Community Resilience Through Crisis At El Infiernito, Chiapas, A Fortified Refuge In The Upper Usumacinta Valley

Whittaker Carl Schroder
University of Pennsylvania, whit.schroder@gmail.com

Follow this and additional works at: https://repository.upenn.edu/edissertations
Part of the Ancient History, Greek and Roman through Late Antiquity Commons, History of Art, Architecture, and Archaeology Commons, and the Latin American History Commons

Recommended Citation
https://repository.upenn.edu/edissertations/3377

This paper is posted at ScholarlyCommons. https://repository.upenn.edu/edissertations/3377
For more information, please contact repository@pobox.upenn.edu.
Community Resilience Through Crisis At El Infiernito, Chiapas, A Fortified Refuge In The Upper Usumacinta Valley

Abstract
Collapse has been misunderstood to equate with the disappearance of civilizations, but political fragmentation is merely one aspect of the complex processes of social transformation. Other concepts, including resilience are useful to separate the effects of cultural continuity from political disintegration. This study approaches these topics from the level of an archaeological community or hamlet located at the periphery of a dynastic center or state. I present 4 broad arguments: 1) collapse and resilience are evolving processes best understood as different aspects of social transformation, 2) the role of agency in collapse and resilience studies is underappreciated, 3) lower elite and commoner populations play a role in these political dynamics, and 4) the changing relationship between dynastic centers and outlying communities is negotiated over time rather than static. The cultural context of this study is the political transformation at the end of the Classic period (AD 250–900) in the Southern Maya Lowlands that involved, in part, political fragmentation or collapse. The timing of this Classic period (AD 250–900) collapse in the Maya area has been informed by long count calendar dates on the final monuments of dynastic and subsidiary centers. However, archaeologists have noted that the subsequent demographic decline in the Southern Lowlands was a protracted process that operated at diverse rates across different subregions. I address these issues with a middle or community-level approach through settlement survey and the excavation of El Infiernito, a hamlet roughly equidistant from the Classic period dynastic center Piedras Negras and its subsidiary ally La Mar. Crucial to the resilience of the El Infiernito community was the reoccupation of a hilltop first modified during the Protoclassic period (100 BC–AD 350) and the construction and maintenance of defensive features to protect the site, agricultural terraces, and a karst spring. Further strategies involved the construction of C-shaped benches and subdivision of living space, ancestor veneration and other household rituals, accessing shifting trade networks, and controlling access to ritual caves. El Infiernito, therefore, provides a rare glimpse of the transition from the Terminal Classic to Early Postclassic periods in the Upper Usumacinta Basin.

Degree Type
Dissertation

Degree Name
Doctor of Philosophy (PhD)

Graduate Group
Anthropology

First Advisor
Richard M. Leventhal

Keywords
Archaeology, Collapse, Crisis, Maya, Refuge, Resilience

This dissertation is available at ScholarlyCommons: https://repository.upenn.edu/edissertations/3377
Subject Categories
Ancient History, Greek and Roman through Late Antiquity | History of Art, Architecture, and Archaeology | Latin American History

This dissertation is available at ScholarlyCommons: https://repository.upenn.edu/edissertations/3377
COMMUNITY RESILIENCE THROUGH CRISIS AT EL INFIERNITO, CHIAPAS, A FORTIFIED REFUGE IN THE UPPER USUMACINTA VALLEY

Whittaker Schroder

A DISSERTATION

in

Anthropology

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2019

_________________________  _________________________
Dr. Richard M. Leventhal                                          Dr. Theodore Schurr
Professor of Anthropology                                        Professor of Anthropology
University of Pennsylvania                                       University of Pennsylvania
Supervisor of Dissertation                                       Graduate Group Chairperson

Dissertation Committee:

Dr. Clark Erickson
Professor of Anthropology
University of Pennsylvania

Dr. Simon Martin
Adjunct Associate Professor of Anthropology
University of Pennsylvania

Dr. Charles Golden
Associate Professor of Anthropology
Brandeis University
COMMUNITY RESILIENCE THROUGH CRISIS AT EL INFIERNITO, CHIAPAS.
A FORTIFIED REFUGE IN THE UPPER USUMACINTA VALLEY

COPYRIGHT

2019

Whittaker Carl Schroder
ACKNOWLEDGMENTS

I would like to thank the various institutions that funded my research and the countless people who supported me throughout graduate school. Granted, I gladly take much of the credit (and blame) for the pages that follow, but this document you now hold in your hands or view on your screen could not have been completed without the financial support and guidance from the following people.

My research was funded in large part by a Wenner-Gren Foundation Dissertation Fieldwork Grant and the Rust Family Foundation Archaeology Grants Program. Other funding sources included, the Kolb Foundation, Sigma Xi, the University of Pennsylvania, the Penn Museum, the Lisa Lynn Brody Foley Fund, University of Pennsylvania Latin American and Latino Studies, Brown University, Brandeis University, and the Alphawood Foundation. My education was also generously funded by a Benjamin Franklin Fellowship, and I was honored to be elected as a Junior Fellow of the Kolb Society of Fellows that has not only supported me financially but has also welcomed me into a vibrant community of scholars who will continue to inspire me throughout my career.

My committee members have served as invaluable mentors since my first year in graduate school. Richard Leventhal, the supervisor of this dissertation, has guided me throughout the process, and I could not imagine a more supportive advisor. Despite our busy schedules, we managed to meet frequently every semester to discuss my progress. Richard also inspired much of the research in this dissertation, always urging me to consider larger issues, interesting research questions, and how archaeological methods...
can link data with theory. I also appreciate his perspective on creating a more ethical and inclusive archaeology to which I hope I have contributed in a small way.

Clark Erickson has also been one of my most important mentors at Penn. He has always been excited about my research, even as it bounced back and forth among different regions. Clark understands the importance of being an Americanist, and I have appreciated his comparative approaches to landscape archaeology. I also am constantly amazed how much Clark delves into his students’ writing, and I am grateful for his many comments on this dissertation. Finally, one of my best experiences in graduate school was our class trip to Mesa Verde with Frank Matero. Beyond archaeology, Clark and I also share musical interests, and that mix tape is legendary.

Simon Martin has a profound expertise in Maya epigraphy, but he also has extensive archaeological and anthropological knowledge. Simon and I share an interest in Classic period Maya politics, and his research has helped frame my understanding of the archaeology, even though I am not an epigrapher. He has always helped me pull back from archaeological interpretations that may have gone too far into speculation. Simon also has his pulse on the most recent (and sometimes unpublished) research on Maya archaeology, and I have enjoyed hearing about some of these advances in the field directly from him.

Charles Golden served as the external member of my dissertation committee, and he drove all the way down from Boston to attend my defense in person. Charles also served as one of my closest mentors in the field, as one of the co-directors of the Proyecto Arqueológico Busiljá-Chocoljá (PABC). When Richard and I first started compiling a list of potential people with whom to work, Charles was at the top of the list, both because of...
my interests as well as Richard’s confidence in him. I am extremely grateful that Charles
responded to my email just after the 2012–2013 holiday season offering me the
opportunity to join the project the following summer. He later trusted me to carry the
PABC torch for a few years and direct my own surveys and excavations. This was a
thrilling and at times overwhelming opportunity, but it allowed me to focus on my own
research and to develop skills in a way that is not always presented to graduate students.

Theodore Schurr may have been required to be at my dissertation defense because
of his position as Graduate Group Chair, but I know he would have attended regardless.
Tad has a holistic understanding of anthropology, largely because he makes himself
present at nearly all departmental events. Tad brings a degree of knowledge and
perspective very different from my archaeological training, but his comments are always
insightful.

Other individuals at Penn who have served as mentors include Asif Agha,
Margaret Bruchac, Harold Dibble, Megan Kassabaum, Louise Krasniewicz, George
Leader, Janet Monge, Katherine Moore, Yoko Nishimura, Deborah Olszewski, Robert
Preucel, Lauren Ristvet, Robert Schuyler, Deborah Thomas, and Greg Urban. I especially
want to thank Brian Daniels for his unwavering support throughout the process and his
invitation for me to participate in his fieldwork in California. I also was lucky to have a
great community of Mesoamericanists at Penn, including Ricardo Agurcia, Joanne Baron,
Jamie Forde, Virginia Greene, Christopher Jones, Sarah Kurnick, Simon Martin, David
McCormick, David Rogoff, and Loa Traxler.

Andrew Scherer also provided support in the field as co-director of the PABC. He
also offered comments on this dissertation. Andrew has a keen understanding of

v
archaeological interpretation and how to build an argument. His advice on properly excavating and treating human remains was crucial, and I thank him for walking me through the process, even remotely when necessary. Charles and Andrew are also very generous to include graduate students in their publications. Other members of the project I would like to thank include Omar Alcover, Harper Dine, George Van Kollias, Mallory Matsumoto, Shanti Morell-Hart, Sarah Newman, Alejandra Roche Recinos, Joshua Schnell, and Max Seidita.

I had an amazing, diverse cohort who studied alongside me, including Osei Alleyne, Diego Arispe-Bazán, Tiffany Cain, Bruno Calisto de Carvalho, Celina de Sá, Erica Jaffe Redner, Marshall Knudson, Sam Larson, and Matthew Magnani. Diego and Celina are great colleagues and friends who have given me interesting perspectives on anthropology. Tiffany has a unique understanding of the intersections among archaeology, cultural heritage, and other fields, and I cannot wait to see where her research takes her. Marshall has an incredible knowledge of social theory, and I enjoyed our late-night jam sessions. Matt and I have already collaborated on a couple of projects, and I look forward to future pursuits. I also would like to thank Larysa Carr, Lara Fields, Mary Kate Hildebrandt, Marie Manski, Ariel Smith, Ruth Styles, and Margaret Spencer for their logistical support and cordial conversations.

I have enjoyed the friendship and support of other colleagues throughout graduate school. To name a few at Penn, I have made lasting friendships with Aylar Abdolahzadeh, Joseph Aguilar, Kevin Burke, Elizabeth Clay, Katherine Culver, Francisco Diaz, Kasey Diserens Morgan, Raquel Fleskes, Volney Friedrich, Christopher Green, Grace Golden, Eric Gruebel, Thomas Hardy, Amber Henry, Li Li, Stephanie
Mach, Paul Mitchell, Kristina Nielsen, Kyle Olson, Justin Reamer, Megan Rubel, Nooshin Samimi, Samantha Seyler, Robert Vigar, and Akshay Walia. Archaeologists at Tulane University have been especially welcoming, including Luke Auld-Thomas, Marcello Canuto, Rachel Horowitz, Erlend Johnson, Mary Kate Kelly, Maxime Lamoureux-St-Hilaire, Evan Parker, Carrie Parris, Jocelyne Ponce, and Marc Zender. I also would like to thank my mentors during my undergraduate studies at Brown University, including Susan Alcock, Stephen Houston, and Patricia Rubertone. A concise list of other people I would like to thank includes Armando Anaya, Christopher Andres, Dmitri Beliaev, Ellen Bell, Eben Broadbent, Bernadette Cap, Oswaldo Chinchilla, Alyce de Carteret, Jeffrey Dobereiner, James Doyle, Keith Eppich, Tom Garrison, Pedro Guzmán López, Patri Horcajada-Campos, Lisa LeCount, Rodrigo Liendo, Damien Marken, David Mixter, Shawn Morton, Tim Murtha, Megan O’Neill, Zoe Rawski, Alexandre Tokovinine, David Webster, Brent Woodfill, and Gabriel Wrobel. Out of necessity, this list is not comprehensive, and I am sure I have forgotten many names.

I also would like to thank all the people in Mexico who contributed to my research. Socorro Jiménez taught me everything I know about Maya ceramics; considering I started from zero she deserves all the credit. She also welcomed me into her lab at the Universidad Autónoma de Yucatán, Mérida, which is a great place to be stuck doing analysis. Also at UADY, I would like to thank Iliana Ancona, Jorge Luis Borges Barrientos, Rafael Cobos, Alan Méndez, Rubén Núñez, Sonny Ojeda, Santiago Sobrino, and Arturo Victoria Pérez. In the field, Yesenia Cabrera, Cyndi Medina, Kellie Roddy, and Moisés Talavera helped significantly with excavations. The local communities of Nueva Esperanza Progresista, La Selva, Margarita Masa de Juárez, Arroyo Belén, Arroyo
Jerusalén, Nuevo Jerusalén, Nuevo Francisco León, and Nuevo Guerrero granted me access to the sites discussed in this dissertation. Willy Fonseca, César Fonseca, Silvestre Fonseca, Gina Fonseca, Guillermo Fonseca, Hugo, and the growing community of its own at the Vallescondido Ranch made for an embarrassingly comfortable field experience.

I also thank the landowners of the sites discussed in this text, including Benito Sánchez Gutiérrez (La Selva), Andrés Reyes (Santa Marta), Eric Pérez González (El Infiernito), Amalia Mendoza López (La Cabaña), Indolfo Islas Galeana (El Jovero), Jacinto Gómez Sánchez (Lacanjá Tzeltal), Enrique Luis Reyes (El Pozo), don Oriel (Rancho Nuevo), Arturo García Pablo (Arturo), José Salvador (San Vicente), Bartolo Mayo López and Miguel Díaz Arcos (Arroyo Jerusalén), Clemente Álvarez Gómez (Cueva de las Ollas), and Juan González (El Esfuerzo). Other local collaborators included Diego Ibarra Cardona, Timoteo Aguilar, Santiago Aguilar, Mario Aguilar de la Cruz, Eduardo Lara Hernández, Asunción Gómez Aguilar, José del Carmen Hernández Ascensio, Ofir Ascensio Bocanegra, Abel Lara Gómez, Denis Reyes Martínez, Deni Mena Aguilar, Elmar Rodríguez Álvaro, José Luis Aguilar, Manuel Sánchez Arcos, Cuauhtémoc Peñato López, Rudby Pérez Hernández, Angélica Casaux Lara, Rocío Sarao Casaux, Miguel Ángel Aguilar, Concepción Ascensio Rosado, Juan Carlos Pérez, Guadalupe Mena García, Mauricio Lisandro Pérez, Ismael Pérez, Miriam Pérez, Domingo Moreno, Celia Rodríguez Álvaro, Herdin Miguel Sánchez, Argeni Mena Hernández, Domingo Hernández Guillén, Sebastian Gómez Moreno, don Antonino, don Marcelo, and Salvador Méndez Arcos. Saúl Ascensio Bocanegra was especially welcoming and supportive and is one of my closest friends. I thank the Consejo de
Arqueología of the Instituto Nacional de Antropología e Historia (INAH), especially Miguel Ángel Rivapalacio Sulser and Héctor Cuevas Fernández, for granting permission to conduct research in the region.

Finally, I would like to thank my family for instilling in me an interest in archaeology and travel from a young age. My parents, Erik and Bryana Schroder gave me the opportunity to travel as a child to Mexico, and I can say that my first visit to Teotihuacan in 1992 is the reason I decided to pursue archaeology. My dad also accompanied me on survey for a couple days in Mexico, and much to his chagrin we didn’t find anything. My brother, Blake Schroder, has always been very supportive and visited me in the field. My wife, Karel Gamboa, puts up with my travels and research and helped me classify ceramics in Mérida for a few weeks. The ceramic sherds, or “rocks” as she calls them, were not very appealing, but thankfully Yucatán was!
ABSTRACT

COMMUNITY RESILIENCE THROUGH CRISIS AT EL INFIERNITO, CHIAPAS, A FORTIFIED REFUGE IN THE UPPER USUMACINTA VALLEY

Whittaker Schroder
Richard M. Leventhal

Collapse has been misunderstood to equate with the disappearance of civilizations, but political fragmentation is merely one aspect of the complex processes of social transformation. Other concepts, including resilience are useful to separate the effects of cultural continuity from political disintegration. This study approaches these topics from the level of an archaeological community or hamlet located at the periphery of a dynastic center or state. I present 4 broad arguments: 1) collapse and resilience are evolving processes best understood as different aspects of social transformation, 2) the role of agency in collapse and resilience studies is underappreciated, 3) lower elite and commoner populations play a role in these political dynamics, and 4) the changing relationship between dynastic centers and outlying communities is negotiated over time rather than static. The cultural context of this study is the political transformation at the end of the Classic period (AD 250–900) in the Southern Maya Lowlands that involved, in part, political fragmentation or collapse. The timing of this Classic period (AD 250–900) collapse in the Maya area has been informed by long count calendar dates on the final monuments of dynastic and subsidiary centers. However, archaeologists have noted that the subsequent demographic decline in the Southern Lowlands was a protracted process.
that operated at diverse rates across different subregions. I address these issues with a middle or community-level approach through settlement survey and the excavation of El Infiernito, a hamlet roughly equidistant from the Classic period dynastic center Piedras Negras and its subsidiary ally La Mar. Crucial to the resilience of the El Infiernito community was the reoccupation of a hilltop first modified during the Protoclassic period (100 BC–AD 350) and the construction and maintenance of defensive features to protect the site, agricultural terraces, and a karst spring. Further strategies involved the construction of C-shaped benches and subdivision of living space, ancestor veneration and other household rituals, accessing shifting trade networks, and controlling access to ritual caves. El Infiernito, therefore, provides a rare glimpse of the transition from the Terminal Classic to Early Postclassic periods in the Upper Usumacinta Basin.
TABLE OF CONTENTS

Acknowledgments ........................................................................ iii
Abstract ......................................................................................... x
Table of Contents ........................................................................ xii
List of Tables ................................................................................ xxi
List of Figures .............................................................................. xxii

Chapter 1: Introduction ................................................................. 1
   Brief Introduction to the Site and Study Region ......................... 7
   Research Aims ........................................................................... 13
   Organization of the Dissertation .............................................. 16

Chapter 2: Collapse and Resilience in Anthropological and Archaeological Theory .................................................. 19
   Defining Collapse .................................................................. 20
   Causes of Collapse ............................................................... 25
   Effects of Collapse ................................................................ 29
   Biological Analogies and Environmental Determinism ............ 34
   Anthropological Approaches to Crisis .................................... 38
   Resilience .............................................................................. 41
   Agency, Resistance, Survivance ............................................. 47
   Reorganization ....................................................................... 54
   Discussion: Collapse as Process ............................................ 55
Chapter 3: The Terminal Classic Period Collapse in the Southern Lowlands

Centralization vs. Decentralization ...................................................... 58
Beyond Centralization and Decentralization .................................... 67
The Classic Maya Polity ................................................................. 69
The Royal Court ................................................................. 71
The Cessation of Monuments .......................................................... 75
Explanations for the Terminal Classic Period Collapse ..................... 78
  Environmental Changes .............................................................. 79
  Ecological Degradation .............................................................. 85
  Invasion ..................................................................................... 87
  Economic Shifts ......................................................................... 92
  Increasing Interregional Warfare .................................................. 93
  Intrapolity Crises ...................................................................... 98
The Demographic Collapse .............................................................. 104
Earlier Periods of Political Transformation in the Southern Lowlands ..... 107
  The Classic Period Hiatus ......................................................... 108
  Protoclassic Period Transformations .......................................... 109
Discussion .................................................................................. 113

Chapter 4: The Usumacinta Region and Study Area .................... 117
Geography and Environment .......................................................... 117
Previous Research in the Study Area ............................................ 121
Teobert Maler’s Expeditions (1895–1900) .......................... 121
The Penn Museum Piedras Negras Project (1931–1939) ........... 124
Proyecto Arqueológico El Cayo ............................................. 135
Proyecto Regional Arqueológico Sierra del Lacandón
(2004–2010) ........................................................................ 137
Proyecto Arqueológico Chinikiha .......................................... 145
The Redención del Campesino Valley Archaeological Survey ..... 147
Proyecto Arqueológico Busiljá-Chocoljá ................................. 150
Epigraphy and Archaeology: A Brief Political History of the Usumacinta Region ......................................................... 157
The Preclassic Period ............................................................. 157
The Early Classic Period ....................................................... 159
The Late Classic Period ........................................................ 163
The Terminal Classic Period .................................................. 168
The Current Study Area ........................................................ 172

Chapter 5: Research Design and Methodology ............................. 175
Research Questions .............................................................. 175
Ceramics and Chronology ..................................................... 180
Form and Function of Architecture ....................................... 181
Defense .............................................................................. 183
Landesque Capital .................................................................. 188
Trade, Household Status, and Craft Production ......................................... 189
Domestic and Landscape Ritual ............................................................... 191
Assessing Integration within the Piedras Negras Kingdom ....................... 195
Survey Methods ..................................................................................... 198
Excavation Methods ............................................................................ 202

Chapter 6: Survey and Regional Settlement Hierarchy ............................. 206
Settlement Types and Ranks .................................................................... 207
Structure Types ...................................................................................... 208
  Residential Structures ....................................................................... 208
  Range Structures ............................................................................... 211
  Palaces ............................................................................................... 211
  Ancillary Structures .......................................................................... 213
  Temple-Pyramids ............................................................................. 214
  Ballcourts ......................................................................................... 216
  Plazas ............................................................................................... 218
Site Categories ...................................................................................... 219
Busiljá River Valley .............................................................................. 226
  El Infiernito ...................................................................................... 226
  Cueva de las Ollas ........................................................................... 245
  Santa Marta ....................................................................................... 246
  El Esfuerzo ....................................................................................... 249
  La Selva ............................................................................................ 252
IN-3A: Investigations of Structures D1-1 and D1-2 .......................... 323
IN-3B, IN-11A, and IN-12A: Excavations of the Upper Group Terraces ...325
          Burial 6 ................................................................. 331
IN-5A: Excavations of Structure E2-5 ................................. 333
Suboperation 5D: Excavation of Structure E2-4 ......................... 357
Defensive Wall, Structure D1-9: Suboperation 13A .................... 359
Lower Group ........................................................................ 360
Operations 6, 7, 14, and 15: Investigations of Structures D2-1, D2-2,
          C2-3, and C2-1 .......................................................... 361
IN-8A, IN-9A, and IN-15A: Excavations of Terraces within the Lower
          Group ........................................................................ 362
Operation 16: Excavations of Structures B4-1 and B4-2 .............. 364
West Group: Investigations of Structures A3-1 and B2-8 ................366
          Burial 1 ....................................................................... 370
Peripheral Structures: Operations 19 and 20 ............................ 371
South Group: Suboperation 20B ............................................. 373

Chapter 8: Discussion and Results .............................................. 374

Ceramics and Chronology ....................................................... 374
          Middle Preclassic Period .............................................. 375
          Late/Terminal Preclassic Period ................................. 376
          Late Classic Period .................................................... 377
          Terminal Classic Period .............................................. 381
Form and Function of Architecture .............................................. 383
Defense ................................................................................... 388
Landesque Capital ................................................................. 400
Trade, Household Status, and Craft Production .......................... 406
Domestic and Landscape Ritual ................................................. 422
The Piedras Negras Kingdom ..................................................... 442

**Chapter 9: Conclusions** .................................................................. 450
Collapse and Resilience ............................................................... 452
Seeking Refuge from Warfare and Crisis ...................................... 454
Shifting Alliances and Borders ....................................................... 461
Conclusion ................................................................................. 462

**Appendix 1: Additional Excavation Data (El Infiernito, La Selva, Rancho Nuevo, and Santa Marta)** .......................................................... 466
Excavations at El Infiernito .......................................................... 466
   IN-2B-1 ............................................................................... 466
   IN-2B-2 ............................................................................... 467
   IN-2B-3 ............................................................................... 467
   IN-2B-4 ............................................................................... 468
   IN-2B-5 ............................................................................... 468
   IN-2B-6 ............................................................................... 468
Operations 4 and 10: Main Plaza and Structures E2-1, E2-2, and E2-3 .. 469
Suboperation 10A .......................................................... 473

Suboperations IN-5B and IN-5C ........................................ 473

IN-5B-1 ........................................................................ 474
IN-5B-2 ........................................................................ 474
IN-5B-3 ........................................................................ 475
IN-5B-4 ........................................................................ 475
IN-5C-1 ........................................................................ 476

IN-6A, IN-14A, and IN-15A: Investigations of Structures D2-1, D2-2, and C2-3 ................................................................. 477

IN-6A-1 ........................................................................ 477
IN-6A-2 ........................................................................ 478
IN-14A-1 ...................................................................... 478
IN-15A-1 ...................................................................... 479

Operation 7: Excavations Related to Structure C2-1 .................. 480

IN-7A-1 ........................................................................ 480
IN-7B-1 ........................................................................ 481
IN-7C-1 ........................................................................ 481

South Group ...................................................................... 482

IN-20A-1 ...................................................................... 482
Suboperation 20B ................................................................. 483
Excavations at La Selva ...................................................... 483
Excavations in the Main Patio, Structure C3-8 ....................... 483
Investigations of Structure C3-1 ........................................... 487
  Burial 2 ........................................................................ 489
  Burial 1 ........................................................................ 490
  Burial 3 ........................................................................ 493
Documentation of the Looting of Structure C3-5 ....................... 493
Excavations to the North of the Main Patio ......................... 494
Excavations at Rancho Nuevo ........................................... 496
  Burial 1 ........................................................................ 500
Excavations at Santa Marta ............................................... 501
  Burial 1 ........................................................................ 503

Appendix 2: Ceramic Paste Classes ........................................ 506
Appendix 3: Ceramic Form Classes ....................................... 530
Appendix 4: Typology of El Infiernito Structures ..................... 533
Appendix 5: Artifact Analyses ........................................... 538

Bibliography ....................................................................... 598
LIST OF TABLES

Table 1.1  Ceramic sequences from the Usumacinta Region, Lamanai, and Uaxactun (adapted from Berlin 1956; García Moll 2005; Jiménez 2013; Muñoz 2006; Powis 2002; Rands 2007a; Smith 1955) ................................................................. 10

Table 2.1  Definitions of collapse in archaeological and popular literature ................................................................. 20

Table 8.1  Proportion of ceramic pastes by site, with total sherd counts under site names (Jiménez 2013; Jiménez et al. 2014) .......... 447

Table A3.1  Ceramic form classes and sub-classes (adapted from Jiménez 2013:95) .......................................................... 530

Table A4.1  Typology of El Infiernito structures .............................. 533

Table A5.1  Lithics ............................................................... 539

Table A5.2  Obsidian .......................................................... 558

Table A5.3  Groundstone ....................................................... 571

Table A5.4  Faunal Bone ......................................................... 576

Table A5.5  Shell ............................................................... 580

Table A5.6  Stucco ............................................................. 585

Table A5.7  Quartz ............................................................. 587

Table A5.8  Greenstone and Hematite ........................................ 589

Table A5.9  Special Lithics ...................................................... 591
LIST OF FIGURES

All figures by the author unless otherwise indicated.

**Figure 1.1** Map of the study region and selected archaeological sites .......... 4

**Figure 1.2** Map of structures and topography of El Infiernito, Chiapas, Mexico ................................................................. 8

**Figure 2.1** The adaptive cycle, visualized as a figure eight (Holling and Gunderson 2002, Figure 2.1) ........................................... 43

**Figure 6.1** Map of archaeological sites and modern communities in the region ................................................................. 226

**Figure 6.2** Map of El Infiernito showing GPS points from archaeological survey of the hilltop .............................................................. 227

**Figure 6.3** Map of El Infiernito, Upper and Lower Group structures ........ 228

**Figure 6.4** View of the El Infiernito hilltop from the southwest .......... 228

**Figure 6.5** Monumental terrace (Structure B4-1) and freestanding wall (Structure B4-2) west of the Lower Group ......................... 231

**Figure 6.6** Map of El Infiernito showing the structures in the Lower Group at top center in relation to Structures B4-1 and B4-2 ............... 232

**Figure 6.7** Structures C2-1 and C2-2, Lower Group .............................. 232

**Figure 6.8** Map of structures in the northern portion of the Upper Group of El Infiernito ................................................................. 234

**Figure 6.9** Retaining wall of Structure D1-7, the monumental terrace at the northwest end of the Upper Group ............................... 235

**Figure 6.10** The top of Structure D1-8, one of the monumental terraces at the northwestern end of the Upper Group ................................. 235

**Figure 6.11** Map of structures in the central portion of the Upper Group of El Infiernito ................................................................. 237

**Figure 6.12** Map of structures in the southeastern portion of the Upper Group .. 238

**Figure 6.13** U-shaped patio group centered on substructure E2-7 facing south with Structure E2-5 in the center foreground and Structure E2-4
in the left background .......................................................... 238

**Figure 6.14** Map of the southwestern portion of the Upper Group .......... 239

**Figure 6.15** Shallow cave at the southern end of the Upper Group ............ 240

**Figure 6.16** Map of West Group structures ........................................ 241

**Figure 6.17** The hill known as “El Volcán” to the west of El Infiernito at center, viewed from the South Group, facing northwest .......... 242

**Figure 6.18** Sloping terrace or ramp flanked by lookoutts on the South Group hill ................................................................. 243

**Figure 6.19** Cueva de las Ollas .......................................................... 245

**Figure 6.20** Map of the southern portion of the main group of Santa Marta ...... 247

**Figure 6.21** Sketch map of El Esfuerzo .................................................. 250

**Figure 6.22** Map of the epicenter of La Selva ......................................... 253

**Figure 6.23** Map of Rancho Nuevo and location of excavation units ............ 256

**Figure 6.24** Tape and compass map of the core of Arroyo Jerusalén ............ 259

**Figure 6.25** Lacandón incense burner found at the top of the main structure of Arroyo Jerusalén ...................................................... 260

**Figure 6.26** Sketch map of Ijik Xajlel .................................................. 262

**Figure 6.27** Terminal Classic period spindle whorl from Ijik Xajlel ............ 263

**Figure 6.28** Terminal Classic to Early Postclassic period tecomate from Witsiljá ................................................................. 264

**Figure 6.29** Sketch map of San Vicente .................................................. 265

**Figure 6.30** Sketch map of Busiljá (Línea Eléctrica) ................................. 266

**Figure 6.31** Sketch map of Laguna de la Culebra ................................... 269

**Figure 6.32** Sketch map of the main structure of Arturo and the possible location of other structures in parts of the site yet to be surveyed ... 272

**Figure 6.33** Blank stela or column altar on the lower terrace surrounding the...
main structure at Arturo .................................................. 273

Figure 6.34 Ik’-shaped window or drainage feature in collapsed
superstructure on the main structure of Arturo ..................... 273

Figure 6.35 Stela fragment from the Santa Clara region ................. 275

Figure 6.36 Sketch map of La Cabaña ........................................ 278

Figure 6.37 Stone column at La Cabaña, likely a recent construction ....... 279

Figure 6.38 Sketch map of La Aurora/La Ceiba .......................... 280

Figure 6.39 View of Nuevo Jerusalén, east of the modern community of the
same name .................................................................. 283

Figure 6.40 Cistern associated with a small hilltop patio group at
El Pozo/Nuevo Tumbalá .................................................. 285

Figure 6.41 Possible location of structures at El Jovero based on satellite
imagery ........................................................................ 289

Figure 7.1 Map of El Infiernito and excavation operations ............... 291

Figure 7.2 Map of excavation units in Operations 1 and 2 .................. 292

Figure 7.3 Altar 1, located at the center of the patio group formed by
Structures E1-1, E1-4 (background center and right), and E1-5
(background left) .............................................................. 294

Figure 7.4 Structures E1-4 (left) and E1-1 (background) from Structure E1-5
(center right foreground) facing southeast ............................. 295

Figure 7.5 Profile of IN-1C-2 showing the location of Burial 4 .......... 297

Figure 7.6 Northeast profile of IN-1C-3 and IN-1C-4 .................... 299

Figure 7.7 Southwest profile of IN-1C-3 .................................... 299

Figure 7.8 Fragment of copper axe money associated with the C-shaped
bench in Structure E1-4 .................................................. 304

Figure 7.9 Southeast profile of IN-1C-7 showing the location of Burial 5 .... 305

Figure 7.10 Structure E1-4 after excavations and partial reconstruction of the
C-shaped bench (background) ............................................ 308
Figure 7.11  Plan drawing of Structure E1-5 and rear, C-shaped wall .......... 310
Figure 7.12  Location of burials in Suboperation 1C, associated with Structure E1-4 ................................................................. 312
Figure 7.13  Burial 4 showing the location of the projectile point relative to the left femur ................................................................. 315
Figure 7.14  Northeast profile of looter’s pit in upper level of Structure E1-1 ....317
Figure 7.15  Northeast profile of looter’s pit in the substructure E1-3 with Structure E1-1 in the background ................................. 317
Figure 7.16  Southeast profile of the looter’s pit showing the base of Structure E1-1 (left) and the expansion of Structures E1-2 and E1-3 (right) ...318
Figure 7.17  Exposed portion of the southwestern wall of substructure E1-3 facing north toward Structure E1-1. Structure E1-2 is immediately above Structure E1-3, out of view ........................................ 318
Figure 7.18  Plan drawing of the circular stone feature near the northern corner of Structure E1-2 ................................................................. 320
Figure 7.19  Plan drawing of Suboperation 2A, Structure E1-2 ................. 321
Figure 7.20  Southeast profile of IN-2A-8 ...................................................... 322
Figure 7.21  Map of Operations 3, 11, and 12 .............................................. 324
Figure 7.22  Northwest profile of IN-11A-1 ................................................... 327
Figure 7.23  East profile of IN-12A-3 and IN-12A-4 ..................................... 329
Figure 7.24  Plan drawing of Burial 6 before lifting capstones (left) and after (right) ................................................................. 332
Figure 7.25  Map of excavation units in Operation 5 ...................................... 335
Figure 7.26  NW profile of IN-5A-1 .............................................................. 336
Figure 7.27  Plan drawing of the line of stones documented in IN-5A-1-5, beneath the Late Preclassic floor of the patio (Structure E2-7) ......338
Figure 7.28  Plan drawing of Suboperation 5A, Structure E2-5 ....................... 339
Figure 7.29  Southwest profile of IN-5A-6 showing the location of the cache ... 344
Figure 7.30  Southeast profile of Structure E2-5  ........................................... 353
Figure 7.31  West profile of IN-5D-1 (drawing by Moisés Talavera and Whittaker Schroder) ................................................... 357
Figure 7.32  Map of excavation units in the Lower Group  ......................... 360
Figure 7.33  Map of excavation units in the West Group  .......................... 367
Figure 7.34  Northwest profile of IN-17A-1 showing a single construction phase ................................................................. 368
Figure 8.1  Box and whiskers plot of living area of domestic structures in the West and Upper Groups  ........................................... 387
Figure 8.2  Lorenz curves of structure surface area, West and Upper Groups ................................................................. 388
Figure 8.3  Freestanding wall to the west of the Upper Group .................... 393
Figure 8.4  GIS model of intervisibility among lookouts and other defensive features at El Infiernito  ................................................. 400
Figure 8.5  Terraces near the West Group  .................................................. 405
Figure 8.6  Example of an incised Early Postclassic period decorative motifs on a Silho Fine Orange bowl ........................................ 407
Figure 8.7  Silho Fine Orange vase with God K iconography recovered from Structure E2-4 .......................................................... 409
Figure 8.8  Proportion of chert flakes by percentage of cortex .................. 411
Figure 8.9  Proportion of chert flakes classified by percentage of cortex, by suboperation .......................................................... 412
Figure 8.10  Density of chert debitage by excavation unit  ........................ 413
Figure 8.11  Frequency of obsidian blades, cores, and flakes by suboperation 416
Figure 8.12  Proportion of obsidian blades, cores, and flakes from El Infiernito ................................................................. 416
Figure 8.13  Density of obsidian by excavation unit  .................................. 417
Figure 8.14  Box and whiskers plot showing obsidian density by suboperation 418
Figure 8.15  Biplot graphic showing obsidian sources for the El Infiernito assemblage (by Max Seidita) ................................. 418

Figure 8.16  Ceramic spindle whorl recovered from Structure E1-5 ................. 420

Figure 8.17  Limestone spindle whorl recovered from Structure E1-5 .......... 420

Figure 8.18  Spindle whorl with Terminal Classic period feathered serpent iconography, recovered from Structure E1-2 ......................... 421

Figure 8.19  Offerings recovered from Burial 3 from top left, clockwise: carved bone, polished stone, brain coral, projectile point .......... 426

Figure 8.20  Early Postclassic period bowl, deposited face down on top of the terrace, Structure D1-7, IN-12A-1-1 ................................. 431

Figure 8.21  Density of ceramics covering above floor assemblages of Structure E2-5 ............................................................. 434

Figure 8.22  Density of faunal bone by excavation lot, showing the highest densities in the Suboperation 3B terrace (Structure D1-7) and the circular feature in Structure E1-2 ....................... 435

Figure 8.23  Box and whiskers plot of faunal densities by suboperation ........ 436

Figure 8.24  Kernel density of non-obsidian stone tools across El Infiernito .... 437

Figure 8.25  Point density of non-obsidian stone tools in the Upper Group, El Infiernito ............................................................. 438

Figure 8.26  Point density of late stage bifaces and projectile points in the Upper Group, El Infiernito ............................................. 439

Figure 8.27  Map of Piedras Negras and surrounding communities in relation to Anaya and colleagues’ (2011) hypothetical territorial extent of the Piedras Negras kingdom .................................................. 446

Figure A3.1  Ceramic form classes and sub-classes (Jiménez 2013:95) .......... 530
CHAPTER 1
Introduction

Societal collapse, or political fragmentation, is merely one form of social transformation, but one that is an intriguing topic to scholars and the public alike. The pervasiveness of the topic of collapse in historical discourse suggests a desire to trace past societal failures to avoid similar consequences in the future. Despite the ubiquity of discussions of collapse, the grand narrative of human history is generally one of resilience, a topic that has gained traction in recent decades. As humanity faces the potential of a global climate catastrophe, notions of community and urban resilience have garnered increasing interest among social scientists and policy professionals to prepare for impending crises. Historians and archaeologists have the benefit of tracking the processes of collapse over the *longue durée*, but what does collapse look like to the people who experience it?

To address this question, collapse must be interpreted as a process rather than an event. Although a single, catastrophic event can provide simplified, monocausal explanations for collapse, such events can also drive people to innovate and to thrive through crisis. Scholarly and public discourses on societal collapse tend to identify the disintegration of political systems as resulting from environmental pressures, social upheaval, or some combination of factors (Acemoglu and Robinson 2013; Diamond 2005; Railey and Reycraft 2008; Tainter 1988; Yoffee 1988). In historical terms, collapse has tended to coincide with the occurrence of dark ages or intermediate periods, during which particular “great traditions” of classic art and architectural styles declined or disappeared (Cowgill 1988). However, archaeologists have proposed alternative models
emphasizing the continuity and resilience of cultural practices even in times of political upheaval (Faulset 2016; McAnany and Yoffee 2009). Indeed, a long-term, bottom up perspective suggests that states are ephemeral entities, and people have developed numerous coping mechanisms to respond to crisis (Erickson 1999; Scott 2009).

Recent anthropological discussions of crisis have shifted from the traditional view that crisis represents a rupture in stability or normality associated with social unrest (Koselleck 2006). Instead, anthropologists question the perspective that crisis is an exceptional state of being, suggesting that it is a chronic condition (Hage 2009; Jansen 2014; Roitman 2014; Vigh 2008). This notion that instability and uncertainty have been historical norms in many societies raises the question of how social actors endure such challenges and how certain cultural systems remain resilient through permanent or recurrent states of crisis (Narotzky and Besnier 2014).

The processes of abandonment and collapse are fundamental to an archaeological understanding of social change. From a site-based perspective, occupational histories must be established to determine the founding of a settlement, major construction phases, the rate of abandonment, or alternatively the continuity of a settlement or its reoccupation. Depending on the scale of such continuity, the later occupants of a site may be termed “squatters,” merely inhabiting dilapidated structures to which they seemingly have no direct ties. Still, the fact that such people choose to maintain a presence within these settlements implies a stronger connection. In fact, from a perspective of landscape archaeology, places or landscapes are seldom abandoned but instead are reshaped and reinterpreted as some settlements wane and others are established or grow. To understand collapse and resilience is, in part, to consider scale. When viewed from trowel level,
houses or sites may reveal abandonment, while when interpreted more holistically, continuity is more apparent (McAnany and Yoffee 2010. A single archaeological project, therefore, cannot solve questions of collapse, but multiscalar approaches from the household to the landscape level can provide robust data to incorporate narratives constructed from the totality of archaeological research in a region.

Mayanists have contributed to discussions of collapse and crisis, as generations of archaeologists have examined the Classic period collapse of kingship and its concomitant demographic changes (Culbert 1973; Webster 2002). However, major questions remain as to the extent of post-collapse settlement in the Southern Maya Lowlands, and whether populations migrated and dispersed or succumbed to the crises associated with drought, warfare, and famine (Guenter 2014:325-326). Further research in the hinterlands of major centers is necessary to document the plausibility of small communities able to persist free from the pressures of a hegemonic state.

In this project, influenced by anthropological theories of resilience and resistance to the state (Clastres 1974; González-Ruibal 2014; McAnany and Yoffee 2010; Scott 2009), I examine the effects of political upheaval and crisis in the hinterlands of the Maya kingdom of Piedras Negras, at the hilltop site of El Infiernito, in the Lacandón Jungle of lowland Chiapas, Mexico (Figure 1.1). I interpret the hilltop location of El Infiernito as a region of refuge (Aguirre 1973), that attracted local populations to a defendable site in the final decades of Piedras Negras’ political influence in the Terminal Classic period (AD 810–900).

Archaeology provides the proper methodology to understand the uniqueness of El Infiernito, as well as its role in the political landscape of the Late Classic period (AD
600–810). A combination of analysis of settlement patterns, household practices, and landscape use has been successful in assessing the changes and continuities associated with the end of the Classic period (Hoggarth and Awe 2016). Inspired by these methodologies, my research focused on determining the relationship between collapse and settlement shifts through a combination of mapping, surveying, and excavation. These findings addressed broad questions relating to how peripheral communities respond to crises associated with the demise of a political entity.

Figure 1.1 Map of the study region and selected archaeological sites. The yellow boundary marks Anaya and colleagues’ (2011) reconstruction of the Piedras Negras kingdom circa AD 690 when local governors at La Mar shifted allegiance toward Palenque. The dashed yellow line marks the Piedras Negras kingdom’s extent before AD 690 and after the middle of the eighth century.
I propose four overarching arguments based on the documentation and examination of settlement within the region surrounding Piedras Negras. (When used alone, “Piedras Negras” will refer to the archaeological site, while other qualifiers including dynasty, kingdom, etc. will describe specific entities associated with the site).

First, to understand fully the processes of social change in the past, collapse and resilience can be useful terms, but only when considered together and when interpreted as constantly evolving processes rather than based on specific, catastrophic events. Although such events certainly affect social change, catastrophes are better viewed as catalysts rather than underlying causes of social transformation. Second, the role of agency in studies of collapse and resilience is rarely appreciated. Collapse, especially when interpreted as driven by external factors, has been discussed as inevitable (Gill 2000) and even resilience has been contrasted with more overt forms of resistance as a process or system that follows predictable cycles, in line with ecological models.

Ethnographic analogies can be especially enlightening when discussing how individuals and communities cope with crisis. Third, political dynamics, in this case those reconstructed primarily from inscriptions for much of the Southern Lowlands during the Classic period, affected not only the royal elite and non-royal members of dynastic courts but also the non-elite populations of farmers and artisans within and outside the major centers.

A community-level approach can provide a link between elite and non-elite members of Classic period society, what some Mayanists have called a middle-out perspective (Canuto 2002; Connell 2000; Canuto and Fash 2004; Yaeger and Canuto
2000), while multiscalar approaches and contributions from landscape archaeology can integrate diverse lines of data.

Finally, site typologies and hierarchies are useful and a crucial first step in reconstructing political landscapes, but archaeologists must recognize that such rigid categories almost by definition hamper efforts to reconstruct political dynamics. Political centers, especially peripheral ones, shifted allegiance repeatedly and even their place within a political hierarchy could change over time. Rather than asking if a political center was secondary or tertiary in relation to a dynastic center, the more interesting question is at what times did a community take on characteristics of a secondary or tertiary site and at whose behest? In Frank Cancian’s (1996) view, how do hamlets and their local leaders perform as mediators between the state and rural commoners and how does this relationship develop and change over time? Just as a dynamic model can explain how different primary centers gain and lose prominence within a political landscape (Marcus 1993; 1998), similar models are necessary to explain how minor centers respond to the strategies of larger states, perhaps accepting or rejecting their status as a subsidiary center (Iannone 2004). As the boundaries of states constantly shift, dynastic centers may rely more or less on certain lower level hamlets, as rulers focus their efforts on more distant locales rather than proximal communities. From an archaeological standpoint, a site’s position in a settlement hierarchy can shift over time as a community chooses or is compelled to interact with the state at different levels.
Brief Introduction to the Site and Study Region

The process developing these arguments relied on continuing a regional settlement survey, directed by Charles Golden and Andrew Scherer of the Proyecto Arqueológico Busiljá-Chocoljá (PABC), building on the first scientific studies in the Upper Usumacinta region of Chiapas, Mexico and Petén, Guatemala, conducted by Teobert Maler (1903), followed by several projects in the region (Anaya 2002; Golden and Scherer 2006; Houston et al. 2003; Liendo 2011; Weeks, Hill, and Golden 2005). Survey focused on two primary objectives: 1) to determine a suitable archaeological site near Piedras Negras to investigate political integration and decentralization through archaeological excavation, and 2) to document and classify archaeological sites (as well as to conduct smaller scale excavations) throughout the region to understand better the selected lower level or subsidiary center’s place within the political landscape.

This selected site was El Infiernito, located within the ejido (modern communal system of land tenure in Mexico) associated with the town of La Selva, Ocosingo, Chiapas. This site was chosen due to its proximity to Piedras Negras (located 8 km to the northeast of El Infiernito), classification as a tertiary site with multiple patio groups, small plazas, and pyramidal shrines, the presence of Late and Terminal Classic period ceramics on the surface and in initial excavation units, and the opportunity granted by the landowner and ejido to conduct multiple seasons of fieldwork, including mapping, surface collections, and excavation at the site. Crucial to pursuing dissertation research at the site, the Main or Upper Group of El Infiernito appeared to lie in the middle of a 35 ha ranch, suitable for a more systematic survey to identify settlement clusters and outlying house mounds (Figure 1.2). To satisfy the second objective of this dissertation, I pursued
a nonsystematic reconnaissance survey strategy, based on the support and interests of local landowners and community members. Although large survey gaps remain in the project area, an understanding of settlement patterns is continually emerging. I discuss these efforts to contextualize the variability in settlements across the Piedras Negras kingdom and the El Infiernito community’s role in regional politics. Methods ranged from documentation with GPS, mapping (sketch, tape and compass, or total station), to limited excavation (at the sites of La Selva, Rancho Nuevo, and Santa Marta, located 2–3 km from El Infiernito and coeval with its Late Classic period occupation). The modal analysis of ceramics recovered from La Selva and El Infiernito followed methodologies established at other sites in the region, including Chinikiha and Budsilha (Jiménez Álvarez 2013; Jiménez Álvarez et al. 2014). The ceramics from El Infiernito’s Upper Group demonstrated a unique Terminal Classic period assemblage for the study area.

Figure 1.2 Map of structures and topography of El Infiernito, Chiapas, Mexico.
The research presented in this dissertation took place over 6 seasons with the PABC from 2013 to 2018. The majority of ceramic and other artifact analysis took place from 2015 to 2018, although some analyses are ongoing. Local ejidatarios, or ejido members, from the modern village of La Selva first led me and other local assistants to El Infiernito in 2015 after unexpectedly wrapping up excavations at the nearby archaeological site of La Selva. This initial reconnaissance first documented the Upper and Lower Groups of El Infiernito, and mapping and excavation proceeded, focusing on the immediate area surrounding Structure E1-1. These first excavation units documented abundant ceramics, revealing a bimodal occupation history in the Late Preclassic period (250 BC–AD 350) and the Late Classic period.

Although unclear at the time, the ceramics suggested a late occupation at least through the late facet of the Chacalhaaz ceramic phase (AD 800–850) extending into the Kumche ceramic phase (850–900) of Piedras Negras (Holley 1983; Muñoz 2006) (Table 1.1). The Chacalhaaz ceramic phase marked the highest population densities at Piedras Negras and the surrounding region, and the presence of these materials suggested that El Infiernito may have supported a significant population during the Terminal Classic period, extending at least into the late ninth century. Further discussions with ceramicist Socorro Jiménez clarified that ceramics from other excavated sites along the Piedras Negras periphery typically belonged to the early facet of the Chacalhaaz phase (AD 750–800) at the latest. The hilly, karstic landscape surrounding El Infiernito also suggested that the Upper Group had been chosen for defensive reasons, as this area lies at the summit of a steep and nearly inaccessible hill. These data led to the primary hypothesis
that El Infiernito served as a refuge for populations during periods of crisis associated with the Terminal Preclassic or Protoclassic periods (100 BC–AD 350) and the Terminal Classic period (AD 810–900).

**Table 1.1** Ceramic sequences from the Usumacinta Region, Lamanai, and Uaxactun (adapted from Berlin 1956; García Moll 2005; Jiménez 2013; Muñoz 2006; Powis 2002; Rands 2007a; Smith 1955).
Building off this hypothesis, I also considered El Infiernito’s role related to the integration of the Piedras Negras kingdom. The hilltop location of El Infiernito could have been beneficial to expansive efforts by the royal court of Piedras Negras. Located 8 km from the core of Piedras Negras, El Infiernito was well within the area typically understood to be within that kingdom’s domain, known from epigraphy to extend at least 20 km to outlying secondary centers La Mar and El Cayo. Still, the political history of the Western Maya Lowlands was especially complex, as dynastic centers vied for power in part to control travel corridors within the rugged landscape of the Upper Usumacinta region (Aliphat Fernández 1994; Anaya Hernández 2001). The conflicts between the dynasties of Piedras Negras and Yaxchilán during the late eighth and early ninth centuries are well known from stone monuments (Golden et al. 2008; Martín and Grube 2008; Scherer and Golden 2014).

The current study region, however, also became embroiled in conflicts between other dynastic centers, including Pomonal, Palenque, Toniná, and the poorly understood kingdom of Sak Tz’i’ (Anaya et al. 2003), likely based at the archaeological site of Lacanjá Tzeltal. The robust epigraphic data raised the possibility that the Piedras Negras kingdom’s territory was part of a contested or fragmentary landscape, and the El Infiernito community may have played a role or at least been affected by these political dynamics.

The location of the Usumacinta River today, marking the modern border between the nation states of Mexico and Guatemala has influenced much of the archaeological research in the region, which tends to focus on boundaries and frontiers. Jeffrey Dobereiner (2016) has applied such arguments as far back as the Preclassic period, when
the region formed a nebulous frontier between the Olmec civilization of the Gulf Coast and the burgeoning Lowland Maya civilization. Charles Golden, Andrew Scherer, and colleagues (2008) sought to establish an understanding of the boundary between the territories of Piedras Negras and Yaxchilán through their work in Guatemala. Additional research on these borders has been pursued through remote sensing. Armando Anaya Hernández (2001; 2006) has used Gravity Model algorithms to predict the extents of Classic period kingdoms, and his surveys between Pomoná and Piedras Negras have confirmed some of his predictions (Anaya Hernández et al. 2003).

Although somewhat hypothetical, Anaya Hernández’s reconstructions of polity footprints and boundaries provided the current research with another intriguing hypothesis. Anaya Hernández suggested with his Gravity Models that the extent of the Piedras Negras kingdom shrank at times during the late seventh and early eighth centuries, when the dynastic center of Sak Tz’i’, located in the Santo Domingo Valley at the western end of the PABC study region, established dominance over Piedras Negras allies La Mar and perhaps El Cayo.

More recent discoveries at the dynastic center of Toniná, further west, have also suggested that royalty at Palenque and Toniná were successful in challenging the Piedras Negras kingdom’s western and southern frontiers (Stuart 2011; Yadeun 2011). After the ruler K’inich Kan Bahlam II of Palenque claimed an alliance with local lords of La Mar and the epigraphic site of Anaite, warriors from Toniná captured two of these lords and/or decapitated their effigies in stone sculpture in the Toniná ballcourt (Bíró 2011; Martin and Grube 2008; Yadeun 2011). As Anaya Hernández’s models were partially based on topography, the periphery of the Piedras Negras territory was perhaps
compressed at its western limits to the line of hills that abut El Infiernito. At this time, the Piedras Negras court may have relied more heavily on local communities and leaders like those at El Infiernito to defend this frontier. Archaeological evidence from the PABC study region also suggests that communities along the western limits of Piedras Negras’s territory had access to a higher proportion of ceramic forms and pastes associated with production centers near Palenque (Jiménez Álvarez et al. 2014).

Research at El Infiernito, therefore, focused on two themes: integration and resilience. These two themes are inextricably related, as a tightly integrated political landscape would seem to rise and fall alongside the dynastic center, whereas in a poorly integrated landscape, outlying communities might be expected to be more resilient. Epigraphic data suggest that the non-royal elite court at El Cayo did not outlast Piedras Negras, although the final lord of La Mar erected a monument perhaps two decades after Piedras Negras’ last securely dated monument. Excavations at Budsilha suggest that the site was largely abandoned by the beginning of the ninth century (Borges Barrientos 2016; Borges Barrientos et al. 2018; Jiménez et al. 2014). These data suggest that Piedras Negras’ collapse affected its subsidiary centers to an equal extent. Did El Infiernito follow the same pattern?

Research Aims

This dissertation tests the hypothesis that El Infiernito’s community was resilient through at least two turbulent periods in Maya history, the Protoclassic period (100 BC–AD 350) and the Terminal Classic period (AD 810–900). To confirm or reject this model, I established a site chronology through a modal analysis of ceramics from architectural
fill, middens, and living surfaces. The presence of Preclassic period and Late Classic period ceramics on the ground surface justified this approach, however, the scale of construction during different periods was crucial to understand the nature of this settlement. If the majority of construction dated to the Late Preclassic period with little evidence for Late Classic period occupation, the site would not have hosted a resilient population during the Terminal Classic period. If instead the site revealed a longer period of Late Classic period occupation, continuity would be more plausible.

A secondary aim of research was to characterize the design of El Infiernito in relation to the natural hilltop. Andrew Scherer and Charles Golden (2009; Golden 1999) have observed that extensive hilltop focused settlement increases as one approaches border areas between Classic period polities of the Usumacinta region. El Infiernito’s location on a rugged and inaccessible hilltop suggested that defense was a concern for the site’s inhabitants. However, I did not want to assume that El Infiernito played a defensive role merely because of its hilltop location. Most settlements in the Upper Usumacinta region favor elevated areas, where farmers could overlook their agricultural fields and avoid seasonal bajos and swamps. Yet, these settlements generally cover low hills that require little effort to ascend.

The hilltop location of El Infiernito’s Upper Group is not inherently convenient. Beyond defense, other reasons for inhabiting the Upper Group may have been symbolic. A large portion of the surrounding Busiljá River valley, an important trade route, lies within the Upper Group’s viewshed, and nearly every secondary political center in this valley is theoretically visible from El Infiernito. The Upper Group, however, was poorly positioned to control this trade route; in contrast, La Mar is conveniently located along
this network. Instead, El Infiernito may have represented a prominent location on the landscape, both topographically and spiritually. The importance of hills and caves in the Maya worldview (Vogt 1969; Vogt and Stuart 2005) could have influenced local leaders to occupy an important locus in the sacred landscape, to legitimate their power by controlling access to a pilgrimage center. Finally, a less likely scenario was that population densities in the region may have increased to such an extent by the end of the Late Classic period that latecomers were forced to occupy an inconvenient location. To test these possibilities, I conducted survey within El Infiernito’s near periphery directed toward documenting incontrovertible evidence of built defenses. I also expected to document evidence of ritual offerings in caves scattered across the landform.

I also considered the orientation of El Infiernito and any documented defensive features in relation to the community’s strategies of defense. Andrew Scherer and colleagues (2013) have distinguished between landscape-focused defenses and community-focused fortifications. To what extent might have any localized defenses at El Infiernito served the protection of the Piedras Negras kingdom’s western periphery? I considered the possibility that El Infiernito was part of a state-influenced strategy of defense, in other words, a negotiation between state and community to monitor and protect the Busiljá River valley. The Upper Group, tucked behind a series of hills, also would have provided a refuge during the crises of the Terminal Classic period and a possible center for political reorganization of lower elite populations. This hypothesis reconciles perspectives that El Infiernito was either autonomous or tightly integrated with the Piedras Negras kingdom. Here, chronology might support this hypothesis, if the reoccupation of El Infiernito coincided with a notable change in site orientation during
the seventh century when the western periphery of the Piedras Negras kingdom was most threatened.

Finally, if El Infiernito supported a resilient community into the Terminal Classic period, I sought to document any effects of the political collapse of the Piedras Negras kingdom. The Terminal Classic period is typically discussed in terms of changing regional economies, as interior, terrestrial trade networks shifted toward coastal routes, either as a cause or result of political transformation affecting the Southern Lowlands (Golitko et al. 2012; Golitko and Feinman 2015; Rathje 1973). Furthermore, the Postclassic period may have brought about a new form of commercialization and mass production, suggesting the emergence of a new merchant class, associated with expansions of the Chontal or Putún Maya (Rathje 1975; Sabloff and Rathje 1975; West 2002). The most likely correlates for such changes were expected to be documented through access to long distance trade items, particularly obsidian and non-local ceramics.

Organization of the Dissertation

This dissertation is organized into nine chapters, beginning with an overview of the relevant anthropological theory and cultural context, followed by a discussion of the survey, excavation, and analysis that took place over six seasons of research from 2013 to 2018. Chapter 2 is a theoretical discussion of the themes of the dissertation, including collapse, resilience, and political reorganization. In this chapter, I summarize and critique common approaches, shifting away from ecological models to incorporate theories of resistance and agency that leave room for local innovation. This review of the literature interprets academic and popular conceptions of collapse, culminating in the view that
resilience and collapse should be considered as parts of the same process and that collapse is rarely a sudden event, but rather a series of transformations that manifest differently across and within societies.

Chapter 3 focuses on the issues of collapse and integration as they relate to Maya history. I discuss the current understanding of Classic period Maya politics to ascertain specifically what collapsed and what aspects of Maya society were resilient through the reorganization during the Postclassic periods. The concepts of collapse and crisis are also placed within their historical contexts, particularly relating to transformations that took place at the end of the Late Preclassic period, during the so-called hiatus of the Early Classic period, and the infamous collapse at the end of the Classic period.

A discussion of the study area follows these theoretical chapters. Chapter 4 begins with a synthesis of the archaeological research in the region including the current study area as well as in adjacent parts of Mexico and Guatemala investigated by other archaeological projects. I also summarize the complex regional history of the Usumacinta area through the Terminal Classic period based on epigraphic research. I frame these local histories within the current understanding of regional politics during the Classic period shaped by the expansive strategies of the Kanul dynasty and ending with increasing regionalization and local efforts to control the Usumacinta region.

Chapter 5 establishes the research design and methodology to address the project aims. I compile various previous approaches to document the lines of data that link with the theoretical framing of the dissertation, including ceramics, architecture, defensive features, landesque capital, changes in trade and household status, and domestic and landscape ritual. I also briefly outline the excavation and survey methods.
Chapter 6 presents the survey data and places the sites documented through nonsystematic regional survey within a settlement hierarchy. This hierarchy is adapted from discussions in other nearby projects within the areas under political influence from Palenque and Chinikiha and the kingdoms of Piedras Negras and Yaxchilán. The purpose of this hierarchy is to create an archaeological typology to simplify discussions of survey data and build an understanding of the political hierarchy of sites within the region. Although almost an entirely etic characterization of the political landscape (except when texts are available), this settlement hierarchy approaches how the rulers of Piedras Negras may have conceptualized their ideal polity and perhaps how the nobles and commoners of outlying sites would have understood their role within larger political networks.

Chapter 7 concerns the most relevant excavation data from El Infiernito. More complete discussions of supplemental data from other archaeological sites (La Selva, Rancho Nuevo, and Santa Marta) follow in the appendices.

Chapter 8 is a discussion and interpretation of the results of the research, focusing on the specific lines of evidence outlined above and in Chapter 5.

Chapter 9 concludes with a review of the dissertation, its arguments and findings, and suggestions for further research. This discussion contributes more broadly to anthropological and archaeological understandings of collapse and resilience, moving away from models borrowed from General Systems Theory embedded in resilience theory to approaches that can account for flexibility and agency.
CHAPTER 2
Collapse and Resilience in Anthropological and Archaeological Theory

Discourses on social transformation have historically referenced the rise and fall or the growth and decline of civilizations as inseparable processes. To understand how societies are formed, a complete understanding of what causes them to fracture is necessary (Railey and Reycraft 2008; Renfrew 1987; Trigger 1989). Two important volumes, published in the same year, marked an important development in the study of collapse (Tainter 1988; Yoffee and Cowgill 1988), addressing the concept cross-culturally. Popular publications and research across diverse academic disciplines have solidified collapse as an omnipresent topic. More recently, Guy Middleton (2017a; 2017b) notes a resurgence in collapse studies over the last three years.

However, a backlash against some of the uses of collapse in archaeology has emerged, with some archaeologists choosing to abandon the term in favor of other phenomena, including resilience, decline, continuity, reorganization, transformation, or transition (Aimers 2007; Hutson et al. 2016; McAnany and Yoffee 2010). In this chapter I focus on the contrasts between collapse and resilience theory, the latter which is seldom critiqued as heavily as collapse but requires are more flexible framing. Unfortunately, both collapse and resilience are interpreted as processes that act on people, when in fact resilience, reorganization, and especially revival are active strategies to overcome or cope with trauma. Building off ecological definitions of resilience, I also introduce approaches in psychological and community resilience to develop a model that can document such strategies in the archaeological record.
Defining Collapse

Any discussion of the phenomenon of collapse must rely on specific definitions. The etymology of the term is the Latin *collapsus*, referring to something that has fallen or slipped, and early uses of “collapse” were applied to failing institutions. The identification of such institutions is critical to characterizing collapse in an anthropological context. Archaeologists tend to favor discussing the collapse of political institutions, rather than entities such as a society, culture, or civilization (Cowgill 1988). In such a framework, much of the intellectual baggage of discussing lost civilizations or extinct societies can be rejected.

Table 2.1 lists a selection of some of the most influential archaeological definitions of collapse. Many of these definitions share much in common, notably references to political systems, complexity, superlatives (e.g., rapid, drastic), and population decline. The emerging consensus about collapse, therefore, is that the concept best applies to specific processes of political change. However, when discussed in more detail, each author has a somewhat unique perspective.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The early state society fragments into a whole number of smaller units which (if they can be defined at all) are at a much lower level of sociopolitical integration. There is a decline in many activities, including craft-specialist production and trade, and often of population.”</td>
<td>Renfrew 1984:366</td>
</tr>
<tr>
<td>“…the falling apart of a large, centralized political system into a number of smaller, politically autonomous units in which permanent specialization of governmental roles is no longer in evidence.”</td>
<td>Yoffee 1988:15</td>
</tr>
<tr>
<td>“…a rapid, significant loss of an established level of sociopolitical complexity.”</td>
<td>Tainter 1988:4</td>
</tr>
<tr>
<td>“…a drastic decrease in human population size and/or political/economic/social complexity, over a considerable area, for an extended time.”</td>
<td>Diamond 2005:3</td>
</tr>
<tr>
<td>“…some or all of the following: the fragmentation of states into smaller political entities, the partial abandonment or complete</td>
<td>Schwartz 2006:5-6</td>
</tr>
<tr>
<td>Definition</td>
<td>Author(s)</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>desertion of urban centers, along with the loss or depletion of their centralizing functions; the breakdown of regional economic systems; and the failure of civilizational ideologies.”</td>
<td>Schwartz 2006:5-6</td>
</tr>
<tr>
<td>“…a rapid (over a few generations) decline in sociopolitical complexity or the demise of a particular political system.”</td>
<td>Faulseit 2016:5</td>
</tr>
<tr>
<td>“…the fairly rapid ending of states (including empires and much smaller entities), which itself can involve fragmentation into smaller units, simplification of political and social systems, change in urban settings, redistribution of population in the landscape, and changes in ideology made visible in architecture and arts.”</td>
<td>Middleton 2017:18</td>
</tr>
</tbody>
</table>

**Table 2.1 Definitions of collapse in archaeological and popular literature.**

Political collapse has more specificity than other terms including societal, cultural, or civilizational collapse. Indeed, examples of the latter can strictly be applied only in the rare instance when a society becomes extinct. In this light, some scholars employ the term collapse as a synonym for political fragmentation. Norman Yoffee’s (1988:15) above definition perhaps best exemplifies this school of thought. The emphasis of political fragmentation over complete failure of institutions is based on the assertion that the former is a much more precise term and a more common phenomenon.

Furthermore, this distinction leads to the segregation of political fragmentation from “severe social troubles” (Yoffee 1988:15), taken here to mean crisis, that sometimes but not always accompany historical examples of collapse. In this sense, political fragmentation can occur without severe social troubles, keeping in mind that the converse, that crisis can take place without political fragmentation is also true.

In contrast, George Cowgill (1988:256) admonishes against using collapse as a synonym for political fragmentation. For example, George Cowgill (1988:256) places emphasis on the loss of certain aspects of a “great tradition” of a civilization, interpreted in a “specifically cultural sense.” Cowgill, thus, refers to Robert Redfield and Milton
Singer’s (1954) concept of “great tradition,” consisting of the overarching sets of practices in art, literature, and belief systems shared across communities in a society. Norman Yoffee (1988:18), in contrast contends that collapse does not merely equate to the death of a great tradition and that this rare phenomenon must be dissociated from state failure. Finally, Eisenstadt (1988:242) pushes back completely, claiming that the end of political systems and their civilizational framework does not occur “at all.”

Echoing some of Cowgill’s concerns, Rebecca and Glenn Storey (2016; 2017:11-12) have presented their own conception of collapse and identify four scales of social transformation: decline, political fall (roughly synonymous with Yoffee and Cowgills’s concept of political fragmentation), collapse (the loss of cultural coherence and the disappearance of some of its defining elements), and resilience (cultural continuity despite political change). Storey and Storey only apply collapse to the rare loss of a great tradition, accompanied by large scale human suffering and population loss. In this view, the use of neutral terms such as transformation fails to characterize the negative effects of collapse.

One of the understandable frustrations with the term collapse is this unsettled definition and inconsistent application among scholars. This disagreement has led to the common use of scare quotes when discussing “collapse” – used to underscore the inadequacy of the term in characterizing a particular scenario or to cast doubt on the existence of the phenomenon in general. One problem with the term is that, at least theoretically, societal collapse can occur at various scales, for example at the level of a site, state, or society (Cowgill 1988:256), categories which unfortunately are seldom isolated in popular literature.
This spatial scale is an important factor when considering social transformations, as collapse does not affect societies uniformly across the political landscape. When viewed at small scales, for example at the level of a site or subregion, Patricia McAnany and Norman Yoffee (2010:5) observe that collapse may provide an appropriate explanation for abandonment, whereas at larger scales, the narrative becomes more complicated as certain traditions or political structures reveal continuity or reorganization. An example is that of the Western Roman Empire, where aspects of a political system ended by the fifth century AD, while the legacy of this society persisted through the Middle Ages to the present day (Pop 1995; Storey and Storey 2017). In the case of the Classic period Maya, the Southern Lowlands experienced demographic decline while new political centers in the Northern Lowlands were established or reorganized.

Some confusion surrounding the term collapse is also based on the issues of the temporal scale. For instance, many definitions of collapse depend on rapid or sudden decline or the more neutral term transformation (Faulseit 2016:5; Middleton 2017:87; Renfrew 1984:366; Tainter 1988:4-5). However, the interpretation of “rapid” can vary from a single generation to a century. Scott Johnson (2017:7) and Rebecca and Glenn Storey (2017:11-12), on the other hand, stress that rapid failure of state systems does not typify most examples of collapse. Johnson prefers the term transition, while Storey and Storey introduce a new concept of “slow collapse;” more in line with the term “decline” (Diamond 2005:3; Tainter 1988:4).

Although all archaeological definitions reference collapse as the failure of institutions or political systems, an overlooked process of collapse is the active rejection
of “civilizational ideologies” (Schwartz 2006). Glenn Schwartz reconciles this dilemma by addressing the effects of collapse. Although crisis can lead to political fragmentation, the result can also be a renewed attempt at political centralization, based off the system that existed before collapse. In cases, however, where new political systems emerged, collapse involved an outright rejection of former institutions. In archaeological contexts, such processes are rarely appreciated as expressions of resistance. Collapse is therefore a form of political restructuring or rejection, rather than merely a failure or loss of complexity.

Much of the critique of collapse reflects a noble effort among academics to counterbalance conceptions of lost civilizations and ecological catastrophe manifested in popular bestsellers (e.g., Diamond 2005; Fagan 2009). However, when viewed as a process of social change, collapse is merely one aspect of the development of civilization, and some scholars consider collapse to be one of the signature characteristics of inherently fragile civilizations (Tainter 1988:1). Therefore, any discussion of collapse requires a nuanced definition that accounts for the nature of societal transformation within its cultural context (Cowgill 1988:246). Ronald Faulseit (2016:4) suggests that rejecting the term collapse for other concepts such as resilience establishes an unnecessary dichotomy because the two ideas are part of the same phenomenon that must be studied as a whole. In addition, Faulseit (2016:6) offers the notion of societal transformation as an umbrella term to encompass the full range of possible societal changes, including collapse, reorganization, and transition. The concept of societal transformation provides a practical compromise to offset the popular obsession with collapse and to incorporate resilience and reorganization into this discussion, interpreting
societal transformation as a process that can vary within different social, historical, and environmental contexts.

Causes of Collapse

In addition, scholars of collapse argue whether external or internal factors are more dominant in social transformation. One perspective is based on the traditional academic separation of societal development from decline, which suggests that collapse results from an external imbalance that affects an otherwise stable and successful state. Bennet Bronson (1988) favors external factors and revisits one of the earliest explanations for societal collapse – that “barbarians” unassociated with states brought on collapse through raiding activities (Gibbon 2003[1788]). Bronson cites examples from India, where individual polities were short-lived due to frequent predation from populations to the west, and Southeast Asia, where conditions could have supported states, but the presence of autonomous populations surrounded by mountainous terrain precluded the success of states. In contrast, James Scott (2009), contends that such populations were evading state control rather than targeting governments for perceived riches. Other scholars cite the invasion from other states or interregional warfare as causes or aspects of collapse (Drews 1993; Demarest 2004).

Another external factor suggested for the collapse of societies is disease. A well-documented case of epidemics leading to collapse is where virgin soil epidemics attributed to the arrival of Europeans in the Americas, represented perhaps the strongest weapon used against indigenous complex societies (Crosby 1976; Diamond 1997; Mann 2005). During the expedition of Hernando de Soto (1539–1543), villages were
depopulated and dozens of chiefdoms collapsed due to the smallpox epidemic introduced (Railey and Reycraft 2008). Scholars have also suggested that Pizarro arrived in Peru during a political crisis brought on by the death of the Inca ruler, Huayna Capac from a fever related perhaps to smallpox or other disease years before the conquest of the Inca Empire (Cahill 2010; Sarmiento de Gamboa 2007).

Natural disasters as factors in collapse have also drawn scholarly and popular attention. Such arguments suggest that major, catastrophic events can affect a society to such a degree that recovery cannot occur. One of the most famous examples of collapse after a catastrophic event was the effect of the eruption of Thera on Minoan civilization and the broader Aegean region. Some researchers have suggested that the eruption and accompanying tsunamis and seismic events contributed directly to the Minoan collapse (Chadwick 1976), while others have claimed that the eruption was at worst a disturbance (Railey and Reycraft 2008; Tainter 1988:54). Other scholars have argued for periodic natural disasters weakening state systems over time. The role of tectonic activity and El Niño climate events have been cited as influencing both the rise and fall of societies throughout the Andes (Reycraft 2008; Richardson and Sandweiss 2008), and a series of droughts in southern Mesoamerica have been tied to the collapse of Maya society at the end of the Preclassic and Classic periods (Gill 1994). Jared Diamond (2005) emphasizes the effects of environmental degradation on societal collapse, citing examples from the Maya and Easter Island as civilizations that were unable to strike a sustainable balance between growing populations and limited resources (Tainter 2006).

Joseph Tainter (1988) and others view external factors as catalysts of societal demise but look to internal factors as the direct causes (Railey and Reycraft 2008:4).
Tainter (1988) argues that collapse results from economic overextension. According to Tainter, initial investments in complexity are sustainable, but the maintenance of such activities over time becomes increasingly costly, culminating in diminishing returns (Railey and Reycraft 2008:4). Continuing investments place stress on the system, leading ultimately to political disintegration. Robert McCormick Adams (1978) made a similar claim that short-term and long-term successes were antithetical. In his study of the Maya, J. Eric Thompson (1966) claimed that the elite’s fixation on monument building and disregard for societal needs led to a violent peasant revolt that toppled the Late Classic period political regime.

Colin Renfrew (1978) proposed a similar argument based on catastrophe theory, in which gradual change over time can lead to sudden transformations in the system. Specifically, Renfrew attributed the discrepancy between the investment of charismatic authority through conspicuous consumption in monument building and rural marginality as leading to collapse. Citing the Roman and Maya examples, Storey and Storey point out that the roots of collapse can be traced to intrinsic weaknesses, or “inherent inertia” in the system (2017:10). Dorothy Hosler and colleagues (1977) and T. Patrick Culbert (1977; 1988) proposed that demand for labor led to a negative feedback in which food production had reached its maximum. In Mesopotamia, excessive irrigation initially supported short-term prosperity but eventually led to decreased stability as the salinity of groundwater increased (R. McC. Adams 1981; Jacobsen and Adams 1958).

Internal explanations for collapse tend to be influenced by literature referring to modern examples of failed states that cite political disintegration as the topic of investigation (Zartman 1995). Railey and Reycraft (2008:5-6) draw attention to the role
of corruption in a state’s leaders to provide for their subjects (Rotberg 2002). Greater investment in territorial organization can lead to bureaucratization, whereby local elites struggle for power with centralized authorities. These paramount elites may respond by attempting to establish greater control, which may ultimately place more stress on the system. Such actions may lead to balkanization, a process seen in the modern world that may have roots in the deeper past.

Some researchers have adopted concepts from General Systems Theory to interpret how systems composed of separate, but interdependent, elements experienced change (Flannery 1998; Marcus 2008; Marcus and Flannery 1996; Renfrew 1984). Kent Flannery (1972) has discussed complexity in terms of the systemic processes of segregation or specialization of independent components and centralization or integration of these components. In this scenario, collapse can occur either when centralizing forces interfere with the ability of lower-order components to function separately (meddling) or when the specialized components inhibit centralization (usurpation). These processes result in hypercoherence in which the subsystems or institutions become tightly coupled with each other or to the centralizing force, after which any stress to the system will be felt throughout the hierarchy. Renfrew (1984) adopted a similar perspective where increasing interdependence first leads to productive growth; however, after a period of zero growth, catastrophe can offset equilibrium, leading to decline. The maintenance of authority or complexity becomes too demanding, and a rapid decrease in centralization results.
Effects of Collapse

For archaeologists, the identification of a period of collapse or decline in the archaeological record has been a crucial aspect of research. Renfrew (1984:367-369) highlighted some features of collapse, as well as their archaeological correlates (Railey and Reycraft 2008:3). The primary result of collapse according to Renfrew is the disappearance of central administrative organization, as military organization becomes more localized, palaces and central storage facilities, temples, and public buildings are either abandoned or reoccupied by the non-elite or “squatters.” A second and related feature is the loss of a traditional elite class, demonstrated by less elaborate burials and fewer luxury goods. The third feature, the collapse of a centralized economy, is characterized by an absence of redistribution or market exchange, the cessation of the production and/or use of coinage, the reduction in external trade and volume of exchange, disappearance of craft specialists, and the localization of agricultural production. Finally, settlement shift and population decline follow, documented by the abandonment of some settlements, a shift to dispersed settlement patterns, and relocation to defendable locations including hills.

Tainter (1988) provides a compelling analysis of collapse that continues to influence scholars who focus on political disintegration. Interpreting collapse as fundamentally a political process, Tainter (1988:4) defines the phenomenon as “a rapid, significant loss of an established level of sociopolitical complexity.” Key terms introduced are established, rapid, and complex. Established, for example, means that the society in question must have reached and remained at a particular level of complexity for multiple generations – any failed attempt at empire-building or expansion is not
necessarily an example of collapse. Second, Tainter defines rapid as transpiring within no
more than a few decades – a shorter period of time than Renfrew’s scale of a century.
Like Renfrew, Tainter (1988:4) characterizes the effects of collapse as 1) a shift to a
lower degree of social stratification, 2) a decreased level of economic and occupational
specialization, 3) a diminishing of centralized control and regimentation, 4) “less
investment in the epiphenomena of complexity,” 5) less connectivity and coordination of
information and resources between individuals and groups, 6) and smaller territory
associated with a political unit.

Defining complexity is more problematic in an anthropological context that
rejects unilinear evolution. Complexity can refer to “the size of society, the number and
distinctiveness of its parts, the variety of specialized social roles that it incorporates, the
number of distinct social personalities present, and the variety of mechanisms for
organizing these into a coherent, functioning whole” (Tainter 1988:23). Randall McGuire
(1983:93) discusses complexity in terms of heterogeneity and inequality. Heterogeneity
relates to the distribution of populations between social groups, while inequality is
differential access to material and social resources within a society (Blau 1977). In
archaeological terms, complexity generally refers to the existence of political systems,
inequality, division of labor, settlement hierarchy, urbanism, ideology, and elites, among
others.

Such discussions of complexity tend to reinforce the traditional notions of
sociopolitical organization based on Service’s (1962; 1963; 1975) typology of band,
tribe, chiefdom, and state. Collapse is traditionally thought to apply only to states, with
the aftermath of political fragmentation resulting in chiefdoms (Tainter 1988:4).
However, collapse has been applied to smaller scale complex societies previously discussed as chiefdoms, including Cahokia and Chaco in North America (Munoz et al. 2015; Tainter 1988). Timothy Pauketat (2007) and Stephen Lekson (2015), question the assignment of chiefdom to these societies: Lekson suggests that Chaco was more state-like in organization and Pauketat abandons the term chiefdom altogether because of its intellectual baggage related to assumptions about the inferiority of Native American cultures.

The term complexity can reinforce such fallacies that anthropologists have largely rejected. Talia Dan-Cohen (2017) suggests that the anthropological notion of complexity is a “dominant problematic,” defined by James Ferguson (1994[1990]:xiii) as an interpretive means to classify and bolster the notion of the other. At the outset, anthropology used the notion of simple societies synonymously with the term primitive (Dan-Cohen 2017:290). In this sense, simple societies were smaller, closed groups more conducive to ethnographic study over short periods. However, criticism of the use of the term complexity emerged as early as the middle of the twentieth century, as anthropologists recognized that so-called simple societies are actually structurally complex in terms of commerce, art, religion, and political organization (Bascom 1948; Dan-Cohen 2017:290; Leach 1961; Schneider 1961).

Like any problematic notion in anthropology, complexity cannot be easily replaced with other terminology, and although the use of the term is debated, the notion of complexity serves as a useful placeholder until better concepts are developed. Rather than lumping different scales into discrete stages (e.g., band, tribe, chiefdom, state), complexity must be viewed as a spectrum. Thus, general laws for distinguishing between
simple and complex societies cannot be established but instead must be based within a specific cultural and historical context, incorporating not only the scale of political integration but also the diverse strategies that societies adopt in political practice and discourse. Although the traditional categories used by archaeologists to describe different forms of political organization may have some utility in clarifying discussions and comparisons among diverse societies, they should not be considered discrete levels or stages of evolution.

Due to its intellectual baggage, the term complex in cultural evolution generally carries a positive connotation, while simple holds a negative connotation. However, complexity and simplicity should be understood as neutral terms describing different political strategies. Tainter’s hypothesis implies that although complexity can be advantageous as states develop, a political system can become unmanageable and costlier over time as leaders attempt to maintain the same or increase the level of complexity. Thus, leaders may overcompensate in the short term to achieve success, although such strategies prove destructive in the long term. Rational decisions, therefore, may lead to undesirable outcomes. This discussion raises the issue of the desirability of complexity, inequality, and social transformation itself.

Today, collapse, at least in terms of the simplification of a political system, is viewed as a failure. The rulers and elite of past societies would likely concur with this perspective, as they are generally the first casualties (literally or figuratively) in such scenarios. Collapse may temporarily benefit the intermediate elite who may emerge as the leaders of new political systems, but such individuals ultimately experience the same consequences as the rulers, as the legitimacy of the intermediate elite is largely dependent
on support from the ruler. On the other hand, to the non-elite, the opportunity for reorganization brought on by changes in complexity and inequality may be beneficial, as access to previously restricted resources emerges. Some scholars reject this perspective because collapse is so typically thought to be caused by external factors, such as natural cataclysms, epidemics, or invading armies. Even when internal weaknesses in a society are the root cause, collapse can result in warfare and other crises, which affect all members of a society, certainly creating an undesirable outcome in the short term. However, scenarios that result in political restructuring or simplification without concomitant crises, may be interpreted as successes rather than failures.

An important pattern to consider in the processes of collapse and subsequent reorganization is the role of social inequality, which becomes especially pertinent when regeneration or reorganization involves the actions of the lower level elite administrators who previously benefited from the collapsed political system or the non-elite who chose to reject certain elements of that system. Various researchers from different disciplines have highlighted the role of inequality in contributing to collapse (Carter 2014; Kohler et al. 2017; Motesharrei et al. 2014). According to Kohler and colleagues (2017) the growing, global cross-cultural trend has been toward increasing inequality (Kohler and Smith 2019). Growing inequality limits social mobility, which can lead to deleterious societal effects, including warfare, revolution, disease, and collapse (Scheidel 2017). Tracing the effects of inequality over time archaeologically can provide crucial data to understand how inequality and crisis are related (Dennehy et al. 2016; Kohler and Higgins 2016; Kohler et al. 2017; Chase 2017; Smith 2019; Smith and Hicks 2016).
Biological Analogies and Environmental Determinism

A recurring theme in the study of collapse is the analogy of societies to biological organisms that develop through birth, grown, and death (Tainter 2016:28). This perspective assumes a unilinear evolution of society and implies that collapse is inevitable as civilizations follow the same lifecycle. Charles Golden and Andrew Scherer (2013:400) point out that archaeologists accustomed to examining abandoned sites and defunct political systems tend to assume that collapse is inevitable, while political scientists do not make the same presumption. Part of the reason for this discrepancy in approaches is that, as Tainter (1988:213) contends, the modern context is unique, where complex societies are the norm. Before the advent of modern travel and global connectivity, collapse occurred in power vacuums, where a society or a collection of peer polities were isolated political entities. In this modern landscape, Tainter asserts that unilateral collapse is less of a threat because the population and territory of a nation in the process of a collapse will be absorbed or supported economically by a more dominant, adjacent state or agency.

The popular understanding of collapse, however, differs from Tainter’s view in terms of the environmental threat of global catastrophes. This environmentalist perspective on collapse is an outgrowth of the view that societies behave like biological organisms, and as a corollary that collapse corresponds to the extinction of civilizations. This environmental deterministic approach is best summarized by Richardson Gill and colleagues’ (2007:299) connection between the Classic period Maya collapse and drought and their observation that “in the end, the food and water ran out – and they died.” Such perspectives tend to be readily adopted in popular writings on collapse because of their
simplicity and their noble effort to admonish readers against environmental degradation. Unfortunately, these approaches have the detrimental effect of encouraging a false belief in the phenomena of lost civilizations and the disappearance of cultures (Nelson et al. 2014; Torvinen et al. 2016).

This theory of collapse as the decimation or extinction of entire civilizations relates to Malthusian conceptions of population dynamics. Thomas Malthus’ (1798) understanding of population relied on the simple premise that population increases exponentially while the food supply increases linearly (Tainter 2006:60). The result is overshoot, the exceedance of a habitat’s carrying capacity (Catton 1980:278). When applied to humans, this Malthusian approach may be taken literally to mean an excess of people in a particular environment or region or may apply more broadly to overindulgent demands from the elite in the form of tribute or taxes, overextension in terms of a polity or empire’s territory, or diminishing returns (Tainter 1988; Tainter 2006:61).

As Tainter (2006) concludes, the issue with applying overshoot to human societies is that overpopulation or overconsumption alone have never led to a single historical case of collapse. Instead, the failure was in the response or lack thereof to such threats. As with any ecological metaphor for human societies, the analogy breaks down when the capacity for human innovation is introduced. Examples of ecological collapse, therefore, were not merely due to overshoot, rather to overshoot without innovation. Of course, innovation is not the only solution. Tainter (2006:72) suggests that an alternative to intensifying production is the simplification of societies or institutions to decrease costs or consumption. In the archaeological record, such conscious strategies toward simplification may incorrectly be labeled collapse or decline.
The most thorough articulation of the argument of ecological degradation contributing to collapse was posed by Jared Diamond (2005). His definition of collapse is “a drastic decrease in human population size and/or political/economic/social complexity, over a considerable area, for an extended time” (Diamond 2005:3). Aspects of this definition can be found in Tainter’s (1988) notion of decreasing complexity and Storey and Storey’s (2017) understanding of collapse as leading to human suffering. The issues of scale and timing are addressed although unresolved in Diamond’s vague labels of “considerable area” and “extended time.”

Diamond (2005:11) acknowledges that no example exists in which a society collapsed due only to environmental damage. Indeed, he admits some degree of naiveté when first compiling examples for the book, ultimately leading him to develop a five-point framework of contributing factors to collapse. These factors include 1) environmental damage, 2) climate change, 3) hostile neighbors, 4) friendly trade partners, and 5) society’s responses to environmental change. This model in essence does not differ significantly from the conclusions of other authors that collapse results more from human responses than to environmental determinism. However, Diamond emphasizes that environmental degradation, specifically “deforestation was a or the major factor in all the collapses of past societies described in this book” (Diamond 2005:487; Tainter 2008; 348). If so, Diamond either believes that environmental degradation is a primary factor in all instances of collapse, or he intentionally omitted examples of collapse that were due to other factors.

Environmental degradation does not seem to be the decisive factor in any of the collapse scenarios that Diamond presents, even in the Easter Island case study, the closest
example of a “pure” ecological collapse, in Diamond’s (2005:20) estimation (Hunt and Lipo 2010; Tainter 2008:349). Diamond avoids reconciling the differences between environmental degradation and climate change and how this distinction influences his judgment on whether societies fail or succeed. If climate change (e.g., drought) was the deciding factor in a collapse scenario, what choice was available to the society? And how can a society made up of thousands or millions of actors make such a monolithic choice anyway? And how can the success or failure of a society be measured? As Berglund (2010:61) notes, the Norse settlement of Greenland outlasted any of the modern successes Diamond describes.

Finally, Diamond fails to acknowledge indigenous innovations in agriculture and other fields that were specifically developed to solve problems, and the negative impact of colonialism and the introduction of Western techniques that were not superior to local strategies. In addition, Diamond’s disregard of colonialism attributes the success of European civilizations to geographical chance and the failures of colonized societies to poor decisions (McAnany and Yoffee 2010:8).

Although Diamond has received the brunt of criticism from anthropologists and archaeologists, environmental determinism continues to provide an attractive model for many archaeologists studying collapse. According to Harvey Weiss and Raymond Bradley (2001:609), high-resolution paleoclimatic data demonstrates episodes of abrupt climate change characterized by unfamiliar conditions that persisted for decades or centuries. This perspective echoes Diamond’s assertion that in past societies without written records people were unable to anticipate dramatic shifts in climate (Diamond 2005), ignoring the ability of historical memory to pass innovations to subsequent
generations (Wilcox 2010). However, A. Bernard Knapp and Sturt Manning (2016:103) assert that the chronological resolution in paleoclimatological data is rarely as fine as that of the historical data to establish a causal link between climate change and culture change.

Instead, multiple stress factors, including social, political, and environmental contribute to social transformation (Butzer and Endfield 2012; Knapp and Manning 2016:137), although other authors contend that inherently unstable political systems were more vulnerable to rapid and extensive climate change (Hassan 2009). However, when environmental determinism is applied to numerous examples of collapse or reorganization in such diverse parts of the world as Egypt, the Near East, the Indus Valley, the Maya, the Moche, Tiwanaku, and China, and other past cultures, the importance of each example’s historical and cultural contexts is often obscured by monocausal arguments.

**Anthropological Approaches to Crisis**

The traditional understanding of societal collapse is that it results from an inability to respond to a crisis, and instead of developing a solution, this crisis is amplified and resonates throughout the society, leading to the decline in a political system (Hoffman 1999). The effects of a crisis, whether environmental, political, or economic, clearly impact political systems, but how are these effects felt by the population as a whole? Comparisons of collapse scenarios across time and space indicate that the extent of a collapse’s effect on individuals has been highly variable. In some cases, as in the Classic period Maya collapse, demographic decline resulted from political
fragmentation. Andrew Scherer and Charles Golden (2014) propose that political fragmentation and population decline are separate processes that should not be conflated, however, other definitions of collapse incorporate demographic changes into their models. Notably, Diamond (2005) includes population loss in his definition of collapse, although his use of “and/or” suggests that it is not a factor in all cases of collapse. Storey and Storey (2017:11-12) emphasize that collapse “also entails human suffering on a large scale, largely through diminution of population, which almost never means total disappearance of a population; but there is significant loss of life and a smaller population left behind.”

Storey and Storey (2017:15) qualify this definition by suggesting that most examples of collapse (in particular the Roman and Maya examples) equate with their understanding of slow collapse, meaning that these processes occur over the scale of centuries, up to 200–400 years. As Middleton (2017) notes, this conception of slow collapse does not necessitate large scale human suffering. Indeed, population decline over a period of 400 years could be explained by lower fertility rates, shorter human life spans, or other social factors that do not result from catastrophic loss of life. However, human suffering in the sense of decreasing agricultural yields or diminishing quality of life may transpire over long periods without sudden population loss. Still, quality of life can decline in otherwise stable states that abuse and exploit their populace.

Recent anthropological perspectives on crisis may serve to contextualize how past populations coped with crisis and instability. In wealthy nations, crisis tends to be considered as a rupture in a more desirable, prosperous state (Koselleck 2006; Narotzky and Besnier 2014:S7; Vigh 2008:8). Crisis is therefore viewed as a singular event that
upsets longer periods of stability, a brief moment that one has to pass through temporarily. However, one interpretation of history is that crisis is actually the norm and stability the exception (Erickson 1999; Koselleck 2006), and indeed for many people and societies today, crisis is a chronic state, forcing people to remain resilient in volatile situations that have no indication of improving within an individual’s lifetime (Schepers-Hughes 2008; Vigh 2008).

This theoretical perspective has introduced the concept of permanent or persistent crisis (Hage 2009), implying the existence of constant ruptures (Roitman 2014; Vigh 2008:9). In this sense, stability is an illusion, resulting from ad hoc innovations that produce a “relative sense of continuity over time” (Narotzky and Besnier 2014:S8). This perspective is similar to Gyles Iannone and colleagues’ (2016:4) characterization of highly differentiated and pluralistic societies as systems that “perpetually lurch from crisis to crisis” (Abercrombie and Turner 1978:152; Brumfiel 1992:558). Although the norm in some settings, crisis should not be taken to be normal in the sense that one should become indifferent toward it. To reconcile this contradiction, the term trauma may better characterize systemic ruptures, while crisis can refer to a slow process of negative change resulting from multiple traumas (Vigh 2008:9). In Marxist terms, these series of traumas undermine the resilience of the system, leading to the escalation of conflict among the classes (Natrotzky and Besnier 2014:S7).

Susana Narotzky and Niko Besnier (2014:S4) define crisis as a set of “structural processes generally understood to be beyond the control of people but simultaneously expressing people’s breach of confidence in the elements that provided relative systemic stability and reasonable expectations for the future.” Their definition emphasizes the
possibilities for exercising agency even in times where that agency is limited, an existential immobility that Ghassan Hage (2009) terms “stuckedness” (Jansen 2014). This sense of stuckedness builds “a sense of community among those who ‘wait out’ the crisis” (Hage 2009:5). This agency can take multiple forms, however, either through the questioning of the political economic system leading to social upheaval, or more commonly in Hage’s view as crisis is normalized a form of governmentality emerges in which waiting becomes self-reproducing and regarded as the behaviour of a model citizen.

For individuals to lose trust or confidence in a system, they must have some understanding of what a more desirable system would look like. Even if a permanent condition for some societies, crisis must be contextualized in terms of other states of being. For example, to know that one is experiencing a period of crisis, one must either remember a time when crises were not felt so strongly or be aware of other people and places experiencing higher levels of stability. As Henrik Vigh (2008:11) observes, people may interpret suffering as a social reality, but they acknowledge that life can be different or better elsewhere. People interpret their suffering through reflecting on the past, either through personal memories or through oral histories passed down, or comparing their place in the world through representations in media or contacts with emigrant communities (Whyte 2008:97).

Resilience

Resilience theory emerged in ecology studies and has recently been applied to archaeology, particularly in discussions of collapse and social transformation. C.S.
Holling (1973:14-15) first introduced the concept to contrast resilience with stability. While stability is the ability of a system to maintain equilibrium even after temporary disturbances, resilience is the amount of disturbance that a system can absorb without altering its state (Gunderson 2000). In this first definition of resilience, Holling (1973:15) stresses that resilience does not exist without instability – a key analogy that can be extended to studies of collapse and resilience in archaeology. This definition of resilience in terms of the time required to return to equilibrium assumes the existence of a single state of equilibrium and was termed engineering resilience. Ecological resilience, however, assumes multiple states of equilibrium and is defined as the amount of disturbance a system can withstand before changing to another stable state (Gunderson 2000:427). This latter definition has proven more influential in archaeology, best defined as “the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks” (Walker et al. 2004:5).

Ecological resilience is visualized as an adaptive cycle in the form of a figure eight (Holling and Gunderson 2002) (Figure 2.1). This cycle consists of exploitation, conservation, release, and reorganization. The conservation phase corresponds with instability resulting from the increasing interconnectedness of elements in the system. Release or collapse only occurs when external stresses disrupt the system (Faulseit 2016:12). The model, however, is not strictly cyclical, as multiple adaptive cycles can be connected in a panarchy or multiple figure eights (Gunderson and Holling 2002; Middleton 2017). C.S. Holling et al. (2002) distinguish between long term and short term nested adaptive cycles that can shift speeds – to slower acting mechanisms described as
“remember” (Holling et al. 2002:76) or faster processes known as “revolt” (Holling et al. 2002:74-75).

Figure 2.1 The adaptive cycle, visualized as a figure eight (Holling and Gunderson 2002, Figure 2.1).

The implications of the ecological resilience model have obvious applicability to human systems. David Mixter (2016:65) expands the figure eight metaphor to characterize aspects of the development of the state. For instance, the exploitation phase may correspond to the formation of a state or other political entity. During the conservation phase, states become more efficient, but they also become more rigid and susceptible to external challenges and internal weaknesses in the system. This phase has also been compared to concepts introduced by Flannery (1972), Renfrew (1984), and Tainter (1988), most notably the latter author’s theory of diminishing returns and increasing complexity (Faulseit 2016:12). Release equates with collapse, especially when
influenced by external stimuli, followed by a reorganization phase where new forms of political organization emerge.

Panarchy also provides compelling analogies to human systems. Mixter (2016:67-69) contends that a literal interpretation of the ecological metaphor characterized as the remember process can explain how the memory of past political institutions can inform the reorganization of political systems after collapse. In contrast, revolt can be interpreted as a rejection of the system that may lead to faster cycles of collapse, perhaps more widespread than a single polity. This latter concept may explain why some historical instances of collapse did not lead to recovery but instead caused demographic decline.

Although intriguing, the ecological definition of resilience can only be taken so far in archaeology. However, archaeologists differ in their conceptions of resilience (as they do in their understandings of collapse) (Keck and Sakdapolrak 2013; Redman and Kinzig 2003). Faulseit (2016:7) contrasts two predominant conceptions of resilience in archaeology: political resilience best defined by George Cowgill (2012:304) as “the ability to maintain, or quickly restore, in the face of challenge, conditions considered highly desirable”; and cultural resilience, defined by McAnany and Yoffee (2010) as the long-term continuity of worldview, kinship, and language in the face of political transformation. This contrast between short-term and long-term strategies also corresponds with the ecological models of engineering resilience and ecological resilience defined by C.S. Holling and Lance Gunderson (2002).

Cultural resilience and political resilience are often framed as a dichotomy in which these two strategies operate at different scales, sometimes in conflict with one another (Faulseit 2016:7; Redman and Kinzig 2003; Sedig 2016). This perspective
resonates throughout anthropological and sociological discussions of politics, specifically how political institutions function alongside long-term social structures (typically couched as tradition), including ethnicity, kinship, and group identity (Kurnick 2013; McAnany 2014). Returning to Robert Redfield (1956), this argument has roots in his discussion of great traditions and little traditions, the former which corresponds roughly to political structures and the latter to peasant or folk cultures. However, in Redfield’s characterization, great and little traditions are not dichotomous, rather they are interconnected (1956). Instead of viewing cultural and political resilience as opposing processes, they may be understood as operating at different scales, both temporally and spatially.

In the definition of resilience as the ability to return to a “highly desirable” state (Cowgill 2012:304) or “essentially the same function, structure, identity, and feedbacks” (Walker et al. 2004:5), the question remains what is desirable and essential? In these terms, the notion of resilience is not unlike that of collapse in the need to identify explicitly what aspects of a system remain resilient and which ones are transformed. McAnany and Yoffee (2010) are more unequivocal in specifying what structures tend to persist: worldview, kinship, and language. However, as Middleton (2017:93) notes, if collapse is interpreted to be political collapse, the function and structure of the state do not endure. However, the reorganization phase can be taken to represent how a new state forms or how smaller scale social organizations replace the state.

The ecological model of resilience has proven to be especially popular in archaeology; a search of resilience literature demonstrates a great diversity of interpretations. Indeed, researchers face challenges in applying resilience theory to their
case studies because on the one hand resilience is embraced as a useful solution applicable to all fields, while on the other hand rejected as an academic fad or buzzword that takes on too diverse a set of meanings within distinct academic circles to be practical (Bradtmöller et al. 2017). Still, archaeology can benefit by incorporating alternate understandings of resilience to construct more robust models. As we reject concepts like collapse as being too simplistic, we must avoid crafting facile models of resilience that oversimplify the concept. If such theories become so flexible to explain everything, in truth they end up explaining nothing.

While archaeological theories of resilience draw heavily on ecological models, perspectives from other social sciences, political science, psychology, and policy provide useful definitions. These understandings have highlighted resilience as the top priority for sustainable development and policy (Chandler 2014:1; Welsh 2014). Such policies have traditionally been concerned with measuring or quantifying resilience, particularly in terms of such metrics as resilient cities or urban resilience, which emphasize the ability of such places to maintain continuity through adaptability in response to stress (Coaffee 2008; Pickett et al. 2004). However, the challenge of measuring resilience is that the ability to adapt or transform a system automatically creates a moving target, after which resilience must be continually redefined.

David Chandler (2014) explores this contradiction by contrasting two types of resilience. The first and more conventional type of resilience, classical resilience, is subject-based, separating the human subject from the environment. Under this perspective, resilience is the ability for a human individual or group of subjects to withstand or to cope with external, oppressive conditions. Chandler (2014:6) colloquially
refers to this type of classical resilience as “bounce-back ability,” to survive and recover in an uncertain world. This interpretation of resilience has also been called psychological resilience, a type of stoicism that involves individuals who can cope with external crisis and eventually return to a pre-crisis state relatively quickly (de Terte and Stephens 2014; Garmezy 1973; Garmezy and Streitman 1974; Hopf 2010; Robertson et al. 2015). In contrast, Chandler (2014:7) presents post-classical resilience as a relational process, or the ability of subjects to adapt, dynamically relate, and/or respond to their socioecological environment. Rather than conquering or coping with trauma, post-classical resilience involves a long-term process of reshaping the world internally and externally, recognizing the interconnectedness of subjects and the environment.

Agency, Resistance, Survivance

The limits to the use of system approaches and ecological models for investigating collapse is that they assume a degree of uniformity in the processes of societal transformation. These assumptions depend partly on the shortcomings of evolutionary frameworks that characterize change as teleological or unilinear. Systems approaches tend to favor complexity as desirable (Cowgill 2012:304), and regression from a state structure to a chiefdom is interpreted as decline or as a temporary form of political organization before reorganization into a new state (Renfrew 1984:367-369). Even resilience theory infers cyclical change from one condition to another, which can take place at different rates (based on panarchy theory), although the order of stages (e.g., from release to reorganization) is assumed to be consistent. Gyles Iannone (2016:181) underscores the falsehood of the latter assumption, observing that in adaptive cycles not
all systems pass through the same phases in the anticipated order. Therefore, most archaeologists have recently adopted a less rigid model of resilience theory, acknowledging that each historical trajectory is unique (Hutson et al. 2016:126).

Gary Feinman and Linda Nicholas (2016:46) also stress that collapse and resilience are less predictable in human contexts because social change is affected by human agency. The application of human agency to archaeology borrows from Pierre Bourdieu’s (1977) practice theory and Anthony Giddens’ (1979) structuration theory that address the relationships between structure and agency, reconciling the two without assigning primacy to either (Dobres and Robb 2000). When applied to the study of collapse, agency approaches provide an alternative to moncausal explanations that emphasize ecological stressors, and external factors. However, practice theory and structuration theory also challenge suggestions that societies choose to fail or succeed by contextualizing agency in terms of the structures of society that may limit the choices people can make. Bourdieu’s (1977) concepts of *habitus* and *doxa* are especially useful in understanding how society changes by characterizing the ways that individuals inherit beliefs and values subconsciously through daily practice. In this light, the actions of multiple individuals may lead to a “business as usual” mentality that proves difficult to escape, even in times of crisis.

Scott Johnson (2017:1) presents a similar argument termed “social hubris,” which “causes people to ignore evidence and prevents proactive adaptation.” This perspective is clearly influenced by current challenges facing responses to global climate change, where the scientific community is in overwhelming accordence, while political dissension regarding the proper response continues. Johnson applies this precareous situation to past
societies, agreeing with other scholars that although external factors may act as catalysts in collapse, the ultimate cause of collapse is the inability of societies to respond effectively to trauma.

The issue with any discussion of social hubris is defining who makes up a society. As diverse entities, a society is unable to make a unanimous decision to fail or succeed. Thus, if agency plays a role in social transformation, who are the main drivers of change? Or more bluntly, if a political system collapses, who is at fault? Are politicians to be blamed or do the masses play a large role in determining the course of cultural evolution?

Early discussions of the collapse of the Roman Empire addressed this debate, with Louis West (1933) condemning the poor and the army for overconsumption, while J.B. Bury (1923) acknowledged multiple causes, among them weak emperors (Tainter 2008:346).

The latter perspective has gained more traction in recent studies of collapse. If a response is to be made to some external disturbance, political leadership is generally held responsible for driving such action or inaction, and if this leadership fails, the masses then have a choice to react against the political system. In a modern democracy, this reaction generally takes the form of elections, however, in past societies that relied on kingship the only choice may have been revolt. Due to this threat, royalty had to strike a balance between self-preservation of their own elite status or legitimacy and maintaining the social order or a reasonable level of prosperity for their followers (Iannone 2016:29). Therefore, in archaic states, the king embodied the state, and any failure could be attributed to his decisions (Coe 2003:135; Iannone 2016:25). This model, known as the “scapegoat king” model (Frazer 1993[1922]; Iannone et al. 2016:1) has been adopted in collapse studies to explain some internal causes for decline. For Iannone (2016:60), while
having substantial explanatory power, the scapegoat king model is imperfect in its assumptions regarding the homogeneity of past societies, specifically how legitimacy and solidarity functioned. The scapegoat king model tends to minimize the role and agency of nobles and the non-elite in accepting or rejecting a particular king, ideology, or political system. Like all other models discussed, a scapegoat king model must be tested critically within its particular cultural and historical context.

The study of commoner agency has recently gained some traction in archaeology and anthropology, especially in relation to studies of resistance. Due to its emphasis on the effects of colonialism, historical archaeology has established much of the groundwork in researching resistance (Liebmann 2014; Liebmann and Murphy 2011; Liebmann and Preucel 2007; Liebmann and Murphy 2011). Michael Brown (1996), however, cautions against an overemphasis on resistance, suggesting that labeling some forms of daily practice as resistance (e.g., styles of dress or hair) trivializes actual examples of overt opposition or rebellion. Indeed, the existence of resistance everywhere undermines anthropology’s efforts at highlighting especially repressive institutions (Brown 1996:730). These criticisms call to mind James Scott’s (1985; 1990) discussions of hidden transcripts as covert forms of resistance that contrast with public transcripts that are more conspicuous to dominant groups. In some contexts, oppressed groups may seemingly appear to accept their domination, while they actively resist in private or through subtle daily practice. Alfredo González-Ruibal (2014) suggests that hidden transcripts are more accurately described as resilience, or “the capacity to adapt, psychologically and socially, to power through the development of cultural coping mechanisms.” This definition assigns a higher degree of agency to resilience than does
the ecological model of resilience. Furthermore, it emphasizes change and reorganization over continuity or retaining “basic function and structure.” Finally, resilience is an ongoing process rather than a strategy only adopted in times of crisis.

This definition of resilience also relates to the concept in Native American studies of survivance. Gerald Vizenor (1999) glosses survivance as an active form of presence and continuity, a renunciation of colonial dominance. This perspective is a rejection of victimization and the narrative of native disappearance (Atalay 2006; Lockard 2008). Although survivance is a specific example of resilience that takes place in settler-colonial contexts of genocide, the concept of survivance is a reminder that resilience is not merely survival or a coping mechanism.

In contrast to resilience, resistance and rebellion occur in periods of unendurable dominance (González-Ruibal 2014). Resistance most often surfaces within communities nominally conquered by states, or groups that have chosen to evade the power of a state by resettling in peripheral or inaccessible areas (Scott 2009). Anthropological discourse has addressed the tenuous relationships between state and non-state actors, emphasizing that groups that have evaded outside governance are not failed societies, rather they are successful in achieving some form of self-governance in the context of state hegemony (Clastres 1974; Graeber 2004; Scott 2009). Although scholars debate the degree of agency in the context of resilience (Dornan 2002; Iannone 2016:55), González-Ruibal’s conceptions of resistance and rebellion necessitate overt decision and action. Rebellion especially implies political motives; a reaction against a particular dominant ideology (González-Ruibal 2014). In the context of state collapse, rebellion or revolt is an active rejection of the political system, and any outcome should be viewed as an intentional
choice on the part of those rebelling, instead of an undesirable change in complexity.
Still, a rebellion can result in unwanted or unanticipated crises, even if the act of
resistance was a conscious decision on the part of certain factions.

Arthur Joyce and colleagues (2001) provide another model of commoner power in
the context of the Late Classic to Early Postclassic period transition on the Oaxaca coast.
Reflecting on the concepts of “power over” (asymmetric domination by the elite) and
“power to” (individual or collective agency to achieve a transformative outcome) (Miller
and Tilly 1984; Rick 2004; Weber 1958; 1968), Joyce and colleagues identify three
commoner, or “power to,” strategies to engage in the negotiation of dominance during the
Late Classic period collapse (Joyce and Weller 2007).

The first form of social interaction, engagement, refers to the compromises
between commoners and elite groups. This balance between the expression of elite or
royal power and non-elite contributions is often discussed in the context of power
negotiations in archaic states (Iannone 2016; Inomata, MacLellan, and Burham 2015;
Kurnick 2013). In Mesoamerica, top-down religious ideology has been related to
household or non-elite ritual, as archaeologists suggest that one of the mechanisms to
garner support of elites by commoners was the adoption of small-scale religious practice,
wrît large (Gonlin and Lohse 2007; Inomata et al. 2015). Furthermore, engagement
relates to recent developments in theories of collective action in the creation and
maintenance of political systems (Blanton and Fargher 2008; Carballo 2013).

In contrast, the second strategy of avoidance refers to efforts by commoners to
create alternative expressions of power outside of the context of elite domination (Joyce
et al. 2001:369). These expressions of power may be due to decentralized political
systems where elites delegate a degree of political and economic independence to rural populations. Alternatively, commoners may choose to migrate and settle in areas outside the purview of the elite to gain a modicum of autonomy. Such local leadership can at times challenge the authority of centralized political systems either publicly or privately, depending on the degree of coercion of the state. For instance, household ritual provides an outlet for commoners to engage in private social practices (Blackmore 2011; Robin 2013).

The third strategy, resistance, manifests in particularly coercive political systems. As outlined earlier, commoner resistance can take multiple forms through “foot dragging or withholding payments” of tribute or taxation (Joyce et al. 2001:348,370) or outright rebellion. The former relates again to Scott’s (1990) hidden transcripts, which likely overlap with Joyce and colleagues’ conceptions of avoidance and resistance. In this model, resistance becomes the only viable option among commoner groups when engagement and avoidance fail. One of the key observations by Joyce and colleagues (2001:372) is that in the context of the Late Classic period collapse on the Oaxaca coast, archaeological evidence for denigration of previously elite and sacred spaces is not necessarily representative of rebellion, rather a gradual occupation of these areas as royalty lost power. The timing of such actions, therefore, is crucial in characterizing the commoner rejection of the elite: if denigration took place prior to the collapse, rebellion may have been a contributing factor, while if destruction and reuse occurred after elite dominance had already declined, commoners were merely exercising new forms of power.
Reorganization

Renfrew (1984:368-369) also addresses the aftermath of collapse and the reorganization of political systems. This reorganization includes a transition to a lower level of sociopolitical integration, which may be reminiscent of earlier forms of social organization in the same region. Alternatively, some organizational features of the collapsed state may survive in peripheral areas. Religious elements and craft production may reemerge in terms of “folk” or “peasant” traditions. In Renfrew’s view, this regeneration will typically be fairly rapid, with chiefdom or states adopting aspects of the collapsed state. Part of the strategy of legitimation of this new political organization may rely on the development of a Dark Age myth to characterize the period before reorganization as inferior.

Glenn Schwartz (2006) has taken these concepts a step further, inquiring what happens after collapse, and why certain “secondary generation” states reemerge in some areas while others experience a decline in social complexity. In the former, regeneration involves the reappearance of societal complexity through the manifestation of states and cities, in other words a form of political resilience involving the recovery of centralized systems similar to what existed preceding collapse (Schwartz 2006:7). These efforts typically emulate the original institutions, under the leadership of former lower level administrators. Schwartz cites early studies by Henri Pirenne (1925; 1939) underscoring the importance of reestablishing long-distance trade. At other times, however, non-elites appear to have been instrumental in efforts at reorganization (Chase and Chase 2006; Cooper 2006). A distinction must be made, therefore, between political reorganization...
that involved completely new strategies (Conlee 2006) and that which attempted to recover earlier political processes through minor innovations (Morris 2006).

Discussion: Collapse as Process

Social transformation is one of the key concerns of anthropological archaeology. To understand the complexities of social change, archaeologists must adopt and embrace diverse perspectives rather than limit themselves to simplified approaches. Although concepts of collapse and the rise and fall of civilizations may be appealing to readers outside of archaeology, complex ideas require complex discussions, and researchers must draw from a range of terminology to characterize social change.

In this light, collapse is merely one part of a larger process of transformation that affects societies, and its utility must be assessed within a society’s own cultural and historical context. Echoing the discussion by James Aimers and Gyles Iannone (2014:29), collapse is a process rather than an event. This phenomenon involves development, decline, resilience, and reorganization, a model borrowed from ecology that can serve as a starting point for a perspective of collapse as process, rather than a rigid evolutionary framework. Although multicausal explanations for collapse, incorporating internal and external factors, are useful, political collapses require political explanations. Finally, resilience should not be viewed as the opposite of collapse (Guenter 2014), but instead part of a larger process of social transformation.

Resilience can be defined in multiple ways, incorporating recovery of earlier institutions or reorganization of the system as a whole. Agency must also play a role in collapse studies, as resilience may be part of a conscious effort to choose between
waiting out a crisis or moving on (Hage 2009). In the latter perspective, even the choice
to resettle can be a strategy of resilience that on the ground may be interpreted by
archaeologists as failure. Borrowing from anthropological theory, collapse is an additive,
prolonged effect of multiple waves of crisis, leading to an increasing decline in people’s
trust of the system (Golden and Scherer 2013; Vigh 2008:17).
CHAPTER 3
The Terminal Classic Period Collapse in the Southern Lowlands

As discussed in the previous chapter, two of the underlying issues with the use of the term collapse are scale and identifying what entity or political structure has collapsed (Demarest 2001:105; McAnany and Yoffee 2010). Shifting to the present case study, an understanding of collapse in the Maya area must first reject the phrase “the Maya collapse” and highlight what aspects of politics and culture changed and over what area. Although the effects of social transformation at the end of the Classic period were felt across the Yucatán peninsula and other parts of Mesoamerica, the colloquial phrase Maya collapse generally refers to the central portion of the Petén region of Guatemala and the Southern Lowlands. However, parts of the Northern Lowlands were also affected, including the Puuc and Chenes regions, and perhaps Chichen Itza, although revisions of the latter site’s chronology support an increase in construction activity and population through the Terminal Classic period into the Early Postclassic period (Volta and Braswell 2014). The Southern Lowlands collapse, therefore, may be a more appropriate term, although even variability in social transformation during the Terminal Classic period characterizes that vast region (Aimers 2007).

The second issue, addressing what collapsed refers to specific traits that characterize the Classic period Maya. These traits include the dedication of hieroglyphic stone monuments, especially in the paired stela-altar cult, and the use of the long count calendar, which places Maya history within a more linear framework than does the Calendar Round. Finally, the political system based on the aggrandizement of the k’uhul ajaw, glossed as holy lord, king, or ruler was abandoned. Before addressing the processes
of collapse and resilience at El Infiernito, I trace historical and current interpretations of this Maya political system, followed by a discussion of some of the most likely causes for its decline or rejection. As important as considering the causes of political fragmentation, the demographic shifts that followed and why concerted reoccupation of the Southern Lowlands did not occur must be understood. The stark contrast between this Terminal Classic period collapse is apparent when discussing earlier periods of trauma and their effects during the Late Preclassic period and Classic period hiatus.

Scholars of Classic period Maya politics view state power as lying somewhere along a spectrum between the two extremes of centralization and decentralization. Centralization refers to large-scale states with regional influence across their territories, while decentralization proposes smaller scale states with poorly-integrated authority beyond the core (Foias 2013:2). Mayanists have tested the extent of centralization and decentralization during the Classic period, using a conjunctive approach (Fash and Sharer 1991; Maca 2010; Taylor 1948) incorporating lines of evidence from archaeology and epigraphy, history, linguistics, and ethnography (Martin and Grube 2008). Finally, bringing in analogies has bridged the gaps necessary to create more robust understandings of Maya political structure.

Centralization vs. Decentralization

The role of analogy in archaeological theory has stimulated ongoing debate within the field, regarding whether analogy should be utilized, and if so, how scholars can discern between strong and weak parallels. Lewis Binford (1967), when developing his middle-range theory, acknowledged this issue, claiming that often the validity of an
analogy had previously been based on the reputation of the archaeologist who championed its application. Robert Ascher (1961), in an attempt to create a more scientific and objective approach, promoted two approaches to strengthening analogies. The first method became known as the direct historical method, which assumes continuity between archaeological cultures and descendant communities in the same geographical region. The second method, formal analogy, to be employed when such continuities could not be easily demonstrated, involved analogies with societies with similar ecological adaptations, subsistence strategies, and technologies.

Olivier De Montmollin (1989) summarized the various theoretical approaches that guide the adoption of a particular analogy. As Ascher (1961) did in broad terms, de Montmollin (1989) established a hierarchy of analogies that applied to the study of political organization in the Maya area. De Montmollin (1989:34-35) divided these analogies into three types: the temporal (the amount of time that has passed between archaeological and ethnographic data), spatial (the distance between archaeological and ethnographic case studies, as well as the similarities in environment), and cultural axes (a category that includes approximations of subsistence, sociopolitical structure, ethnic/linguistic identity, or cultural isolation).

The utility of drawing on analogies from later periods of Mesoamerican culture history has been challenged. Indeed, the societies of the Postclassic and Colonial periods of the northern Yucatán peninsula were spatially and temporally far removed from the Classic period Maya states. Lowland Maya states underwent dramatic transformations at the close of the Classic period with the collapse in kingship, as well as upon the arrival of Spanish conquerors who actively sought to alter and eliminate aspects of indigenous
culture. Thus, Maya political organization, by the sixteenth century had adapted to numerous external and internal stimuli to develop new systems of administration. Whether drawing comparisons between Classic period Maya social structure and ethnohistoric sources from the Yucatán or highland Guatemala (Braswell 2001; Carmack 1981; Jones 1998; Rice 2004), these changes must be acknowledged.

If the direct historical method is problematic in reconstructing Classic period Maya politics, what are the alternatives? Here, scholars have turned to analogies from societies that share environmental adaptations, sociopolitical structures, or ritual systems with those of the Classic period Maya. These analogies overlap in many respects, and typically assume a more decentralized view of Maya politics.

One of the first external models for Maya sociopolitical structure was adapted from the feudal systems of medieval Europe, Japan, Rwanda, and Burundi (Adams and Smith 1981). Borrowing from Rushton Coulborn (1956), Richard E.W. Adams and W.D. Smith (1981) listed the three qualities of feudal societies present in the Classic period Maya context: 1) power and authority are decentralized, divided among chiefs under a suzerain, 2) agricultural surpluses are distributed among a landholding elite rather than the support populations that work the land, and 3) political relationships are organized based on kinship, especially through elite marriage (Murphy 2000:16).

Adams and Smith (1981) found support for such a feudal system in the glyphic record of lineage warfare, a hierarchy of sites based on architectural styles, and ethnohistorical evidence for such systems during the Colonial period. T. Patrick Culbert (1991) raised three objections to the feudal model, including the likelihood that trade during the Classic period played an important role in politics which is not supported by a
feudal model, land ownership cannot be established in the archaeological record, and feudal societies are a form of sociopolitical regression caused by the collapse of centralized powers. In this criticism, feudal systems during the Colonial period do not prove their existence during the Classic period.

Although the feudal model has not garnered significant acceptance in Maya archaeology, other models drawn from ethnographic analogy support the notion of a decentralized political structure in the Maya area. These models tend to be adaptations of a segmentary state model. Aidan Southall (2004[1956]) in his survey of the Alur of Central Africa describes societies with decentralized political systems of limited territorial sovereignty that rely more on ritual in outer areas; duplication of central administrative structures, arranged pyramidally at a smaller scale in the periphery; legitimate force controlled only at the center; and the opportunity for peripheral areas to shift allegiance between adjacent centers due to the decentralized nature of the system (Sahlins 1961; Southall 2004[1956]:248). According to Southall (1988:52; 1991), the ritual and political spheres of a segmentary state do not coincide: ritual systems extend from center to flexible periphery, while political sovereignty is limited to the core (Murphy 2000:35). Strongest support for the segmentary state model in the Maya area came from Houston (1993; see also Fox 1987; 1989 for applications of the segmentary state model to the Postclassic period), whose epigraphic and archaeological evidence substantiated the idea that Classic period Maya polities were inherently unstable, based largely on a ruler’s success in charismatic attributes and shamanic duties (Houston 1993:147; Eliade 1964; Freidel and Schele 1988; Schele and Freidel 1990). Combined
with the physical challenges of controlling and supervising subordinates over great distances, Maya states were never able to achieve unification or empire.

A similar model, the galactic polity has also been applied to the Classic period Maya (Demarest 1992; 2007; Houston 1993). First discussed by Stanley Tambiah (1977), the galactic polity model incorporates the importance of ideology in the nature of political organization, relating to shifts from Hindu to Buddhist traditions in Southeast Asian states. Tambiah (1977) described a center-oriented political system, in which each division became its own center (Murphy 2000:27). Although these divisions were relatively autonomous, the core relied on ritual and warfare to legitimize its authority. In this scenario, such states developed a galactic constellation of administration rather than a bureaucratic hierarchy (Tambiah 1977:114). Thus, the galactic polity model could be interpreted as a specific type of segmentary state that incorporates a symbolic or cosmological design to settlement and political organization (Fritz 1986; Houston 1993:143).

Another model often used interchangeably with the galactic and segmentary states is the theater state model, which Clifford Geertz (1968; 1980) applied to the Negara of Bali. In the theater state, the Negara system was divided into three bounded domains of authority: 1) the ordering of public life, 2) the control of irrigation, and 3) the maintenance of religion (Murphy 2000:30; Nordholt 1996; Shankman 1984). Importantly, the motivation of the state was ritual. Arthur Demarest (1992) has drawn parallels between the theater state and the prominence of ritual as a legitimating factor in rulership among the Classic period Maya.
Other scholars emphasized the need to rely on historical, or emic sources to reconstruct political organization of archaic states. Indeed, the recognition of a shared hieroglyphic system across the Maya lowlands hinted at some degree of state influence in the spread of symbolic information and, once deciphered, provided an opportunity to interpret Classic period Maya perspectives on politics. However, the meaning behind the glyphs was under debate for much of the early twentieth century, as some scholars insisted the representations could not be recording language, only arcane religious and calendrical information (Coe 2012; Knorosov 1952; 1958; Thompson 1950; 1953; 1959).

A breakthrough in the study of Maya glyphs occurred when Heinrich Berlin (1958) identified patterns of a unique form of symbol throughout the Maya Lowlands. These characters, which he termed emblem glyphs, consisted of a principal element that varied according to its associated geographic location and smaller components that remained relatively constant. Berlin intentionally labeled these glyphs neutrally as “emblem,” surmising that they identified either a place, a dynasty, or both. Thomas Barthel (1968) confirmed the existence of emblem glyphs at the largest known archaeological sites in the region, including Tikal, Copán, Yaxchilán, Piedras Negras, and Naranjo.

These analyses of emblem glyphs led to the development of a theory of Maya political organization based on city-states or peer polity interaction (Renfrew and Cherry 1986), which described the full range of exchanges that may take place between autonomous, self-governing political entities. Based in part on the organization of Greek city-states, this analogy in the Maya area focused on the distribution and patterns of emblem glyphs. Relying on the decipherment of the prefixed elements within the emblem
glyphs as holy lord (k’uhul ajaw), Peter Mathews (1991) inferred that the consistency of this title across the Maya Lowlands demonstrated no hierarchical relationship among kingdoms. Mapping and cataloguing the corpus of known emblem glyphs, Mathews determined that during the Classic period, the Maya area consisted of about forty independent city-states.

The city-state model had become popular since its proposal by J. Eric Thompson (1954). Norman Hammond (1972; 1974) borrowed approaches from geography to predict the territorial extent of hypothetical Maya city-states. Rather than relying on the presence of emblem glyphs, Hammond identified key major sites archaeologically through calculations of construction mass. By generating Thiessen polygons, based on the Euclidean distance between points of interest, Hammond attempted to estimate the sizes and boundaries of the territories of various city-states. Although they provide a starting point, Thiessen polygons fail to account for topography, environment, power hierarchies, and other sociopolitical factors that would have influenced the size and rank of city-states.

The problem with using emblem glyphs to reconstruct Maya political organization is evident when viewing a map of Thiessen polygons based on sites with emblem glyphs. In such a representation, the proposed extent of the Tikal kingdom, long understood to be one of the major polities of the Classic period appears relatively small compared to nearby contemporary sites. This problem can most easily be explained by recognizing that although adjacent sites could have emblem glyphs, a hierarchical relationship must have existed among them, meaning that sites with emblem glyphs near Tikal should be considered part of the Tikal kingdom rather than separate polities.
This assertion suggests some form of regionalism to Maya states beyond the city-state. Sylvanus Morley (1947) had previously favored a regionalized view of Maya politics, interpreting variation from the Southern Lowlands to the Northern Lowlands. In his delineation, an Old Empire was centered on the southern sites of Copán and Quiriguá (today understood as the Classic period), and a New Empire formed after their collapse, as this society moved north to Chichen Itza (roughly equivalent to the Postclassic period). Archaeology and the burgeoning field of Maya epigraphy later rejected this simplified characterization of political organization; however, Barthel (1968) favored a form of regionalism based on the appearance of four emblem glyphs on Copán’s Stela A. On this monument, the four emblem glyphs of the sites Tikal, Calakmul, Palenque, and Copán are each associated with the four cardinal directions, which Barthel interpreted as representing a cosmological model for the Maya world. Because of their prominence on Stela A, Barthel suggested that each city was a capital of its regional state based on its relation to the cardinal directions. Citing similar evidence from a later monument at Ceibal, Stela 10, which communicates a similar quadripartite division, replacing Palenque and Copán with Ceibal and Motul de San José, Barthel suggested that a political shift took place by the Terminal Classic period.

Scholars have also turned to anthropological theory and ethnographic analogy to introduce alternative models. Joyce Marcus (1976) revisited Barthel’s observation of a quadripartite and directional model for Maya centralization, incorporating central place theory into her analyses of the four proposed capitals. Building on the initial theories, Marcus (1993) turned to ethnographic analogy, in particular ethnohistoric sources from direct descendants of the Maya of the Yucatán peninsula. Choosing to develop models
using the direct historic approach was in line with Evon Vogt’s (1962) genetic model for Maya cultural development, which leaned heavily on symbolic aspects of Highland Maya culture to draw parallels with the Classic period Maya. Ethnohistoric data from the northern Yucatán supported many of Marcus’ contentions, including a quadripartite political structure and the occurrence of shifting capitals. Classic period epigraphy seemed to confirm such a model, as Stela A from Copán and Stela 10 from Ceibal consistently described four “capitals.”

Along with this evidence, the “peaks and valleys” of rising and declining quantities of texts at sites throughout Maya history led Marcus to propose a dynamic model that accounted for a more fluid political system than a city-state model. Marcus also demonstrated that a dynamic model could explain the evolution of state systems around the globe, accounting for periods of centralization followed by intermediate periods of decentralization.

Although Marcus’ dynamic model provided a refreshing approach that draws on archaeology, ethnography, epigraphy, and ethnohistory and geography, some specific flaws in her methodology have been identified. First, Marcus’s interpretation of the epigraphy of Stelae A and 10 has been questioned, particularly her assertion that the presence of four emblem glyphs refers to a quadripartite division of the Maya area. Stephen Houston (1993) has pointed out that if the directions were meant to be associated with the cities mentioned, Tikal would be located west and Calakmul south, which does not reflect the reality of the relative locations of these sites. Second, and more important, Houston (1993) highlighted that such texts should not be taken literally as reflecting the actual nature of geopolitics but instead the desires of local rulers to aggrandize the
perception of their dynasties in relation to others. Stela 10’s replacement of Copán and Palenque emblem glyphs with those of Ceibal and Motul de San José likely reflected more localized politics rather than a larger shift in macropolitical structures across the lowlands. Third, Murphy (2000:41) underscored the irony that Marcus’ initial claim of the superiority of her model due to its grounding in Maya ethnohistory was later overshadowed by her broad application of the dynamic model to other archaic states, including across Highland Mesoamerica, the Andes, Mesopotamia, Egypt, and the Aegean (Marcus 1999).

In contrast to Marcus’ quadripartite model of Maya political organization, Simon Martin and Nikolai Grube (1994) proposed a dualistic division of Classic Maya period politics, based on the “superstates” of Tikal and Calakmul, long recognized to be the most monumental sites in the Maya area. In the superstate model, local politics across the Maya area are interpreted to have been reactions to the expansive efforts of especially large and powerful kingdoms centered on the archaeological sites of Tikal and Calakmul. Martin and Grube (1994) emphasized the need for reconstructions of Maya politics based on epigraphy while establishing precedent for superstates based on the hegemonic model of the Aztec Empire. Building on Marcus, Martin and Grube incorporated epigraphic and ethnohistoric analogies into their model, benefiting from advancements in Maya epigraphy to reconstruct the relationships of warfare and alliance among Maya polities.

Beyond Centralization and Decentralization

The value in such discussions regarding Maya political structure has been the emerging consensus that Maya states were not homogeneous entities, and any attempt to
generate a rigid model to characterize all Maya polities is unproductive (Foias 2013; Sharer and Golden 2003). In this sense, the general premise of a dynamic model, as proposed by Marcus (1993), is valid, although to assemble the specific political structures behind Maya polities, archaeologists must develop methods to test changes in centralization and decentralization over time (Iannone 2002). Epigraphy should certainly play a major role, although Mayanists must be aware of the limitations of such approaches, due to the propagandist nature of inscriptions. Indeed, when scribes wrote of expansionist tendencies of certain kingdoms, we must recognize that attempts to achieve centralization or empire do not reflect the relative successes of rulers.

In addition, archaeology within core areas that suggests a centralized state (Fox et al. 1996; Chase and Chase 1996) must be complemented by projects in peripheral areas to determine the extent of such influence within hinterland settlement (Ashmore 1981; 2007; Canuto and Yaeger 2000; Connell 2000; Garber 2004; LeCount and Yaeger 2010; Lucero 2003; Robin 2003; 2012; 2013; Robin and Ashmore 2010; Wilk and Ashmore 1988; Willey et al. 1965). Beyond reconstructing macropolitics, an understanding of the sociopolitical structure of Maya society will also benefit from pursuits that aim to “people the past” (Robin 2001) to interpret the division of labor and class structure (Inomata and Houston 2001; Houston and Inomata 2009; Jackson 2013). Only with such efforts can archaeologists begin to bridge the gap between such analytical categories as states, households, and individuals.
The Classic Maya Polity

Although monumental inscriptions tend to be propagandistic in character, epigraphy is vital to understand how the Classic Maya elite interpreted their kingdoms, thus giving Mayanists an impression of the ideal Classic Maya polity from the perspective of the rulers (Biró 2011:268; Smith 2003). Unfortunately, epigraphers are lacking forms of transportable media, including codices and other paper documents, that might have better reflected bureaucratic or economic data from the hinterlands of kingdoms. In rare cases, ceramics and small stone or wood boxes provide political data, but by far the majority of information regarding the Classic period Maya political system has been documented in stone monuments from elite centers.

The most important decipherment regarding the understanding of Classic period Maya politics was the identification of the aforementioned emblem glyph (Berlin 1958). Berlin suggested three possibilities for the meaning of the emblem glyph: 1) historical name for a site, 2) the name of a site’s patron deity, 3) or the name of the ruling dynasty (Biró 2011:278). The most influential interpretations since Berlin have been the first and third possibilities (Barthel 1968:120; Kelley 1976:215; Proskouriakoff 1960:471). Some scholars extended the meaning of the emblem glyph to include either the site and its territory (Marcus 1973:913; Mathews 1991:26) or a political unit governed by a site (Mathews and Justeson 1984:216; Stuart and Houston 1994:3). This debate led to the acceptance that the main signs of some emblem glyphs could behave as toponyms. Elsewhere, emblem glyphs relate more to a political unit such as a dynasty (Stuart and Houston 1994:5,7). David Stuart and Stephen Houston’s (1994) identification of independent toponyms that never appeared as the main signs of emblem glyphs led to the
conclusion that emblem glyphs were not strictly tied to place names and more likely related to kingdoms with other named toponyms referring to places within these kingdoms (either sites or parts of sites) (Schele and Mathews 1998:23).

Alexandre Tokovinine and Vilma Fialko (2007) advanced the current understanding that the main signs of emblem glyphs refer to the origin places of ruling dynasties (Biró 2011:278; Tokovinine 2013). Such examples are known from numerous sites, including Naranjo, Tikal/Petexbatun, El Zotz/Yaxchilán, and Palenque/Comalcalco/Tortuguero. In cases of their adoption at sites other than the origin site, emblem glyphs can sometimes behave as toponyms, but generally other toponyms are used when a specific site or part of a site is described. Therefore, single toponyms and emblem glyphs do not seem to reference any conception of a kingdom’s territory, although the appearance of multiple emblem glyphs (including some without the k’uhul or “holy” adjective) throughout a kingdom’s territory indicate a hierarchical relationship among different royal and noble groups (Houston and Stuart 1996:295; 2001:60).

The use of hierarchical emblem glyphs and toponyms provides some clues to how Maya rulers conceived of their kingdoms, however, they do not clarify to what extent royal power was thought to imbue spaces between royal and noble centers, nor do they clearly define the spatial extent of a kingdom or its borders. Epigraphers have not reached a consensus on whether Classic period Maya inscriptions have any referent for territory (Biró 2011:269), although some possibilities have been advanced. Alfonso Lacadena and Andrés Ciudad Ruiz (1998; 2001) proposed that the nouns ajawlil and ajawlel, related to the office of ajaw (or lord), referred to kingdom or territory, based on Colonial period Yucatec dictionaries (Bolles 1997). However, the more accepted translations of ajawlil
and *ajawlel*, refer to the state of kingliness and the institution of kingship, respectively (Houston et al. 2001).

Other arguments revolve around the use of *ch’e’n* as being associated with place names, or literally meaning “place” (Stuart and Houston 1994:12; Vogt and Stuart 2005). James Brady and Pierre Colas (2005) and Erik Velásquez (2004), however, maintained that *ch’e’n* is better translated literally as cave, and when used in the context of warfare referred to the destruction of sacred parts of a site. The appearance of *ch’e’n* alongside two other expressions, *chan ch’e’n* and *kab’ ch’e’n* has led some epigraphers to suggest that *ch’e’n* referred to a city and *kab ch’e’n* more broadly to a city’s territory, often drawing comparisons with the Aztec concept of the *altepetl* (Houston 2000:173; Lacadena 2009; Martin 2004). *Chan ch’e’n*, on the other hand, may have wider connotations relating to world, region, or *axis mundi* (Hull 2003; Stuart 2015; Velásquez García 2004:84). Tokovinine (2008) suggests that *ch’e’n* refers to temples or sacred areas of a city, *kab ch’e’n* to the physical land and city, or territory, and *chan ch’e’n* to the sacred landscape. Biró (2011:277) claims that the issue remains unresolved, but he proposes that *ch’e’n* represents the “smallest unit of the landscape” or “inhabited place, settlement,” *kab ch’e’n* as “dominion,” sometimes extending beyond a settlement, *chan ch’e’n* as usually an imaginary place, and a fourth expression *chan kab’* as “world, everywhere.”

*The Royal Court*

Another way to interpret political organization is by examining the people and their respective titles who are mentioned in relation to a kingdom’s royalty. Takeshi
Inomata and Stephen Houston (2001:6–7) define the royal court as an organization centered around a sovereign ruler but also composed of associated individuals including family members, advisors, guards, servants, and others who are linked by “mutual understandings and obligations” taking place in “culturally ordered spatial settings.” Inomata and Houston also acknowledge the existence of non-royal courts that can form under the leadership of powerful nobles, and indeed these secondary courts may be instrumental in the successful operation of the kingdom as a whole (Webster 2001).

According to Max Weber (1946; 1947), one of the key elements of a leader’s legitimation relied on the development of an “administrative apparatus” composed of subordinate individuals who served as a link between the ruler and the people. Furthermore, Weber distinguished between two types of societies: bureaucratic societies and administratively oriented societies. Weber viewed bureaucratic societies as an entirely modern construction, originating in the development of industrialism. However, Weber recognized general administrative features in earlier societies, including Egypt, Rome, and European feudalism, which he termed administratively oriented societies or patrimonial administration. In these societies, subordinates were bound to the ruler based on personal loyalty rather than established laws, and the majority of administration took the form of personal communication between office holders, rather than through written documentation.

Weber’s definitions remain accepted by most sociologists and anthropologists. However, some scholars argue for the existence of bureaucracy during the Qin dynasty (221–206 BC) in China and perhaps in ancient Sumeria (Foias 2013:112; Kiser and Cai 2003; Maisels 1999). Some Mayanists have also argued for the evidence of centralized
bureaucracies in certain kingdoms, notably Tikal and Caracol (Chase and Chase 1992:309). Antonia Foias (2013:123), however, offers a compelling argument against the existence of bureaucratic administration in Classic period Maya kingdoms. Although recognizing a clear hierarchy among office holders, Foias notes that once these individuals were selected from a defined elite rank or lineage, that office continued to be inherited through kinship. Finally, evidence is lacking for other signatures of bureaucracies, including forms of payment, monitoring and sanctioning, and the extent of public administration (Foais 2013:127). These administrative structures represent inchoate or proto bureaucracies, what Foias terms a process of “bureaucratization.” Such systems were weak and could shift or break apart as rulers changed or during times of crisis.

The strongest evidence for this process of bureaucratization lies in the epigraphic evidence for royal and non-royal titles and a clear hierarchy among these individuals. Houston and Stuart (1996:295) had noted a hierarchy even within the ajaw title, meaning lord or literally “he who shouts” (Houston and Stuart 2001:59). Houston and Stuart (2001:59-60) note that the k’uhul (holy) prefix emerges toward the end of the Early Classic period, probably to distinguish a higher office from the explosion of ajaw titles across the Southern Lowlands. Royal women could also hold the ajaw title with the ix (“lady”) prefix, and royal heirs were known as ch’ok, meaning “youth, immature” (Houston and Inomata 2009:146; Houston and Stuart 2001:66-67).

Several other elite, non-royal titles have been identified, including sajal, ajk’uhuun, yajaw k’ahk’, ti’huun or ti’sakhuun, lakam, and chak tok wayaab’ among others (Beliaev 2004; Estrada-Belli et al. 2009; Foias 2013:117; Jackson 2013:11). First
identified by David Stuart (1985), the *sajal* title remains untranslated, although glosses include “one who fears” (less likely “one who is feared”) (Houston and Stuart 2001:61; Grube and Nahm 1991), reflecting perhaps the *sajal*’s relationship as a kind of second officer to the *ajaw*. This possibility is supported by the existence of the *ba-sajal*, or “head *sajal*,” suggesting a hierarchy within this category, as well as the ability in some cases for a *sajal* to be promoted to *ajaw* (Houston and Stuart 2001:62). In practice, the *sajal* is best understood as a provincial or military governor (Foias 2013:117; Schele 1991:7,10; Stuart 1985:17-18), possibly part of a decentralized or segmentary strategy to govern large, diverse, and rugged territories, although these individuals can also appear at the dynastic centers (Houston 1993:147-148; Houston and Stuart 2001:62).

The meanings of other noble titles are more ambiguous. *Ajk’uuhuun* (the God C title), for example, has been translated variously as “he of the holy books,” “royal scribe,” or “he who guards/venerates” (Coe and Kerr 1998:91-96; Foias 2013:117; Houston 1993:130-134; Jackson and Stuart 2001; Jackson 2013:13). Marc Zender (2004) has proposed that the title be translated as “worshipper,” or evidence for the existence of a Classic period Maya priesthood. Other titles are used more infrequently and likely point to highly specialized offices. One example is *yajaw k’ahk*, or “lord of fire,” which may represent a military or religious position (Stuart 2005:18) or may be related to incense rituals or other religious duties (Jackson 2013:14; Zender 2004:205,210). *Ti’huun* or *ti’sakhuun* may be another example of a priestly title, translated as “edge or mouth of the (white) paper,” possibly the literal mouth or spokesperson of the ruler (Foias 2013:121; Jackson 2013:14-15; Zender 2004:15). Finally, *lakam* and *chak tok wayaab’* may relate to administrative duties. *Lakam*, for example, may refer to the collection of tribute or
military contingents within parts of a site (Foias 2013:119), while *chak tok wayaab’* (or “red/yellow cloud dreamer/priest”) appears with nobles who commission structures and monuments under the supervision of higher-ranking political figures (Beliaev 2004; Estrada-Belli et al. 2009:246; Foias 2013:119).

These glimpses into the royal court of the Classic period Maya enrich our understanding of the political organization of these kingdoms. However, as underscored time and again, these inscriptions omit most of Classic period Maya society (Houston 1993:127–128). Other people with important roles in Maya politics were the artists, sculptors, and scribes who produced monuments and painted ceramics, artisans who produced textiles, ceramics, stone tools, and other crafts, merchants, and farmers (Houston and Inomata 2009). Based on these social roles as well as the diversity of artifact assemblages, Chase and Chase (1996; 2016) suggest the presence of a middle class or middle status of individuals at the site of Caracol (Smith 2018). This conclusion is based on the large number of tombs, modified teeth in burials, and access to prestige goods likely through a system of markets. Other archaeologists proposed a framework, which Samuel Connell (2000) calls “middle-out,” to move beyond the dichotomy of top-down and bottom-up approaches (Canuto 2002).

*The Cessation of Monuments*

The timing of the Classic period collapse in the Southern Lowlands has been based on the cessation of monument dedication and the use of the historical long count calendar. The end of monument dedication alone does not coincide with the immediate decline or abandonment of a site but represents a dramatic change, especially in the
context of the iconography of monuments at a site, which may also reveal transformations or script obsolescence. In many discussions of the Southern Lowlands collapse, the final dates of monuments are presented, often the specific iconographic changes are ignored, and these shifts are crucial to understand the processes of collapse in the Maya lowlands. Stanley Guenter (2014) provides a complete analysis of these changes.

In terms of the dates of final monuments, sites cluster into sub-regions that appear to have collapsed in distinct phases. Richardson Gill (2000:328) argues for three phases of collapse across different sub-regions of the Maya area. These three phases correspond to the following periods: Phase 1) AD 760–810 in the Western Lowlands, the Petexbatun region, and Edzna, Phase 2) AD 811–860 in the southeastern area and most of Belize and eastern Petén, and Phase 3) AD 861–910 in the central Petén through the Puuc region and Chichen Itza. However, epigraphers have instead identified two phases of collapse based on monuments, consisting of a gap in monuments at most sites after the first half of the ninth century followed by a brief resurgence of monument dedication around 880–910 (Boot 2005:416-417; Grube and Martin 2000:169; Houston et al. 2003:458-461; Houston and Inomata 2009:300-310; Schele and Freidel 1990:381). Monuments dating to this second recovery phase depict distinct iconography and “script obsolescence,” or a declining scribal tradition, suggesting new experiments in political reorganization (Bíró 2011; Guenter 2014; Houston et al. 2003).

For example, the sites belonging to Gill’s Phase 1 (AD 760–810), including Pomoná (780), La Mar (785), Aguateca (790), Piedras Negras (795), Bonampak (796), Palenque (799), and Yaxchilán (808) show decline in scribal artistry (except for
Yaxchilán). In fact, this set of monuments are considered to be of the highest quality (Bíró 2011:240; Miller and Brittenham 2013). Gill’s Phase 2, includes the southeastern area and the sites of Los Higos (781), Quiriguá (810), and Copán (822), whose monuments, again, show little sign of a declining scribal tradition.

In contrast, some sites in the Maya Lowlands experienced a late ninth century revival in monument production. These sites belong to Gill’s (2000) Phase 3, including sites in the northeastern Petén and the Northern Lowlands. However, some sites from other regions, including the Pasion River and the Western Lowlands, assigned to Gill’s Phase 1, also participated in this period of reorganization, dedicating monuments as late as the early tenth century. Sites included in Gill’s Phase 3 include Ucanal (849), Caracol (859), Tikal (869), Ixlu (879), Jimbal (889), Xultun (889), Uaxactun (889), and Calakmul (899 or 909) (Bíró 2011:240). Evidence for political reorganization during the Terminal Classic period is known from the site of Ceibal (889), where the dynasty may have been revived with the support of migrants from the site of Ucanal. Sites in the Western Lowlands that erected monuments after the gap in the middle of the ninth century include Comitán/Tenam Puente (874), Quen Santo (879), and Toniná (909). The unprovenanced Randall stela also suggests that elements of the Sak Tz’i’ and Piedras Negras dynasties may have persisted at least to AD 864 (Bíró 2011).

Recent excavations at Nakum in the northeastern Petén also point to a unique period of intense architectural construction during the Terminal Classic period, until approximately AD 950, apparently linked to Nakum’s importance as a river port that controlled commerce in the region after the reduced level of competition from other centers like Tikal and Naranjo (Żrałka and Hermes 2012). Late and Terminal Classic
period monuments from Nakum also show a shift toward power sharing between royal and non-royal elites and perhaps the adoption of the eastern kalomte’ title, bolstering the argument that Nakum took on increased regional power after the initial collapse of other dynasties in the northeastern Petén (Żralka et al. 2014; Żralka et al. 2018).

Explanations for the Terminal Classic Period Collapse

Gill has cited at least 88 different explanations for the Classic period Maya collapse. Based on his work, Glenn Storey and Rebecca Storey (2017:6-9) listed 91 reasons for the Classic Maya collapse; the majority had been proposed since the 1970s. Richard Wilk (1985) noted that scholars have sought explanations for past crises based on contemporary events that influenced their scholarship. For example, ecological degradation became popular during the emergence of the environmental movement and foreign invasion was proposed during the height of the Vietnam War. Climate change and ecological degradation have been favored recently as humanity faces an anthropogenic global environmental crisis. Today, the majority of Mayanists accept multicausal explanations for the collapse; however, disagreement remains over the principal underlying factors that contributed to the process (Sharer 1977). The following discussion summarizes these arguments as 5 general themes: environmental and ecological challenges, invasion, economic shifts, interregional warfare, and intrapolity crises. In reality, many of these themes should be interpreted as offshoots or effects of the collapse of the political system.
Environmental Changes

The appropriate starting point for a discussion of the Classic period Maya collapse involves explanations that focus on environmental changes, as these interpretations have become popular in recent decades. Such explanations are attractive in the Maya context because they provide a simple narrative that fits the evidence of a political collapse followed by demographic decline. Natural disasters also remove agency from the equation, for better or worse, suggesting that collapse was inevitable and nothing could be done (Gill 2000:1). Beyond climate change, any discussion of an environmental collapse must also explain why people were unable to recover after such dramatic events.

Since the nineteenth century, scholars have proposed that natural disasters could have played a role in the political collapse of the Southern Lowlands. These theories include earthquakes, hurricanes, tornadoes, and disease (Goodman 1897). Another hypothesis related to natural disasters was that increased rainfall challenged farmers’ use of swidden agriculture (Huntington 1915). Euan MacKie (1961) attributed evidence of architectural collapse at the site of Xunantunich to earthquakes that led to the abandonment of the site. However, as a general explanation for the more widespread Classic period Maya collapse, earthquakes have seldom been cited as a serious threat to the region (Guenter 2014:55).

Herbert Spinden (1943) suggested that disease, specifically yellow fever was a factor in the demographic collapse of the Southern Lowlands. Saul (1973) identified instances of trauma, specifically osteitis or bone inflammation consistent with syphilis or yaws, malnutrition, parasitic disorders, and childhood malnutrition in the skeletal remains of the site of Altar de Sacrificios. His findings, however, suggest a “chronic precarious
health status” (Saul 1973:323), which may have magnified the effects of other crises (e.g., invasions or crop failures) leading to collapse. Catastrophic natural disasters do not adequately explain the collapse, and evidence for increasing rates of disease during the Classic period is lacking (although not all diseases leave signs on the skeleton).

Discussions surrounding the role of climate change on the Classic period collapse have increased more recently (Marx et al. 2017). Gill proposed the drought hypothesis in 1988 before evidence for such a drought had been documented (2000:4). Less than a decade later, the first evidence for droughts was published. David Hodell and colleagues (1995) analyzed a sediment core from Lake Chichancanab, Mexico in the northern Yucatán peninsula, providing evidence for a 200-year drought between AD 800 and 1000. Later, evidence from additional lake sediment cores indicated two droughts, an early phase (AD 770–870) and a late phase (AD 920–1100) separated by a relatively moist 50-year period (AD 870–920) (Hodell et al. 2005). Sediment cores subsequently taken from other lakes including Punta Laguna (Quintana Roo, Mexico), Petén Itzá, and Salpetén (Petén, Guatemala) confirmed a drier climate during the Terminal Classic period (Guenter 2014:74; Yaeger and Hodell 2008). In contrast, a sediment core from Aguada X’caamal in northwestern Yucatán, shows minor changes during the Terminal Classic period, with evidence for a drier climate during the fifteenth century at the onset of the Little Ice Age (Hodell et al. 2005; Yaeger and Hodell 2008:231). Around the same time, Joel Gunn and colleagues (1995) used measurements of discharge from the Candelaria River in Campeche, Mexico to confirm that global cold temperatures delayed the onset of the wet season, reducing swidden agricultural productivity. In contrast, global warm
temperatures effectively eliminate the dry season, disrupting the burning season and ultimately reducing overall productivity.

Although lake sediment cores provide evidence for drought during the Terminal Classic period, these data have low temporal resolution (Guenter 2014:75). In contrast, data from cores taken in the Cariaco Basin of Venezuela provide a much higher resolution of less than 5 year intervals. These records are relevant for reconstructing climate within the Caribbean as a whole, due to the northward and southward movements of the Intertropical Convergence Zone (ITCZ) determining the rainy and dry seasons in both regions (Yaeger and Hodell 2008). Gerald Haug and colleagues (2003:1734) identify three periods of intense drought during the Terminal Classic period: nearly a decade beginning in AD 810, three years in AD 860, and six years in AD 910. Although Haug and colleagues (2003:1734) note a gradual increase in dry conditions from AD 760 to 810, this AD 760 date has been cited in numerous publications as a fourth period of intense drought (Gill 2000; Guenter 2014:75; Yaeger and Hodell 2008; Yaeger, and Hodell 2014:53-57). This assumption is erroneous and is based more on Gill’s analysis of final dates of monuments in the Petexbatun region, rather than environmental data (Iannone et al. 2014:58-59).

Recent studies of speleothems from caves in Belize provide local data that support findings from the Cariaco Basin. James Webster and colleagues (2008) recovered paleoclimatic data from Macal Chasm cave in western Belize suggesting that a series of the driest periods in a 3,300-year sequence occurred during the the Terminal Classic period at AD 754–798, 871, and 893–922. A similar study at Yok Balum Cave in southern Belize detected multidecadal droughts between approximately AD 200 and 300,
820–870, 1020–1100, and 1530–1580, along with shorter droughts around AD 420, 930, and 1800 (Kennett et al. 2012). Although the data from Yok Balum Cave show some differences, Douglas Kennett and colleagues conclude that major droughts occurred at the end of the Late Preclassic period and throughout the Terminal Classic period and that these droughts contributed to periods of political disintegration in the Maya area.

Although accepting the evidence for droughts, most Mayanists question the extent to which these events played a major causal role in the rise and fall of Maya political systems. Jason Yaeger and David Hodell (2008:235) caution against framing the collapse as a singular event caused by drought rather than a set of “interrelated historical processes.” They also underscore the variability in the paleoclimatic records, especially in the northwestern Yucatán compared to the north-central and northeastern Yucatán. Furthermore, correlating the paleoclimatic and archaeological evidence (each with its own imperfections and dating uncertainties) proves challenging (Yaeger and Hodell 2008:236). Finally, although the paleoclimatic records demonstrate dry periods, until recently the data have not been conducive to estimating quantitative reductions in rainfall.

Annual rainfall in some parts of the Southern Lowlands is high enough that it can drop substantially before impacting crop yields (Iannone et al. 2014:67; Yaeger and Hodell 2008:236). Nicholas Evans and colleagues (2018) documented changes in rainfall in the northern Yucatán during the Terminal Classic period through isotopic analysis of structurally bound water in sedimentary gypsum from lake cores. The presence of gypsum generally reflects drier climatic conditions associated with droughts (Evans et al. 2018:498). The data suggest that annual precipitation, at least in the northern Yucatán
peninsula, decreased between 41 and 54%, as well as up to 70% in peak drought conditions. These data confirm that the Terminal Classic period drought was severe compared to the historic droughts of the sixteenth and eighteenth centuries, which did not register in the Lake Chichancanab lake cores (Evans et al. 2018:501).

A further complication to the drought hypothesis is that the first areas to experience a cessation of monuments and demographic decline are today the regions with the highest annual rainfall (Neiman 1997). In contrast, the driest part of the northern Yucatán peninsula attracted populations during the Terminal to Early Postclassic periods (Iannone et al. 2014:61). According to Andrew Scherer and Charles Golden (2014:216), the Middle Usumacinta Basin, within the Western Lowlands, receives up to 2,200 mm of annual rainfall (Aliphat 1994:44), while the annual mean at Palenque is 3,034 mm based on data collected by Kirk French. In contrast, data from Tikal and Copán show much lower averages of 1,250 mm and 1,072 mm, respectively (Scherer and Golden 2014:216-217). Finally, the driest part of the northern Yucatán peninsula receives an average of 500 mm of annual rainfall (Deevey et al. 1980; Hoggarth et al. 2017).

If drought caused the collapse, the Southern Lowlands would be expected to attract populations rather than the dry Northern Lowlands. Attempting to reconcile this contradiction, a recent reanalysis of sediment cores from the Lakes of Chichancanab and Salpetén suggests that the Southern Lowlands experienced a more intense period of drying than did the Northern Lowlands (Douglas et al. 2015). Bruce Dahlin (2002) has also suggested that perhaps populations in the northwestern Yucatán were more accustomed to living in dry conditions, while subsurface water was more accessible in cenotes (Diamond 2005; Dunning et al. 2012; Hoggarth et al. 2017; Peterson and Haug
2005). This perspective relies on the assumption that surface water in the Southern Lowlands would have receded. Gill (2000:254) suggests that during a multiyear drought, rivers such as the Usumacinta River may have gone dry, an assertion that has not received support among most archaeologists (Scherer and Golden 2014:215).

Although problematic, the drought scenario remains attractive as one of the hypotheses that can explain the collapse in political authority and the demographic decline that followed. Although disease alone has been rejected as a viable explanation, famine and diseases that would have accompanied droughts would have theoretically caused human suffering on scales significant enough to lead to regional abandonment. Gill (2000:306) examined 26 cases of famine in historical records from the Yucatán peninsula between AD 1540 and 1840 to demonstrate the effects of drought.

In another study of historical famines, Hoggarth and colleagues (2017:83) identified cyclical population decline in the Yucatán peninsula beginning after AD 1580, following a recovery from the introduction of European diseases earlier in the same century. They rely on the paleoclimatic data from prehistory through the nineteenth century from Yok Balum Cave. Three periods of drought from this record, AD 1525–1560, 1610–1670, and 1720–1800, correlate with episodes of famine documented in historical records (Hoggarth et al. 2017:86-88). However, Jason Yaeger (2017:105-106) underscores the challenges in explaining demographic decline (e.g., disease, famine, outmigration) even in Colonial period contexts with more robust historical records. Yaeger also questions why recovery did not take place in the wetter periods following drought after Terminal Classic period, in contrast to the Colonial period.
In general, Classic period inscriptions avoided any reference to environmental crisis or drought, although some Mayanists have identified limited examples. Victoria Bricker (2017) cited the Late Postclassic period Dresden Codex as describing a drought in August of AD 818 (Bricker and Bricker 2011:385). Zender (2004:257) has also identified a unique text referring to a Classic period drought from Comalcalco Urn Burial 26. An inscribed stingray spine, Spine 3, from this burial records “there was drought (k’intuuun), there was famine (w’inaal)” in early March of 763. The individual interred in this burial was the priest Aj Pakal Tahn, a yahaw k’ahk and b’aah ajaw. Other texts in this burial document Aj Pakal Tahn’s response to this drought, undertaking yearly bloodletting on the vernal equinox until 777, possibly as a ritual to invoke rain (Zender 2004:257-258). These texts provide crucial insight into the occurrence of drought, its relation to famine, and the elite response to such crises at the onset of the Classic period collapse.

Ecological Degradation

Ecological degradation has been discussed frequently in popular literature relating to the Classic period Maya collapse since the 1970s and the advent of the environmental movement (Santley et al. 1986). However, this explanation has existed since the early twentieth century. O.F. Cook (1909; 1921) discussed the effects of milpa or swidden agriculture on soil and vegetation. According to Cook, swidden agriculture, in his view a “primitive system,” led to a rapid decline in soil quality followed by the encroachment of grasses. The resulting grasses created artificial savannas that farmers could allegedly no longer cultivate with Classic period technology. C.W. Cooke (1931) proposed that bajos
throughout the Southern Lowlands were previously shallow lakes that were filled with sediment due to a combination of swidden agriculture, heavy rainfall, and erosion, diminishing the amount of potable water and perhaps leading to an increase in mosquito borne diseases, such as yellow fever (Adams 1973:28). However, studies of bajo soils did not suggest that these swamps were formed due to heavy silting (Adams 1973:26; Cowgill and Hutchinson 1963). Although some of the specifics of the savanna and bajo hypotheses are no longer supported, the general idea that deforestation led to erosion, the abandonment of agricultural fields, and increasing warfare over resources remains popular (Diamond 2005).

Evidence for deforestation, however, is limited and localized and cannot be extrapolated to other regions. At Copán, researchers have postulated that pine forest deforestation of hillsides to collect fuel led to increased erosion and soil depletion (Rue 1986; Webster et al. 2000). One palynological study of a sediment core taken from an aguada 5 km to the north of the main center suggested a significant reduction in pine trees \textit{(Pinus oocarpa)} during the Late and Terminal Classic periods (Abrams and Rue 1988). A follow-up study from the same aguada, however, contradicts the previous study, suggesting that pine tree deforestation peaked between 900 and 790 BC, followed by lower levels of deforestation during the Protoclassic period (second century AD), with a subsequent peak shortly before the eruption of the Ilopango Volcano (early fifth century AD) (McNeil, Burney, and Burney 2010). In contrast to previous work, McNeil and colleagues’ study shows evidence of an increase in pine forest cover during the Late Classic period from AD 400 to 900, suggesting that the people of the Late Classic period Copán kingdom were responding to soil depletion and erosion that took place during the
Early Classic period by practicing forms of controlled ecological management (McNeil, Burney, and Burney 2010:1019). Indirect evidence for these practices lies in changes in the production and use of stucco demonstrated by thinner layers of stucco during the Late Classic period compared with the Early Classic period (Fash and Fash 1996; McNeil, Burney, and Burney 2010:1019).

Clearly, more data is needed to assess the extent of deforestation during the Late Classic period. Nevertheless, deforestation as an explanation for the collapse still fails to account for a lack of resettlement one or two centuries later after recovery and reforestation of the landscape (Cole et al. 2014). Another issue, not dissimilar from the drought hypothesis is that the least densely populated parts of the Maya area were the first casualties of the collapse, while political centers in the densely-populated central and northeastern Petén persisted for nearly a century longer in some cases.

**Invasion**

Another postulated external cause of the collapse was a series of invasions by non-Maya peoples or Mayan speakers from the Gulf Coast into the Southern Lowlands, a theory that was introduced early in research on the Maya collapse in the Classic period (Goodman 1897; Morley 1938; Spinden 1913; 1917) that gained support predominantly during the 1970s (Adams 1971; 1973; Cowgill 1964; Sabloff and Willey 1967; Sabloff 1973b; Rands et al. 1982). The invasion hypothesis stems from the first identification of Toltec influences at the site of Chichen Itza (Adams 1973:30). Research at the site of Ceibal bolstered an invasion hypothesis, leading J. Eric Thompson (1970) to propose the Putún hypothesis, that the Putún or Chontal Maya, the “Phoenicians of the New World”
in Thompson’s (1970:7) view, conquered parts of the Southern Lowlands during the Terminal Classic period. Although Kremer (1994) and Stuart (1993) argued against the evidence for invasion, the Putún hypothesis has garnered some support as a factor in the collapse (Adams 1973:32; Schele and Freidel 1990).

The specific evidence that supports the Putún hypothesis at the site of Ceibal appears in Terminal Classic epigraphy, iconography, architecture, and ceramics. The epigraphic and iconographic evidence center on five stelae associated with the radial pyramid Structure A-3 (Guenter 2014:189). According to Stela 11, sometime before the 10.0.0.0.0 period ending (AD 830) a foreign individual, Wat’ul K’atel arrived at Ceibal (Mathews and Willey 1991:58; Schele and Mathews 1998:182-184). Another monument, Stela 8, mentions the presence of a k’uhul Puj ajaw associated with a foreign “cattail reed” place, the Maya version of the Nahua tollan, once used to refer to the sites of Teotihuacan during the Classic period (Stuart 2000) and later Tula, but likely used to describe any large city in Mesoamerica (Schele and Mathews 1998:200-201).

Aside from the references to foreigners at the site of Ceibal, these stelae also bear unusual iconography, including individuals with moustaches and/or long hair, tzolkin glyphs surrounded by square cartouches, Central Mexican calendrical day signs, and Tlaloc masks that many scholars have related to a possible invasion from the Gulf Coast (Graham 1973:213; Guenter 2014:195-196; Thompson 1970:25). David Stuart (1993:337) has rejected this hypothesis, pointing out that the iconographic details of the scenes on the five stelae had strong roots in the Classic period and any distinctions are consistent with a trend toward greater diversity in carvings toward the end of the Late Classic period.
Archaeological data from the site of Ceibal have also been cited to support the invasion hypothesis. Adams (1973:31) noted similarities between Str. A-3 and the Transition Period in the northern Yucatán region (Sabloff and Willey 1967:322). Evidence from ceramics has proven more complicated to contextualize. Arguments focus on the introduction of fine orange wares into the Southern Lowlands, which largely replaced Classic period polychrome wares (Rice and Forsyth 2004). Thought to have been produced in the Lower Usumacinta basin, the abundant concentrations of fine orange ceramics in surface and near surface contexts at sites along the Upper Usumacinta and Pasión Rivers (e.g., Altar de Sacrificios, Ceibal, and Yaxchilán) have been used to support the hypothesis of an arrival of a group of Putún Maya to the region (Adams 1971:136; Sabloff and Willey 1967; Sabloff 1973a; Thompson 1970). Furthermore, Akira Kaneko (2009:99) relied on a concentration of fine orange ceramics, along with an analysis of lithics and graffiti from the Small Acropolis of Yaxchilán to propose a Putún invasion at the site during the Terminal Classic period. López Varela (1989:54-60), however, has argued that the appearance of abundant sherds of fine orange ware ceramics in the Great Plaza at the site of Yaxchilán alone do not support an invasion hypothesis.

Much of the confusion surrounding fine paste ceramics can be clarified by recognizing that Terminal Classic period fine orange and fine gray wares include a diverse range of pastes produced across the Lower, Upper Usumacinta, and Pasión River drainages, as well as adjacent regions of Campeche. Fine paste traditions were also not limited to the Terminal Classic and Postclassic periods. Sites near the site of Palenque and the Lower Usumacinta river of the Tabasco region developed fine paste ceramics as early as the Early Classic period (Rands and Rands 1965; Rands 1973), although they
were increasingly elaborated throughout the Murciélagos phase (AD 700–770) (Rands 1974). By the Balunté phase (AD 770–850), fine paste ceramics increased in frequency, reflecting foreign influences as well as indigenous and localized sources of manufacture (Rands 1974:38). One of the more common fine paste ceramics, the Chablekal group of fine gray ceramics, appears at the end of the Late Classic period (by approximately AD 750). Bishop and Rands (1982) have noted that these ceramics were produced at multiple loci, along the Lower Usumacinta River drainage of modern Tabasco (Cabadas-Báez, et al. 2017; Foias and Bishop 1997, 2007; Rands and Bishop 1982).

The subsequent fine gray ceramics of the Tres Naciones group have a distinct paste composition, were produced elsewhere, and exhibit restricted distribution ranges (Golden et al. forthcoming). In terms of paste composition, Tres Naciones group ceramics are similar to fine orange ceramics of the Altar group, which involved a re-firing step to produce their orange pastes (Bishop 2003:84). These two groups, Tres Naciones and Altar, define the onset of the Terminal Classic period in the region by approximately AD 850 (Muñoz 2006). As previously noted, these fine paste ceramics appear in relatively high densities on the surface of sites along the Upper Usumacinta and Pasió River drainage, including Yaxchilán, Altar de Sacrificios, and Ceibal but in low quantities at Piedras Negras (Muñoz 2006). The surmised non-local nature of these ceramics was the key assumption in the popularity of the Putún hypothesis during the 1970s.

However, undecorated and nondiagnostic sherds of fine orange ceramics can be impossible to assign to a specific group without detailed elemental, or Instrumental Neutron Activation Analysis of the paste. Ronald Bishop and Robert Rands have identified five compositional groups based on their sample of fine paste ceramics, four
inferred to have been produced at multiple loci along the Usumacinta river drainage, and one likely produced further upstream in Guatemala (Bishop 2003:84). Generally, the presence of traces of volcanic dust in the paste of some ceramics points to the extraction of clays along the Usumacinta River, while the absence of such particles suggests a production zone along the Pasión River, a tributary of the Usumacinta River that avoids the volcanic highlands (Bishop 2003; Bishop and Rands 1982; Bishop et al. 1982; Rands et al. 1982).

In Bishop’s (2003:86) analysis the Pabellón Molded-carved type, associated with the Altar group of ceramics, corresponds with the so-called “up-stream” compositional group, likely produced along the Pasión River. Based on this current understanding, the high density of such ceramics at sites of Ceibal and Altar de Sacrificios is due to proximity to the production source, rather than an invasion from the Gulf Coast. Indeed, Altar group ceramics can be considered a local innovation rather than a non-local intrusion. In contrast, fine orange ceramics associated with the Balancán and Silho groups have characteristic “down-stream” compositions based on the presence of volcanic particles in their pastes. These data would suggest that these later fine paste developments were produced along the Lower Usumacinta River. Bishop interprets the Balancán group as exhibiting continuity from the fine gray and fine black pottery of the Palenque region, in terms of paste composition and decoration, while the Silho group marks a shift toward the use of “delta-like” paste compositions (Bishop 2003:89). In this light, the majority of fine paste ceramics should be viewed as a natural progression from pottery developed in the region throughout the Late Classic period, and even the later introduction of the Silho group of ceramics merely involved an innovation that filled the vacuum left by the
political transformations of the Southern Maya Lowlands and the cessation of the production of polychrome ceramics.

**Economic Shifts**

Economic models have also been used to explain the Maya collapse in the Classic period as a political and economic collapse. An early proponent of the economic explanation was William Rathje (1973) who incorporated his views on General Systems Theory into his study. According to Rathje (1973), the Southern Maya Lowlands were made up of a core zone, centered primarily on the Central Petén region, as well as parts of southern Campeche. The buffer zone, in contrast, encircled the core zone and had access to different ecozones in the Northern Lowlands, the Gulf Coast, the Caribbean Sea, and the highlands to the south. The Classic period economic system thus relied on trade between the core and buffer zones.

In essence, Rathje (1973:453) argued that Late Classic period development within the buffer zone along with increasing competition from areas outside of the buffer zone (e.g., the Gulf Coast and the highlands), obviated the trade potential of the core area. These economic shifts resulted in decline and depopulation of the core area. This argument, however, fails to explain why parts of the buffer zone seem to have collapsed before the core area. Still, social network analysis of obsidian trade patterns, suggests that a shift from inland trade to coastal routes contributed to the collapse (Golitko et al. 2012). Archaeologists must consider whether these shifts were causes or effects of the collapse, as changes in settlement patterns followed by shifting trade to the coasts is a logical result of depopulation of inland areas.
Increasing Interregional Warfare

Research in the Petexbatun region has revealed a degree of warfare previously unrecognized in other parts of the Maya area. The scale and timing of this archaeological evidence has led Arthur Demarest and colleagues (1997) to propose that warfare among kingdoms played a significant role in the collapse of many of the sites of the Southern Lowlands. According to Demarest (2013), however, these processes must be viewed within the context of the intrinsic instability of the structure of Maya kingdoms, as well as the tenuous alliances between them. Adopting the perspective of “hyperintegration” from Kent Flannery (1972), Demarest (2013:25) noted that the increasing complexity of trade and exchange, along with the growth of an elite class and subsequent competition led to pronounced weaknesses in Maya polities. An offshoot of these processes was the increasing frequency and intensity of interpolity warfare, stemming from competition and unstable alliances (Demarest 2013:26). Although increasing interregional warfare is often cited as a cause of collapse, its strongest proponents underscore that warfare is not the underlying cause of collapse but one of the important catalysts that drives such processes.

The specific archaeological evidence for increasing warfare in the Petexbatun region has been documented at numerous archaeological sites in the region. The inhabitants of Dos Pilas expeditiously erected crude walls to protect the site epicenter (Demarest 2006; Demarest et al. 1997; Guenter 2014:68; Houston 1987; 1993). The builders of these walls had dismantled portions of the royal palace and repurposed stone from other buildings to hasten the protection of the civic-ceremonial core (Demarest 1993:104; Demarest et al. 1997; Houston 1987; Inomata 1997). Aguateca also suffered similar events, as the already defendable location of the site was further secured by the
construction of walls (Inomata 1997). The site was also quickly abandoned during an attack that involved the burning of structures and ultimately the rapid abandonment of elite households (Demarest 1993:106-109; Inomata 1997).

Defensive features were further documented at lower-ranked political centers, including Punta de Chimino where a canal or moat had been cut into a peninsula to form an inaccessible island (Demarest 1993:109-111). In domestic contexts at small hamlets such as Quim Chi Hilan, defensive walls were constructed to protect a small hilltop refuge (Van Tuerenhout 1996). Archaeologists have dated the construction of these features at Dos Pilas and Aguateca to the middle and end of the eighth century, marking the earliest sites to experience abandonment or collapse in the Southern Lowlands (Demarest 1993:106; Graham 1967:24-27; Guenter 2014:69), although the site of Punta de Chimino persisted into the ninth century (Demarest 1993:109-111).

The important trade center of Cancuen also suffered a violent end. By AD 800, the site was terminated, involving the defacing of monuments, burial of the royal palace, and assassination of fifty royal or noble men, women, and children, including the king and queen, who were deposited in two cisterns along with their full regalia (Demarest et al. 2016:159). Although evidence of trauma was noted on some of the remains, Demarest and colleagues (2016) suggest that the presence of elaborate burial goods imply that even during such a violent event, the royal and noble elite were treated with some level of respect. This termination event may have been spurred by a rebellion of Cancuen’s highland neighbors who had lost faith in the k’uhul ajaw but still believed that such individuals must be respected in death (Demarest et al. 2016:185-186).
Although archaeological evidence suggests a dramatic increase in warfare toward the end of the Late Classic period, epigraphic data is more ambiguous. In an analysis of 28 events of warfare recorded on the monuments of the site of Yaxchilán, Akira Kaneko (2009:63) identified an increase in the occurrence of warfare. During the reign of Shield Jaguar I, eight wars were recorded over a period of eighty years; during Bird Jaguar IV’s reign three wars over sixteen years, during Shield Jaguar IV’s reign ten wars over thirteen years, and finally during K’inich Tatb’u Skull III’s reign three wars over eight years. In particular, in AD 808, three wars transpired over three months. These data are likely incomplete due to the fragmentary epigraphic record. The inscriptions also do not differentiate between wars and battles; the latter can skew data to appear that warfare increased (Martin 2018).

Even if the number of wars did not necessarily increase during the Late Classic period, the nature of warfare may have shifted. Some researchers have suggested that a new, more destructive type of warfare emerged toward the end of the Late Classic period. Martin and Grube’s (1994) interpretation of a Mesoamerican hegemonic model of politics suggests that conquered states were not necessarily absorbed into the territory of the victor, but rather a form of indirect rule was established in which the original structure of the vanquished state persists under supervision. However, the economic consequences of such warfare likely involved the maintenance of a tribute relationship. In contrast, Nicholas Dunning and Timothy Beach have dubbed the Petexbatun region a “landscape of fear” during the end of the Late Classic period, in which previously established rules of warfare were abandoned (Demarest 2006:147). Unfortunately, this premise is impossible to test because the so-called rules of Maya warfare are poorly
understood. Warfare in any form is of course costly, but certain types of warfare may have led to a more challenging recovery. Unfortunately, in the Classic period context, the location of battles, whether they took place at prescribed battlefields on the edge of kingdoms’ territories or in population centers themselves is unknown. In other cases, carved monuments discuss the “axing” of a population center, notably in inscriptions from Palenque that state that Lakamha, or the epicenter of the site, was destroyed (Stuart and Stuart 2008).

Warfare centered on populated areas would have been especially destructive, and subsequent rebuilding would have required extensive resources. The fortifications constructed at site epicenters toward the end of the Late Classic period in the Petexbatun region, and the movement of some royal palaces to defendable hilltop locations as at Ceibal (Inomata et al. 2017) suggest that a shift in warfare may have taken place, specifically targeting site cores. The archaeological evidence from the palace at Piedras Negras and Lintel 10 from Yaxchilán also suggest an attack by the latter site in AD 808. However, warfare focused on the hinterlands of kingdoms could have been equally destructive. Rural or non-elite populations are sometimes considered not to have participated in warfare (Arkush 2011), but their locations at the periphery of kingdoms would have made commoners especially vulnerable to invading armies. Furthermore, invading armies may have targeted agricultural features for looting as well as to destroy the subsistence base of kingdoms. For the time being archaeologists can only speculate as to the nature of Maya warfare and whether strategies changed at any point in time.

Although evidence for changes in warfare is limited, the macropolitical context of Martin and Grube’s (2008) superstate model explains the rise in regionalism during the
eighth century. In fact, much of the crisis that transpired in the Petexbatun region can be linked to the defeat of Calakmul by warriors from Tikal in AD 695. Indeed, the Kanul dynasty at Calakmul had controlled the Pasión River region from AD 656 to 695, and the resulting vacuum after its decline may have sent the Petexbatun region into its crisis of interregional warfare (Douglas et al. 2016). Grube and Martin (2001:171) view AD 695 as a turning point in Classic period politics that led to the disintegration of the hegemonic power structures of Calakmul and Tikal. Although victorious against Calakmul, the rulers of Tikal were unable to establish a new infrastructure to incorporate Calakmul’s dominion over much of the Southern Lowlands. The eighth century, therefore, became a period of intense local competition among states, some declaring their own sovereignty at this time.

In this historical backdrop, the nature of warfare may have changed substantially. When Calakmul or Tikal, the largest Classic period states, influenced politics during the sixth and seventh centuries, warfare generally took place in the context of this macropolitical structure. Warfare during this period may have been supervised and somewhat limited by these hegemons. When a superstate defeated a smaller center, a retaliatory attack against the hegemon was unlikely, requiring multiple alliances. For example, when warriors from Calakmul invaded Palenque at the end of the sixth century and the beginning of the seventh century, the subsequent rulers of Palenque never mustered the resources to attack Calakmul. Still, the inscriptions of Palenque during K’ínich Janaab Pakal I and his successors’ reigns typically frame attacks against sites linked to Calakmul, like Santa Elena, as revenge against Calakmul (Stuart and Stuart 2008). After the disintegration of Calakmul, Palenque’s rulers shifted their focus toward
Toniná, essentially a peer in terms of its size and power (Martin and Grube 2008). A similar pattern takes place across the Western Lowlands, for example between the Yaxchilán and Piedras Negras polities. A single warfare event between such peers could have been devastating (even for the victors), and the pattern of pyrrhic victories, with one kingdom’s army defeating its rival only to collapse shortly after may reflect these processes.

**Intrapolity Crises**

In contrast to interregional warfare, intrapolity crises refer to political dilemmas that faced rulers and their subjects in the hinterlands surrounding the dynastic centers. J. Eric Thompson (1931:230; 1954; 1970) addressed one example of intrapolity crises in his theory of a peasant revolt, also advanced by George Brainerd (Brainerd 1954; Morley and Brainerd 1956). This argument relied on the assumption that rulers (or priests in Thompson’s view) forced commoners to construct their temples, labor in the fields, and provide tribute to support the elite. The commoners eventually revolted against the elites, destroying their ceremonial centers and returning to a smaller scale agrarian lifestyle in the wilderness.

As evidence for the peasant revolt hypothesis, Thompson cited the intentional destruction of Throne 1 at the site of Piedras Negras (Mason 1938:308; Satterthwaite 1936:87; Thompson 1954:89). More recent interpretations of this context, however, associate the destruction of the throne with an attack by the polity of Yaxchilán, recorded on that site’s final monument, Lintel 10, carved in AD 808 (Martin and Grube 2008:153). Other examples of iconoclasm have been documented throughout the Maya area.
(Ardelean 2008; Freidel 2016; O’Neill 2013; Schwake and Iannone 2016); however this destruction does not consistently target all members of the royal court, nor is it ubiquitous among Terminal Classic period monuments (Guenter 2014:324). Furthermore, assigning identity to the actors involved in such ritual activities may be impossible, as these individuals, may have been peasants, invaders from outside of the Maya area, or enemy kingdoms (Harrison-Buck 2016). In addition, Terminal Classic period deposits and burning of structures may not represent desecration, rather they could be part of ritual killing or abandonment of significant places. Finally, even researchers who entertain the possibilities for a peasant revolt generally frame these processes as responses to inaction on the part of rulers to external threats, such as drought or famine (Ardelean 2008; Guenter 2014:322; Iannone 2016).

A growing interest in the structure and integration of Classic Maya polities took place in the 1980s and 1990s, sparked by the decipherment of the glyphs. Linda Schele and David Freidel (1990) outlined a popular argument for the increasing power of non-royal elite individuals in the Yaxchilán polity during the Late Classic period. Further afield, research in the Las Sepulturas noble residential area at the site of Copán, focused on Str. 9N-82, or the “House of the Bacabs,” influenced Fash (1991:175–176) to suggest a nobles’ revolt. This argument interpreted the increasing appearance of powerful nobles at the end of the Late Classic period to an inherently weak, decentralized political system. Beyond a merely weakened political system, the transformations during the Terminal Classic period at Copán have been interpreted as a direct strategy on the part of secondary, peripheral nobles to withhold tribute payments to rulers at dynastic centers (Fash 1991; Fash et al. 2004). Other perspectives attribute decentralization to the natural
trajectory of expansion throughout the Late Classic period, where spheres of interaction shifted toward individuals outside of the royal court (Golden and Scherer 2013).

Epigraphic evidence seems to support this contention, based on the distribution of elite titles in inscriptions across time and space. Sarah Jackson (2005:83) has charted the number of monuments referring to non-royal elites over time, noting a clear pattern of increasing mentions between AD 600 and 775, with a sharp drop off at AD 800 (Houston and Inomata 2009:171). Houston and Stuart (2001:73-74), suggested three explanations for this evident increase in non-royal elite titles: 1) the pattern merely reflects an increase in the number of total monuments during the Late Classic period, 2) the pattern reflects a shift in political discourse, meaning that these nobles had existed throughout the Classic period but their representations increased over time, and 3) the pattern reflects a reality that more noble categories were established and more individuals were placed into these positions over time.

Jackson (2013:85) favors the second option, while Zender (2004:390) favors the first. According to Zender, a combination of sampling bias toward larger sites and Late Classic period surface monuments, higher populations, and higher numbers of monuments toward the end of the Late Classic period following the same distribution as that of elite titles over time results in misleading data. Indeed, Early Classic period and early Late Classic period monuments at Copán, Palenque, Tikal, and Yaxchilán are more significant in that they were produced in the context of lower populations and fewer monuments. Still, Jackson (2013:82-83) cautions against accepting the accuracy of retrospective texts that describe elite individuals before the seventh century, although she agrees that non-royal elite titles demonstrate genuine time depth. The regional
distribution of elite titles, however, is undeniably significant, as an overwhelming emphasis on non-royal individuals is evident across the Western Lowlands. Finally, Houston and Inomata (2009:172) note that noble titles seem to increase after antagonism between Tikal and Calakmul had subsided, and furthermore, that noble titles are almost completely absent from those two hegemons, although abundant noble palaces and residences have been documented within those polities. This evidence suggests that iconographic representations of nobles were indeed monitored and restricted at some sites.

Biró (2011) presents a nuanced discussion of the issue of the influence of nobles over time in his analysis of Western Lowland inscriptions. Like Jackson and Zender, Biró notes considerable time depth of non-royal titles on monuments, especially in the Western Lowlands. According to Biró’s interpretation, the earliest contemporary monuments that mention non-royal titles in the Western Lowlands are the unprovenanced Houston and Po panels (actually lintels), dating to the end of the fifth century AD, which depict a noble with an a’nab’ title (attested throughout the Lacanjá River region) subordinate to the ruler of the Ak’e dynasty. Crucially, these two monuments were commissioned by the noble individual himself and placed within the palace at the site he governed, rather than at the Ak’e dynastic center. Furthermore, these inscriptions establish the same characteristics of later monuments that mention non-royal elites (Biró 2011). Biró therefore agrees with Zender (2004), based on the Houston and Po panels as well as other inscriptions from the sixth and seventh centuries, that an increase in the number of representations of non-royal elites during the Late Classic period is due to an
overall increase in known monuments, and furthermore that even in the Early Classic period nobles had the power to commission and display their own monuments. Non-royal individuals were even represented on more public monuments from an early date, for example in AD 615 when an \textit{aj k’uhuan} was represented on a stela at Toniná (Monument 183) (Biró 2011:293). The distinction for Biró arises, however, when discussing changes in how and where non-royal elites and royal women are represented. Before the eighth century AD, non-royal elite are typically mentioned at their own sites, always in relation to the \textit{k’uhul ajaw} of a larger center. However, by the eighth century, non-royal elites and royal women are represented by themselves in public areas of dynastic centers as well as in some cases their own sites. Furthermore, non-royal elites are also shown as participants in period endings and accession ceremonies, rather than merely in military contexts (Biró 2011:163). Biró (2011), however, emphasizes that even since the beginning of the Late Classic period non-royal elites participated in such rituals but by the end of the Late Classic period such activities were finally displayed in public. Rather than implying a process of increasing decentralization and power sharing, Biró (2011:298) terms this new strategy on the part of royalty as “politics of incorporation” to engage with non-royal local leaders in the hinterlands of kingdoms, especially as new dynasties were being founded in the Western Lowlands, some of which relocated from the Central Petén.

Epigraphic evidence has revealed distinct strategies on the part of local rulers to respond to shifting allegiances. The most well-known example took place at Dos Pilas in the context of the macropolitical competition between Tikal and Calakmul. The Dos Pilas dynasty was established in AD 629 by a Tikal faction led by Balaj Chan K’awiil, the
four-year-old son of the Tikal ruler. In AD 649, Balaj Chan K’awiil shifted his support to Calakmul after being captured (Martin and Grube 2008). Simon Martin (2003) has noted another dramatic example at Moral Reforma. This site’s Stela 4 records various “headband-tying rituals associated with kingship, supported by competing kingdoms, first a local event in AD 661 involving Hawk Skull’s ascension, followed by a second ceremony in AD 662 supervised by Yuknoom Ch’een II of Calakmul, and finally a third headband-tying ritual supported by K’inich Kan B’alam II of Palenque. Martin’s (2003) interpretation suggests that local lords may have chosen or been forced to shift allegiance to competing dynasties depending on changes in regional politics.

At other times, local lords may have remained loyal to their overlords, choosing to abandon their sites temporarily. Dos Pilas, again, provides an example of such political maneuverings, when between AD 672 and 677 B’alaj Chan K’awiil was sent into exile when the Tikal polity reconquered the site. Biró (2011:115) also interprets a fragmentary clause from Piedras Negras Panel 4 as recording an unknown individual’s “return” to La Mar sometime in the middle seventh century, perhaps indicating the local ruler had fled in exile to the polity of Piedras Negras when Palenque appears to have influenced La Mar during this period.

Although the loyalty of local governors in relation to dynastic rulers was not guaranteed, any explanation of collapse that attributes these processes to a kind of “nobles’ revolt” must account for the challenges of a political recovery through most of the Southern Lowlands. Indeed, if a nobles’ revolt had been successful, recovery would have been expected to involve reoccupying elite and royal areas. Still, no emblem glyph sites were occupied through the Postclassic period (Chase and Chase 2006). Furthermore,
within sites and subregions, political reorganization shifted away from royal areas, focusing on other parts of sites (Child and Golden 2008). Therefore, the Classic period Maya collapse did not involve the recovery of institutions by middle level administrators, rather isolated attempts at reorganization by lower level communities, focused away from site cores. This apparent rejection of the Classic period system would not be expected by non-royal members of the dynastic courts who had previously benefited from this political structure.

The Demographic Collapse

As Scherer and Golden (2014) have observed, the political collapse of Classic period dynasties must be viewed as a separate process from the demographic decline that followed. Indeed, the degree and timing of demographic decline is the most variable aspect of the Classic period collapse and has led to the greatest amount of debate among Mayanists (Aimers 2007). From the perspective of the cessation of monuments and the archaeological evidence from dynastic centers, the initial period of collapse from AD 760–810 may have been sudden, while the occupation data from non-elite contexts and hinterland settlements shows a more gradual decline. Still, demographic decline took place across the Southern Lowlands by the Early Postclassic period with isolated settlements in some areas, in particular those places with access to permanent water sources, and reoccupation of some sites by the Late Postclassic period (Aimers 2007, 2014; Lucero 2015).

Any discussion, therefore, of the demographic decline must explain the absence of a recovery in most of the Southern Lowlands. In fact, population densities throughout
the Southern Lowlands, especially in the Petén region of Guatemala are still below population estimates of the Classic period (Canuto et al. 2018). Although the drought hypothesis has been touted as the only plausible scenario for a monocular explanation of the cessation of monuments and the subsequent demographic decline, in reality to explain fully the demographic changes the absence of a recovery must also be addressed. Even multidecadal droughts would have been temporary, and demographic recovery could have begun during the Early Postclassic period. Instead, recovery only began by the Late Postclassic period in some areas.

Some of the paleoclimatic data suggest that droughts may have persisted into the early twelfth century (Douglas et al. 2016). However, even in such extremes, some recovery would be expected after the initial collapse beginning in the eighth century, over a period of nearly four centuries. For this reason, Guenter (2014:9) refers to the Early Postclassic period as a “Dark Age,” even in the Northern Lowlands. As Peter Douglas and colleagues (2016:637) point out, such droughts would have forced any recovery to have been focused on the Usumacinta and Pasión River drainages that had sufficient surface water. Still little evidence for recovery is known from these areas.

Therefore, explaining the lack of a recovery raises the same concerns when explaining the initial collapse: multidecadal droughts played a role but could not have been the single cause. Recoveries after the deforestation of the Late Preclassic and Early Classic periods have led some archaeologists to suggest that forestry management and agricultural intensification may explain recoveries during the Late Classic period (Lucero 2018; McNeil 2010). After the political collapse of states in the Southern Lowlands, perhaps such techniques were no longer sustainable. Without the management and
centralized control of such landscape modifications, large, urban populations may not have been sustainable. However, one of the benefits of such landscape modifications, or landesque capital (Blaikie and Brookfield 1987; Brookfield 2001; Sen 1959), is that such features can be maintained with minimal effort after their initial construction. The distribution of such features outside of dynastic centers in the Upper Usumacinta region suggests that in some regions of the Southern Lowlands the control of such landesque capital was largely decentralized and monitored by local populations (Schroder et al. 2017). For such water management features and agricultural intensification to be forgotten, major disruptions would have been necessary. As farmers would have made up the majority of the Classic period population, such a disruption seems less likely than the cessation of writing systems and art styles that would have been more centralized and controlled by an elite class.

Economic changes, therefore, provide the best explanations for an absence of a recovery in the Southern Lowlands. Although shifts in trade networks have typically been posed as causes for the political collapse of dynastic centers, these shifts are better understood as effects of this collapse. The collapse of dynastic centers and the subsequent warfare that appears to have enveloped the region, especially within the Pasión and Usumacinta River drainages, long recognized as crucial trade corridors, would have disrupted such trade. If these regions became dangerous for merchants, trade would have bypassed such areas, shifting to the coasts. These economically-driven shifts explain the changes in settlement patterns, the fluorescence in the Northern Lowlands, and the rise of the Putún Maya. To explain the demographic collapse and lack of recovery in the Southern Lowlands, the most likely scenario is that the nature of the Maya economy had
changed to such an extent that even rural populations sought better opportunities elsewhere. Some populations, of course, remained behind, attempting to reestablish a political presence in parts of the Southern Lowlands, but even these groups ultimately made the choice to relocate. Agency, therefore, played a role in who decided to wait out the crisis and who chose to move on.

Earlier Periods of Political Transformation in the Southern Lowlands

Although the Classic period collapse in the Southern Lowlands has spurred the greatest scholarly and public interest, researchers have suggested that these processes were not unique to that period. Indeed, when collapse is viewed as a process rather than an event, history can be interpreted as a series of crises and instability. At times, societies are able to absorb such trauma and recover, while other times a more sustained collapse occurs. Processes associated with collapse certainly transpired after the Classic period, notably related to the Spanish conquest and other periods of colonization. However, crises also preceded the Classic period in some regions, although the effects of such collapses were not as widespread and were limited to specific regions, notably the late sixth to early seventh century hiatus at Tikal and the Protoclassic period collapse in the Mirador region. Based on these transformations over time, Joyce Marcus (1993; 1998) has proposed a dynamic model for archaic states that reflects periods of continuity disrupted by crises and discontinuity. These periods are especially important in the context of paleoclimatic data that correlates earlier droughts with abandonment or depopulation of some sites.
The Classic Period Hiatus

A decline in monument dedication across the Southern Lowlands at the end of the sixth century AD has been noted by a number of Mayanists (Coe 1966:86; Moholy-Nagy 2003; Morley 1938:333; Proskouriakoff 1950:111-112; Thompson 1954:55-56; Willey 1972). Gordon Willey (1972:417) famously termed this lack of inscriptions or Classic Maya hiatus as a “rehearsal for the collapse.” Willey (1972:418) noted that in the Northeast Petén, very few monuments recorded period endings from 9.5.0.0.0 to 9.8.0.0.0 (AD 534–593), and the known examples belong primarily to peripheral sites, including Cobá, Pusilha, Copán, and Toniná. Furthermore, building activity ceased at sites including Uaxactun, Tikal, and Altar de Sacrificios. The transition from Tzakol to Tepeu ceramic horizons also occurred during this time. Based on the evidence for Teotihuacan iconography and styles in the ceramics, architecture, and monuments of the Early Classic period Maya, Willey (1972:423) suggested that a withdrawal of Teotihuacan influence during the sixth century AD had an effect on precipitating the Classic period hiatus (Fash and Fash 1996).

More recently, the Classic period hiatus has been further linked to epigraphic and archaeological evidence from Tikal over a period of 125 years without monument dedication or major construction. Epigraphic evidence from Caracol documents an alliance with the Calakmul polity during the middle of the sixth century AD that resulted in a major defeat of the Tikal polity in AD 562 (Guenter 2002; Martin 2005; Schele and Freidel 1990:171-179). The hiatus may not have been restricted to Tikal, as Willey observed gaps in monument dedication across the Usumacinta region. Biró (2011:91) notes a cessation of monuments at the site of Yaxchilán from 537 to 688 (with one
monument dating to 613) and at the site of Piedras Negras from 539 to 608. However, the sites of Palenque and Toniná show continuity at this time. Thus, Biró (2011:94) concludes that the lack of monuments from the sites of Piedras Negras and Yaxchilán at this time is due to a combination of earlier monuments still being buried at the former and the common practice of re-use of early monuments at the latter.

The Classic period hiatus, therefore, remains a poorly understood period in Maya history. If occurring, the hiatus was primarily restricted to the Tikal polity and its allies, but Tikal maintained a degree of regional influence after its defeat in AD 562 (Guenter 2002). Willey was likely correct that the waning influence of the Teotihuacan polity, which appears to have been instrumental in Maya developments during the Early Classic period, contributed to the transformations that occurred at the end of the sixth century. Whatever the scale of the Classic period hiatus, the result was distinct from the later collapse of the ninth century. Although settlement patterns changed in some regions (Willey 1972), major depopulation or demographic decline did not coincide with these political processes. Despite drought and political crises, no major disruption took place in the Maya area at this time, and in fact a florescence followed, with local innovations and regionalism prevailing across the region.

**Protoclassic Period Transformations**

Evidence is sparse for periods preceding the widespread adoption of the Mayan writing system and iconography centered on political affairs. However, based on changes in settlement patterns and the depopulation and abandonment of some major centers at the end of the Late Preclassic period, some researchers have suggested that similar
processes associated with the Late Classic period collapse took place at an earlier time (Douglas et al. 2016; Hansen 2013). Although epigraphy is absent, other lines of evidence point to the likelihood of a localized collapse during the Late Preclassic or Protoclassic period. This evidence is limited to specific regions, particularly the Mirador region, the Usumacinta and Pasión River drainages and parts of Belize. Evidence for collapse on as large a scale as the Late Classic period collapse is absent; in fact, some sites, notably Tikal seem to have benefited from the vacuum created by the collapse of the El Mirador polity.

An especially precocious period of development and construction occurred in the Mirador region during the Late Preclassic period. Although texts are largely absent for this period and region, the scale and settlement patterns suggest that El Mirador had inherited the structure of a regional state from the nearby Nakbe polity, exercising a degree of influence across the landscape, noted especially by the long causeways or sacbeob that connected the region (Hansen 2011). However, Richard Hansen (2013) notes that in the final phase of construction of these causeways, the builders were covering these features in excessive amounts of stucco. Hansen interprets this evidence as an example of conspicuous consumption, in which the patrons of these sacbeob were attempting to convince their subjects that resources, such as the firewood needed to produce stucco, were abundant.

This conspicuous consumption is especially significant in light of data from the site of Copán that suggests a major period of deforestation during the Late Preclassic period (McNeil 2010). Other evidence for deforestation throughout the Middle and Late Preclassic periods has been found in the signs of erosion and soil deposition in lakes
between 1000/700 BC and AD 250 in Lake Salpetén and near the sites of Blue Creek and Cancuen (Anselmetti et al. 2007; Beach et al. 2006). These data agree that forest clearing occurred at scales greater than expected for the Late Preclassic period and at scales less than expected for the Late Classic period, despite some evidence for intense but short-lived deforestation near Cancuen. Although direct evidence is lacking from the Mirador region, these processes are assumed to be widespread across the Southern Lowlands at this time, especially in the context of the especially large population densities near the site of El Mirador. Thus, Hansen (2011) believes that deforestation was a contributing factor to explain the collapse of the El Mirador polity.

The ceramics of El Mirador suggest that the final occupation of the site was during the Protoclassic I phase, between approximately AD 150–175, although occupation of some other regions of the Southern Lowlands may have persisted until the middle to late third century (Brady et al. 1998; Douglas et al. 2016:636; Forsyth 1989; Žrařka et al. 2018). Ceibal experienced a period of decline starting around AD 300 (Inomata et al. 2017:1297), while Cerros showed signs of decline as early as AD 150–175 before the site was abandoned by AD 300 (Reese-Taylor and Walker 2002; Walker 1998). Takeshi Inomata and colleagues (2017) have collected the largest concentration of radiocarbon dates from a Maya site at Ceibal. Performing a Bayesian analysis and contextualizing these data with ceramic data, a refined site chronology suggests that similar processes of social instability and increasing warfare caused major declines in two separate periods, by AD 300 and later by AD 900, although in both cases populations persisted. The outcome of these two collapses differed: the Late Preclassic/Early Classic period collapse led to the foundation of a dynasty, spurred by outsiders associated with
the Tikal polity, while the Late/Terminal Classic period collapse led to the dissolution of these same dynasties.

Similar patterns are known from other regions, based on indirect evidence from fortified sites. Defensive features have been documented and associated with Late to Terminal Classic centers, as discussed in the Petexbatún region, but increasingly researchers have been recognizing the importance of such features as early as the Late Preclassic period. Although defensive walls can be difficult to assign to a specific period, often their context alongside other architecture can serve to date such walls.

The defensive embankment at the site of Becan was especially crucial in detecting the presence of such features during the Late Preclassic period (Webster 1974), but similar defenses have been dated to the Late Preclassic period at other sites including El Mirador, Edzna, Cerros, Muralla de León, Cival, Chaak Ak’al, and within the Upper Usumacinta River basin at hilltop sites like Zancudero, Macabilero, and El Infiernito (Estrada-Belli 2011; Golden et al. 2008; Graham 1967; Hansen 1990; Inomata et al. 2017:1296; Johnston 2006; Matheny 1983; Rice and Rice 1981; Scarborough 1983). In addition, some sites with defensive features, for example Punta de Chimino which consists of a moat feature, may have been first established in the Late Preclassic period and reoccupied in the Terminal Classic period (Bachand 2010; Demarest 2013). These data suggest the existence of a fragmented landscape in many parts of the Maya area at the end of the Late Preclassic period. As such, many of the developments of the Classic period can be attributed to the efforts of specific dynasties, including the Mutul dynasty at Tikal to consolidate power after the political crises of the Protoclassic period. Although patterns emerge when comparing the two collapses of the Late Preclassic and Terminal
Classic periods, the latter processes must be understood as unique in that they did not lead to a subsequent reorganization in the Southern Lowlands.

Discussion

The precise processes of the collapse of royal dynasties in the Southern Lowlands of the Maya area remain one of the great unresolved issues in Mesoamerican archaeology. The clear diversity of effects across the Southern Lowlands must be recognized in solving this question, and in fact rather than being viewed as an impediment to researchers, the wealth of data should be embraced. Still, patterns have clearly emerged in discussions of the Maya collapse, and indeed they echo certain understandings from other parts of the world that emphasize the importance of multicausal theories to explain political change. The Classic period Maya collapse in fact provides an opportunity to consider multiple causes and effects by breaking down the evidence from abundant sites, including dynastic capitals, secondary centers, and rural hamlets. Furthermore, the various waves of social transformation from collapse to reorganization or resilience acted differently across the region, which must be understood to contextualize the initial causes of collapse and how they were compounded over the subsequent centuries.

Any discussion of collapse must first account for what entity has collapsed. In some sense, the social transformations of the Terminal Classic period are one of the few examples of the collapse of elements of a great tradition. These elements include the erection of stone monuments displaying historical dates in the long count calendar as well as images of royalty, or a cult centered on the office of the divine king, the k’uhul ajaw.
Although this stela-altar cult was reinvigorated in parts of the Southern Lowlands during the ninth century, the Puuc region and the site of Chichen Itza during the tenth century, and briefly during the Late Postclassic period at Mayapan, ultimately attempts to revive this practice were not successful or desirable. The pattern of the cessation of dated monuments implies a three-stage collapse from the Western Lowlands to the southeast, and finally to the Northeast Petén region and the Northern Lowlands; however, a more fine-tuned understanding of the monumental record complicates this understanding of the Classic period collapse (Guenter 2014). Such an understanding suggests that most Classic period centers experienced a cessation of monuments around the turn of the ninth century, with reorganization taking place from the middle ninth century to the early tenth century at limited centers with monuments showing script obsolescence and foreign influences (Bíró 2011; Guenter 2014; Houston et al. 2003).

The primary issue in reconstructing the causes of the Classic period Maya collapse is reconciling this narrative from the monument record with sometimes contradicting demographic data. The proximate cause of the cessation of monuments is the loss of an elite scribal class and/or the inability of rulers and nobles to sponsor their works. To account for this issue, political causes must be sought, and as the scribal class were members of the non-royal elite, broader understandings of changes in the representation of the secondary elite are paramount in this discussion. This growing representation of secondary nobles on monuments is best explained by Zender’s (2004) observation that noble titles increased due to the general rise in the frequency of monument dedication. Still, these depictions were spatially restricted, occurring overwhelmingly more often in the Western Lowlands. In addition, although non-elite
titles and artistic depictions of such individuals are known from the Early Classic period, by the Late Classic period these secondary nobles were displayed publically and centrally alongside royalty at dynastic centers.

Furthermore, royalty and nobles share the same artistic spaces at secondary centers, especially at Bonampak, La Pasadita, and Chicozapote. Biro’s (2011) introduction of the concept of the politics of incorporation is useful. While many scholars highlight the growing decentralization of Maya states during the Terminal Classic period and that nobles challenged the power of the dynastic lords (Fash 1991; Golden and Scherer 2013; Hamblin and Pitcher 1980; Schele and Freidel 1990), I view the efforts of rulers like Shield Jaguar III and Bird Jaguar IV on the periphery of the Yaxchilán kingdom as an attempt to incorporate their frontiers, a strategy toward bureaucratization, which in Joseph Tainter’s (1988) terms would be viewed as an attempt at innovation in the face of growing complexity. Indeed, in this context, nobles’ revolt hypothesis, which relies on the nobles rejecting such attempts at politics of incorporation, does not match the evidence. In such a system, the power of the nobles relies on the existence of the k’uhul ajaw to legitimize the secondary elites. Such individuals would not reject such a system outright.

However, this politics of incorporation makes sense as an effect of growing decentralization relative to the non-elite populations of the peripheries of kingdoms. Therefore, the growing presence of non-royal elites on monuments toward the end of the Late Classic period seems to have been a royal strategy, again ultimately unsuccessful, to negotiate with surrounding communities. Perhaps these efforts were aimed to be too far-reaching; the kingdoms that embraced such politics in the Western Lowlands collapsed
first, while dynasties centered at Tikal and Calakmul persisted longer. Still, the Puuc region adds ambiguity to the situation, as increasing noble titles in that area corresponded with late monuments.

The Terminal Classic collapse, thus, provides a setting for the research at El Infiernito. The occupants of the site during the ninth century faced mounting crises associated with drought, warfare, and shifting economies. In this discussion, the precise causes of political fragmentation are less important; rather, the question at El Infiernito is what attempts its final occupants made to support a resilient community and what caused them ultimately to abandon the site. The following chapters outline how archaeological methods provided insight into these questions.
CHAPTER 4
The Usumacinta Region and Study Area

As one of the earliest regions of the Maya area to experience the cessation of monuments and earliest effects of the collapse, the Upper Usumacinta River Basin, like the Petexbatun region, provides rich archaeological and epigraphic data to discuss the Terminal Classic period. However, the epigraphic record is silent in some sites even by the final decade of the eighth century with only few texts known from the middle of the ninth century. To contextualize El Infiernito and the other sites documented in this research, I discuss the geography and environment of the region and the state of archaeological research within and adjacent to the study area. I also synthesize some of the epigraphic work in the Western Lowlands to interpret the place of middle level communities in the history and politics of the region.

Geography and Environment

The Usumacinta River is the largest river in Mesoamerica, located in southeastern Mexico and western Guatemala. The Usumacinta sub-region of the Maya area takes its name from this river and includes the river kingdoms of Piedras Negras and Yaxchilán. Mario Aliphat (1994) has compiled the most extensive study of the geography of the Upper Usumacinta region, linking the physical, cultural, and political landscapes during the Classic period. The course of the Usumacinta River between Piedras Negras and Yaxchilán (Upper Usumacinta River) is unique when compared to its environmental context upstream from Yaxchilán and its trajectory through the state of Tabasco to the Gulf of Mexico (Lower Usumacinta). According to Rands (1973:167–169), the Upper
Usumacinta Basin is the section of the river from its official beginning at the junction of the Pasión and Salinas (Chixoy) Rivers near the archaeological site of Altar de Sacrificios to its exit from the Boca del Cerro near Tenosique. After the Boca del Cerro, the Lower Usumacinta River follows a more gradual flow, meandering to the confluence with the Grijalva-Usumacinta River Delta and its mouth near Frontera, Tabasco at the Gulf of Mexico. Politically, the Upper Usumacinta River forms the modern border between Mexico and Guatemala, and once fully within Mexican territory, downstream from Piedras Negras, the river forms the border between the states of Tabasco, Chiapas, and later Campeche.

The use of the term Middle Usumacinta River has been used with less consistency. Rands (1973) defines this middle section as beginning at the Boca del Cerro and ending near Berlin’s (1956) survey near Tecolpan. This description places sites like Chinikiha and Pomoná well within the Middle Usumacinta River region but excludes Piedras Negras and sites further upstream (Adams and Culbert 1977; Liendo Stuardo 2005; López Bravo 2013). Other archaeologists (Dobereiner 2016; Golden et al. 2012; Scherer 2015) adopt the term Middle Usumacinta River to discuss surveyed areas surrounding Piedras Negras. Although such designations may seem arbitrary, the geographic distinctions between the Upper, Middle, and Lower Usumacinta Regions appear to have had direct influences on Classic period kingdoms, as the hinterlands of Pomoná, Chinikiha, and Palenque all lie within the Middle Usumacinta Region, while the hinterlands of Piedras Negras and Yaxchilán fall generally within the Upper Usumacinta.

Thus, the ambiguous definition of the Middle Usumacinta Region echoes the uncertain political landscape of the Classic period, with secondary sites like Laguna
Oscura and Flores Magón reflecting superficial influences from both Palenque and Piedras Negras. In fact, sites like Laguna Oscura, Flores Magón, and Chinikiha along the poorly defined geographic border between the Middle and Upper Usumacinta Rivers have at times been discussed as fairly autonomous centers (Liendo 2007b; Scherer and Golden 2012:74). Thus, placing Rancho Búfalo, Flores Magón, Laguna Oscura, and other sites near the Chocoljá River within the Middle Usumacinta Region seems appropriate. Still, for consistency I use the Upper Usumacinta Region designation to describe the majority of sites in this dissertation because they tend to be most proximal to Piedras Negras.

The physical landscape of the Upper Usumacinta River contrasts starkly with areas downstream. Between Arroyo El Chorro and the Busiljá River, the Usumacinta River drops approximately 40 m in elevation creating various rapids, the largest of which form the Raudal Anaite rapids and the Raudal El Chicozapote Rapids (Aliphat 1994:21). This geography is due to the location of the Usumacinta River as passing between a series of mountain ranges that form the foothills of the Sierra Madre de Chiapas; to the north is the Sierra del Lacandón range and to the south is the Sierra de la Cojolita. The Upper Usumacinta River Basin runs between these mountain ranges, with parallel valleys on either side of the Mexico and Guatemala border. The larger of these valleys is on the Mexican side of the border and unfortunately has no name (Aliphat calls it the Santa Clara syncline and sometimes the Busiljá River Valley), although it follows the modern Carretera Fronteriza. To the south of the Sierra de la Cojolita lies the Lacanjá Basin and the Santo Domingo Valley, historically the domains of the Classic period kingdoms of Sak Tz’i’, Lacanha, and Bonampak. A smaller range of hills bisects the Upper
Usumacinta River and the Busiljá River valley, which forms a smaller valley near the Santa Clara lagoon (Santa Clara syncline).

As Aliphat (1994:31) notes, this pattern of range (anticline) and valley (syncline) follows a consistent northwest-southeast orientation. The anticlines are periodically cut by perpendicular faults which create the rugged canyons, gaps, and passes that aided and continue to influence movement across the landscape. In fact, before the construction of the Carretera Fronteriza, these passes were crucial for accessing roads and settlements within the Santo Domingo Valley to the southwest (Dobereiner 2016:319). The Usumacinta River actually follows an anticline between Yaxchilán and the Boca del Cerro, rather than a syncline. Therefore, the curves of the Upper Usumacinta River, including the famous omega delimiting the site of Yaxchilán are not technically meanders; rather, they follow a stable geological block or fault determined by tectonics (Aliphat 1994:38). For the purposes of archaeological interpretation, this geology is important in that it establishes that the trajectory of the Upper Usumacinta River has not meandered significantly since the Classic period. This same natural fracture also prevents the creation of a floodplain, which is the reason behind the dramatic variation in the depth of the river from the wet to dry seasons.

The karstic landscape of the Usumacinta region, formed by the limestone bedrock also influences the physical geography. Aliphat (1994:59–69) defines 9 different types of landforms within the Upper Usumacinta basin: 1) karstic plateau, or mesetas at the tops of anticlines (e.g., the Bonampak anticline), 2) karstic upland with hummocks, the pitted, hilly topography most common in the region, typifying the hills between the Santa Clara syncline and the Upper Usumacinta anticline, and the location of the site of El Infiernito,
3) escarpment (15-30° slope), most clearly present along the Usumacinta River, within the steep cliffs through which the river passes, 4) slopes (6-15°), escarpments that are less inclined 5) karstic intermontane valleys, extensive lowland areas located within valley synclines, the largest of which include the El Cayo pocket, the Santa Clara lake area, and the Busiljá Valley, 6) structural plains, or wide valleys with flat relief beginning northeast of Yaxchilán and continuing south to the Pasión, Chixoy, and Lacantún Rivers, 7) bajos, low-lying, seasonal swamps, 8) sibal, marshes near lakes, and 9) lakes, including laguna Santa Clara in Mexico and Texcoco, Laguna Lacandón, Laguna Macabilero, La Pasadita, Laguneta Pozo Azul, Santa Maria, La Gardunza, and Laguna Mendoza in Guatemala.

Previous Research in the Study Area

Teobert Maler’s Expeditions (1895–1900)

Much of the region was first documented archaeologically at the end of the nineteenth century by the German explorer Teobert Maler. His travels took place from 1895 to 1900 and were first published in 1901 and 1903 in two volumes of Researches in the Central Portion of the Usumatsintla Valley (Maler 1901; 1903; Scherer and Golden 2012). These expeditions included some of the earliest documentation of Piedras Negras and Yaxchilán. Especially important to the history of Maya archaeology, Maler conducted reconnaissance of areas between the largest sites, although he still tended to favor sites with standing architecture and inscriptions. Maler’s drawings and photographs are some of the only record of some of these sites and monuments, although many of the sites have been relocated and investigated archaeologically. Some monuments that Maler
photographed have resurfaced in private collections and museums (Scherer and Golden 2012).

The sites directly pertinent to the current study all lie on the Mexican side of the Usumacinta River and were important allies of the kingdoms of Piedras Negras or Yaxchilán. Maler’s observations related to architecture and many of the monuments he photographed would later be used to identify these alliances (Chinchilla and Houston 1993; Zender 2002; Golden et al. 2008). Sites that formed part of the Piedras Negras kingdom (or at least the extent of the polity according to the site’s Late Classic period rulers), included La Mar and El Cayo. Other sites like Budsilha, El Chile, and Anaite I that had no monuments can be safely (in the case of Budsilha) or tentatively (in the case of the latter two) assigned to Piedras Negras based on proximity and architectural similarities (when drawings are available). The only confirmed Yaxchilán-affiliated site documented by Maler included El Chicozapote, based off the inscriptions from its lintels, but perhaps Anaite II was also part of the Yaxchilán kingdom due to proximity (Golden et al. 2008).

In Maler’s time, the archaeological site of La Mar was part of a milpa and easily visible (Maler 1903:93). Maler documented four structures surrounding a central plaza, flanked by twin pyramids (one to the east and the other to the west). Despite documenting no standing superstructures, Maler did recover at least one lintel with an incised circle and cross motif. In the central plaza, Maler encountered fragments of Stela 1 (part of which is now in the Tuxtla Gutierrez Regional Museum of Chiapas) and Stela 2. Two other stelae are also known from the site, including Stela 3 now in the Los Angeles County Museum of Art (Golden and Scherer 2015a). Based on these stelae, La Mar has
been associated with the placename Pe’tuun or Pe’ptuun, a Maya kingdom with strong ties to the Piedras Negras kingdom during the Late Classic period, which is also mentioned in antagonistic terms at Sak Tz’i’ and Toniná, the latter implying an earlier alliance between the kingdoms of La Mar and Palenque during the seventh century (Bíró 2011; Martin and Grube 2008; Zender 2002). Three kilometers to the east of La Mar lies Budsilha, a smaller settlement that is typically discussed in terms of an extension or an outlier of La Mar (Scherer 2015). Maler was drawn to Budsilha based on accounts of a partially collapsed superstructure, Structure D6-1, a double-chambered “community house,” likely a noble palace or residence (Scherer and Golden 2012). Surrounding Structure D6-1, Maler also observed further mounds, as well as a high “temple” with large, uncarved stones.

To the southeast, along the banks of the Usumacinta River, Maler was taken to El Cayo. The main structure of this site was a large 15 m high platform with a monumental stairway surmounted by five north-facing temple superstructures. The fourth temple had a lintel with an incised cross similar to the one documented at La Mar, and Stela 3 was inside the chamber of the central temple. On the western terrace of the substructure, Maler located Stelae 1 and 2, as well as Panel 1 (incorrectly identified as a lintel) and an eroded altar in the central plaza in front of the main structure. Epigraphers have since identified El Cayo with the placename Yax Nil, like La Mar an important ally of Piedras Negras during the Late Classic period (Chinchilla and Houston 1993). Although Panel 1 complicates this relationship, suggesting that Sak Tz’i’ also maintained some level of control over the site (Bíró 2005).
Upstream from El Cayo, Maler registered three more sites on or near the Usumacinta River, including El Chile, El Chicozapote, and Anaite II (in that order approaching Yaxchilán). El Chile consisted of a main structure similar to that of El Cayo, a north-facing, large substructure topped with two, single-chamber superstructures. Although the structures’ lintels lay among the structural collapse, they were uncarved. To avoid the Chicozapote or Anaite rapids further upstream, Maler moved inland toward the Laguna Santa Clara (also sometimes named Anaite) where he documented Anaite II, “a quite extensive ruined city” to the southwest of the lagoon (Maler 1903:98). A smaller site, Anaite I was located 3 km inland from the confluence of the Anaite stream and the Usumacinta River. Between Anaite I and El Chile, near the Usumacinta River, Maler also explored the archaeological site of Chicozapote, whose main structure is a Yaxchilán-style palace, composed of two chambers with four exterior entrances. Each doorway had an inscribed lintel, showing scenes of the Chicozapote sajal, or local governor, and Shield Jaguar III of Yaxchilán (Miller and Brittenham 2013; Scherer and Golden 2012).

**The Penn Museum Piedras Negras Project (1931–1939)**

Although Morley (1929) visited the site following Maler’s expeditions, Piedras Negras did not become the focus of a larger scale archaeological project until the 1930s, when J. Alden Mason directed a project as curator of the American Section of the University of Pennsylvania Museum. Mason was later joined by Linton Satterthwaite, Jr., who served as director of the project from 1932 to 1939 (Weeks, Hill, and Golden 2005:1). The focus of the project was on the documentation and recovery of stone monuments as well as the excavation of monumental architecture to develop an
architectural sequence for the site, as an understanding of Mesoamerican chronology and calendrics was first emerging. As one of the first major archaeological projects in the Maya area (along with other work by the Carnegie Institute of Washington elsewhere), the Piedras Negras project set the stage for archaeological methodology in the region for decades to come (Black 1990). Much of Satterthwaite’s methodology for numbering structures and excavation lots would be adopted and refined in later work by the University of Pennsylvania Museum at Caracol and Tikal, establishing a protocol still employed to this day by archaeologists working in the Maya area (Weeks, Hill, and Golden 2005). Furthermore, Satterthwaite’s efforts to interpret architectural sequences and building function proved groundbreaking and influential, especially in his investigations of the palaces in the Acropolis and the ballcourt. Elsewhere, Satterthwaite hesitates assigning function to buildings when he deems such interpretations unsuitable (Weeks, Hill, and Golden 2005). Finally, Mary Butler’s analysis of the site’s ceramics, when integrated with Satterthwaite’s understanding of architectural sequences and long counts from associated monuments was pivotal in determining site chronology (Weeks, Hill, and Golden 2005:3).

Although ahead of its time in many ways, the Piedras Negras project was fraught with challenges of recording and presentation of data, even by Satterthwaite’s own admission, and publication was limited to two volumes: the Preliminary Papers and the Architecture series, of which fewer than ten copies were in existence before they were compiled in the 2005 volume *Piedras Negras Archaeology, 1931-1939* (Weeks, Hill, and Golden 2005:5). Still, the Piedras Negras project would continue to produce data that would later inform further groundbreaking studies. These works include George Holley’s
(1983) doctoral dissertation, which established a type-variety system for the site’s ceramics, William Coe’s (1959) doctoral dissertation on the site’s caches and burials, and Tatiana Proskouriakoff’s (1950, 1960, 1961) observation that monuments at Piedras Negras recorded the births, deaths, and accessions of Maya rulers, thus recording history and actual living individuals.


In 1997, archaeologists returned to Piedras Negras after the official end of the 30-year Guatemalan civil war. This project, co-directed by Stephen Houston and Hector Escobedo continued investigations of monumental architecture as well as following changing trends in the field by expanding research to include excavations of households within the site core and settlement survey, the latter led by David Webster (Weeks, Hill, and Golden 2005:2-3). The Brigham Young University-Universidad del Valle de Guatemala (BYU-UVG) project produced numerous dissertations, including topics on Maya perceptions of time and chronology (Golden 2002), lithic production (Hruby 2006), the use of sweathouses (Child 2006), diet and faunal remains (Emery 2007), population and settlement (Nelson 2005), and burials (Scherer 2007) (Scherer et al. 2018).

An important accomplishment of the BYU-UVG was the documentation of Preclassic period occupation and construction at the site and the establishment of Preclassic period ceramic phases. This occupation centered primarily on the South Group of the site, where Middle Preclassic ceramics were recovered in thin lenses above bedrock, corresponding to the Hol ceramic phase (500–300 BC) (Houston et al. 2003:219; Muñoz 2002; 2004; 2006). The Late Preclassic period is more elusive,
although an increasing density of Protoclassic period I ceramics suggests an occupation extending into the Early Classic period. These data may suggest either noncontinuous occupations throughout the Preclassic period, or constant small populations (Houston et al. 2003:220).

Impressive construction activity took place during the Preclassic period under Pyramid R-3 and Platform R-32, where Middle Preclassic period construction (R-3-3rd) was followed by a Late Preclassic period structure (R-3-2nd), amounting to a total of 3 m in height. Houston and colleagues (2003:222) interpret these structures as an unparalleled investment in the construction of public space in the Usumacinta region. These patterns of a small village extend into the Early Classic period, where Piedras Negras artisans began to develop their own local varieties of Petén ceramics (Muñoz 2004). Finally, by the end of the Early Classic period (fifth to sixth centuries) Piedras Negras grew suddenly over a period of a century into a “city-focused settlement” (Houston et al. 2003:225), accompanied by only “modest amounts of surrounding settlement” (Houston et al. 2003:224). Only by the Late Classic period (around AD 600) did populations expand into the periphery (Houston et al. 2003:225).

To explain the Piedras Negras kingdom’s control of the region during the Early Classic period, Houston and colleagues (2003) explore the concept of moral authority and moral community (Fitzsimmons 2015). According to such a theory, a society that does not rely on legal codes, enforcement, and coercion can revolve around a “moral object,” such as the Classic period Maya k’uhul ajaw, whose behavior establishes a moral community of “values and reciprocal obligations” manifested through public and private ritual (Houston et al. 2003:232). Houston and colleagues assign the settlement changes
within the Piedras Negras kingdom to specific royal strategies of community-building during the Early Classic period and organized population movement to resettle the surrounding landscape during the Late Classic period. Golden and Scherer (2013) approach the issues of settlement pattern change by applying conceptions of generalized social trust from political science. In their model, community-building during the Early Classic period at Piedras Negras was more conducive to harboring trust among its residents. In contrast, population expansions during the Late Classic period hampered trust building or at least shifted the focus of such mechanisms toward non-royal individuals beyond the royal court of Piedras Negras. Golden and colleagues (2016) do not deny the possibility of coercive strategies in these settlement shifts, but they contend that coercion alone cannot explain such changes.

These settlement pattern changes within the kingdom of Piedras Negras provided an opportunity for archaeologists to examine the issue of population estimates in the Western lowlands. Zachary Nelson (2005) approached this question through an analysis of settlement patterns, architecture, ceramics, and agricultural features. Houston and colleagues (2003:217) discuss how archaeologists can reconstruct population estimates of sites in the Maya area by two means: first, based on structure counts, and second, by using the number of burials as a proxy for the living population (Wood et al. 1992). Both methods are unreliable, and Nelson (2005) favors discussing population density in terms of structures per square kilometer, which can then be translated to people per square kilometer according to the researcher’s methodology and assumptions based on analogy (Rice and Culbert 1990). Not all structures were residential, nor were they all necessarily
occupied at the same time, and structure size does not necessarily pertain to the number of individuals occupying said residence (Nelson 2005:136).

Still, despite the uncertainties in estimating site population, even the most liberal methodologies suggest that the site core of Piedras Negras (at its height) was home to no more than 5,000 individuals, and likely far fewer (Houston et al. 2003:217). The density of structures within the core of Piedras Negras, based on 502 structures within a 0.97 square kilometer area (the mapped portion of the site core), amounts to between 517 and 518 structures per square kilometer and a population of 2,811 people (using the ethnographic analogy of 5.6 people per structure) or nearly 2,898 people per square kilometer.

Although this methodology provides a high density, the total number of people, keeping in mind that this value is the absolute maximum based on all structures being residential and occupied at the same time, is low. In reality, Nelson (2005) suggests that a more realistic population was 2,653 after omitting non-residential structures. However, this estimate still assumes that all structures within a patio group were residential and home to 5-6 people, while Nelson (2005:141) favors viewing the patio group as the fundamental proxy for a household, which would result in an estimate of 1,050 people based on 10 people per patio group. These relatively small populations suggest that a state based on moral authority or trust would have been feasible.

The BYU-UVG project also resulted in a more complete understanding of burial practices at the site of Piedras Negras, expanding off William Coe’s (1959) early analysis of burial and cache contexts. Out of a total of 118 burials consisting of 128 individuals as of 2003 (Houston et al. 2003b:115), the majority consisted of the “humble dead” with
few offerings, placed in construction fill or sometimes with more formal cists, primarily in residential contexts. Even the remains of the elite were often unaccompanied by burial goods at Piedras Negras. Some exceptions include offerings of ceramics or pyrite mirrors (such as Burial 5, excavated by the University of Pennsylvania Museum project in the 1930s) (Scherer 2015:135). Fairly rich burials, including Burial 5 (Ruler 3, K’ínich Yo’nal Ahk II) and Burial 13 (the probable resting place of Ruler 4) were accompanied by “costume jewelry” (Houston et al. 2003b:122): clay-shaped replicas of Spondylus shell beads in Burial 5 and clay beads painted to mimic jade in Burial 13 (Barrientos et al. 1997; Butler 2005:128; Coe 1959; Golden et al. 2012:15).

Of the known burials at Piedras Negras, two tombs may represent noble individuals, including Burial 45 and Burial 77 (Houston et al. 2003b:125-126). The latter, Burial 77 may represent a sajal based on the corresponding panel disturbed by the Penn project, which although highly eroded is reminiscent of a style of mortuary monument associated with sajalob in the Usumacinta region (Bíró 2011). Houston and colleagues (2003b:127) observe that such noble tombs may represent a certain level of non-royal elite autonomy during the Yaxche ceramic phase (AD 620–750).

Finally, excavations at Piedras Negras have uncovered five royal burials, sometimes identified by accompanying inscriptions (Burial 5) or based on size, architectural context, wealth, the presence of sting-ray spines, jewelry (pectorals, earspools, or sewn on to clothing), heirlooms, access to niches or shelving, and in two cases the presence of the bodies of sacrificed younger individuals (Burials 5 and 13) (Houston et al. 2003:127-132). Royal tombs were typically interred in accessible areas, meant to be reopened and revisited for specific burning rituals, documented in Burials 10
and 13 (Houston et al. 1998:19) as well as described retrospectively on Panel 3 (Houston et al. 1999:13; Martin and Grube 2008), contrasting with the known tombs at Yaxchilán, which were traditionally placed beneath architecture and not meant to be entered (García Moll 1996; 2004; Golden et al. 2012:264).

The earlier Penn project had documented Postclassic period activity at the site in the form of Lacandón incense burners that demonstrated repeated pilgrimage to the site even into Maler’s time. Furthermore, Proskouriakoff (1944) had linked a jade head figurine recording Piedras Negras Ruler 3’s accession in AD 687 that had been dredged from the great cenote at Chichen Itza to a pilgrimage event sometime during the Postclassic period. The BYU-UVG project brought to light more evidence of Terminal Classic and Postclassic period activity at Piedras Negras. Two Yucatecan-style red-slipped plates, assigned to the Silho Fine Orange group of the Early Postclassic period, depicting a crocodile or caiman, possibly a bee, and abstract geometric motifs were recovered from a cache within the collapse of the sweatbath, Structure P-7 (Child and Golden 2008; Muñoz 2006:160).

Building off the work of the University of Pennsylvania Museum project, which documented the destruction of Throne 1 in the Acropolis during the early ninth century, the BYU-UVG project encountered evidence that some of the buildings associated with the palace were burned at the same time (Houston et al. 2003:228). Still, these events, likely associated with Yaxchilán’s attack and capture of Piedras Negras Ruler 7 in AD 808 and the subsequent abandonment of the site, did not mark the end of occupation of the palace. Child and Golden (2008:80–84) discuss the continued use of the buildings of
the Acropolis into the Terminal Classic period, either by elite survivors of the royal court or non-elite households residing in previously royal space.

This reoccupation, however, marked a significant contrast in the use of the Acropolis, as maintenance of royal architecture ceased and ritual space became profane (Child and Golden 2008:82; Golden 2002; Houston et al. 2003:227). The most notable evidence for these processes was documented in the restricted, royal sweatbath, Structure J-17, which became a garbage dump between AD 808 and 840, following a pattern of abandonment of sweatbaths across the site early in the ninth century (Child and Golden 2008:82). In contrast, Court 4 of the palace remained occupied as a non-royal residence, amidst collapsing structures, including Structure J-24, which collapsed before AD 810 (Golden 2002:300). Structures J-33 and J-25 were constructed shortly after, reusing the finely-cut masonry of earlier structures.

Child and Golden (2008:83) describe the living conditions of the Acropolis during the Terminal Classic period as “squalid,” as alleyways were filled with thick middens of ceramics, animal bones, human remains, and refuse relating to lithic production, food preparation, and other domestic activities littered the living surfaces – none of which was evident during the Late Classic period when the area was occupied as a royal residence. Finally, the burials in Court 4 were unaccompanied by burial goods that would assign the individuals an elevated status, even though jade and *Spondylus* shell objects were discarded in the aforementioned middens. No evidence of use was documented after the end of the ninth century, when Structures J-33 and J-25 were ritually terminated and abandoned (Child and Golden 2008:83; Golden 2002:302).
While Child and Golden (2008:84-86) contend that the activities within the acropolis underscore a major shift away from its royal design, evidence from the South Group suggests that some form of dynastic renewal or reorganization took place. Around the same period of AD 810–840, as the acropolis was being reconceived, Structure R-8-1st was constructed on top of the patio that formed the earliest sweatbath and ballcourt complex at Piedras Negras (Child and Golden 2008:86). This placement may have been part of an intentional strategy to link the Structure R-8-1st household with the most important section of the site associated with public and royal ritual during the Early Classic and Late Classic periods, or it may have been chosen merely because of its ample, unused (at the time of the Terminal Classic period) space (Child and Golden 2008:86). Structure R-8-1st differed from the Terminal Classic period structures of the Acropolis; although the bench and columns were crudely constructed of rough stones, the area was kept clean, and refuse was deposited surrounding the nearby ballcourt, Structure R-11. Despite this late attempt at the creation of Terminal Classic period public space, Structure R-8-1st was abandoned around the same time as the structures of the acropolis, by the end of the ninth century.

Investigations outside of the site core of Piedras Negras formed some of the groundwork for later projects, including the Proyecto Regional Arqueologico Sierra del Lacandón (PRASL) and the Proyecto Paisaje Piedras Negras-Yaxchilán (PPPNY). As early as 1998, archaeologists from the BYU-UVG project conducted a reconnaissance of La Pasadita, previously visited and mapped by Ian Graham in 1971. Like Chicozapote, documented by Maler at the end of the nineteenth century, La Pasadita was a Late Classic period subsidiary site of Yaxchilán; located, in fact, near the frontier between the
kingdoms of Yaxchilán and Piedras Negras (Golden 1999:2). Also similar to Chicozapote, La Pasadita is known for two carved lintels depicting Bird Jaguar IV and his *sajal* Tiloom during the late eighth century, as well as partially preserved murals.

Charles Golden (1999:7) noted that the majority of settlement within 2 km of La Pasadita was focused on hilltops. The main group of the site lies on top of high cliffs surrounding a small, deep lake (Golden 1999:7). In contrast, valley settlement pattern is sparse and tended to be built on terraces at the base or the sides of hills. The karst landscape is riddled with caves, chasms, and cliffs that were incorporated into the settlement plan; the majority of caves in particular had ceramic offerings (Golden 1999:9). The main group of La Pasadita, as mapped by Ian Graham, occupies a large U-shaped hill with four local summits, of which three show construction. The largest architectural cluster (including the main structure where the lintels and murals were located) is at the northwesternmost summit, although other large (taller than 2 m) structures and patio groups lie on top of the other local summits. Golden (1999:7) also noted a collapsed vaulted structure associated with three caves in the valley to the southwest of the main group.

The settlement surrounding La Pasadita contrasts sharply with the settlement near Piedras Negras, and even to the south of La Pasadita (Golden 1999:10). Approaching La Pasadita from the south, large structures between 3 and 5 m high are located nearly continuously across the valley floor, while near La Pasadita valley structures are far more uncommon. According to David Webster (cited in Golden 1999:10), settlement near Piedras Negras tended to avoid hilltops and instead focused on the lower slopes of hillsides and the valley floor.
Unfortunately, the only chronological data related to the site (other than the inscriptions) was recovered from three caves and abundant looters’ pits within the main group. These caves contained ceramics from the Late Preclassic, the Protoclassic, Early Classic, and Late Classic periods, suggesting a long ritual use for the area. Looter’s pits reveal at most two phases of construction during the Late Classic period, indicating a rapid burst of construction likely corresponding to the reign of the sajal Tiloom (Golden 1999:12). Golden (1999:15), at the time, hesitated to attribute a defensive purpose to the site, although he confirmed that La Pasadita was certainly defendable and could have partially functioned to guard the valleys to the south, where settlement was less concerned with occupying inaccessible areas.

Proyecto Arqueológico El Cayo

After Maler’s (1903) documentation of El Cayo at the end of the nineteenth century, the site received occasional visits throughout the early twentieth century, including by Linton Satterthwaite and Sylvanus Morley who stopped by on the way to Piedras Negras (Mathews and Aliphat 1992:2). The first archaeological studies were undertaken in 1963 and 1965 by the New World Archaeological Foundation, under the direction of Thomas Lee. These efforts consisted primarily in surveying and mapping outlying areas of the site, as well as excavations in the recently documented San Pablo Cave (Lee and Hayden 1988).

The Proyecto Arqueológico El Cayo lasted from 1992 to 1993. This project, directed by Peter Mathews and Mario Aliphat, renamed El Cayo’s 3 architectural complexes the North Group (the largest compound at the site first documented by Maler),
the South Group (first described by Lee to the south of San Pablo Cave), and the Central Group (also first noted by Lee). Mathews and Aliphat (1992:5) also observed significant architecture across the Usumacinta River in Guatemala, consisting of a structure comparable in size to the North Group with another mound delimiting a large plaza. Archaeologists also documented 12 caves with cultural remains and relocated the archaeological site of El Chile. Although Maler had stated that the North Group was oriented due north, the actual orientation is approximately 163–164°, more closely matching the typical northwest-southeast design of Late Classic period sites in the region.

As described by Mathews and Aliphat (1992), the North Group consists of 16–17 structures, covering an area of 110 x 120 m, with the highest point reaching 28 m above the adjacent plaza. Maler’s drawing of this area focused exclusively on the main structure (Structure F); however, this main complex consists of Structure F along with four additional pyramidal structures, with Structure F facing northwest toward the plaza. The additional pyramids, Structures A, C, and D lie to the northeast of the plaza and overlook Structure E, on the opposite (southwestern) side of the plaza. Maler’s drawing of Structure F also simplified its 5 superstructures. The three superstructures from southwest to northeast match Maler’s description as vaulted buildings with two entrances on their northwestern sides. The two additional superstructures to the northeast are larger and may actually have doorways facing to the southeast. Although El Cayo had suffered extensive looting primarily during the 1960s, Mathews and colleagues (1992:19-20) were able to document some of the site’s monuments, including Stelae 1 and 3, and Lintel 2.

All excavations focused on the North Group of El Cayo. The majority of ceramics dated to the Late Classic period Tepeu 1 and Tepeu 2 horizons, although sherds
belonging to the Chicanel horizon of the Late Preclassic period were also documented, generally mixed with Late Classic period fill. Early Classic period Tzakol horizon ceramics were also recovered in small quantities. Terminal Classic period ceramics consisted of Altar Fine Orange group ceramics, with other fine paste wares including Balancan groups and Tres Naciones fine gray. Excavations also uncovered Altar 4, which depicts the *sajal* Aj Chak Wayab’ K’utim in AD 731, engaged in a scattering ritual (Bíró 2011:139). This same *sajal* is mentioned on Piedras Negras Stela 2. In 1997, members of the Proyecto Arqueológico El Cayo attempted to relocate Altar 4 to the archaeology museum in Frontera Corozal, leading to an altercation that effectively ended research at the site (Hoopes 1997; Mathews 2007). According to locals, Altar 4 is currently held in a church within the community of Lázaro Cárdenas.

**Proyecto Regional Arqueológico Sierra del Lacandón (2004–2010)**

Following the BYU-UVG Piedras Negras project, Charles Golden and Andrew Scherer continued research on the Guatemalan side of the Usumacinta River between Piedras Negras and Yaxchilán under the auspices of the Proyecto Regional Arqueológico Sierra del Lacandón (PRASL), co-directed at various times by Arturo René Muñoz, Luis Castillo, Luis Alberto Romero, Rosaura Vásquez, Joel Palka, Ana Lucia Arroyave, and Luz Midilia Marroquín Franco. The primary goal was to understand the borders between adjacent Maya kingdoms, whether such areas were tightly controlled or more autonomous (Golden and Scherer 2006:1). The borders between Piedras Negras and Yaxchilán were chosen specifically because of the archaeologists’ experience in the area, the extensive historical epigraphic data from the region, and the detailed archaeological
research that had taken place at the two major archaeological sites. As a result, the PRASL succeeded in rediscovering known sites in the region, as well as documenting sites previously unknown archaeologically, despite the complications of working in a geographically and politically remote area (Golden and Scherer 2006:2).

Although the primary research questions pertained to the Classic period political landscape of the region, a better understanding of the Upper Usumacinta Basin’s Preclassic period settlement patterns also became a focus of the project. These investigations centered on three almost entirely Preclassic period sites: Macabilero, Zancudero, La Técnica, and Fideo. Macabilero was first documented by Satterthwaite as part of the University of Pennsylvania Museum Piedras Negras project of the 1930s and was later visited and mapped by Edwin Shook (1998) and then Luis Romero (2004). Today, Omar Alcover is conducting ongoing survey and excavations at the site. Macabilero is perched on top of a high escarpment on the eastern side of the Usumacinta River, opposite El Cayo in Mexico. Originally thought to have been a defensive site related to Classic period El Cayo, Macabilero actually appears to date almost entirely to the Late Preclassic period. The hill itself was heavily modified during the Late Preclassic period by constructing at least six high terraces of megalithic blocks of dry masonry. At the summit lie at least 11 structures forming perhaps a small ceremonial center.

A similar site, Zancudero, located approximately 5 km to the southeast of Yaxchilán, may have also served as a type of Preclassic hilltop fortress. The site centers around a 90 m hill topped with a series of low platforms (Golden and Scherer 2006:12), with some settlement near the base of the hill. Three quarters of the circumference of the base of the hill is further surrounded by a 4–5 m high stone wall, running approximately
800 m long. The remaining portion of the base of the hill is guarded by swampland and the Arroyo Yaxchilán. Although the wall itself has not been securely dated, Late Classic ceramic sherds only appear in small quantities in the humus in other parts of the site, and the majority of materials date to the Late Preclassic period (Golden and Scherer 2006:12). The contrast between the small scale of settlement and the monumental defensive wall at Zancudero is remarkable, and although the commanding views upriver to the south and valleys to the north would have benefited the strategic location of Yaxchilán, the purpose of such a site during the Late Preclassic period is less obvious (Golden and Scherer 2006:12).

Two additional sites, Fideo and La Técnica, provide a different physical context for Preclassic period settlement in the region. Unlike Macabilero and Zancudero, Fideo and La Técnica have significant ceremonial centers, located in low-lying valley areas (Golden et al. 2008). The center of Fideo is made up of two small pyramids, while La Técnica exhibits one of the only E-groups known from the Upper Usumacinta region (another E-group may be located at La Mar) (Dobereiner 2016; Golden and Scherer 2006:7; Golden et al. 2008). The construction of La Técnica is unique in the area, with no evidence of facing stones being used. Instead, river cobbles appear to have been used for fill as well as for facing stones. The majority of construction occurred during the Late Preclassic period, although Middle Preclassic period ceramics were also documented, as well as Protoclassic period ceramics and scattered Late Classic period ceramics on the surface.

Late Classic period settlement is much more abundant and follows clear patterns when crossing the probable boundary between Piedras Negras and Yaxchilán. In the area
surrounding Piedras Negras, settlement covers large swaths of territory, however, secondary centers are spaced widely across the landscape. As David Webster had observed previously (Golden 1999), settlement near Piedras Negras tended to avoid hilltops, with secondary and tertiary sites more typically located along the valley floor. The only conceivably strategic locations include El Cayo, which could have monitored canoe traffic upstream from Piedras Negras. The secondary center of Texcoco, is more elevated, constructed near a natural pass facing east toward the Hix Witz polity (Golden and Scherer 2006:4). The majority of the area to the southeast, toward Yaxchilán, however was left completely unguarded and occupied only by tertiary sites like Esmeralda, and smaller tiered settlement (Golden and Scherer 2006:4).

Minor centers in the vicinity of Piedras Negras appear to emulate architectural features of the dynastic center. Texcoco, the only probable documented Piedras Negras secondary center in Guatemala, exhibits structures with square colonnades similar to structures in the West Court Plaza and Acropolis, and the site also has a monumental sweatbath that calls to mind Piedras Negras’ emphasis on these features (Golden et al. 2008:263). Esmeralda, classified as a tertiary site due to its lack of vaulted structures, also emulates certain architectural patterns known from Piedras Negras, in particular a patio group design consisting of three structures in a U shape on a large platform (Golden et al. 2008:263). Karla Dardón and Greg Borgstede (2004:137) also identified a possible ballcourt at Esmeralda, and the 30° orientation of the site as a whole matches that of Piedras Negras.

Secondary centers in the vicinity of Yaxchilán, in contrast, are densely concentrated near the probable boundary with the Piedras Negras polity and take
advantage of natural, defendable topography (Golden and Scherer 2006:5). Research at the secondary center of Tecolote in particular documented such a strategy. Tecolote lies approximately 16 km to the northwest of Yaxchilán and 1.75 km northeast of the Usumacinta River, within the same rugged terrain as nearby sites La Pasadita and El Tunel. In fact, Tecolote, La Pasadita, El Tunel, and Chicozapote (across the Usumacinta River in Mexico) form a line running from southwest to northeast at a point equidistant between Piedras Negras and Yaxchilán. A further 4 km to the northwest of Tecolote, the quaternary-ranked site of Bayal was positioned to control the small Argueta valley that provided access to the Usumacinta River, as well as a permanent spring (Golden et al. 2008:265).

The core of Tecolote’s settlement centers around rugged, hilly terrain, although the Central Plaza is located at the base of these hills (Scherer and Golden 2009:288). Overall, the site is oriented toward 120°, the same as Yaxchilán. Another characteristic of the site that draws a strong comparison with Yaxchilán is the design of Structure D3-1, located at the western end of the Central Plaza. Structure D3-1 is a long palatial structure reminiscent of buildings at nearby sites, including La Pasadita, Chicozapote, and Structure 1 at Bonampak (Scherer and Golden 2009:290; Scherer and Golden 2012:71-72, Miller and Brittenham 2013). Although the similar structures at La Pasadita, Chicozapote, and Bonampak all had carved stone lintels above their doorways, the stone lintels at Tecolote’s Structure D3-1 were not carved (Scherer and Golden 2012:72). Still, Scherer and Golden (2009:289) contend that Tecolote must have also been governed by a sajal because Tecolote appears to be much larger than La Pasadita and its architecture is
more formal and imposing. Indeed, Tecolote may have been the source of some of the numerous looted monuments known from the area around Yaxchilán (e.g., Site R).

The settlement patterns around the site core of Tecolote closely resemble those around La Pasadita, again contrasting with settlement further south. Unlike La Pasadita, Tecolote lacks a major permanent water source, other than a handful of aguadas (Scherer and Golden 2009:289). As a result, at least two cisterns were documented within hilltop patio groups at Tecolote, as well as in surrounding settlements (Scherer and Golden 2009:289).

The chronological data based on ceramics is fairly unique for a site with such monumental architecture. Ceramics suggest that occupation dates primarily to the eighth century AD, with few examples of sherds dating earlier or later (Scherer and Golden 2009:289). These data raise two likely scenarios: 1) Tecolote was built fairly rapidly, with the site core and surrounding sparse settlement constructed at about the same time, and 2) Tecolote was abandoned around the same time as the collapse of the Yaxchilán dynasty shortly after AD 810 (Scherer and Golden 2009:291). These conclusions call to mind observations made by Charles Golden (1999) based on ceramics from looter’s pits at La Pasadita, showing evidence of rapid construction during one or at most two phases.

The settlement patterns support the likelihood that Tecolote was oriented primarily toward defense. Confirming this suspicion, Scherer and Golden (2009:291) documented numerous stone walls near Tecolote, La Pasadita, El Tunel (recently suggested to be a candidate for the previously documented site of Laxtunich), and Bayal (Scherer et al. 2017). These walls are generally isolated and unassociated with architectural features. Constructed of large, unworked stone, the walls typically measure
1–2 m high and were built on top of bedrock or natural, unmodified terrain (Scherer and Golden 2009:292).

The placement of these stone walls suggests that they were built to restrict passage between hills; the walls begin on the footslope of one hill and end at the footslope of an adjacent hill (Scherer and Golden 2009:292). Based on analogy with similar features documented in the Petexbatun region, as well as a process of elimination that the walls could not have been used for agriculture or to prevent erosion, Scherer and Golden (2009:292) propose that the stone walls were used for defense, and they were likely used to bolster wooden palisades (Scherer and Golden 2009:292). Another set of L-shaped walls may have formed a type of flanked gateway combined with a “kill-alley” (Scherer and Golden 2009:295). Finally, many of the hilltops that flanked these stone walls had informal structures at their summits that differ from the more formal patio groups documented at Tecolote and La Pasadita. These structures may have served as temporary residences or watchtowers for warriors (Scherer and Golden 2009:297). These strategic positions would have been crucial to defense as well as communication to nearby sites including La Pasadita and Yaxchilán using fire, smoke, or mirrors (Scherer and Golden 2009:297).

The area directly to the south of Tecolote and La Pasadita has not been systematically surveyed, but Golden (1999) had previously noted extensive valley settlement between Yaxchilán and La Pasadita. This observation conforms with patterns known from other sites investigated by the PRASL, including Oso Negro and El Kinel. Unfortunately, archaeological work at the secondary center of Oso Negro has been limited; however, the site shows clear similarities with other Yaxchilán subordinate sites,
including the architecture of the Las Puertas palace, with parallels to other palace structures in the region (Golden and Scherer 2006:6). Research within the modern community of La Técnica was more feasible, however, and the discovery of a monument at the site of El Kinel and an earlier archaeological investigation warranted further research (Houston et al. 2006:87; Morales 2000a; 2000b; Morales 2001:5). Houston and colleagues (2006) suggest that El Kinel Monument 1 was a lintel, or perhaps far less likely a stela. The monument depicts a dancer, perhaps Shield Jaguar IV of Yaxchilán (AD 790), dressed as a warrior and holding a box possibly filled with blood-letting implements (Houston et al. 2006).

Surprisingly, the site of El Kinel has no evidence for vaulted structures, a characteristic of most sites in the region that have inscriptions. Furthermore, the presence of a lintel at a site without standing architecture is incongruous. Houston and colleagues (2006), therefore, suggest that the monument may have been moved from its original location, or alternatively if the monument was a stela it may suggest that within Yaxchilán’s kingdom, even small tertiary sites displayed inscriptions. El Kinel is made up of a North and South Sector, bisected by a canal that appears to have been anthropogenic and prehispanic, forming an arc that connects parts of the Usumacinta River to the west and south of the site. This construction is reminiscent of the canal separating Punta de Chimino from the mainland in the Petexbatun (Demarest et al. 1997; Houston et al. 2006). The North and South Sectors of El Kinel are notably different: the North Sector is rectilinear and consistently oriented to 120°, while the South Sector is denser but more haphazard in terms of the axes of structures (Scherer et al. 2014:199). Another interesting feature of the South Sector is that each platform is adjacent to a large
borrow pit, where construction material was locally extracted. These borrow pits were later modified to hold water during the rainy season. Ceramics date throughout the Late Classic period and fine orange wares also demonstrate a Terminal Classic period occupation at El Kinel.

A fairly large sample of 12 burials from the North and South Sectors of the site also shows strong similarities with burials from Yaxchilán, in their orientation (118-120°), ceramic offerings, and cist or crypt constructions (Golden et al. 2008:264-265). Also similar to Yaxchilán, burials at El Kinel were placed under structures, with one example of eight graves excavated within a single structure (Golden et al. 2008:264). The presence of some burials at El Kinel with multiple ceramic offerings, including examples with kill holes is also known from Yaxchilán (Golden et al. 2008:264).

Proyecto Arqueológico Chinikiha

Archaeological research to the north of the current project began with Rodrigo Liendo Stuardo’s (2003) analysis of the organization of agricultural production and settlement patterns in the Palenque region. This research continued with the Palenque Settlement Project and the Proyecto Arqueológico Chinikiha (Liendo et al. 2014). Liendo’s (2003) initial research covered a regional survey of 37 square kilometers surrounding Palenque.

These surveys established an influential model for this part of the Western Lowlands relating the dynastic influence of the kingdom of Palenque to rural settlement. According to Liendo (2003), during much of the Late Classic period, populations were nucleated around Palenque, with a low number of rural settlements, including Nututun,
forming the exception rather than the rule. Only during the Balunte ceramic phase (AD 770–850) at the end of the Late Classic period did a clear shift become occur, consisting of a more dispersed settlement pattern as populations systematically settled the landscape surrounding the primary centers, like Palenque. These data supported the hypothesis of growing decentralization, related to settlement and agricultural production, throughout the Late Classic period.

Research at Chinikiha has demonstrated that the site represents a primary center, with perhaps a relative level of autonomy on par with Palenque, Piedras Negras, and Pomoná (Liendo, López, and Campiani 2014:111). Still, Chinikiha is nearly half the size of Palenque, in terms of its physical extension, as well as its density of structures, with a total population perhaps a quarter the size of Palenque’s. The central civic-ceremonial complex of Chinikiha is notably similar to that of Palenque, focused on an extensive palace and ballcourt. At the northern end of the Main Plaza lie the twin temples (Structures A-2 and A-3) and to the south stands the four-tiered Great Pyramid.

Although similarities are clear between the architecture and ceramics of Palenque and Chinikiha, the influence from Palenque appears to have been hasty and short-lived, restricted to Chinikiha’s second and final construction phase during the eighth century (Jiménez 2013). During this latter phase, Chinikiha’s construction techniques emulate those of Palenque showing an inferior quality in the structural composition of building fill and simplicity in the design of the stone facades. These major renovations focusing on the enlargement of architecture thus appear rushed, with a focus on quantity over quality, leading to the collapse and instability of many of Chinikiha’s most monumental constructions (Liendo, Lopez, and Campiani 2014).
A line of secondary centers following the Chancalá River valley controlled the area between Palenque and Chinikiha, and even further east to the transhipment center of Boca Chinikiha, at the confluence of the Chinikiha and Usumacinta Rivers (Maestri 2018). These secondary centers include Xupá, El Lacandón, La Cascada, and San Juan Chancalaíto, among others (López Bravo 2013). Along either side of the Chancalá River valley, low lines of foothills provided upland areas that aided in terrestrial traffic (Maestri 2018), and Flavio Silva de la Mora (2008) has identified portions of anthropogenic causeways, or sacbeob, bridges, and other features throughout the region, particularly within the modern community of San Juan Chancalaíto. These data suggest that Palenque and Chinikiha (perhaps as allies at least during the eighth century) were concerned with controlling much of the frontier with the nearby kingdoms of Pomoná and Piedras Negras, and the travel networks focused on the Chancala, Chinikiha, and Middle Usumacinta Rivers and the adjacent terrestrial networks. The methodology established by these archaeological efforts have been instrumental in the research conducted in the area to the south by the PABC and the current study.

The Redención del Campesino Valley Archaeological Survey

Armando Anaya Hernández (2001; 2002, 2006) has conducted archaeological survey within the hinterlands of the Pomoná kingdom, particularly centered on the Redención del Campesino Valley. Combining these surveys with site prediction algorithms through GIS and epigraphy, Anaya Hernández documented secondary centers associated with both Pomoná and Piedras Negras, as well as a contested landscape between the two centers, which were known to have engaged in a series of wars during
the Late Classic period, as recorded on Piedras Negras Stela 12 (Bíró 2011). Of the sites in the area, only Panhale and a cave near Alvaro Obregón 2 have revealed epigraphic data; the former suggests Panhale was a defensive site or refuge associated with Pomoná, while the latter links Alvaro Obregón 2 with Piedras Negras.

Archaeological surveys documented at least two secondary centers: Alvaro Obregón 2 with evidence for vaulted structures and Redención del Campesino, a larger site lacking vaulted structures. Alvaro Obregón 2 offers a commanding view of the valley on par with the vistas known from Panhale. Based on the inaccessible location of Alvaro Obregón 2, Anaya Hernández (2001) hesitated to assign major administrative importance to the site, as the location of Redención del Campesino was more conducive to such a function. Still, Anaya Hernández (2001) proposed that Alvaro Obregón 2 could have been the seat of a local ruler, especially as a refuge during turbulent periods.

Anaya Hernández (2002) was also able to generate a least cost model to propose the likely path followed by Piedras Negras warriors to attack Pomoná. This path would have passed directly through the Redención del Campesino Valley, underscoring the importance of sites like Redención del Campesino and Alvaro Obregón 2 to the defensive and expansionist goals of the Piedras Negras dynasty. Anaya Hernández’s efforts indicated that both the Piedras Negras and Pomoná kingdoms were concerned with controlling the Redención del Campesino valley, integrating viewsheds from sites like Alvaro Obregón 2 and Panhale with least cost paths connecting the dynastic centers.

Based on Mario Aliphat’s (1996) thesis that the natural landscape and topography of the region shaped settlement patterns, influencing the placement of primary and secondary centers, Anaya Hernández (2001) explored these questions from the
perspective of unlocated sites with emblem glyphs. Generating a Gravity Model, which assumes that closely spaced centers will have more intensive interactions than those more distant, Anaya Hernández (2001:18) reconstructed the hypothetical extents of kingdoms throughout the Classic period, including those of Sak Tz’i’, Hix Witz, Namaan, and the “Knot-Site,” whose dynastic centers had not yet been located archaeologically.

Integrating this approach with the epigraphic record, Anaya Hernández (2001:62–80) mapped how these hypothetical boundaries shifted over time, from AD 416 to 772. Nelson (2005) later used these same boundaries to reconstruct the population of the Piedras Negras polity at its greatest spatial extent.

Anaya Hernández’s (2001) methodology produced an interesting and useful way of visualizing the changing areas of influence of the major Classic period kingdoms. Anaya Hernández’s (2001:85) study can serve as a means of hypothesis testing, in which his proposed boundaries can be compared to archaeology on the ground. Although the Gravity Model methodology attempts to improve on the earlier technique of Thiessen polygons, which merely extend polity boundaries to points equidistant between two centers, Anaya Hernández’s (2001) territorial extents have similar limitations, in that polity sizes will be determined by which sites are selected as primary centers. For example, Toniná was omitted from the study, even though epigraphy suggests that this dynasty played an important role in controlling the Selva Lacandona (Bíró 2011; Martin and Grube 2008). Furthermore, the Gravity Model assumes that all land was controlled by one of the selected polities, dismissing the possibility for relatively autonomous or independent areas between kingdoms. Such a method also fails to acknowledge the possibility of exclaves or colonies established far from dynastic centers, a real possibility
for the most powerful kingdoms, like Palenque and Toniná, especially in the area around Anaite or the Santa Clara lagoon.

Anaya Hernández and colleagues (2011:141) have addressed this final issue in an updated analysis of kingdom extents in the Western Lowlands, distinguishing between “domains,” which are coterminous areas surrounding the dynastic capital, and “territories under the influence” of these centers that include more distant exclaves traditionally associated with other emblem glyphs. This approach also reduced the extent of certain kingdoms, especially Piedras Negras and Lacanha based on a cost distance model that restricted the radius of kingdom extents to roughly 15–20 km. This study demonstrates that Anaya Hernández’s approach can be significantly improved with additional epigraphic and archaeological research.

Proyecto Arqueológico Busiljá-Chocoljá

The Proyecto Arqueológico Busiljá-Chocoljá (PABC) began in 2010 under the co-direction of Charles Golden and Andrew Scherer as essentially a continuation of the PRASL in Mexico. In addition to documenting settlement patterns from the non-elite to nobles, the stated goals of the PABC are 1) to establish the chronology of settlement within the study region, 2) to understand commerce and the ancient economy among sites, 3) to determine the spatial relationships among sites, in relation to the ancient political boundaries between distinct kingdoms, 4) to establish a connection between the settlement patterns of the region and the landscape, 5) to document and understand agricultural features that would have supported the non-elite and the elite, and 6) to begin to interpret the integration of minor centers like La Mar with dynastic centers through
excavation, artifact analysis, and GIS. Although the extent of the study area has changed since 2010, the original study area was roughly marked by the Chocoljá River to the north, the Usumacinta River to the east, the Sierra Guiral to the west, while the southern edge corresponds roughly to the Santa Clara lagoon and the Late Classic period northern boundary of the Yaxchilán kingdom, as established by Scherer and Golden (2009). More recently, the project has incorporated portions of the Santo Domingo Valley to the west.

Although the PABC study region includes many of the sites registered by Teobert Maler, including La Mar, Budsilha, El Cayo, Anaite I and II, El Chile, and Chicozapote research has focused primarily on Budsilha, parts of La Mar, and areas further north not surveyed by Maler. The PABC efforts can be summarized by roughly three regions: 1) the northern area encompassing the sites of Laguna Oscura, Flores Magón, and Rancho Búfalo, 2) the central area including La Mar and Budsilha and settlement surrounding the modern community of Nueva Esperanza Progresista, and 3) the southern area consisting of sites within the modern community of Nuevo Guerrero. More recently, Golden, Scherer, and students have expanded research to include areas between Nueva Esperanza Progresista and the Usumacinta River (discussed in the current study), areas to the west within the modern community of Lacanjá Tzeltal, and the region within the modern community of Sacrificios, between the aforementioned northern and central areas.

The northern area consists of sites linked with the Chocoljá River, including the largest secondary site in that region, Laguna Oscura. Named for a lagoon located 0.5 km to the south, Laguna Oscura lies 1.6 km to the south of the Chocoljá River. Scherer and Golden (2012:23) documented 3 hectares of the core, which consists of a plaza bounded by natural, modified hills to the west, north and east. The western hill was modified into
the large pyramidal Structure 1, measuring nearly 30 m tall with a footprint of 80 x 65 m. The hill was terraced and fronted with masonry and topped with a collapsed, looted superstructure likely originally vaulted. The orientation of the site, 120° may point approximately toward Piedras Negras, although the two sites are not intervisible. At the western base of Structure 1, Scherer and Golden (2012:23) noted a fragmented monolith resembling an uncarved stela. Altogether, the site as currently understood consists of 10 structures surrounding the main plaza, three of which are situated on top of the hill to the east. Abundant settlement, however, is notable throughout the surrounding area. Unfortunately, no chronological data was recovered from the brief visit to Laguna Oscura, but its location approximately equidistant between Chinikihá and Piedras Negras suggests that the site was either a secondary center of perhaps Piedras Negras or its own relatively autonomous center.

Another secondary center approximately 5.25 km to the west of San Lorenzo is Flores Magón, named for the modern community. Unfortunately, as the highway passes directly through this archaeological site, many structures were razed and used for construction. Local residents, however, describe a much more extensive site in the past, and most notably one member of the community recovered two large blocks of jade, the remains of a lip to lip cache of Miseria Appliqué incense burners, and the remains of Palenque-style stucco glyphs (including an ajaw sign) that would have adorned the facade of one of the demolished structures. Other significant surface finds include two uncarved stone monuments, including a lintel. Like many secondary centers in this part of the Western lowlands, including Palenque and La Mar, Flores Magón lies directly at the base of the foothills to the west.
The preserved portion of the site contains multiple low walls and platforms that Scherer and Golden (2012) suggest resemble features linked to markets at other sites. The evidence that the site had access to unworked jade supports the idea that Flores Magón represented an important economic center, and its position along a modern and historic trade route bolsters this possibility. To the south of the center of the site lies a vaulted structure on top of an approximately 50 m hill. This structure is in poor preservation, but has not fully collapsed. While the function is unknown, this structure’s partially subterranean design suggests it may have been a tomb.

Only 2.5 km to the northwest of Flores Magón is the site of Rancho Búfalo, a significant Late Preclassic to Early Classic period center. Many of the structures have been looted, including Structure D5-3, which contained a tomb. Based on the presence of Late Preclassic ceramics, Scherer and Golden (2012:32-33) surmise that the tomb dates to this period, although upon clearing the interior space, they recovered a complete Late Classic cylinder vase, along with shell earflares, a bone needle, and fragments of human remains. Thus, the tomb was likely re-entered during the Late Classic period. Rancho Búfalo Burial 1 is significant as its identification with the Late Preclassic period makes it the oldest documented tomb in the Western Maya Lowlands. Residents of the community also seem to have uncovered a cache of greenstone celts reminiscent of similar offerings known from Ceibal, Cival, and La Venta (Drucker et al. 1959; Estrada-Belli 2006; Scherer and Golden 2012:33; Smith 1982:245).

Most recently, Jeffrey Dobereiner (2016) conducted dissertation research at Rancho Búfalo, focusing on the Preclassic period occupation of the site, interpreting the diverse material culture affinities to various regions in Mesoamerica, including the
Northern Lowlands, the Southern Lowlands, and the Gulf Coast not due to Rancho Búfalo’s peripheral location in relation to essentialized culture areas but to localized traditions that responded to emerging Mesoamerican social complexity. In Dobereiner’s (2016) view, Rancho Búfalo’s site plan was a local interpretation of the Middle Formative Chiapas pattern, offset from true north to match the northwest-southeast orientation characteristic of the Middle Usumacinta region.

Aside from the mapping of the eastern portion of the core of La Mar, most of the archaeological research has taken place outside of the epicenter. On the western side of the site, abutting the foothills of the Sierra Guiral, Scherer and colleagues (2013) excavated a defensive feature that appears to have been part of a system of walls to protect the core of La Mar. This feature resembled some of the gate-like walls known from the region surrounding Tecolote (Scherer and Golden 2009). These walls consist of two parallel, low alignments of stone with a narrow alley in between. Within these walls, Scherer and colleagues documented a series of postholes that may have supported perishable doorways or structures that could have been opened or closed to monitor visitors to La Mar.

Significantly, these excavations revealed a large number of projectile points, obsidian blades, chert bifaces, and sling stones, representing perhaps a cache of weapons or the actual remains of a battle. Scherer and colleagues (2018) suggest that these defensive walls were oriented against attacks from the west, and least cost analysis predicts that a path connecting Toniná to Piedras Negras would have passed directly through the narrow valley to the west of La Mar (Golden and Scherer 2013; Schroder et al. 2017). Still, these defenses differ from those documented along the northern border of
the Yaxchilán kingdom, which are landscape-oriented, whereas those at La Mar were oriented to protect the community, representing distinct, decentralized defensive strategies on the part of the rulers and allies of Piedras Negras.

Research at Budsilha suggests that the site was a noble palace associated with La Mar and/or Piedras Negras. However, a diversity of ceramic forms and pastes shows some influence from Palenque, which is absent from excavations at Piedras Negras. This archaeological evidence is in line with epigraphic data that suggests shifting alliances throughout the Late Classic period, which extended Palenque’s influence to within a short distance of the core of Piedras Negras (Martin and Grube 2008). A significant find at the site occurred during the excavations of Structure D7-3, at the northeastern end of the secondary, southern patio group of the site epicenter. This structure consists of a stairway on its southwestern side and an interior L-shaped bench.

In the final phase of occupation, archaeologists recovered abundant blades, flakes,debitage, and exhausted cores, especially near the stairway where such debitage would have been swept away. In total, the excavations of this structure in Suboperation 6B during 2013 uncovered 1,602.51 g of obsidian in 10 units, the majority of which were excavated only to the level of the final floor of the structure (Scherer et al. 2013). In 2018, Alejandra Roche Recinos conducted further excavation of this context. These finds suggest that Structure D7-3 functioned partially as an obsidian workshop and had better access to trade routes in obsidian than did Piedras Negras. Indeed, Golden and colleagues (2012:15) have suggested that Piedras Negras was generally limited in precious stones like obsidian and jade when compared to Yaxchilán and Palenque. The presence of an obsidian workshop at Budsilha may indicate that sites within the Piedras Negras
hinterland did not experience the same problem and were perhaps able to bypass trade routes via the valley to the west of the Usumacinta River. Investigations of the interior walls of Structure D5-1 also documented evidence of the Lacandón use of the site, with hand paintings mimicking the shape of a deer head. Similar paintings have been found nearby in the Cueva de las Manos Rojas (Scherer and Golden 2012).

Approximately 2 km to the south of La Mar is the site of El Chuzo, consisting of at least three different mound groups on low hills. Directly to the northwest, at the summit of a nearly 100 m high hill is a small acropolis, the site of Na Wits, consisting of a large pyramidal modification to the summit (Structure A1-17), with a sunken patio to the northeast, and an additional 16 structures. To the northwest of the sunken patio is Structure A1-7, a partially preserved vaulted structure with a drainage feature underneath its floor (Golden et al. 2013). A small cave is located at the southwestern end of the site and was accessible by a steep stairway descending from the rear of Structure A1-17. Excavations in the sunken patio uncovered two large, uncarved stela-altar monuments. The ceramics from Na Wits date primarily to the Late Classic period, with some Late Preclassic and Early Classic period sherds (Jiménez 2015). Due to its proximity to La Mar, Na Wits may have been a small refuge for an elite family. A wall near the summit suggests the site served a defensive purpose, although the site could have also functioned as an elite retreat or hilltop palace, as has been suggested at Bejucal in the Northeast Petén (Garrison et al. 2016).

The southern region of the project area coincides with the modern community of Nuevo Guerrero. Reconnaissance in this area documented further settlement, including the secondary center of Uch Chan, which appears to have been a noble palace or elite
residence based on the presence of vaulted range structures (Scherer and Golden 2012:70). Another important site in the region is El Edén, which consists of an architectural group on a low hill that was heavily terraced. These terraces provide the clearest examples of agricultural terracing in the region, and suggest that hinterland sites may have been producing more maize than was necessary to support their own populations. Based on proximity, El Edén is most likely to have been linked with Piedras Negras, which had minimal arable land near its epicenter (Nelson 2005). Evidence from El Edén, thus, suggests that some subsidiary sites in the region were likely to have supported populations at Piedras Negras through tribute.

Epigraphy and Archaeology: A Brief Political History of the Usumacinta Region

The Preclassic Period

The first evidence of occupation in the area dates to the Middle Preclassic period (600–250 BC), as documented at La Técnica, Guatemala and Rancho Búfalo and Sacrificios, Mexico. At this time, the Usumacinta region was a frontier between Mayan and non-Mayan speakers, including Olmec-related people from the Gulf Coast and Mixe-Zoquean speakers centered on Chiapa de Corzo (Andrews V 1990; López Bravo 2013; Ekholm-Miller 1973; Lowe 1991; Rands 2007b). Evidence for such non-local influence in the region was documented at Rancho Búfalo, where a single Middle Preclassic period sherd showed a possible incised glyph related to examples of writing known from the Cascajal Block and Isthmian script (Dobereiner and Jiménez Álvarez 2015). Settlement and construction increases during the Late Preclassic period, again at La Técnica and Rancho Búfalo, with public architecture also known from Piedras Negras, El Porvenir, El
Cayo, Macabilero, Zancudero, Fideo, El Kinel and El Infiernito. Late Preclassic period ceramic sherds have also been documented in Classic period fill at Palenque and Yaxchilán, although actual construction dating to this period has not yet been documented (Rands 2007b:25–26). Surface finds near the modern community of Arroyo Jerusalén, Chiapas also hint at a Preclassic period population in this area, but excavation has not yet been carried out to contextualize these data.

Sites in the Usumacinta region during the Late Preclassic period were widely dispersed and roughly equally-sized. Although the sample size of Preclassic period settlement is too small to establish a settlement hierarchy, Piedras Negras and Yaxchilán were likely no more politically significant than any other site at the time. In fact, evidence suggests that La Técnica was a larger political center during the Late Preclassic period than was Piedras Negras (Houston et al. 2006); however, La Técnica never approached the population sizes of other Preclassic period sites in the Central Petén (Golden and Scherer 2006:12). Golden and colleagues (2008:252) interpret these data to suggest that these Late Preclassic period sites were centers of small “chiefdoms” whose ruling elite exercised little if any political hegemony over other sites in the region. An important shift in settlement patterns seems clear, even with the limited data, however. Toward the end of the Late Preclassic period, inaccessible hilltop locations began to be fortified. Ceremonial centers like El Cayo, La Técnica, Fideo, and Rancho Búfalo show evidence of occupation into the Protoclassic period, but these centers are complemented at the same time by fortified hilltop sites, including Macabilero and Zancudero in Guatemala and Rancho Don Fermín, Na Wits, and El Infiernito in Mexico. Golden and colleagues (2008:252) interpret these data as evidence for warfare and a fractured
landscape during the Terminal Preclassic and Protoclassic periods (Golden and Scherer 2006: 13).

The Early Classic Period

Settlement patterns in the region again change dramatically at the onset of the Early Classic period (AD 350–600). As Stephen Houston and colleagues (2003) had previously hypothesized, people were attracted or coerced toward population centers like Piedras Negras and Yaxchilán during the Early Classic period, as these sites began to take on low density urban characteristics. A bimodal pattern of ceramic data outside of Piedras Negras and Yaxchilán suggests that the countryside was occupied most heavily during the Late Preclassic period and the Late Classic period, with almost no evidence for construction in the hinterlands during the Early Classic period (Golden and Scherer 2006). Despite years of research, this model has retained its explanatory power. This phenomenon has also been documented in the adjacent Petexbatun region, where a similar model has been proposed, although a methodological explanation has also been suggested (O’Mansky and Dunning 2005).

The Early Classic period marks the first epigraphic evidence to contextualize the archaeological data with historical texts, although most of the known monuments that discuss this period are retrospective inscriptions from the Late Classic period. These retrospective texts discuss the founding of new dynasties throughout the Western Lowlands as early as the fourth century AD. Mounting evidence shows that at least some of these dynasties had their origins elsewhere in the Northeast Petén. The best evidence for this phenomenon is from Yaxchilán, where the double emblem glyphs Pa’ Chan (split
The founding of dynasties in the region of the Selva Lacandona, defined by Bíró as the area between the Usumacinta and the Jatate Rivers, is less certain. However, the epigraphic evidence for this area suggests a high level of factionalism throughout the Late Classic period. Indeed, emblem glyphs rarely seem to correspond with specific sites, suggesting that the dynasties moved across the landscape or that rulers of different sites claimed the same titles. Peter Mathews (cited in Bíró 2011:69) has posed an intriguing hypothesis to account for this factionalism, that the kingdoms of the Selva Lacandona were formed by local populations who were displaced by the migrations out of the Northeast Petén into the Western Lowlands. Numerous sites are known from the region, including Bonampak, Lacanjá, Plan de Ayutla, Lacanjá Tzeltal, and Ojo de Agua, but only some of them have been identified with a specific emblem glyph, primarily because these sites have all been heavily looted and surface monuments removed, and archaeological investigations have been limited. B’ub’ulha’ (likely Ojo de Agua), Xukalnah (likely Lacanjá), and Sak Tz’i’ (likely Lacanjá Tzeltal) all seem to have been founded between the fourth and sixth centuries AD, although evidence is lacking from
other important dynasties in the area, including Ak’e (likely Plan de Ayutla and less likely Bonampak, which has been identified as Usij Witz) (Bíró 2011:122).

The Lacanjá River region also has some of the earliest contemporary monuments in the Western Lowlands: the Houston and Po panels, the former commissioned in AD 498. These monuments describe the dedication of the house of K’an Tatb’u Max, a subordinate of K’inich Yat Ahkul, the ajaw of Ak’e. The Po panel itself was likely the lintel of this structure (Bíró 2011:84). This early monument, depicting the ruler with a noble (commissioned by the latter) outside of the dynastic center, suggests that much of the internal structure of Late Classic period polities was already established during the Early Classic period (Bíró 2011). Furthermore, these panels are the only evidence contradicting the proposed settlement model that the hinterlands between dynastic centers were not a focus of the ruling elite during the Early Classic period.

Other Early Classic to Late Classic period transition monuments from elsewhere in the Usumacinta region confirm that external politics between polities was also actively pursued well before the height of the Late Classic period. Yaxchilán Lintels 11, 49, 37, and 35, Early Classic monuments that were later re-set into Late Classic structures, as well as Hieroglyphic Stairway 1, a later retrospective monument, list the rulers of Yaxchilán along with their counterparts at other sites, either as captives or foreign visitors, with a particular focus on the Lacanjá River region surrounding Ak’e and areas east into the Petén (Bíró 2011; Martin and Grube 2008).

Piedras Negras’ earliest contemporary monument, Panel 12 (AD 518), follows a similar pattern, depicting an unknown ruler (possibly Ruler C) under the influence of an unnamed “western” kalomte’ along with four kneeling captives, perhaps from Masiil (an
unknown site between Piedras Negras and Palenque), Yaxchilán, Santa Elena, and possibly Lakamtuun (a site along the Lacantún River, possibly El Palma or Benemérito de las Américas, Primera Sección) (Beliaev and Safronov 2009; Bíró 2011:220; Grube et al. 2002; Stuart 2007a; 2007b). Such scenes become characteristic at Piedras Negras, and although they may reflect actual military campaigns, the more important symbolic message is that Piedras Negras claimed to control distant sites in almost all directions, to the Tabasco Plains north and the Selva Lacandona south (Stuart 2007a).

The close of the Early Classic period is less well known. The infamous Early Classic period hiatus, the so-called “rehearsal for the collapse” (Willey 1974), may have been restricted to a few areas, in particular Tikal, after an attack by Caracol in AD 562 (Martin 2005a; Schele and Freidel 1990). The consequences of this phenomenon in the Usumacinta region are unclear (Bíró 2011:91) According to Bíró, Palenque and Toniná show no evidence for disruption; however, from AD 537 to 688 Yaxchilán dedicated only one monument in AD 613, and Piedras Negras dedicated no monuments between AD 539 and 608. Bíró links this observation at Piedras Negras with archaeological evidence of intentional burning and destruction of buildings in the Acropolis and Western Plaza at the Naba-Balche transition around AD 550, perhaps associated with an attack by Pomoná (Golden and Houston 1999:1056), although Bíró suggests that such archaeological evidence is ambiguous and does not necessarily reflect warfare. Furthermore, the gaps in monumental dedication can be explained in a number of ways, including that more archaeological work will uncover inscriptions, and at Yaxchilán especially, evidence of the reuse and recarving of Early Classic period monuments during the Late Classic period was common (Bíró 2011:94).
The Late Classic Period

The Late Classic period began with the expansion of the Kanul dynasty into the Western Lowlands, although the presence of the Kanul and Tikal dynasties in the Western Lowlands had been documented even during the Early Classic period. Martin and Grube (2008:121) observed that on the Early Classic period Yaxchilán lintels only the captures or visits from Tikal and the Kanul dynasty were marked by dates, suggesting that those individuals were especially significant. The Kanul dynasty’s influence at La Corona during the early sixth century AD also suggests a strategy to access the Usumacinta region from the Northwest Petén. At this time, Martin (2005b) suggests that the Kanul dynasty was centered on the southern Quintana Roo site of Dzibanche until the move to Calakmul in AD 631.

The Kanul dynasty boldly re-asserted its interest in the Western Lowlands in AD 599 with an “axing” of Palenque by Ox Kulua of Kanul, along with Itzamnaj Bahlam II of Yaxchilán, and Nun Hix Lakam Chahk of Santa Elena. Palenque apparently did not accept defeat, based on an inscription from an incensario in Group IV, which describes the accession of multiple high-ranking non-royal elite individuals and the burial of a Santa Elena lord. An undated stela from Santa Elena from the same period commemorates the accession of a Santa Elena lord under the supervision of Ajen Yohl Mat of Palenque (AD 605-612). These incomplete data suggest that Palenque was an expansive power at the start of the Late Classic period, and the Kanul dynasty was concerned with limiting the power of the Palenque lords at this time (Bíró 2011). Finally, in AD 611, Scroll Serpent himself, the k’uhul ajaw of Kanul attacked and destroyed Palenque, events that would define much of Palenque’s identity during the Late Classic
period, as K’inich Janaab Pakal I and his successors would rebuild their city and become a dominant political force throughout the Western Lowlands.

Palenque and Calakmul were not the only participants in the control of the Western Lowlands. Piedras Negras especially emerges as one of the major powers in the region. In fact, Piedras Negras attacked Palenque and Sak Tz’i’ early in the seventh century AD, and starting in AD 608 commissioned monuments consistently every five years. Calakmul seems to have been involved in much of Piedras Negras’ expansionist activities at this time. In particular, Piedras Negras Stela 35 (AD 662) recorded a visit of a vassal of Calakmul’s Yuknoom Ch’een to participate in a “fire ceremony” with Piedras Negras’ Itzam K’an Ahkul I (Ruler 2). This evidence suggests that during the seventh century AD, Palenque and Piedras Negras adopted opposite strategies related to Calakmul. The former actively resisted Calakmul’s influence, while the latter chose or was compelled to form an alliance with the Kanul dynasty (Bíró 2011).

An interesting phenomenon early in the seventh century, perhaps not a coincidence, was the accession of young kings at various sites: both K’inich Janab Pakal I of Palenque and Itzam K’an Ahkul I of Piedras Negras became ajaw at age 12, while K’inich Hix Chapat of Toniná acceded at the age of eight or nine. Simon Martin (personal communication, 2017) wonders if Calakmul played a direct role in placing young, inexperienced rulers into these positions, or alternatively the frequent wars early in the Late Classic period may have resulted in the death of more mature heirs.

The Hellmuth Panel likely originally from El Cayo shows that Calakmul reaffirmed its support of Piedras Negras, when a Calakmul official attended the funeral of Itzam K’an Ahkul I. Martin and Grube (2008) have suggested that Tikal may have later
supported Palenque’s efforts against Calakmul (or more specifically sites allied with Calakmul); however, no mention of Tikal in any of Palenque’s inscriptions has been documented to date. The current evidence, therefore, suggests that Calakmul was the primary expansionist power in the Western Lowlands at this time.

The late seventh century brought about major changes in the Classic period Maya political landscape, as three great Maya kings K’inich Janab Pakal I (Palenque), Itzam K’an Ahkul I (Piedras Negras), and Yuknoom Ch’een II (Calakmul) died within three years of each other. Shortly after in AD 695, Tikal finally turned the tables, defeating Calakmul, whose dynasty never fully recovered its influence in the Western Lowlands. Due to Calakmul’s waning impact, the eighth century became a period of intense local competition among the kingdoms of the Western Lowlands. As part of these efforts, rulers sought to expand their domains by forging new alliances with other kingdoms, for example, in the marriage of Itzam K’an Ahkul I’s successor, K’inich Yo’nal Ahk II of Piedras Negras, with a royal woman from Namaan (likely La Florida, Guatemala).

The visibility of the non-royal elite had increased gradually throughout the seventh century, with Piedras Negras firmly supporting sajalob and later an ajaw at La Mar, as described on Piedras Negras Stela 12, Stela 14, Stela 16, Throne 1, Panel 3 as well as the La Mar stelae and El Cayo, where long histories of the succession of sajalob under the supervision of Piedras Negras were recorded on El Cayo’s monuments, including Altar 4 and the Dumbarton Oaks panel.

However, the increasing power of Toniná and Yaxchilán began to pose threats throughout the Usumacinta region. After K’inich Kan Bahlam of Palenque’s attack against Toniná in AD 687, K’inich B’aknal Chahk of Toniná spent much of the following
decade attacking Palenque subsidiary sites throughout the Middle and Upper Usumacinta. These battles threatened Piedras Negras’ hegemony, especially at La Mar and Anay Te’ (an unlocated site near the Laguna Santa Clara/Anaite, perhaps associated with some of the settlement documented by Teobert Maler), which shifted allegiance between Piedras Negras, Palenque, and Toniná.

An undated event recorded on the New York and Brussels panels (actually two halves of the same panel), likely from Sak Tz’i’, suggests that secondary centers throughout the region were not merely passive players in the Late Classic period political landscape. This panel records an offensive move on the part of La Mar’s ruler Nik Te’ Mo’ against K’ab Chan Te’, the ruler of Sak Tz’i’. La Mar was likely supported by either Toniná, Palenque, or Piedras Negras, although the inscription does not specify who (Piedras Negras seems most likely because Mo’ was a family name associated with multiple Piedras Negras sajalob). An ambiguous clause, however, describes K’ab Chan Te’ as the lord of Nik Te’ Mo’, implying that Sak Tz’i’ claimed control over La Mar at this time (Bíró 2011).

A likely scenario, therefore, is that La Mar’s Nik Te’ Mo’ may have been revolting against their Sak Tz’i’ overlords with the help of Piedras Negras. No matter the reasons behind the initial attack, K’ab Chan Te’ responded with a series of attacks over a four-day period, ending in the “head-chopping” of Nik Te’ Mo’ (Bíró 2011). Indeed, by the early eighth century, Sak Tz’i’ seems to have become a major force in the Western Lowlands (Martin and Grube 2008). At this time, Sak Tz’i’ rulers claim the Ak’e emblem glyph, previously associated with Bonampak, Xukalnah, and Toniná. El Cayo Panel 1 adds credence to the possibility that Sak Tz’i’ was a dominant power in the region, as
from AD 751 to 776, Aj Sak Max, the ruler of Sak Tz’i’ was heavily involved in the accession of a *sajal* and a period ending ritual at El Cayo (Bíró 2011).

The early to middle eighth century otherwise appears to be a relatively peaceful period (or at least quiet in terms of the discourse), as Toniná produced no monuments between 739 and 762, and Piedras Negras recorded no warfare between 729 and 790, nor did Palenque after 726, or Yaxchilán from 732 to 752 (Bíró 2011). Yaxchilán was clearly making preparations to effect influence, however, as the site’s rulers made efforts to either form alliances with nearby sites or to place *sajalob* into peripheral areas. The archaeological evidence from Tecolote suggests the latter (Scherer and Golden 2009).

Archaeologists and epigraphers have framed Yaxchilán’s embracing of the secondary elite as a political strategy on the part of Yaxun B’alam IV (Bird Jaguar IV), to foster support from outlying nobles and communities to occupy the throne after the death of Itzamnaaj B’alam II (Shield Jaguar II) (Schele and Freidel 1990). According to this narrative, Yaxun B’alam IV was not the rightful heir to the throne, as his mother was Lady Ik’ “Skull” (Lady Eveningstar) rather than Lady Xoc (Itzamnaaj B’alam II’s first wife). A ten-year “interregnum” from 742 to 752 after the death of Itzamnaaj B’alam II and before the accession of Yaxun B’alam IV has also been cited as resulting from the challenges faced by Yaxun B’alam IV to claim the throne (Proskouriakoff 1964:180). Finally, the numerous monuments, many of them made from re-carved monuments, have been interpreted as propaganda to justify Yaxun B’alam IV’s actions during the interregnum.

However, Yaxun B’alam IV’s efforts to legitimate his reign by commissioning monuments was not unique in the Maya area, and the reuse of earlier monuments was
common at Yaxchilán even before his reign. The use of the term interregnum to describe the period between 742 and 752 is a misnomer, as this period did not mark a suspension of rulership, rather, a gap in inscriptions (Tate 1992). Martin and Grube (2008) have suggested based on an analysis of Panel 3 from Piedras Negras that Ruler 4 of that site had installed a ruler, Yopaat B’alam II, to the Yaxchilán throne sometime around 749. Whether Ruler 4’s claim is true, Martin and Grube’s interpretation suggests that Yaxun B’alam IV’s propaganda may have been part of an effort to clarify Ruler 4’s deceit or to erase the memory of Yopaat B’alam II, who may have been viewed as a traitor from Yaxchilán’s perspective. Tate (1992) has also suggested that Yaxun B’alam IV’s mother, Lady Ik’ “Skull” may have ruled during a part of the so-called interregnum. Finally, Yaxun B’alam IV’s investments in the support of sajalob within Yaxchilán’s hinterlands were merely a continuation of his predecessor Itzamnaaj B’alam II’s political strategy.

The Terminal Classic Period

For much of the Western Lowlands, the cessation of monuments and other art forms occurred early and suddenly. The final monuments of Piedras Negras and La Mar date to the final two decades of the eighth century, which establish a close alliance between the ajaw of La Mar, Mo’ Chaak and Ruler 7 of Piedras Negras, who are both depicted on Stela 12 of Piedras Negras. Mo’ Chaak, in fact commissioned Throne 1 for Ruler 7. Evidence from the Piedras Negras kingdom has been interpreted as reflecting increasing decentralization, and indeed Mo’ Chaak is the first known figure at La Mar to carry an ajaw title, while his predecessors were named as sajalob. Furthermore, Mo’ Chaak evidently had his own scribes based at La Mar who were separate from the scribal
tradition at Piedras Negras (Bíró 2011). This decentralization has been suggested to have led to a dissolution of trust centered on the k’uhul ajaw (Golden and Scherer 2013).

The situation at Yaxchilán appears to have been distinct. Shield Jaguar III had pursued “politics of incorporation” (Bíró 2011:295) throughout the kingdom, and his successors Bird Jaguar IV and Shield Jaguar IV continued building such alliances. However, in contrast to monuments within the Piedras Negras kingdom at the sites of El Cayo and La Mar, sajalob are rarely depicted on their own monuments. Only one monument at Chicozapote depicts the sajal without Shield Jaguar III; however, this monument is a lintel, which is accompanied by two other lintels that do depict the k’uhul ajaw. Increasing interest in Yaxchilán’s hinterlands, therefore, takes place, however the rulers of Yaxchilán appear to have adopted a slightly different approach to these efforts.

Bonampak is a clear example of Yaxchilán’s strategy. Indeed, great effort was spent on producing these murals outside of the dynastic center, and Yaxchilán scribes were named as the painters. The narrative appears to focus on the successor of Bonampak’s Chan Muwaan, while the rulers of Yaxchilán are represented on two of the lintels within Structure 1. Murals are known throughout the Yaxchilán kingdom, but their poorly preserved remains do not equal the unprecedented Bonampak murals. Still, the Bonampak murals were never completed and represent one of the last records of the Bonampak dynasty in AD 792.

The last monument at Pomoná dates to AD 780, and Stela 12 from Piedras Negras suggests that Pomoná did not recover after the attack from Piedras Negras in the final decade of the eighth century. Still, a late monument dating to AD 830 at the nearby site of Panhale suggests that a remnant of the Pomoná dynasty sought refuge in this
defendable place (Bíró 2011). The ruling dynasty at Piedras Negras, however, met a similar end. Despite the lack of monuments at Piedras Negras after AD 795 (aside from a poorly preserved altar that may date slightly later), Ruler 7 continues to have reigned until his capture in AD 808, recorded on Yaxchilán’s Lintel 10. This lintel, in turn, represents the final monument of Yaxchilán, poorly conceived, as the final columns of glyphs had to be reduced in size to fit on the stone (Martin and Grube 2008). The abundance of fine orange ceramics at the site hint at an occupation persisting after AD 850, although the historical record is silent after the first decade of the ninth century.

Oddly, what little is known of the Palenque region during the second half of the eighth century was recorded not at the dynastic center itself, but at sites in its hinterlands, including Comalcalco and Chancelá. However, this lack of monuments may be due to the focus of excavations on the central portion of the site surrounding the Temple of the Inscriptions and the Palace (Stuart and Stuart 2008). Indeed, the existence and importance of K’ínich Ahkal Mo’ Nahb III who reigned during the early to mid eighth century was unknown until Alfonso Morales’ project of the 1990s (Stuart and Stuart 2008). Furthermore, the final inscription known from Palenque dating to AD 799 is actually from a fine black ceramic vessel from the Murciélagos Group, an elite domestic context. Thus, further investigations of outlying areas of the site may uncover more evidence of this poorly known period (Stuart and Stuart 2008:231).

Still, a monument from Pomona shows that the king of Palenque, K’ínich Kan Bahlam III celebrated the period ending AD 751 at Pomona rather than Palenque, suggesting troubling times (Martin and Grube 2008; Stuart and Stuart 2008:231). The following king, K’ínich K’uk’ Bahlam II commissioned the Tablet of the 96 glyphs,
which with its refined calligraphic-style inscription is celebrated as one of Palenque’s
greatest works of art, following the pattern seen elsewhere in the Western Lowlands of a
sudden cessation of monuments showing no artistic decline.

Not all sites in the Western Lowlands followed such a pattern of abrupt cessation
in monument dedication. Some sites, most notably Toniná commissioned monuments as
late as the early tenth century. However, Bíró (2011:199) notes a clear halt in monument
dedication at all centers after AD 810. Thus, the late monuments of Toniná and the
surrounding region point to attempts at political reorganization rather than continuity, as
seen at Ceibal.

One of the first signs of political reorganization during the middle to late ninth
century is known from the so-called Randall stela, an unprovenanced stela from the
region of Sak Tz’i’, in the Santo Domingo Valley. The Randall stela dates to AD 864 and
is a posthumous biography of B’ahlam Chij uy K’uk’ Max, a *sajal* of K’ab’ Chan Te’ of
Sak Tz’i’. His wife Ix K’och carries the title of “she of *k’i[h]n ha’,*” a placename
associated either with the Piedras Negras dynasty or a subsidiary center within its
kingdom (Stuart 2004:2; Zender 2002:170-176). Thus, the Randall stela suggests that
even by the second half of the ninth century, some factions of the Piedras Negras and Sak
Tz’i’ dynasties may have persisted after the initial collapse of the early ninth century
(Bíró 2011:236).

Péter Bíró (2011) notes a long gap in the inscriptions of Toniná from AD 837 to
904. The final two monuments from Toniná, dating to AD 904 and 909, respectively,
represent some of the latest monuments using the long count calendar in all of the Maya
area. However, Toniná’s final monuments (as well as those from elsewhere in the Maya
Lowlands) exhibit a marked shift in scribal traditions, including reduced interaction between sites, no events of recorded warfare, new narrative styles without documentation of royal births, accession, or capture, and script obsolescence. Other monuments from the region of Chinkultic including from Comitán/Tenam Puente (AD 874) and Sacchana (AD 879), reflect these patterns (Bíró 2011).

These data suggest a major disruption in the system of royal and noble courts patronizing the scribal class and commission of monuments (Bíró 2011:240). These monuments also suggest either a change in warfare and royal practices, or at least the omission of their expression in the discourse of this period. While the Western Lowlands and specifically the Usumacinta region are often cited as one of the first parts of the Maya Lowlands to experience a collapse, the epigraphic data from the Maya area in general suggest instead an initial collapse suffered throughout the Southern Lowlands, followed by political reorganization in some areas (Bíró 2011; Guenter 2014). Even sites without monuments after AD 810 have evidence of attempts at political reorganization of their dynasties known from other parts of the Western Lowlands, notably a record of the Pomoná dynasty at Panhale, the Piedras Negras dynasty at K’inha or the region of Sak Tz’i’, the Chinkultic dynasty in the area of Comitán, and the Lakamtuun dynasty at Ceibal (Bíró 2011).

The Current Study Area

The research in this dissertation is restricted to the study area of the PABC, with a focus on the immediate region surrounding the Busiljá River valley. As noted, the largest secondary centers in this region include La Mar, Budsilha, and El Cayo. Additional
surveys in this area, as well as further south in the Santa Clara syncline were aimed at establishing a site typology in the region; first and foremost to reconstruct the political hierarchy in the region especially focused on documenting secondary and tertiary sites and the quaternary or household-level settlements surrounding them. These efforts are discussed in greater detail in Chapter 6.

Through this survey, I selected several archaeological sites for excavation. The primary deciding factor for excavation was based on local permission: in nearly all cases in which a landowner or ejidatario granted permission to excavate a site, some effort was made to at least place a small number of test units to collect a sample of ceramics to determine chronology. One site, El Infiernito, provided a necessary balance between my research interests and the desires of the ejidatario of La Selva who managed the land. Thus, I chose El Infiernito as the focus of the current project, to be supplemented by data recovered in smaller quantities from other sites, including the archaeological sites of La Selva, Rancho Nuevo, and Santa Marta.

El Infiernito is an extensive site consisting of at least four architectural groups, surrounded by abundant dispersed settlement. All architectural groups cluster around a prominent crescent-shaped landform, a low hill that marks the eastern edge of the Busiljá River valley and the western edge of the “karstic upland with hummocks” topography (Aliphat 1994:59) of hills extending east toward the Usumacinta River and Piedras Negras, approximately 8 km to the northeast of El Infiernito. The site is characteristic of tertiary centers in the region, consisting of multiple patio groups surrounded by substructures that would have originally supported perishable superstructures. The diversity of tertiary centers in the region has been noted (Golden et al. 2008), and I
hypothesized that El Infiernito’s remote location related to defense, rather than to control trade routes in the valley below, which would have been more feasible from secondary centers like La Mar and Budsilha located on the valley floor. El Infiernito presented an appropriate opportunity, therefore, to conduct excavations and survey to explore the function and chronology of the site in greater detail. This research is further elaborated in the following chapters.
CHAPTER 5
Research Design and Methodology

To interpret the processes of collapse, resilience, and reorganization at El Infiernito, I utilized a combination of methodologies to examine changes from the eighth to the tenth century and to document the earlier occupation of the site during the Late to Terminal Preclassic periods. Previous researchers have emphasized that political collapse leads to notable changes in integration and the makeup of a society itself, especially in terms of the disappearance of the elite (Renfrew 1984; Tainter 1988). If such changes were present at El Infiernito, they may indicate a rapid decline as an effect of collapse. In contrast, if data were more ambiguous, with the maintenance or resilience of elite groups, the processes of collapse may suggest a slower transformation. In other words, some continuity in material culture and social practices at the site would be expected in a resilient community, whereas in a scenario of revitalization, some disjuncture would be expected, especially if the later inhabitants of El Infiernito were foreigners. Finally, if El Infiernito became a center of political reorganization during the Terminal Classic period, evidence from the site’s architecture and material culture should point to coalescence rather than dispersal and perhaps an attempt to appropriate royal or sacred symbols.

Research Questions

1) What was the occupation and construction history of the site?

At what period were hilltop portions of El Infiernito modified and settled and did these efforts mark a significant move from valley areas to hilltop areas? These questions are fundamentally a chronological issue. Ceramic evidence from surface collections and
initial excavations indicated the presence of Late Preclassic period and Late Classic to Terminal Classic period sherds. This evidence suggested a long history of use of the site. However, the nature of occupation of the site must be understood in relation to major construction periods. A primarily Late Preclassic period site with scattered visitors in the Late Classic period would suggest the use of El Infiernito as an outpost, occasionally revisited at later times, while significant construction during the Late Classic period would point to a more significant population and use of the site. This latter possibility would coincide with the pattern of a bimodal distribution of ceramics dating to the Late Preclassic and Late Classic periods with little evidence during the Early Classic period throughout the study region.

Beyond determining whether El Infiernito supported a significant Terminal Classic occupation, this research intended to characterize the nature of the Terminal Classic period use of the site. This aim involved assessing what proportion of the structures at El Infiernito had a residential use. The extent of domestic evidence during the Terminal Classic and Early Postclassic periods would relate to the resilience of the community. In contrast, scattered offerings placed on top of the site’s structures in later periods could be explained by pilgrimage rather than occupation. Finally, the nature of site abandonment, based in part on the presence of termination rituals, whether gradual or sudden, could relate to the community’s resilience.

2) What was the nature of site design in relation to the natural topography of the region?
The natural topography of El Infiernito consists of a crescent-shaped hilltop, dotted with karstic caves and springs. This landscape would have been conducive to defense but could also have been significant as a sacred space relating to Maya conceptions of the sacred landscape. If defense was a concern for the households at El Infiernito, further modification of this natural landscape would be expected. Such modification would include defensive features, located in access points and areas with increased viewshed. Finally, if defense was a concern, the timing of the construction of defensive features may point to periods of increased warfare or suggest that violence was a perpetual threat to the community.

3) How did trade networks shift from the Late Classic to the Terminal Classic period?

The political collapse of the Piedras Negras dynasty could have resulted in the economic abandonment of trade networks. Other possibilities include a shift in trade networks or an increased ability of the El Infiernito community to access prestige goods previously restricted by the Piedras Negras elite. The latter possibility would suggest that populations at El Infiernito were able to benefit from the declining power of a centralized state at Piedras Negras. Such a benefit would challenge the traditional conception of collapse as a negative process rather than a political event that affects primarily elite members of society.

4) What role did El Infiernito play in the broader political dynamics of the Late Classic period in the Upper Usumacinta region?
This question relates to the broader question regarding the role of tertiary centers within a Maya polity. Some secondary centers in the Western Maya Lowlands were crucial to the dynastic rulers’ conception of their territory. However, the position of tertiary centers is more ambiguous because by definition they lack carved monuments with political messages. Archaeological evidence in the form of architecture, settlement patterns, and ceramics can provide data relating to the political position of tertiary centers like El Infiernito. Such centers could theoretically have been more or less autonomous as the political power of Maya rulers may not have extended from center to periphery continuously. Other tertiary centers, especially those proximal to the political center, could contribute to the economy of the dynasty through the paying of tribute. Furthermore, if El Infiernito occupied a critical, physical position in the political landscape, the Piedras Negras dynasty may have negotiated with smaller, local communities to defend peripheral parts of the kingdom.

5) What attempts, if any, were made by the final inhabitants of El Infiernito to consolidate political power?

The scale of the El Infiernito community during its final occupation phase relates to its partial function as a refuge from the political crises of the Terminal Classic period. Decreasing populations would point to a dwindling community, composed perhaps of mobile communities or squatters, while increasing populations would characterize a resilient location that attracted refugees from surrounding areas. The identity of these people relates to the effects of the political collapse of Maya centers in the Southern
Lowlands. A small group of farmers eking out an existence might be expected in a smaller refuge, whereas the presence of non-royal elite individuals attempting to establish or reassert their prestige in a changing political landscape may indicate a brief period of political reorganization. A lack of continuity in households may point to the arrival of foreigners, either refugees from more distant locales such as the Petexbatun, intruders from the Gulf Coast, or pilgrims passing through the region (Demarest and Escobedo 1998).

To address these questions, I conducted research through a combination of systematic and regional survey, remote sensing (GIS), excavation, and ceramic analysis. These methods sought to document several lines of evidence, including artifacts, features, and architecture that would not only be interpreted for chronological purposes but also to highlight social, political, and ritual activities at El Infiernito, focusing on the final occupation of the site. Vertical excavations complemented these data to reveal changes from the Late Preclassic period, through the Late and Terminal Classic periods. These lines of evidence included 1) ceramics and chronology, 2) form and function of architecture, 3) cultural and natural features related to defense, 4) landesque capital, 5) trade, household status, and craft production, and 6) domestic and landscape ritual. Finally, based on data from El Infiernito and regional reconnaissance of other archaeological settlements, I sought to address the political integration of the Piedras Negras polity from the perspective of lower-ranked centers and communities.
Ceramics and Chronology

The primary line of evidence to assess chronology was through an analysis of ceramics. Due to the lack of well-preserved surface decoration in the majority of the sample of ceramics, a type-variety analysis was only possible with a small fraction of the assemblage. In general, type-variety analysis was more useful in Late Preclassic assemblages, which tended to have better preserved slips. Thus, I conducted a modal analysis, influenced by the methodology developed by Socorro Jiménez (2013) involving multiple classifications (Culbert and Rands 2007) to identify ceramic modes and attributes beyond surface decoration that had implications for chronology. This modal analysis, therefore, shifted focus toward aspects of paste and form that were generally more suitable for classification, following methodological approaches in the Palenque area (Rands 1967a; 1967b; 1974a; 1974b; Rands and Bishop 1980; 2003; San Román 2007) and broader critiques of the type-variety system by some archaeologists (Dunnell 1971; Smith 1979).

Beyond chronology, ceramics also provided data related to other lines of evidence. Ceramic form and decoration relate to vessel function, which in turn relates to the functions of associated structures and possibly distinct rooms (Leventhal and Baxter 1988). The relationship between ceramic form and decoration points to functions relating to serving, storage, or cooking, which supplements faunal analysis to identify the possibility of feasting (Hayden 1996; 2001; Kassabaum 2014; Kurnick 2013; LeCount 1996; 1999; 2001). Finally, ceramics have potential in the region to assess long distance trade and polity integration (Golden et al. 2012). Paste classes (described fully in Appendix 2) represent a ceramic attribute that is nearly always identifiable even in poorly
preserved sherds. Paste also has implications for identifying production centers and non-local ceramics. Finally, due to the study area’s position at the border between ceramic styles associated with the Petén to the east and Palenque to the northwest, the extent of economic influence from these areas could also be assessed based on the proportion of paste classes and forms known from these two distinct traditions.

*Form and Function of Architecture*

The Terminal Classic and Postclassic periods marked changes in the design and use of architecture. T. Kam Manahan (2003:82; 2004) has noted that during the Late Classic period, elite constructions favored monumentality over usable or habitable square space. Monumental constructions required substantial walls to support roofs, either vaulted or perishable. In contrast, during the Terminal Classic period, permanence and monumentality may have been rejected (Kingsley 2014:69; Villamil 2008). Kevin Schwarz (2009) suggests that more open patio arrangements were also developed during the Terminal Classic period, in contrast to the fully enclosed patio groups earlier in the Classic period. In addition, architects planned the facades of individual structures to have multiple entrances, employing colonnaded halls, sometimes lined with long benches (Andres 2005). Terminal Classic and Postclassic period structures also sometimes reused cut facing stones from earlier buildings, as a form of expeditious construction (Manahan and Canuto 2009). Indeed, an often-cited effect of political disintegration is the lack of new constructions, though the reoccupation of earlier buildings involves the reuse of stone and further subdivisions of interior space to create more living areas (Tainter 1988).
Structures previously used for other purposes, for example ritual or administrative tasks, may also have been converted into residential space, or non-elite families may have reoccupied previously elite residences (Child and Golden 2008). Diane Chase and Arlen Chase (2004a:19) characterize Postclassic period architecture as typically perishable with low lines of stones serving as the base of walls. Donald Rice (1986:307; 1988:234) observes that the superstructures of Postclassic period architecture tend to contain interior walls or benches in L or C shapes, place along the long axis of the rear wall of the building. Such benches, termed “audience benches” by Maxime Lamoureux-St-Hilaire (2018), face an open area at the front of the structure, suggesting that they were used in concert with reception halls either inside the building or in the adjacent patio (Kingsley 2014:71; Rice 1986; 1988).

Christina Halperin (2017:116) notes a return to circular shrine constructions during the Terminal Classic period, a re-adoption of forms more common during the Preclassic period that was largely abandoned throughout the Classic period. Some researchers consider such shrines to be emblematic of foreign influence from the Gulf Coast or Yucatán (Chase and Chase 1982; Sabloff 1973b:128), perhaps representing a manifestation of the cult of Quetzalcoatl-Ehecatl (McAnany 2012; Ringle et al. 1998). Although monumental versions of circular shrines are common throughout the Terminal Classic period, most notably at Chichen Itza, non-elite contexts also suggest an adoption of this architectural style. The function of circular shrines at Chan appears to have been related to incense burning (Cap 2012:159–165), while at Tayasal, evidence points toward feasting and artifacts (including chert hand axes) associated with agricultural productivity (Halperin 2017:120).
Defense

In the Maya context, a site’s placement on top of a hill does not merely relate to defense, as ethnographic data has documented the association between hills and caves with sacred landscapes (Geller 2004; Núñez Ocampo 2015; Palka 2005; 2014; Vogt and Stuart 2005). Though hills are naturally conducive to defense, providing a protected place with little need for modification, other indicators, including fortifications, viewsheds, and the placement of structures can improve a site’s defendability. Rather than adopt the term defensive site, which overlooks the many other reasons for people to settle in a location, the term defendable better characterizes one aspect that influences settlement. Andrew Martindale and Kisha Supernant (2009) list various factors that affect a location’s defensiveness. Landscape factors include inaccessibility, concealment, line of sight, escape routes, and a water supply. Architectural factors include walls or moats, restricted access, parapets, towers, and internal redoubts. Larger populations also tend to be more defendable. Landscape and architectural factors, however, are not separate; instead, they are used together to increase the defendability of a location (Martindale and Supernant 2009:194).

To compare the defendability of sites, Martindale and Supernant (2009) developed a method to quantify the various factors that contribute to defense. First, visibility (V) is a measure of the horizontal degrees of a viewshed around a site. Sites with unobstructed views are, of course, more defensive than sites with limited views. However, visibility can be improved by coordinating with nearby locations to increase the viewshed in all directions. Therefore, if a site’s architectural features (e.g., watchtowers) demonstrate an attempt to cover viewsheds in 360°, then defense would be
significantly improved. Another relevant variable for visibility is the aspect of a site, as the direction of the slope implies that the viewshed is favored in that direction. The second variable is elevation (or prominence), as higher locations are more inaccessible from lower elevations. The third variable, accessibility is a measurement of ease of access, incorporating both natural and architectural barriers to a site’s approach. The final variable, area refers to the size of the site. Martindale and Supernant (2009:196) recognize that though larger populations are more defendable, larger sites may have more access points and, thus, be more vulnerable to attack. Therefore, a better measurement would be population (or structure) density, as a large, dispersed population would not be easily defendable.

Mayanists have adopted many of these same variables when discussing archaeological evidence for warfare in the Southern Lowlands. Though the decipherment of the Maya writing system has shed light on the ubiquity of warfare during the Classic period, Mayanists have debated the nature and scale of warfare and the traces it left on the archaeological record. Early in the twentieth century, some archaeologists claimed that warfare was limited only to occasional raids on small settlements on the outskirts of city-states aimed at capturing sacrificial victims (Means 1977, Morley 1947:70; Thompson 1954:81). This recognition of some degree of warfare and violence among the Classic period Maya was often overshadowed, especially among the public, by a perspective, echoing the romantic notion of the noble savage, that the Maya were a predominantly peaceful civilization of astronomer priests (Webster 2007). The rediscovery and publication of the Bonampak murals that vividly depict a battle scene and the display and torture of captives marked a paradigm shift, as a handful of notable
researchers began rejecting the prevailing view (Coe 1962; 1966; Rands 1952; Webster 1974). David Webster (2000:83) notes that alongside the decipherment of Maya glyphs, an equally important factor in acknowledging the presence of warfare during the Classic period was the documentation of fortifications in the Southern Lowlands.

Defensive fortifications surrounding Maya settlements were known from the period of the Spanish conquest, as Hernán Cortés (1986:371) described a village located on elevated terrain, surrounded by a lake, a deep stream, a moat, and a system of palisades combined with lookout towers. This observation points out that Maya defensive systems could incorporate naturally defendable areas with limited but effective fortifications. Defensive walls were also known archaeologically in the northern Yucatán during the Postclassic period at Mayapan (Shook 1952) and Tulum (Lothrop 1924) where well-built, cut stone fortifications completely enclosed dense settlement (aside from Tulum where cliffs defend the eastern, ocean-facing side of the site) (Ardren et al. 2005; Kowalski and Dunning 1999; Kurjack and Garza 1981).

Defensive features elsewhere in the Maya area differ in their scale, design, and intent. In some cases in the Southern Lowlands, defensive features consist of one or more lines of barriers, either ditches, earthworks, or stone walls that would have been combined with wooden palisades or other perishable materials (Webster 2000:73). In some cases, these defenses appear to have influenced the design of the settlement (as at Mayapan), while at others such as Becan, Cuca, and Tikal, the defenses were later additions (Puleston and Callender 1967; Webster 1976; 1979). At Tikal, the defensive system protected much of the hinterland but does not seem to have been completed (Webster 2000:73). Other sites were constructed in naturally defendable areas that were
later modified, such as the escarpment at Aguateca and the peninsula at Punta de Chimino which was converted into an island by a ditch (Demarest et al. 1997; Inomata 1997).

Other expeditious defenses were erected at some sites, including Dos Pilas, incorporating stone from adjacent buildings (Houston 1987; 1993; Demarest 1993; Demarest et al. 1997). Walls in the Petexbatun and elsewhere in Guatemala, including Muralla de León (Rice and Rice 1981), Zacpetén (Rice et al. 2009), and Tecolote (Scherer and Golden 2009) were constructed of unworked stone, leading Dahlin (2000) to suggest that similar features at Chunchucmil were hastily constructed and represented a last-ditch effort to defend the settlement. Researchers in the Petexbatun have contended that such walls of irregular stone served as the foundations for wooden palisades, especially in areas with little soil deposition (Demarest et al. 1997; Inomata 1997; 2008; Palka 2001).

Although defensive walls in the Maya area have been extensively excavated in recent decades, assigning a date to such features can be difficult. Stone walls generally lack artifacts, and any ceramics recovered nearby are heavily eroded. These features can sometimes be dated based on associated architecture. At sites with short occupations, like Tecolote, this methodology is fairly straightforward. However, at sites that have long occupations throughout the Classic period, or even earlier in the Preclassic period, a chronological placement can be nearly impossible. Following the impression among many Mayanists that warfare increased at the end of the Classic period, many of these features are assumed to date to the Terminal Classic period. However, Preclassic period
fortifications initially documented at Becan, Muralla de León, and other sites have
challenged this perspective (Rice and Rice 1981; Webster 1974).

Recent findings from LiDAR surveys in Belize and Guatemala have documented
forms of landscape modification that contributed to the defendability of hilltop centers. In
2013, the Western-Central Belize LiDAR Survey expanded off the 2009 Caracol LiDAR
survey, covering a large part of west-central Belize, including Xunantunich and parts of
the Belize River valley. At Xunantunich, researchers documented a series of terraces or
embankments to the east of the central acropolis (Chase et al. 2014). These embankments
differ from agricultural terraces in their scale and location on a steep hillslope. The
construction of these embankments also involved the excavation of a ditch, with backfill
material being deposited at the edge of the embankment. One interpretation of these
constructions is that they were defensive; the embankments would have provided high
ground as well as protection for defenders of the site (Yaeger 2018).

Similar features have been documented in the recent PACUNAM LiDAR
Initiative in northern Guatemala (Canuto et al. 2018). To the south of Holmul, Francisco
Estrada-Belli has interpreted one site as a fortified hilltop center, surrounded by several
moat and ramparts along the slopes of the hill. The same survey also documented a
possible system of fortresses or citadels to the west of Tikal at the site of La Cuernavilla.
According to Thomas Garrison and Stephen Houston (2018), these sites were protected
hilltop centers surrounded by defensive systems. The interpretation of these centers as
fortresses relies on their scale, architecture, and extent of occupation. Garrison and
Houston (2018) have distinguished between fortresses and refuges, defining the latter as
smaller or more temporary centers used in defending small populations. Fortresses, in
contrast, were permanent defensive outposts that made up a larger effort on the part of a kingdom. Garrison and Houston (2018) also distinguish between strategic, long-term defenses (designed to alter the course of a conflict) and tactical, short-term responses to threats.

_Landesque Capital_

The challenge in assigning function to certain features, as well as the observation that large construction projects could serve multiple purposes has influenced recent discussions of landesque or landscape capital in the PABC project area (Schroder et al. 2017). According to Amartya Sen (1959), landesque capital refers to modifications to the landscape, especially oriented toward improving agricultural yields, that once established can be maintained with minimal labor relative to the initial costs of their construction (Blaikie and Brookfield 1987:9; Brookfield 2001; Marx [1894]1992:618-619; Widgren 2007).

Other researchers have expanded the definition of landesque capital to encompass other anthropogenic features used and maintained over multiple generations, including paths, elevated causeways, canals (Erickson 2000; Erickson and Walker 2006), temples, shrines, markets, and institutions (Morrison 2014). In the Usumacinta River Basin, landesque capital can also refer to prominent locations like hilltops, watchtowers, and vista points that would have aided in monitoring trade routes as well as places of ritual importance like caves (Schroder et al. 2017). This expansion of the term landesque capital does not merely dilute its original meaning but rather highlights the importance of the built environment, regardless of function, as an enduring investment on the landscape.
Another useful approach is Elizabeth Arkush’s (2011:12) landscape patrimony, which helps to broaden the utility of the concept to include defensive features and fortification, which over time influence and perpetuate cycles of violence across a modified landscape.

These perspectives are applicable to El Infiernito, located on a heavily modified hilltop that was maintained for centuries. Furthermore, even when the functions of features may be unclear, the concept of landscape patrimony highlights that the modified landscape contributed to the agricultural and defensive efforts of multiple generations of people occupying the site. At a site like El Infiernito with two long, but distinct occupations, this understanding of the reuse of the built environment is crucial to building a narrative of the site’s history. Thus, different lines of evidence may support different or multiple functions for certain features, and in such a case the concepts of landscape capital and patrimony serve as useful umbrella terms to characterize ambiguous modifications to the landscape.

Trade, Household Status, and Craft Production

One of the assumptions of the effects of political collapse is that long distance trade routes break down, as they are assumed to be controlled by elite individuals (Renfrew 1984). In the Maya area, changes in trade routes have been cited as a cause for the collapse, but such shifts could have merely been a result of depopulation of the Southern Lowlands, an effect of the collapse (Golitko et al. 2012; Rathje 1973). The access to long distance trade items, particularly obsidian and jade from the highlands of Guatemala, have formed key parts of arguments describing the development and rise of states during the Preclassic period (Dobereiner 2016; Drennan 1984; Lesure 2004), and
as a corollary, the reverse might be expected after a period of political disintegration. Thus, after political collapse, such objects might not be expected to circulate as widely in the Southern Lowlands.

A different perspective, however, proposes that obsidian, jade, and other long-distance trade items may have been restricted by elites, and access to and trade of such materials would have actually increased due to the waning influence of the elite. This hypothesis depends on the scale of economic centralization by the state. Recent studies suggest that Classic Maya economies were composed of diverse forms of exchange, including redistribution and market exchange (Eppich and Freidel 2015; King and Shaw 2015). The existence of markets at Maya sites is evident today, though the identification of these places still proves challenging (Becker 2015; Hirth 1998; Jones 2015; Terry et al. 2015).

The Postclassic period economy has been repeatedly characterized as marked by an increase in commercialization. However, in these discussions, the Postclassic period is generally used as a shorthand to describe the Middle through Late Postclassic periods (post twelfth century), partly because the Epiclassic and Early Postclassic periods are less studied (Smith and Berdan 2000:284). Evidence for commercialization after the twelfth century includes large volumes of imported goods, ethnohistoric accounts of marketplaces, a merchant class, and the use of currency (Smith and Berdan 2000:285). Traded goods included feathers, greenstone, obsidian, turquoise, metal, salt, cacao, and textiles. Hendon (2004) notes the emergence of a pan-regional elite identity during the Postclassic period, centered on a Postclassic Religious style (Smith and Heath-Smith 1980) or a Mixteca-Puebla style (Nicholson 1982). Rather than being produced in a
specific area, these objects were produced locally, adopting a shared iconography across Postclassic period Mesoamerica.

All of El Infiernito’s architecture consists of stone platforms or substructures that would have supported perishable superstructures. Lacking any standing architecture, an assessment of the elite status of a residence must depend on the scale of a structure, the quality of its construction and the stones used in the substructure, and the location of the structure in relation to the plan of the site and other non-residential structures. Burials can also provide an important context to assess the elite status of certain individuals when offerings are present, especially when compared to a sample of other buried individuals.

**Domestic and Landscape Ritual**

Chelsea Blackmore (2008) defines four broad categories of household ritual at the site of Chan, Belize: 1) ancestor veneration, 2) house dedication/termination, 3) agricultural/calendrical ritual, and 4) feasting. Building off of Patricia McAnany’s (1995:11) research, ancestor veneration refers to the rituals and practices centered on the burial and commemoration of specific deceased ancestors who played important roles in a group or kin setting (Lau 2002; Li 2000). The selection of certain ancestors for burial is evident in the number of individuals recovered in household burials, which likely only represented a fraction of the people who occupied these structures (Blackmore 2008:209). The burial of ancestors beneath a house established a connection between the dead and the living, a kind of continuity that allowed later generations to draw power or legitimacy from deceased individuals (Kurnick 2013:119; McAnany 2014:1).
The features associated with burials were also symbolic of Maya worldviews and conceptions of the landscape. The Maya, through inscriptions from the Classic period and ethnographic data, described tombs as caves beneath mountains, represented by pyramids or other constructions (Brady and Ashmore 1999; Ashmore and Geller 2005; Vogt 1969; Vogt and Stuart 2005). These beliefs extended to non-elite contexts, for example cists, crypts, or other defined spaces for burials in domestic areas (Blackmore 2008:210). Other features associated with houses, including altars or benches, established spaces for ancestor veneration (Geller 2004; Gillespie 2000:145). The house represented the *axis mundi*, with its center in the three-stone hearth and the cardinal directions represented by the four corner posts (Taube 1998:432). Ancestor burials can also be transformed into non-domestic space, for example, forming ancestor shrines, which can be identified by their height and form, associated features and offerings, and sometimes their location at the eastern end of a patio or plaza (Ashmore 1984; 2007; Becker 1971; Chase and Chase 1987; 1994; Kurnick 2013:119; Leventhal 1983).

Other common forms of household ritual include caches, objects, and practices associated with dedicating and terminating buildings. Archaeologists variously term these ritual phenomena as ritual deposits, dedicatory or votive offerings, caches, or termination events (Mock 1998:3). As the intent can be difficult to discern, a more neutral terminology, such as cache, may be more appropriate for these offerings (Newman 2018). Still, ethnographic data suggest that some Maya communities distinguish between dedication rituals, which serve to ensoul or engender the built environment, and termination rituals, which are acts of killing or removing spiritual force from such places or objects (Freidel 1998:189; McGee 1998; Stross 1998; Vogt 1998).
John Monaghan (1998), however, challenges the concept of dedicatory ritual because it has been used to encompass too many practices. Instead, Monaghan (1998:50) prefers to interpret dedication as production, acknowledging that in Mesoamerica ritual does not take place separate from daily life. Instead, ritual is part of a set of activities that contribute to the creation and maintenance of a people’s way of life. Related to ancestor veneration, caches establish a link between past, present, and future designs of a structure, either highlighting continuity or ritually destroying earlier conceptions of the space.

In archaeological contexts, termination events are associated with extensive burning of buildings, large concentrations of broken objects, and the defacement of sculptures, monuments, and architecture (Bell 2007; Sharer et al. 2005). Dedicatory offerings can also include large deposits of artifacts, or ritual fill deposits, typically ceramics intentionally placed between different stages of construction (Connell 2000:145–146). Other offerings are more spatially defined by lip-to-lip vessels or architectural niches (Blackmore 2008:212). The association between such caches and their placement within the construction fill of buildings underscores the connection between the present form of a structure and the efforts of its creation (Pendergast 1998).

Sandra Noble (1998) further associates dedicatory events in elite contexts as dedications of authority. This variety of dedication involves the placement of monuments or benches within buildings to associate the dedication of a structure with the validation of an individual’s position of authority (Noble 1998:65). An example of such an event was depicted on Yaxchilán Lintel 1, set into the southeast doorway of Structure 33, depicting a performance by Bird Jaguar IV with Lady Great Skull, who carries a bundle
of jades. Such offerings solidified a performance, witnessed by a large group of people, in the permanent dedication of Yaxchilán’s largest and most visible structure and the seat of the royal court. In non-elite residences, such bundles served a similar purpose, establishing a new construction within a historical context, witnessed by members of the community.

Blackmore (2008) notes a third category of household ritual described as agricultural or calendrical ritual. In the agricultural context, the milpa served a similar symbolic role as the house, defining an ordered space within a larger understanding of the Maya worldview (Taube 2003). Agricultural rituals involved the veneration of water and maize deities, primarily Chac and the Maize god (Miller and Taube 1993; Taube 1992), as well as animals associated with water, including frogs, toads, snakes, and fish (Blackmore 2008:214-215; Gonlin 2007:102; Pohl 1981:524). In the Tzeltal community of La Selva, Ocosingo, Chiapas, I have been told that some farmers dedicate their milpas by offering a meal of chicken to workers and the land itself because chickens consume corn. Other archaeologists have linked water with ritual, especially in terms of political legitimation based on the control of water access (Lucero 2002; Scarborough 1998).

A form of public ritual commonly discussed by archaeologists revolves around communal gatherings that involved feasting, a communal act of consuming food and drink at special events (Dietler and Hayden 2001:3; Jennings et al. 2005:275). Inclusionary feasting as a gathering of different classes of community members can be used as a political strategy to forge bonds within a community while differentiating certain individuals who preside over the event (Kurnick 2013:116). Such feasting
typically would have coincided with other events, such as the construction of monumental architecture or some of the dedicatory events discussed above.

Assessing Integration within the Piedras Negras Kingdom

Integration refers to the extent that a site and its inhabitants were politically associated with other sites and individuals in the region. Integration may be horizontal, between similarly-sized sites and people of the same status, or vertical, between higher and lower ranked sites and between royalty, the non-royal elite, and the non-elite. The degree and nature of such integration can be assessed through numerous lines of evidence, including material culture, architecture, and settlement patterns.

Another useful methodology for interpreting integration is viewshed analysis. Viewshed refers to both the phenomenological practice of the extent of an individual’s view from a specific location as well as the GIS tool used to model such vistas (Wheatley and Gillings 2000). Quantitative models produced with GIS software differ from viewsheds in practice, primarily in producing a binary understanding of what is visible and what is not visible (Doyle et al. 2012:794). In reality, viewshed depends on the eyesight and height of the viewer, time of day, air quality, vegetation, as well as the size of objects being viewed. Reverse viewsheds and cumulative viewsheds can be more significant, as a site or object may be intentionally located in a place that is meant to be seen from multiple places. The quality of results from GIS also depends on the quality and resolution of the Digital Elevation Model (DEM), generally produced from various remote sensing platforms, including ASTER, SRTM, and AIRSAR (Golden and
Davenport 2013:150). Each of these platforms has its own disadvantages depending on the complexity of the terrain and the concentration of high vegetation.

According to Charles Golden and Bryce Davenport (2013:148–149), viewsheds were politically significant to the Maya, as epigraphers have identified the phrase *y-ichnal*, referring to a visual field associated with deities and rulers (Houston et al. 2006:173–175). Rulers’ actions took place within the view of deities, while subjects were within the purview of the *ichnal* of rulers (Golden and Davenport 2013:149). Furthermore, the design and placement of architecture and monuments was oriented toward specific viewing places and audiences (Golden 2010). In this light, visibility was important for communication and defense, and viewsheds were figuratively significant in defining who was under the sway of certain rulers. Golden and Davenport (2013) apply these concepts to the viewsheds from the South Acropolis of Yaxchilán. According to GIS predictive models, portions of the secondary sites of Tecolote, La Pasadita, and Oso Negro were visible from the high point of Yaxchilán, and these secondary centers were intervisible among themselves.

Other viewshed analyses incorporate least cost surface analysis (CSA) to interpret how movement across the landscape was monitored. CSA involves the generation of least cost paths, using a DEM to determine the fastest route across a landscape. Parameters generally include slope and direction of movement, whether cost is isotropic, the same in all directions, or anisotropic, in which cost differs based on uphill or downhill movement (Doyle et al. 2012:793). Again, the resolution of the DEM determines the quality and scale of the GIS results. For example, a low resolution (more than 30 m) is more useful in predicting movement over regional scales, whereas higher resolution is necessary to
assess movement within a site (Doyle et al. 2012:794; Richards-Rissetto and Landau 2014).

In one such study, James Doyle and colleagues (2012) apply these methodologies to the Buenavista Valley between Tikal and El Zotz, two adjacent but seemingly rival polities during the Late Classic period. Doyle and colleagues address changes in settlement across three different periods and compare these shifts to historical data. From the Preclassic period to the Early Classic period, settlement patterns shift from valley areas between El Palmar and Tikal, well-positioned for access to exchange routes, to defendable hilltop locations with extensive viewsheds. The seats of royal courts at El Zotz and Tikal, however, maintained access to exchange routes across the Buenavista Valley. By the Late Classic period, after El Zotz allied itself with Calakmul, Tikal’s settlement expanded to the west possibly to defend or monitor this region from rival polities.

Armando Anaya Hernández’s (2006) research in the Redención del Campesino Valley, Mexico adopted a similar approach, using a combination of archaeological survey, viewshed, and least cost analysis. According to Anaya Hernández, during the Late Classic period, secondary centers between Piedras Negras and Pomona were strategically positioned in defendable hilltop areas with viewsheds of the valleys and travel routes below. Prior to survey, Anaya Hernández generated a Dempster-Shafer model to predict site locations, based on the proximity to travel routes and distance from major centers (Anaya Hernández 2006). Only four sites were found within these predicted areas, the largest of which was the site of Alvaro Obregon 2. This site differs from other sites in the area in its monumental masonry architecture and its strategic
hilltop location, with commanding views of the predicted travel routes. Based on the find by members of the community of Alvaro Obregon of an inscribed wooden box in a cave, Anaya Hernández (2006) suggests that Piedras Negras controlled much of the Redención del Campesino Valley, via the site of Alvaro Obregon 2 during the Late Classic period (Anaya Hernández et al. 2001). Anaya Hernández’s (2002) surveys near Pomoná have also further documented that a secondary center, Panhale, controlled the Boca del Cerro, where the Usumacinta River flows out of the karst canyons of the Upper Usumacinta into the Tabasco plains (Houston et al. 2000). Epigraphic evidence supports the claim that Panhale was associated with Pomoná, as the former adopted Pomoná’s emblem glyph.

*Survey Methods*

Survey methods in the study region are limited by current land use practices. All land in the study region is either privately held or communally held as *ejido* land. Due to this modern land use, archaeologists must always obtain permission from at least one individual, usually the landowner, land holder, or a relative and at times from the *comisariado* (commissary) or other *ejido* officials. Rarely, land access is only granted when all *ejidatarios*, or members of an *ejido*, unanimously agree, and in some cases an agreement granting long-term field work is not feasible.

Within the region, community organization can differ significantly. Beginning in the 1950s, during the presidency of Miguel Aleman, the Mexican government encouraged the settlement of the region west of the Usumacinta River, in part to establish some semblance of management and control of the border with Guatemala. These initial landowners relocated from other Mexican states, founding new communities and
claiming large tracts of land owned by members of various families. This period of settlement has left its mark in modern placenames, including Nuevo Guerrero, Nuevo Jalisco, Nuevo Mexico, Nuevo Chihuahua and others, named for the original states of origin of these families. As part of their claim to the land, these families were also encouraged to clear much of the high canopy of the rainforest to symbolize that such areas were being actively used.

This area, of course, was already occupied by small groups of mostly Ch’ol speakers, as well as isolated populations of Lacandón speakers. Many of the Ch’ol-speaking groups, as well as Tzeltal-speaking communities who had migrated from the highlands, some of whom were evangelicals fleeing religious persecution, had founded small settlements within the larger areas claimed by landholders. Evangelical communities in general carry biblical names, including Nuevo Jerusalén and Nuevo Canan, whereas Catholic communities generally refer to the names of saints, including San Juan Sacrificios, San Luis, or La Selva (San Andrés). In reality, today these communities form a more diverse mix of mestizo, Ch’ol speakers, Tzeltal speakers, Evangelicals, and Catholics.

The gradual phasing out of ejido land continued under the presidency of Luis Echeverria beginning in 1970, however, under threat of peasant revolt, Echeverria reversed his position and undertook the largest program of agrarian reform since the late 1930s. At this time, indigenous and peasant communities were granted the legal use, although technically not ownership, of the land they occupied. Many of these communities that were established at this time were named after Mexican revolutionaries and heroes of the initial agrarian reform, including Emiliano Zapata, Alvaro Obregon,
Lazaro Cardenas, Alfredo Bonfil, Reforma Agraria, Redención del Campesino, among others. Finally, some communities were created when the government relocated people from newly established national parks and biosphere reserves, including Nuevo Montes Azules, named for the Montes Azules Biosphere Reserve.

Since 1991, *ejido* land has come under threat, after President Carlos Salinas de Gortari legalized the selling of *ejido* land. Indeed, today new *ejidos* cannot be established, and existing *ejido* land can be confiscated by the government if it is not being used. The changes to the *ejido* system in the early 1990s, along with the signing of NAFTA, were prime factors in the Zapatista rebellion in Chiapas.

Archaeological work in the region must take this complex mix of land use into account when conducting and planning long-term projects. People in the region, especially *ejidatarios*, are hesitant to invite outsiders on to their lands, in fear that the government will take an interest and force the land to be ceded. This threat looms especially heavy if the land holds significant archaeological resources. However, *ejido* management differs significantly throughout the region. In some cases, *ejidos* are treated like *colonias*, which are communities made up of independent landowners. In these types of *ejidos* and *colonias*, an individual may have total control over how they use their land.

In other *ejidos*, the land holder, *comisariado*, and even a majority or entirety of the *ejido* may have to come to an agreement, often in an *asamblea* or meeting of all land holders. At other times, an *ejidatario* may have complete control over their parcel, but they may prefer that the *comisariado* approve of the archaeological work. These factors require that the archaeologists have some flexibility in these situations. Finally, even independent landowners may decide that they are uninterested in archaeological work on their land.
and forbid it, which is the case with the site core of La Mar. Technically, INAH may have some authority and jurisdiction in these matters, but the PABC has never requested the direct involvement of INAH in such matters to protect the interest of local landowners and communities (Golden and Scherer 2015b).

Due to these diverse forms of landownership, systematic survey at a regional level is impossible west of the Usumacinta River. Instead, survey, or more accurately reconnaissance, follows a nonsystematic methodology not unlike that used by Teobert Maler in the late nineteenth century. Archaeologists rely on an invitation from community members to visit their land and register any archaeological sites or features. If possible, based on the landowner’s interest, archaeologists may return to conduct further survey, mapping, excavation, and other studies of the archaeological resources on that individual’s parcel. Often, archaeological sites tend to overlap multiple parcels, whose landowners are then approached for further permission to extend the research to adjacent areas. Though this methodology poses challenges early in the process of research, within a few years more landowners become comfortable with inviting archaeologists to their land, and opportunities can increase.

The project area is home to numerous communities, and not all have been equally interested in archaeological fieldwork. Some communities, such as Arroyo Jerusalén, are more remote, have fewer Spanish speakers, and have shown minimal interest in archaeological research. Other communities, like Nueva Esperanza Progresista, have a long history with the project and have developed a strong interest and working relationship with the PABC. Adjacent communities can be equally interested in pursuing this relationship, for example La Selva, or they may decline, for example Agua
Cristalina. Finally, some factions of communities have a history of actively rejecting, assaulting, or threatening archaeologists and other outsiders, as occurred at El Cayo in 1997.

Ideal scenarios involve a close relationship with a particular community or individuals within that community, who grant archaeologists the possibility of long-term research. For this reason, El Infiernito was chosen as the focus of this dissertation.

Excavation Methods

The PABC follows a similar architectural terminology to that used during the BYU-UVG Piedras Negras project, which in turn was based on Satterthwaite’s original terminology later modified by Shook and Coe (1961) at Tikal and adopted throughout much of the Maya area (Golden 2002:107). Any visible construction on the surface was named a structure (abbreviated Str.) and numbered based on a grid arbitrarily placed over the map of the site. This grid is made up of survey squares each measuring 100 x 100 m, numbered vertically starting with the number 1 and horizontally starting with the letter A. Thus, any survey square can be identified by the combination of letter and number (e.g., A1, A2, B1, B2, etc.). The placement of this grid over the map of the site is at the archaeologist’s discretion and requires assumptions regarding the overall design and orientation of a site if structure numbers are established before the surrounding region is surveyed. For this reason, the mapped portion of a site generally falls at the center of the grid, generally near the squares designated with the letters C, D, and E and the numbers 5–7. In the case of El Infiernito, the center of the site was assumed to lie toward the east of the grid with settlement extending to the west, based on the shape of the landform.
Formal structure numbers were only assigned to sites that were accurately mapped with a total station.

Structures were numbered within their survey square in sequential order, beginning with the number 1. This numbering was arbitrary, however, in general, the largest structure was assigned the number 1, and surrounding structures were given the following numbers in a clockwise direction. Basal platforms or patio and plaza space, also labeled as structures, typically were assigned the final number in a sequence. For example, within the survey square D5, the largest structure would be labeled Structure D5-1, followed by Structure D5-2, Structure D5-3, etc. Because the majority of sites investigated by the PABC are architecturally less complex than Piedras Negras, the terminology is generally simpler. However, when earlier structures were documented in excavations, the term “sub” was appended to the structure number, followed by a number beginning with 1, increasing from strata closer to the surface toward bedrock. A structure beneath Structure D5-1, would be labeled Structure D5-1 sub 1, and a structure beneath Structure D5-1 sub 1 would be labeled Structure D5-1 sub 2.

Excavations followed the lot system, commonly used in the Maya area, developed by the Tikal project (Coe and Haviland 1982) and simplified at Altar de Sacrificios (Adams 1971:12). The lot system is a flexible method for defining and interpreting excavation contexts, simplifying comparisons between contexts at different locations within a site. The location of a context is first defined by its operation, assigned a number when an excavation is first opened. An operation designates a particular location within a site, usually a structure or small area under the supervision of a single individual. A suboperation is a smaller portion of an operation and has been variously defined by
researchers. In my view, a suboperation usually consists of a group of units that are
coterminous, for example a grid or investigations of a specific part of a structure.
Suboperations are labeled with letters following the operation number. Therefore, for
example, Operation 1 may be made up of four different gridded areas, or suboperations,
labeled 1A, 1B, 1C, and 1D respectively. The following locational data is the square or
rectangular excavation unit that can have any dimensions, although no larger than 2 x 2 m
and usually no smaller than 1 x 1 m. Units are also numbered sequentially. Within a unit,
contexts are assigned a number and termed lot. Lots have flexible meanings depending on
the archaeologist, but they are the smallest contextual unit in the lot system. Excavation
levels, caches, burials, and objects can each be a separate lot. The entire sequence,
therefore, is labeled Site Name (Initials) - Operation - Suboperation - Unit - Lot. For
example:

<table>
<thead>
<tr>
<th>IN</th>
<th>El Infiernito Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operation (location within a site)</td>
</tr>
<tr>
<td>A</td>
<td>Suboperation (location within an operation)</td>
</tr>
<tr>
<td>1</td>
<td>Excavation unit (within a suboperation)</td>
</tr>
<tr>
<td>1</td>
<td>Lot (excavation level, context, or feature)</td>
</tr>
</tbody>
</table>

All artifacts excavated within this context and the context itself would be assigned the
same label, IN-1A-1-1.

Unlike the Piedras Negras projects, caches were not assigned unique labels.
Instead, they were assigned their own lot numbers. For example, IN-5A-6-5 refers to a
cache documented in Suboperation 5A, and its architectural context can otherwise be
determined by referring to the relevant section of the excavation report. Burials, on the
other hand, were numbered separately without reference to their context. Each burial was
numbered sequentially, beginning with 1 at each individual site. For example, three
burials were documented at La Selva, designated Burials 1–3, and six burials were
documented at El Infiernito, designated Burials 1–6. Burial numbers were assigned even
if the burial was not excavated and only encountered during excavations of other features.
Burials were also assigned lot numbers following the same methodology of other
contexts, and often burials overlapped multiple lots. During excavations, these individual
lots were preserved and noted to specify the relative locations of burial goods. For
example, El Infiernito Burial 3 consisted of two lots: IN-1C-2-3, which included the skull
and burial goods associated with that area, and IN-1C-3-3, which included the rest of the
individual’s body and artifacts associated with that area. Note that in this example both
lots and the burial itself were all numbered 3; however, in this instance that numbering is
a coincidence.
Settlement patterns research has a long tradition in Maya archaeology (Willey et al. 1965). In one sense, a settlement hierarchy provides a crucial first step in differentiating the size and relative functions of sites (Liendo 2003:58). In another sense, in the absence of inscriptions or excavations, a settlement hierarchy can initiate a discussion as to the political role of a site across the greater landscape, illuminating such concepts as community, territory, boundaries, and organization (de Montmollin 1989). Though simplistic reconstructions of politics based on site or structure design and size can be misleading (de Montmollin 1989:85-87; Iannone 2004; Yaeger and Robin 2004), the establishment of a settlement hierarchy is essential to begin to make sense of the data generated through archaeological survey and settlement patterns research.

The most frequently utilized interpretation of settlement hierarchies has been to distinguish between different levels of social complexity, namely between chiefdoms and states. A settlement hierarchy is emblematic of both systems of political organization; however, archaeologists have somewhat arbitrarily classified chiefdoms as exemplifying a three-tier settlement hierarchy whereas states present a four-tier settlement hierarchy. In particular, Marcus (1998:59-60) describes the Classic period Maya as exhibiting a four-tier settlement hierarchy, in which the upper three tiers served administrative functions to the state and were governed by hereditary lords. This contention may point to the common use of the term center when typifying primary, secondary, and tertiary sites. In principle, this assertion is not entirely incorrect, as archaeologists tend to attribute higher ranked centers as holding stronger political sway within the state, and epigraphy suggests
that at least some subsidiary centers were indeed ruled by nobles tied to the *k’uhul ajaw* through kinship.

However, the identity of many nobles who ostensibly governed lower ranked sites are unknown in epigraphy, and archaeologists have suggested that even the lower ranked households were important political participants (Ashmore et al. 2004; Joyce et al. 2001; Robin 2013). Furthermore, the line between chiefdoms and states has become increasingly blurred, as archaeologists recognize that such a system of classification relies on outdated cultural evolutionary models (Pauketat 2007). Still, recognizing such limitations, settlement hierarchies are crucial to any study of political dynamics.

*Settlement Types and Ranks*

In the PABC study area, the relevant approaches to settlement hierarchies have been adopted from the Proyecto Integración Política en el Señorío de Palenque (PIP-SP), located directly to the north, and the Sierra del Lacandón Regional Archaeology Project (SLRAP), located to the east across the Usumacinta River in Guatemala (Figure 6.1). These two systems differ slightly in their typologies; however, their goals are similar in determining the relationship between primary centers and their outlying sites (Liendo 2011; Golden et al. 2008) Therefore, the current study combines these two approaches, while raising specific issues in establishing a settlement hierarchy in the region. Furthermore, following the approach outlined by Rodrigo Liendo (2011), this study first identifies categories defined archaeologically, which are then translated to ranks that more subjectively attempt to attribute a certain level of political significance to these categories (Flores Esquivel 2011). First, the analysis begins with the lowest level of
analysis, the single structure, progressing to more complex arrangements, such as patio groups, finally reaching the level of archaeological site.

Structure Types

Residential Structures

Domestic structures can exhibit a variety of architectural plans; however, they tend to be low platforms supporting perishable buildings that resemble the design of ethnographic and ethnohistoric households in the region (Ashmore 1981:40-41). Wendy Ashmore’s (1981) “principle of abundance” assumes that based on their ubiquity, such low platforms must have served a primarily residential function. However, not all such structures were merely residential. Ashmore (1981) suggests that the average living space for residences was 20 m² throughout the Maya lowlands during the Classic period. Rodrigo Liendo (2003:59) suggests that this number was higher in the Palenque area, reaching 36.4 m², while the lowest livable space would have been 8 m². Any smaller structures would have served separate functions associated with other household duties, perhaps related to cooking, storage, or ritual.

The design, size, and quality of architecture have traditionally been used to characterize the wealth of households. For example, larger platforms tend to be identified with more elite families who perhaps represent the founding occupation of a site, whereas smaller structures are assigned to commoners. Often more important, however, is the quality of the architecture and stonework. The most elite residences were vaulted or had stone masonry walls covered with a perishable roof. In the absence of such stone masonry, the quality of the stonework used in the construction of the platform that
supported a perishable structure is indicative of the relative status of a household. For example, facing stones suggest a higher status, while unworked cobbles reflect a lower status.

Other architectural features associated with low platforms can be used to determine status, as well as the function of structures. Larger and higher platforms would have required staircases, while low platforms would have not necessitated a formal riser. Interior architecture also suggests differences in status. Interior walls may designate separate rooms with distinct functions or living areas for household members with varying statuses. Finally, interior platforms or benches may have served a variety of purposes. On the one hand, benches may have been used in a literal sense as places to sit or sleep, perhaps where important individuals would have engaged in dialogue with visitors, or multiple people could have joined together (depending on the size of the bench) for meetings or for other household activities, including craft production. On the other hand, benches may have been used to designate interior space, separating people from other areas (for example, in Structure 1 at Bonampak where the interior benches may have determined where viewers stood in relation to the paintings), or for the placement of important objects or offerings (Miller and Brittenham 2013).

The shape of platforms and interior architecture also relates to structure function and household status. The structures that make up patio groups can combine to form distinct shapes, including those shaped like the letter “L,” “U,” or “C.” These shapes may be formed by the alignment of multiple structures or by a single structure. Here, I interpret U-shaped patio groups to be made up of three separate structures, while C-shaped structures or benches are single structures or elements of interior architecture. In
general, across the Maya Lowlands, U and C-shaped structures are likely interchangeable terms. L-shaped structures are especially common at El Infiernito, where the interior corner formed by the “L” tends to orient toward a central place, and Charles Golden and colleagues (2008:263) note that U-shaped patios may be an architectural characteristic of sites associated with the Piedras Negras kingdom.

C-shaped structures and interior benches have been documented during the Late Classic period and are especially common during the Terminal Classic period across the Maya Lowlands (Bey et al. 1997; Freidel and Sabloff 1984; Mixter 2016; Proskouriakoff 1962; Rice 1986; Schwarz 2009; Tourtellot 1988). David Mixter (2016:209) has discussed C-shaped rear walls or interior benches as council houses when facing toward an open space. The design of a bench in the form of the letter “C” suggests that if used for seating, multiple individuals could have occupied the bench, facing each other or the open space formed by the letter “C.” This open space may have been used for performance or for important visits in the presence of a council associated with the bench (Bey and May Ciau 2014; Kowalski 2003; Mixter 2016: 75; Vogt 1969:272-281).

Beyond political implications, interior benches may have served functions associated with craft production, especially activities that would have required diverse steps and skills. One example is lithic production, especially in areas with access to local raw materials. In these situations, a C-shaped bench could have accommodated multiple individuals, each with a specific task associated with production, for example, a knapper to reduce the raw material, another to select appropriate flakes or blades, another to perform late stage thinning, etc. In such a scenario, C-shaped benches would have
provided discussion and community while even creating a type of assembly line for
efficient craft production.

Range Structures

The range structure, or any multi-room building significantly longer than wide, is
one of the least understood types of buildings at Maya sites (Seibert 2006). Such
structures are differentiated from other platforms by being higher, longer, exhibiting
facing stones, and a staircase (Liendo Stuardo 2003:60). These features are typical of
elite residences; however, Olivier de Montmollin (1989:51) has noted that range
structures often lay within close proximity to other structures within a patio group,
including pyramids and other buildings with probable civic-ceremonial functions. In the
Upper Usumacinta region in particular, exceptionally long range structures are known at
sites like Bonampak and Yaxchilán, accompanied by pyramidally-modified hills with
large staircases and ample plaza areas that would have surpassed space needed by the
population of the site cores. Range structures were likely crucial to the preparation of
ritual performances associated with the pyramidal structures, the most famous example
being depicted in the paintings of Bonampak, Structure 1. Excavations can determine in
each case whether a range structure served a residential function, but other functions
related to civic-ceremonial duties were likely important.

Palaces

At dynastic centers typically with inscriptions describing members of a royal
court, and in particular an ajaw, certain elite residences or clusters of structures can be
termed palaces (Leventhal 2010). In some cases, however, what archaeologists come to define as palaces, for instance the famed example at Palenque, were not necessarily the residences of the royal family. Rather, such “palaces” served specific administrative purposes, providing the seat or throne room for the *ajaw*, as well as areas for support staff (Stuart and Stuart 2008). Still, even such administrative compounds may have had residential sections, again for support staff and noble visits from outlying areas.

In the Maya area, despite its frequent use, the term palace has been employed to describe a diversity of structures across different sites (Andrews 1975:42; Arnauld 2001; Ciudad Ruiz 2001; Delvendahl 2005; Flores Esquivel 2011; Lamoureux-St-Hilaire 2018; Liendo 2003). In the Western Lowlands, one of the few examples of two sites with similar palace layouts is that of Palenque and Chinikiha, which attests to the political connection between the two sites during the Late Classic period (Flores Esquivel 2011:40; Liendo 2007). Such palaces consist of rectangular, elevated platforms with a combination of open and closed interior courtyards, often with long halls or “houses” (in the nomenclature of Palenque) separating public and private spaces. Atasta Flores Esquivel (2011:40) elaborates on the category of palace at other sites within Palenque’s orbit, suggesting that long platforms, or range structures between 2 and 5 m high may be considered palaces at lower ranked centers. Such structures are often located close to other civic-ceremonial precincts, including temple-pyramids, ballcourts, and large plazas.

Outside of dynastic centers and their subsidiary sites, palace-like structures may be present, though such buildings can hardly be termed palaces when they lack formal stone masonry or interior courtyards. In these cases, the largest range structures, sometimes termed “*casas grandes*” or “large houses” can be considered elite residences
Ancillary Structures

In some patio groups the smallest structures would have not served as habitable space. Liendo (2003:61) suggests that in the region around Palenque any structure under 8 m² would have qualified as an ancillary structure. Such ancillary structures, however, may have still been important parts of household activities, especially if the patio group, rather than the domestic platform represents the household level (Nelson 2005). Liendo (2003:61) notes that when these ancillary structures are located within the corners of patio groups, they likely functioned as kitchens or storage rooms. When associated with temple-pyramids or other structures with civic-ceremonial functions, such ancillary structures could have served similar functions associated with the storage of ritual implements or as kitchens associated with public rituals or feasting.

In other cases, small platforms may have related to household ritual, especially when located at the center of patio groups. In these cases, ancillary structures may have served as altars, where offerings were left or burned. Central, square-shaped altars are
known in the Western lowlands at sites like Pomoná and Palenque. In the latter example, David and George Stuart (2008) associate the altar structure within the Cross Group with the concept of the *axis mundi* and perhaps a ritual similar to the “Danza de los Voladores” of Papantla, Veracruz. At other sites in the area, like Benemérito de las Américas, Primera Sección, the most common patio group design is a set of four structures around a patio with a low, square platform altar at its center. In other examples, altars may be represented as single, carved stone monuments, either with or without inscriptions. Some may be circular (as at Yaxchilán), while others may be three dimensional depictions of objects or place name glyphs (as at Piedras Negras) (Stuart 2004). When not associated with the stela-altar cult known from sites with inscriptions, such altars may be associated with larger structures or temples near the patio group.

Archaeologists have observed a shift toward circular altar structures during the Terminal Classic period (Halperin 2017; Harrison-Buck and McAnany 2013).

**Temple-Pyramids**

One of the emblematic features of the Maya civic-ceremonial center is the pyramid, typically surmounted by a temple or other structures associated with a patron deity or royal ancestors (Taube 2013). Although variable, pyramids in the Western Lowlands are generally square-shaped in plan, covering an area of at least 120 square meters, and rising at least 5 m high (Liendo 2003:76). The finest pyramids in the region contain large volumes of stone fill covered with facing stones, with a stone masonry temple at the summit. However, the rugged terrain of the Usumacinta region offered
much flexibility in pyramid design, as builders could take advantage of natural hills for their temples.

Sometimes these hills were covered with additional fill and facing stones, while other times they were leveled and modified to a more desirable pyramidal form. Indeed, the erosion of the karst landscape of the region tends to form conical hills that require little modification to create a pyramidal form. When stone masonry is absent, a temple constructed out of perishable materials occupied a pyramid’s summit. Therefore, distinguishing between pyramids (for example, those at Palenque and Piedras Negras), which are built from the ground up using copious fill, and pyramidal hills (for example, those at Yaxchilán and Bonampak), that were modified from natural features, is useful in classifying structures.

All dynastic centers in the region contain at least one example of a pyramid or a pyramidal hill. Smaller, subsidiary centers in the region also typically have a single pyramidal structure (Flores Esquivel 2011:38). Even smaller centers and household groups contain pyramidal structures, but such features are generally smaller than Liendo’s (2003:76) measurements. In these cases, such structures are identified as pyramidal shrines (Yaeger 2010:246). This definition is distinct from the use of shrine to refer to any location on the landscape that was infused with sacredness (Woodfill 2007:2). The location of a pyramidal or household shrine in relation to a patio group or other structures has been noted as significant by some researchers, especially when located at the eastern end of a patio (Becker 2003; Leventhal 1983; Magnoni et al. 2014; Tourtellot 1983).
Ballcourts

The political significance of ballcourts and their inter- and intra-site distributions has long been discussed in Mesoamerican research (Santley et al. 1991). Present in nearly all dynastic centers, while less so in minor centers, the presence of a ballcourt within a Maya site has been associated with its position within a site hierarchy (Flores Esquivel 2011). For example, a site with a ballcourt may have some level of relative autonomy, while a site without a ballcourt may indicate a reliance on the nearest dynastic center for the civic-ceremonial activities associated with the structures. Furthermore, the number of ballcourts at a site, as well as the sizes or shapes of the playing alleys may reflect a similar hierarchy. Indeed, a small playing field would have restricted the types of activities to be performed within the ballcourt, as well as limiting public viewing space.

In addition, the shape of a ballcourt is suggestive of political ties between a site and the greater region. At its most basic design, a ballcourt consists of two parallel, rectangular platforms, generally 2 to 5 m high with a playing field of 15 to 30 m long in the Western lowlands (Flores Esquivel 2011:41; Taladoire 2001). Furthermore, the number of “endzones” may also have some significance. In the Usumacinta region, a single endzone, or a T-shaped playing field is more widespread than a double endzone, or an I-shaped playing field, which are more common in sites associated with Palenque and other sites in the Selva Lacandona, like Toniná and Plan de Ayutla.

Flores Esquivel (2011:41) observes that the majority of ballcourts are oriented north-south lengthwise, and Ashmore (1992:178-179) linked a southern position of ballcourts within sites to the underworld. Stephen Houston (2014) agrees with the relationship between ballcourts and the underworld, especially tombs; however, he argues
that the position of ballcourts relative to the cardinal directions was inconsistent across sites. In the Western Lowlands, some ballcourts are placed within sunken patios, possibly relating to this underworld association (Flores Esquivel 2011:42). At some sites, like Palenque and Piedras Negras, ballcourts are located near water sources or sweathouses, while at most other sites ballcourts are linked to other civic-ceremonial structures, like temples and palaces.

The distribution of ballcourts across minor centers in the Western Lowlands is variable, depending on the polity. Ballcourts are common within the Palenque polity, at sites like Chinikiha, El Lacandón, Lindavista, Santa Isabel, La Cascada, and San Juan Chancalaíto, among others. Typically, ballcourts at minor centers are smaller than their counterparts at the dynastic center; however, within the Palenque polity, the ballcourts at Chinikiha, Lindavista, and El Lacandón supercede the size of the largest ballcourt within the Palenque site core (Flores Esquivel 2011:42). The presence of larger ballcourts at these sites may indicate an effort on the part of the Palenque polity to assert its influence in distant locales, or alternatively a relative level of autonomy or the seat of local polities at these sites.

Within the Piedras Negras kingdom, ballcourts are less common, although they are present at a handful of minor centers. Among these, La Mar, Esmeralda, possibly Rancho Nuevo, El Porvenir, and Rancho Búfalo contain ballcourts, though the ballcourts at the latter two sites were constructed in the Preclassic period with no modification or apparent use during the Classic period (Dobereiner 2016; Kingsley et al. 2012). With only one exception (Rancho Nuevo) these ballcourts are all T-shaped in design. At La Mar and Rancho Nuevo, the ballcourts are notably small, measuring less than 20 m long.
by 4 m wide, although Andrew Scherer and Charles Golden (2012) suggest that a larger ballcourt may be located within the undocumented portion of the La Mar site core. These smaller ballcourts suggest that they may have been largely symbolic, or that the activities for which they were used were restricted. Therefore, the larger ballcourts at dynastic centers remained paramount in the region.

Other kingdoms in the region are less well-known, such as Toniná, Sak Tz’i’, and Ak’; however, the ballgame appears to have been crucial to the politics of Toniná based on the findings of captive sculptures from its largest ballcourt, and Plan de Ayutla (a site associated with the Ak’e or Sak Tz’i’ dynasties) exhibits the largest ballcourt in the region (Martos 2009). Yaxchilán is the outlier in this discussion because to this day, no site within the dynastic center’s area of influence has a ballcourt (Scherer and Golden 2012). This area includes Bonampak, a site notable for its monumental architecture, large plaza space, and paintings (completed by Yaxchilán artists). The minor centers identified by Charles Golden and colleagues (2008), including Tecolote, Oso Negro, and sites previously known like La Pasadita do not have ballcourts. In Mexico, Dos Caobas, a Yaxchilán minor center, does not appear to have a ballcourt, though its main structure is reminiscent of Structure 33 at Yaxchilán (Alejandro Tovalín Ahumado, personal communication, 2017).

Plazas

One of the most important types of structures at dynastic centers and minor centers are plazas, defined by an open space delimited by civic-ceremonial buildings. Flores Esquivel (2011:42) notes that plazas tend to cover areas larger than 1,225 m².
Dynastic centers and minor centers may have multiple plazas, corresponding usually to multiple temple-pyramids or other civic-ceremonial structures. However, the smallest minor centers will generally only have a single plaza, taking the form of a monumental patio group, a design known from minor centers like El Cayo and Dos Caobas. Some minor centers like Budsilha and La Selva may be smaller in scale, with no plaza, but they will typically be oriented around a central patio smaller than 1,225 m². Sites like Budsilha and La Selva seem to match these characteristics.

*Site Categories*

Due to its proximity to the current study area, the PIP-SP provides the best analog for establishing site categories or types, with the lowest categories representing the smallest and most informal sites and the highest categories corresponding to the most complex site designs. Liendo’s (2011) classification of five categories begins with the following basic site descriptions: isolated structures, patio groups, informal groups of structures lacking patios or a consistent orientation, multipatio groups, settlements with civic-ceremonial structures, and concentrations of ceramics, lithics, or other artifacts. The latter is not present in the current study area, due almost entirely to the general lack of ground visibility and the limited opportunity for systematic survey. In areas with improved ground visibility, such as plowed fields or burned milpas, artifact concentrations have not been noted to occur in the absence of architectural features.

Category 1 refers to a patio group, the most well-known and studied domestic settlement type in the Maya lowlands (Ashmore 1981; Ashmore and Wilk 1988; Tourtellot 1983). De Montmollin (1989:43) asserts that patio groups represent the
minimum level of sociopolitical organization in the Maya area, and Nelson (2005) suggests that they better represent the level of the “household” (5–6 people) than does the single structure. In the Maya Lowlands in general and the Palenque area more specifically, patio groups generally consist of between 2 and 4 structures, with a consistent orientation around an open patio. At El Infiernito, large L-shaped structures may resemble a patio group with two separate structures. Therefore, when combined with an open patio, a single L-shaped structure is classified as a patio group. Category 1 sites are assumed to have served primarily residential functions, and the appearance of manos and metates either on the surface or in excavations confirm these hypotheses. This category corresponds to quaternary centers in Liendo’s (2011) and Golden and colleagues’ (2008) settlement rankings.

Category 2 is the single structure, which is a poorly-understood type in the current study area due to the focus of excavations on multipatio groups. Single structures may be joined to so-called “invisible structures” that are not visible on the surface due to vegetation or soil deposition. Alternatively, single structures may have had interior divisions that would have defined activity areas, and outdoor spaces may have been used for kitchens or storage, with no permanent constructions associated with such features. Category 2 corresponds to quaternary sites in Golden and colleagues’ (2008) hierarchy, while Liendo (2011) ranks such structures as fifth in his hierarchy.

Category 3 are informal groups consisting of at least two structures with different orientations. A clear, central patio is also absent. According to Tourtellot (1983:97–121), such groups may have been established at a late date. Like Category 1 settlements, Category 3 sites are ranked fourth in the site hierarchy. Informal clusters of more than six
structures (Ashmore 1981:51) are generally not known in the study area, but they would also be classified a quaternary-ranked sites.

Category 4 are multipatio groups, structure-focused patio clusters or group-focused patio clusters (Ashmore 1981:51). These multipatio groups tend to reveal more heterogeneity of construction across platforms, at a level more pronounced than in Categories 1–3 (Liendo 2011:23). Such sites will not have civic-ceremonial structures, although many patio groups may have one or more structures larger and more elaborate than the others, demonstrating perhaps some degree of communal or public use. In these cases, lower level, or local political or administrative functions may have taken place.

Liendo (2011:23) notes in the Palenque region that Category 4 sites are made up of between 2 and 5 patio groups consisting of between 7 and 27 structures. Liendo defines these centers as towns, corresponding to tertiary centers in the PIP-SP ranking. Golden and colleagues (2008:257) on the other hand continue to rank such sites as quaternary centers if they have fewer than 10 patio groups with no definable site center. When a clear site core with public masonry architecture exists (without vaulted structures), with more than 10 patio groups, these sites attain the ranking of tertiary centers. This distinction is important, as tertiary centers, though diverse, remained key political players in the political landscape; thus, architecture with a likely administrative function can aid in distinguishing such sites from smaller towns or hamlets of mostly non-elite people.

Still, the arbitrary number of 10 patio groups may be too high in the study area (as Liendo’s numbers suggest near Palenque), although this value is reserved until further survey can clarify this issue.
Category 5 refers to sites with civic-ceremonial structures, including large plazas, ballcourts, temple-pyramids, and palaces or elite residences (Liendo 2011:22). These centers were arranged hierarchically among themselves, and epigraphy has suggested numerous noble titles arranged in such a manner, which probably reflected the status of the sites that these individuals managed (Jackson 2013). In Liendo’s (2011) classification, Category 5 includes primary and secondary centers; however, these types of sites can sometimes be distinguished archaeologically, even in the absence of texts, depending on the scale of architecture.

Primary centers will in nearly all cases have texts naming a k’uhul ajaw or an emblem glyph, while secondary centers with texts may name any other noble title including ajaw. Secondary centers may have their own toponyms but will usually be attached to emblem glyphs associated with a primary center. However, secondary centers, do not necessarily have their own texts, which may be partly due to their removal by looters, a lack of archaeological excavations, iconoclasm, or reuse in the past; or such sites may have never had a scribal tradition (at least in the permanent media of stone monuments). In these cases, secondary centers must be described archaeologically, as Golden and colleagues (2008) have done. In their hierarchy, secondary centers’ site cores generally cover areas lower than 1 km². Beyond architectural similarities in site core design and civic-ceremonial architecture, material culture from excavations will show strong allegiance to those of the nearest primary center. Burial traditions will also be similar (Golden et al. 2008:264). Stone masonry superstructures may also be present, in contrast to the platforms that supported perishable structures at tertiary centers.
Flores Esquivel (2011) further subdivides Category 5 sites into 4 subcategories, which helps to distinguish primary centers from secondary centers and to identify diversity among secondary centers. In his analysis, Category 5-1 refers to major civic-ceremonial centers (e.g., Palenque, Chinikiha), equivalent to Golden and colleagues’ (2008) primary centers. Category 5-2 includes secondary civic-ceremonial centers with a ballcourt, while Category 5-3 centers have no ballcourt. A fourth Category 5-4 is assigned to so-called “problematic sites.” This label is a provisional category that refers to sites in the Palenque area that lack civic-ceremonial buildings, except for temple-pyramids and plazas. An intriguing explanation for such sites may be attributed to an intentional “dual plan” (Flores Esquivel 2011:45), where two Category 5-4 sites may be separated by 1 to 2.5 km, forming a dispersed settlement pattern. The rugged terrain of the region provides the best explanation for this dispersion, as civic-ceremonial structures were placed on low ridges separated by possible farmland.

The primary difference between the PIP-SP and SLRAP settlement hierarchies is in the importance of the presence of stone masonry superstructures or vaulted structures in the latter’s primary and secondary sites. This discrepancy is entirely expected of survey projects located in two distinct Classic period polities. Due to the SLRAP’s hierarchy being based primarily on sites within the Piedras Negras polity (in addition to the Yaxchilán polity), that project’s approach is generally favored in the current study. In addition, due to the limits of survey methods in Mexico that are restricted based on modern land use and ownership, the size of sites (i.e. spatial footprint, number of patios) is less important than the quality of the architecture. The current study also acknowledges that civic-ceremonial structures may be present at tertiary centers, like Esmeralda, but in
all cases they will not be associated with vaulted architecture. A final issue to consider with problematic sites is that looting will almost always focus on the most formal structures; therefore, vaulted architecture may not be apparent at sites that have suffered intense levels of destruction. Still, the quantity of worked stones and presence of capstones may facilitate a determination.

Teobert Maler (1903), who conducted the first surveys in the region, first recognized secondary centers, though he did not use that term. With the help of local informants, he identified La Mar, Budsilha, El Cayo, and El Chicozapote. Monuments known from La Mar, El Cayo, and Chicozapote have identified these sites as secondary centers associated with Piedras Negras or Yaxchilán. Another site noted by Maler, El Chile, lacks data but was a secondary center of either Piedras Negras or Yaxchilán based on Maler’s drawings of a twin-stairway pyramidal structure topped by twin, vaulted superstructures. Armando Anaya Hernández’s (2006) surveys in Tabasco have documented numerous sites, including Alvaro Obregon, Francisco Villa, and Redención del Campesino, which appear to have been secondary centers associated with Piedras Negras’ offensive strategy against Pomoná during the Late Classic period. Scherer and Golden (2012) have identified two additional secondary centers archaeologically in Chiapas, including Laguna Oscura, Flores Magón (either associated with Piedras Negras or a relatively autonomous polity), and possibly Santo Domingo (perhaps related to Lacanjá Tzeltal). Other previously reported secondary centers in the region are in Guatemala, including Texcoco (Piedras Negras-affiliated), La Pasadita, Oso Negro, and Tecolote (Yaxchilán-affiliated). Although abundant secondary centers are located within
the current project area, Category 5-1 and 5-2 sites are the least understood archaeologically in the region due to the challenges in land access.

Uncategorized features refer to loci on the landscape that are not associated with settlement. Such features included concentrations of material, agricultural terraces, other terracing and landscape modifications, caves, and defensive features. These types of constructions are often located near ranked centers, but in many examples they have been documented in isolated places. Defensive features have been noted near the sites of Tecolote and La Pasadita, though Scherer and Golden (2009) have suggested that they are oriented toward defending a landscape rather than a site or community. Agricultural terraces are typically associated with a house mounds or patio groups, but in some cases they appear to be unrelated to any recognized settlement (Golden et al. 2016). Finally, caves are often used or modified even when a settlement is not apparent.

Preclassic centers can technically be categorized, and in the absence of excavations or surface materials such sites may theoretically be accidentally ranked as Classic period sites. A deeper understanding of Preclassic period settlement is necessary to develop a more detailed political hierarchy. However, Golden and colleagues (2008:252) observe that although several Preclassic period sites are known in the region, no single site seems to have exercised hegemony over distant settlements. Instead, each known site seems to have represented a small chiefdom. Many sites in the region, for example Yaxchilán, contain Preclassic period materials in secondary fill contexts attributed to Classic period construction, although sites with primary Preclassic period remains include Piedras Negras, El Porvenir, Rancho Búfalo, Macabilero, and El Infiernito. An interesting pattern is that Preclassic components of sites seem to have been
intentionally avoided by later Classic period activities. This pattern has been shown within the site of El Porvenir, at Macabilero/El Cayo, Rancho Búfalo/Flores Magón, and Lower/Upper/West El Infiernito (Kingsley et al. 2012; Schroder et al. 2017).

**Figure 6.1** Map of archaeological sites and modern communities in the region.

**Busiljá River Valley**

**El Infiernito**

El Infiernito is an extensive site covering a series of hills on the 14 hectare ranch of the same name and adjacent ranches to the south. Access to the ranch is via a 1.5 km walking path to the north of a large bend in the road connecting Nueva Esperanza Progresista to Arroyo Jerusalén, between the junction with the road to La Selva and the
junction between Nueva Libertad and Margarita Maza de Juarez. The path from the gravel road passes through a combination of cattle pasture, milpa, and low canopy vegetation before reaching the hilltop on which the site is centered, which is largely covered by medium canopy vegetation (Figure 6.2–6.4). Included within land held by the La Selva ejido, which lies 4 km to the southwest of the site, El Infiernito is actually closer to the ejido of Margarita Maza de Juarez, which is 3.25 km to the east. In fact, until fairly recently (likely the 1970s or 1980s), El Infiernito was part of the Margarita Maza de Juarez ejido, which was located somewhere within the vicinity of El Infiernito. The main ejido settlement of Margarita Maza de Juarez was moved to its present location after the recognition of the La Selva ejido by the Mexican government.

Figure 6.2 Map of El Infiernito showing GPS points from archaeological survey of the hilltop.
Figure 6.3 Map of El Infiernito, Upper and Lower Group structures.

Figure 6.4 View of the El Infiernito hilltop from the southwest. The West Group is located on the left summit, while the South Group lies on the right summit. The Upper Group is barely visible in the background between the West and South Groups.
El Infiernito consists of various patio groups on top of and at the base of the hill, surrounded by more dispersed, continuous settlement to the west toward the archaeological site of La Selva, which is 3.25 km to the southwest. The main hilltop on which the densest settlement is centered is shaped in a crescent, horseshoe, or C shape, with the opening in the landform facing the southwest. This formation is covered with abundant caves, springs, and limestone cliffs, typical of the karst landscape of the region but in such great abundance that the landform was likely part of a cenote long before the first settlement of the site in the Late Preclassic period. Although essentially representing an escarpment rising above the valley to the west, with higher summits to the east, the dry cenote is most characteristic of the pitted karstic terrain with hummocks described by Mario Aliphat (1994), who reserves the term escarpment to describe the anticline and canyons through which the Usumacinta passes between Yaxchilán and the Boca del Cerro. This natural geography divides the site of El Infiernito into two areas: valley (lower) and hill (upper).

The majority of architectural clusters lie in the upper, hill portion of the site. I have identified four architectural clusters covering the hilltop: the three upper clusters are the Upper or Main Group, the West Group, and the South Group. The Upper and West Groups lie on top of the main crescent-shaped hill, while the South Group lies on a separate landform that consists of a long hill trending west to east. This South Group hill is immediately south of the crescent-shaped hill and blocks the opening at the southwestern end of the main, crescent-shaped hill. The only documented architectural cluster in valley areas consists of the Lower Group, which sits in the middle of the area formed by the C-shaped hill, which today is the bottom of a dry cenote. Other
architectural clusters are located in the piedmont areas of the hill and adjacent hills, especially at the western and southern ends of the South Group and the western end of the West Group. Furthermore, along the western approach to the site, small architectural clusters flank the route, likely used in part to monitor this path.

The Lower Group consists of a series of terraces that rise to the West and Upper Groups. The first terrace connects the westernmost point of the South Group hill to the southwesternmost point of the crescent-shaped hill. This terrace is approximately 4 m high and up to 20 m long and appears to have formed two functions (Figure 6.5). The first relates to the obstruction of the main route to the Lower and Upper Groups; this terrace wall seals off the opening formed between the crescent-shaped hill and the South Group hill (Figure 6.6). One of the hypotheses is that this terrace served a defensive purpose related to embankment features documented elsewhere in the Maya area. The second possible function of the terrace is agricultural or for the purposes of water management. Approximately 500 m to the east of the terrace, a natural water spring emerges from the base of the crescent-shaped hill, which forms an arroyo that flows through and to the west of the terrace. Today, the arroyo to the west of the terrace is dry, although water reemerges from another spring further west. In the peak of the rainy season, the terrace may have controlled the flow of water from the spring to areas to the west.
Figure 6.5 Monumental terrace (Structure B4-1) and freestanding wall (Structure B4-2) west of the Lower Group. Structure B4-2 is visible at the upper far right of the photo.

To the north, a second large terrace rises to the main plaza of the Lower Group. The Lower Group consists of five structures lying on top of a lower and upper (slightly elevated) terrace. The entrance to the Lower Group from the south reveals a large main plaza flanked on the left (west) by a massive terrace construction up to 8 m high and 40 m long and to the right (east) a large boulder measuring up to 3 m high. This boulder does not appear to have been modified and no cultural remains were encountered on top of or at the base of this feature. Still, the natural boulder would have been significant to the design and use of space in the Lower Group. The large structure to the west (Structures C2-1 and C2-2) consists of at least two large terraces made of unworked, irregular stone, that climb to a large, open space (Figure 6.7). No stairway is evident on this large structure; thus, the likely approach to the top of the structure could have been at
its southwestern and northeastern sides. At the top of the structure is another natural boulder, smaller than the one in the main plaza.

**Figure 6.6** Map of El Infiernito showing the structures in the Lower Group at top center in relation to Structures B4-1 and B4-2.

**Figure 6.7** Structures C2-1 and C2-2, Lower Group.
From the plaza moving to the northeast, the Lower Group climbs a second terrace measuring less than 1 m tall to a second plaza space. This space is dominated by two structures that are roughly parallel to each other. Though this design resembles a large ballcourt, this possibility seems unlikely, as the structures are not entirely parallel and the space formed between them is especially large and open, distinct from other ballcourts in the region that form much smaller alley space for a playing field. The purpose of the structures is unknown, but they do not appear to have been residential based on the lack of interior space despite their size. Surrounding these two structures is a single terrace to the north, east, and south that forms the main approach to the site’s Upper Group.

The Upper Group is the most densely settled part of El Infiernito, consisting of a series of architectural clusters built into the natural, local summits of the hilltop. From these local summits, expansive vistas of the valley to the west dominate the viewshed. The two largest structures at the summit of the hill are Structure E1-1 to the northwest and Structure E2-4 to the southeast each overlooking residential patio groups (Figure 6.8). Structure E1-1 was built on top of a large substructure or platform (Structure E1-3) approximately 2 m high, with a well-preserved southwestern wall that still retains much of its exterior stucco. The likely approach to Structure E1-1 was from the northwest via a poorly-preserved stairway rising from a patio space (Structure E1-6). Two other structures surround this patio, including the L-shaped Structure E1-4 to the northwest and northeast and the smaller Structure E1-5 to the west. At the center of the patio (Structure E1-6) is a small circular altar (Altar 1), measuring 30 cm in diameter, representing the only stone monument known from the site.
Figure 6.8 Map of structures in the northern portion of the Upper Group of El Infiernito.

To the northwest is another architectural group centered on Structures D1-1 and D1-2. Structure D1-1 is an L-shaped platform oriented toward a large patio area to the southeast formed by the top of Structure D1-2, a large substructure built into the natural local summit. To the southwest of this monumental structure is a small structure, Structure D1-3 built into a terrace in the side of Structure D1-2. To the east is a large patio formed by Structures D1-2 and Structure E1-6 to the southeast. Around this large patio are smaller structures, including Structure D1-4 built into what appears to be a natural hilllock or rock outcrop. To the southwest is a small patio group focused on Structure D1-5 and the patio formed by the terrace, Structure D1-7 (Figures 6.9–6.10). This terrace continues around the northwestern portion of the site to the east and to the
north. Structure D1-7 surrounds Structures D1-2 and E1-1, where another terrace approaches the north of Structure D1-4. This terrace continues to the southeast where it forms the main plaza of the Upper Group, finally ending to the southwest in a cliff face to the east of Structure E2-4. The feature continues around the southwestern side of the hill from Structure D1-6 to Structure E2-5. Below Structure D1-7 is a lower terrace, numbered Structure D1-8.

**Figure 6.9** Retaining wall of Structure D1-7, the monumental terrace at the northwest end of the Upper Group.

**Figure 6.10** The top of Structure D1-8, one of the monumental terraces at the northwestern end of the Upper Group.
Further terracing is noted to the north of Structure D1-1. In general, such terracing is on a smaller scale than the terraces of Structures D1-7 and D1-8. The latter two structures, therefore, are considered to be architectural while the smaller terracing to the north of Structure D1-1 may have served an agricultural purpose.

Descending Structure D1-8 to the west, a freestanding wall blocks access to the Upper Group from this direction. This wall measures approximately 60 cm high with a width of 140 cm. No other architecture is closely associated with this feature, which may have supported palisades to protect the Upper Group and its agricultural terraces.

To the southeast of one of the main clusters of the Upper Group, labeled Structure E1-1, is a large plaza formed by the space between Structure E1-6 and Structure E2-1. The latter, Structure E2-1 represents a large substructure that supports Structures E2-2 and E2-3. Structure E2-2, located at the southeastern side of the substructure Structure E2-1, is a small range structure, likely serving a residential purpose. Structure E2-3, however, reveals a more complicated design that zig-zags forming eight corners and an elaborated C shape (Figure 6.11). This structure is best described as a bench, as it does not form enough interior space to have created habitable space. This bench is oriented toward the large plaza space to the northwest and the architectural group centered on Structures E1-1 and E1-6. Structure E2-3 may have therefore been a viewing platform associated with activities or performances that occurred in the main plaza of the Upper Group.
Figure 6.11 Map of structures in the central portion of the Upper Group of El Infiernito.

To the southeast is one of the largest structures at the site and the high point of the Upper Group, Structure E2-4 (Figure 6.12). This structure faces toward the northwest, overlooking a patio defined by the substructure E2-7. On the southwestern side of this patio is a large range structure, Structure E2-5 and to the northeast is a lower range structure, Structure E2-6. With Structure E2-4, these structures form a U-shaped arrangement oriented toward the northwestern end of the site (Figure 6.13). Settlement however continues to the southeast, behind Structure E2-4 is a subsequent long patio space consisting of two low mounds, Structures E2-8 and E3-1 built into natural rock outcrops. These two structures lie at the edge of steep cliffs that descend at least 30 m down the northeastern side of the hill.
Figure 6.12 Map of structures in the southeastern portion of the Upper Group.

Figure 6.13 U-shaped patio group centered on substructure E2-7 facing south with Structure E2-5 in the center foreground and Structure E2-4 in the left background. Structure E2-6 is off camera to the left.
As the hill shifts to the southwest forming the crescent shape, terraces and modifications continue to the southern tip of the hill (Figure 6.14). The main feature of this area is a large cave entrance (Figure 6.15). This cave is shallow and was full of ceramic sherds. Furthermore, the cave walls had all been modified, likely to extract rock for building material in the Upper Group. Inside this cave, a human vertebra was also documented, and numbered as Burial 2, although the remains were left in place and not excavated.

Figure 6.14 Map of the southwestern portion of the Upper Group.
The West Group, 150 m to the west of Structure C2-1, resembles the Upper Group in its location on a leveled summit of the hill (Figure 6.16). However, this area consists of smaller structures, all likely habitational, oriented 10°, which differs from the 50–60° orientation of the Upper Group. The West Group appears to have been a continuation of the terracing of Structure C2-1 and the base of the hill. For this reason, the West Group is coeval to the Lower Group and likely a small Late Preclassic period village associated with the small ceremonial center at the base of the hill. The West Group consists of 20 low structures, including 4 terraces that climb to the western summit of the crescent-shaped hill. The largest structure of the West Group, Structure A3-1 measures 1.5 m high and was looted prior to the current landowner acquiring the ranch. Structure A3-1 is oriented 50°, contrasting with the consistent 10° orientation of the other structures in the West Group. This distinct orientation is considered to have been a
product of a chronological difference in the construction of Structure A3-1, likely built during the Late Classic period. Further survey between the West Group and the Upper Group, along the crest of the hill, revealed no evidence for settlement or landscape modification. Reaching a natural saddle between the Upper and West Groups, no structures were visible, even though this area would have formed one of the most accessible approaches to the Lower Group to the south and the Upper Group to the east. Exposed bedrock could have been incorporated into a defensive feature, but no postholes were noted.

Figure 6.16 Map of West Group structures.
To the west of the West Group, additional settlement descends part of the hill. Approximately 400 m to the west of the West Group, a large hill in the shape of a cone forms a dominant feature in the landscape (Figure 6.17). Some local communities describe such conical hills facetiously as volcanoes, or “El Volcán,” based on their shape and steep sides, but they are actually formed by the natural erosion of the karst topography. After being deforested, these hills erode in such a way that rock is uncovered at their summits, leading some people to believe that the hills have risen in height over recent decades. The southern side of this hill appears to have been modified to form a stairway or terrace rising to the summit. At the summit, abundant loose cobbles also suggested that an informal platform had been constructed on top of the hill. This structure would not have been likely to have served a residential purpose, and instead may have been a type of defensive watchtower associated with the defensive wall restricting access to the Lower Group of El Infiernito. To the south, a range residential structure with an interior bench was documented, and to the southwest, an elaborate courtyard was also constructed in this valley area.

![Image](image_url)

**Figure 6.17** The hill known as “El Volcán” to the west of El Infiernito at center, viewed from the South Group, facing northwest.
The South Group is located 300 m to the south of Structure C2-1, on a separate hill trending east-west. The South Group is made up of terracing around steeply modified local summits. The natural topography consisting of cliffs and cave entrances continues in the South Group. The most interesting architectural cluster within the South Group lies at the easternmost point of the long hill. This area was terraced, but unlike the terracing in other parts of the site that leveled the hillside, this area was constructed somewhat haphazardly, following the natural topography creating a type of saddle or ramp that rises to two structures flanking the terrace (Figure 6.18). These two structures are steep and inaccessible, looming over the surrounding landscape. This architectural group may have formed a gate to the site from the southeast, or it may have served a more direct, defensive purpose to protect this edge of the site.

Figure 6.18 Sloping terrace or ramp flanked by lookouts on the South Group hill.
On the southern descent from the South Group hill, various smaller architectural groups were built into terraced hillsides. The presence of metates on the surface of this area suggest that these structures served a residential purpose. This settlement pattern is not common archaeologically, as settlement tends to occur either at the top of hills, in piedmont, or in the valley, rather than on steep hillsides. These types of construction are, however, more common in modern settlements located in such environments, for example, Arroyo Jerusalén, 11 de Julio, and Nuevo Canaán. To the east of these terraced, residential structures is a large spring that exits the base of the South Group hill. This spring apparently forms the primary water source for the modern community of La Selva, and the Margaritas Maza de Juarez community was located somewhere in this area prior to the ejido of La Selva claiming the water source and being officially recognized by the Mexican government. More settlement was identified to the east of the spring, but the spring marks the boundary of the El Infiernito ranch with another landowner.

Although no ceramics were recovered in surface finds, the South Group probably was built primarily during the Late Preclassic period. Evidence from excavations in the Upper Group suggest that massive transformations to the hill took place during this period, consisting almost entirely of leveling, terracing, and the construction of mounds on top of local summits. More elaborate architecture was built during the Late Classic period, and nothing like the Upper Group, dating to the Late Classic period, was documented in the South Group. The only exception is perhaps the “saddle” documented at the eastern end of the South Group, which may have been modified and used for defense during the Late Classic period.
Cueva de las Ollas

Located 2 km to the southwest of the town center of the ejido Margarita Masa de Juarez, is the Cueva de las Ollas (Figure 6.19). This cave is only one of apparently multiple caves in the vicinity that contain the remains of jars and other offerings. Although much of the surrounding region was surveyed, no structures or other cultural features were documented.

Figure 6.19 Cueva de las Ollas.

The site of Cueva de las Ollas is located near the summit of a line of hills that mark the modern border between the ejidos of Margarita Masa de Juarez and La Selva, as well as the limit between the municipios of Palenque and Ocosingo, respectively. Within a drainage 30 m below the summit of these hills, lies the cave entrance, which measures 2 m long by 60 cm high, which opens slightly to an interior space measuring 3 m long by 1 m wide. Inside and to the southeastern rear of the cave are four nearly intact large, high-
necked jars (sub-class 3.8 based on Jiménez’s classification), along with numerous other sherds. Beneath the cave entrance is a rim fragment of a fifth jar. Two of the jars appear to have been ritually terminated based on the presence of small holes in their sides. Finding such remains in situ is rare, and the landowner explained that someone once tried to remove the jars, struggling to fit them through the narrow cave entrance. After a dream, he returned the jars to their original places.

The only other known cave in the region with equally well-preserved remains is the Cueva de los Jarros Rotos. However, this cave is directly associated with a settlement, whereas the Cueva de las Ollas is isolated from settlement. Currently, the nearest site to Cueva de las Ollas is El Infiernito, 1.5 km to the west.

**Santa Marta**

The Santa Marta ranch is part of the colonia of Nueva Esperanza Progresista and contains at least two architectural complexes as well as scattered platforms on the surrounding hills. The main settlement lies 4 km to the northeast of Budsilha. The larger of the two groups of mounds is at the western end of the ranch, on top of a low hill overlooking the Busiljá River 150 m to the west (Figure 6.20). This location is also roughly 2 km upstream from the waterfalls that form the confluence with the Usumacinta River. This architectural complex consists of at least 10 mounds, and the settlement is divided in half by a fence running from west to east. The largest patio at the site lies to the north of this fence but it was not investigated due to the absence of the landowner. Instead, the southern portion of the site was documented.
Figure 6.20 Map of the southern portion of the main group of Santa Marta.

Although a large patio group is visible to the north of the fence, the rest of the site does not follow a clear orientation. One exception is at the western end of the site where a long range structure, Structure B3-1, forms a large plaza space with the natural, modified hill to the east (Structure C3-3). Structure B3-1 reveals interesting architecture, consisting of a large stairway along its southeastern side, which climbs up to the remains of at least two perishable structures. Between these two superstructures, an alleyway was formed that leads to a small, 5-m long sunken patio at the northwestern corner of Structure B3-1. The shape of Structure B3-1 and its interior architecture suggest that it represented an elite residence. To the east, the top of Structure C3-3, the natural hill may have also been
modified and leveled. This flat space on top of the hill is intriguing due to its large scale; however although it appears to have been intentionally leveled, no structures were built over this part of the hill. To the north, a large mound, Structure C3-1, overlooks the space to the south, as well as the large patio group to the north of the fence.

On one occasion, while clearing grass at the base of Structure C3-1, the landowner’s son found four stone barkbeaters. This evidence suggests the presence of a midden or refuse area along the southeastern side of this structure and may indicate an administrative purpose for the structure associated with producing bark paper or other materials. To the east, Structure C3-2 represents a house platform on top of the same modified hill, Structure C3-3. The strategic location of the site near the Busiljá River, and the expansive views from this structure suggest that Santa Marta could have been positioned along a trade route between La Mar/Budsilha and areas downstream from Piedras Negras. This setting echoes the location of the site of Boca Chinikiha, located near the confluence of the Chinikiha and Usumacinta Rivers and thought to have been a transhipment center where cargo was transferred from foot to canoe, or vice versa (Maestri 2018).

To the south, 200 m from Structure C3-1 and the epicenter of Santa Marta, a set of low-lying structures are located on a lower platform below the modified hill, Structure C3-3. Here, two parallel, 10-cm high platforms form a small alley. These structures were only visible due to a recent milpa burning. Without excavation, the purpose of these constructions is unclear; however, they are not likely to have served a residential purpose due to their small scale. The existence of these low structures at Santa Marta suggests that the issue of “invisible structures” may be a concern in the region. In this area, rim
fragments of basins characteristic of the Late Yaxche (AD 700–750) and Chacalhaaz (AD 750–800) periods were also found.

The second group of mounds lies 1 km to the east of the main group. While the main group is currently used for cattle grazing, the second group is still largely forested with medium canopy vegetation. This second group consists of a large mound on top of a 30 m high hill with a smaller mound to the north. At the base of the hill to the south, abundant ceramics were eroding out of the ground. These ceramics were also associated with a nearby cave with a large entrance but shallow depth. The cave appeared to have been used as a quarry for stone. More mounds were visible to the north on the adjacent ranch. Even with the minimal survey of surrounding settlement, and without visiting the main patio group of the site, Santa Marta clearly represents one of the largest tertiary-ranked centers in the region, certainly on par with El Infiernito, which is visible from parts of Santa Marta and only about 2 km distant (check). These data suggest that El Infiernito may have been associated with Santa Marta, either ritually or as a hilltop refuge.

**El Esfuerzo**

El Esfuerzo consists of three architectural groups and a cave located to the southwest of the Carretera Fronteriza between the communities of Ojo de Agua and Busiljá (Figure 6.21). Located a mere 2.7 km to the south of the center of La Mar, El Esfuerzo likely represents a small tertiary center associated with the southern periphery of La Mar. Like La Mar, El Esfuerzo’s largest architectural groups lie at the base of the foothills of the Sierra Guiral, well-positioned to access the expansive valley west of the
Usumacinta river as well as the narrow canyons that descend through the mountains from the Santo Domingo valley to the west.

**Figure 6.21** Sketch map of El Esfuerzo.

Group 1 is located on the eastern side of the steep foothills, immediately below a natural gap formed a canyon. Five small hills near this entrance were modified to form a series of terraces that descend gradually toward the valley. The tallest, westernmost hills have a prominence of approximately 10 m above the valley. Each modified hill has a small platform at its summit, with a third platform lying between the two westernmost hills. To the east are two shorter hills, each with a platform, and the aforementioned terraces or stairs descending to the valley. One of these modified hills appears to be
topped by a small T-shaped ballcourt or perhaps a type of gate or entrance, although further investigations are necessary to confirm this possibility. These platforms are all oriented equally to 60° from magnetic north.

Approximately 150 m to the northwest of Group 1 is an impressive cave known locally as “La Cueva de los Jarros Rotos.” Although the entrance to the cave is small and unassuming, the interior opens forming ample space. Inside the cave are numerous near complete jars and countless other fragments of ceramics, and some of the jars have calcified to the walls of the cave. In some cases, worked, tabular stones appear to have been placed intentionally to form altars in natural recesses and niches. Although these altars have not calcified, they likely represent prehispanic constructions.

The largest architectural group, Group 2, is located 400 m to the north of Group 1. Group 2 also consists of a series of platforms placed on top of a natural hill. At the southeastern side of Group 2 are three platforms that form a small patio space. To the northwest are additional platforms that form a more complex design of three patios. The central patio is the largest and abuts a series of at least five terraces that descend to the north. At the northwestern end of the central plaza, the largest platform has an exposed exterior wall, reminiscent of construction seen at other sites including Santa Marta and Maracas, the latter located 2 km to the northeast of El Esfuerzo (Scherer et al. 2013). The third patio to the northwest is the most restricted area at the site and is encircled on three sides by a U-shaped platform, a typical design in the area that seems to be associated with Piedras Negras subsidiary sites (Golden et al. 2008:263).

In the natural pass to the site near Group 1, two low stone features may represent defensive walls or a type of gate. These features are located 100 m to the southwest of
Group 1. Although heavily disturbed by cattle and possibly by a seasonal arroyo, two alignments of worked stone appear to be in situ, and one in particular is architecturally similar to features known to the west of La Mar, in similar passes or bottlenecks that would have provided access between La Mar, Toniná, and sites to the west. Scherer and colleagues have suggested that these defensive features were part of a community-focused system of defense to protect La Mar from incursions from the west (Scherer et al. 2013:58; Scherer and Golden 2014a). One possible explanation for the location of El Esfuerzo was to guard or monitor people following an alternative entry to the valley west of the Usumacinta basin and to defend the southern periphery of La Mar.

Further evidence for El Esfuerzo’s strategic position is a 60 m hill. On top of this hill are three heavily looted platforms, placed linearly from northeast to southwest. Each platform is larger than the other, with size increasing toward the northeast. Also to the northeast is a large area of exposed bedrock that appears to have been modified. This bedrock faces the easiest approach to the hilltop, but the reason for its modification is unclear -- perhaps it was modified to form a terrace or less likely it may have formed part of the base of a defensive wall.

La Selva

The archaeological site of La Selva is located between the modern towns of Nueva Esperanza Progresista and La Selva, for which the archaeological site is named. The archaeological site of La Selva lies on a low ridge that runs northwest-southeast, creating a small valley with a parallel ridge 170 m to the northeast. This entire ridge
likely contains settlement associated with the center of La Selva, but access challenges have limited the amount of survey.

The center of the site consists of eight structures, consisting of a large patio group at the northwesternmost edge of the long ridge (Figure 6.22). The two largest structures at the site, Structures C3-1 and C3-6 were constructed on basal platforms, Structures C3-3 and C3-7, respectively. Each platform has an additional, smaller ancillary structure. Between Structures C3-3 and C3-7 is a large patio space, formed by a natural, low hilltop that was leveled and modified. In the middle of the patio is a rectangular structure, Structure C3-4, which may have been a small residence or a large ancillary structure such as an altar. Structure C3-6 is a large range structure with evidence of interior architecture at its southwestern end.

Figure 6.22 Map of the epicenter of La Selva.
Structure C3-1 is located at the northwestern end of the patio, and it overlooks the valley to the northwest. This structure was almost entirely destroyed by a massive looter’s pit dug by hand over multiple years by villagers from nearby towns. However, the southeastern side of Structure C3-1 is better preserved, showing the remains of a stone masonry wall that formed the southeastern side of Structure C3-1’s superstructure. Structure C3-1 was likely originally a vaulted structure, and the high quantity of worked stone in the looter’s pit as well as downslope.

The preserved wall of Structure C3-1 stands nearly 2 m high (at the southern corner), but most of the structure is now only 1 m high. The northeastern and southwestern exterior walls are also partially preserved, standing approximately 1 m high. The interior space of the structure measures approximately 4 m long from the eastern corner to the southern corner, while the other dimension is unknown, although Structure C3-1 appears to have been essentially square-shaped. The looter’s pit is nearly 2.5 m deep, revealing three floors. These floors were constructed of stucco nearly 30 cm thick, slathered over loose, large cobble fill. While digging, villagers from the modern community of La Selva encountered three burials, one of which (Burial 3) was placed in a large, simple crypt in the northeastern side of the structure and covered on the southwestern side by a large, 80 cm x 70 cm carved stone, now located at the bottom of the looter’s pit. The other two burials were sealed in small cists that were encountered during archaeological excavations of the site in 2015. All three burials appear to date to the earliest known construction, Structure C3-1 sub 2.

To the north of the site core, a flat area was believed to represent a smaller patio group, with two low platforms on the northeastern and northwestern sides. However, this
space was shown through excavations to be natural, though perhaps the area was flattened to remove stone for the construction of the site center. Other nearby areas along the ridge also appear to have been modified in a similar fashion, although they do not appear to have formed living patio space. Approximately, 150 m to the southeast of the site center, along the ridge, a large, single mound was noted, though further survey was not possible.

The presence of at least one vaulted structure at La Selva leads to its classification as a secondary center; however, its small size and lack of civic-ceremonial architecture leads to its designation as Category 5.4, a problematic site. With further survey, this issue may be resolved. Furthermore, La Selva’s proximity to Rancho Nuevo, located less than 1 km to the northwest suggests that it may form a dual plan, recognized by Flores Esquivel (2011) at a number of sites within the Palenque and Chinikiha hinterlands. In this case, a dispersed settlement pattern may explain that Rancho Nuevo was a civic-ceremonial center and La Selva was a residence for the same community. Finally, immediately to the northwest of Structure C3-1, two hills appear to form a large plaza space with the La Selva site core. If these two hills were modified or show construction at their summits, these two hills may actually be pyramidal structures at the southwestern and northwestern sides of the large plaza, with the La Selva epicenter located at the southeastern side of the plaza. The parallel ridge 300 m to the north of the La Selva center may form a fourth large structure or modified hill at the northeastern end of the plaza, though if so, that plaza would be notably large. This hypothesis can be clarified only with further survey.
Rancho Nuevo

Rancho Nuevo is an archaeological site located along the road that connects the modern towns of Nueva Esperanza Progresista, Palenque and La Selva, Ocosingo (Figure 6.23). Although the full extent of the site is unknown, Rancho Nuevo has been established as a Category 5.2 site based on the quality of its architecture and the presence of a small ballcourt. The epicenter of the site is located on top of a low hill overlooking a valley to the north and south. Additional settlement is visible nearby in the valley and on another hill to the east that has also been surveyed.

Figure 6.23 Map of Rancho Nuevo and location of excavation units.
The main structure of Rancho Nuevo, Structure C4-1, is visible from the base of the hill that rises approximately 10 m above the surrounding valley. The structure is 5 m high and constructed out of worked, tabular stone, consistent with construction techniques seen at Budsilha. Structure C4-1 is in poor condition and has been looted severely, primarily for its stone, which has been used for nearby modern construction. Much of the stone has been removed to the base of the hill for its later removal by vehicles. Due to the intensive looting, the original shape of the structure is unclear. Its original dimensions were either similar to the current dimensions, with a 10 x 10 m base, or perhaps half of the structure has been removed suggesting an original base of 10 x 20 m. The latter scenario seems likely as a basal platform extends the full 20 m to the northwest. The removed portion of Structure C4-1 was probably a staircase rising from the basal platform to the top of the structure. The quantity and quality of the stone suggests Structure C4-1 was vaulted before its collapse from either looting and/or natural processes.

Additional structures are also located on top of the low hill, which was in fact leveled prior to their construction. This leveled area corresponds to the basal platform of the site core (Structure C4-8), on top of which six structures were built (including Structure C4-1, which is at the center of the leveled space). A large L-shaped platform (Structure C4-3) was constructed on Structure C4-8, and Structure C4-1 and an ancillary structure (Structure C4-2) were built at the center of Structure C4-3. A small patio space is located to the northeast of Structure C4-1 and to the northwest of Structure C4-2, while a larger open space is to the northeast of Structures C4-3 and C4-2. More elaborate architecture is located in the southwestern part of the epicenter, where two parallel
platforms, Structures C4-4 and C4-5 are located. The design of these structures resembles a small ballcourt, especially along with Structure C4-3 to the northeast and two ancillary structures, Structures C4-6 and C4-7, to the southwest which create a sunken I-shaped playing field. This playing field measures 18 m long, while the alley between Structures C4-4 and C4-5 measures 3.5 m wide. The Rancho Nuevo ballcourt, therefore, is similar in size to the documented ballcourt at La Mar, located approximately 5 km to the west.

The main access to the site was from the southwest, where a small staircase rises to Structure C4-8 and the ballcourt. The site center does not appear to have served a domestic use. Metates are not evident on the surface, and the architecture, including the ballcourt, and Structure C4-1 appear to have served civic-ceremonial purposes.

Settlement associated with Rancho Nuevo is likely located immediately to the southwest in the valley, where low mounds are clearly visible, and to the northeast on a slightly higher hill at the other end of the modern ranch. This higher hill has two local summits, each with settlement and smaller architectural clusters (perhaps tertiary-level sites). Furthermore, a large water spring is located near this settlement. The archaeological site of La Selva, approximately 950 m to the southeast may have also been an elite residence related to Rancho Nuevo.

**Arroyo Jerusalén**

The archaeological site of Arroyo Jerusalén is located within the ejido of the same name, at the northeastern limits of the village, although additional features are located throughout the town. The center of the archaeological site is located 50 m from the southern bank of the Usumacinta river (Figure 6.24). Although the site lacks vaulted
architecture, the scale of the structures is large, and the presence of two large patios is reminiscent of Budsilha. The southeastern patio is the larger of the two and is associated with ten structures. These ten structures were placed on top of a large platform, and the large patio at the center of this platform is sunken. The platform to the southwest of the sunken patio is surmounted by four mounds, the largest measuring approximately 5 m above the patio. The four mounds were constructed in a line from northwest to southeast, and the three northwesternmost mounds are roughly equal in height and design, each with a large stairway on their northeastern sides. The southeasternmost mound is smaller and has no visible stairway, suggesting that it formed an ancillary structure associated with the three other mounds.

Figure 6.24 Tape and compass map of the core of Arroyo Jerusalén.
These three mounds with stairways are reminiscent of other Piedras Negras-affiliated sites located along the Usumacinta river. For example, El Cayo with its five temple superstructures on a basal platform or even more closely the two temples of El Chile, each with its own stairway overlooking the Usumacinta river draw parallels with the main patio at Arroyo Jerusalén. At the top of the central and tallest of the three temple structures at Arroyo Jerusalén, members of the community discovered a Lacandón incense burner, *läkiil k’uh*, or “god pot” (Grube 1999:118) (Figure 6.25). During the Piedras Negras excavations of the 1930s, archaeologists encountered various Lacandón incense burners within Structures J-2 and J-4 (Thompson 1977:15). The Arroyo Jerusalén vessel is in the shape of a bell-shaped pedestal, with the face of a woman or goddess, based on the presence of hair braids (Palka personal communication, 2014). During the 19th or 20th centuries, a group of Lacandón people migrating from Tenosique to Lake Metzabok likely offered this goddess pot to dedicate the largest structure at Arroyo Jerusalén as a god house (McGee 1990:46).

Figure 6.25 Lacandón incense burner found at the top of the main structure of Arroyo Jerusalén.
To the northwest of the main patio lies a secondary patio with smaller scale architecture. Some of these platforms, especially the central platform of this patio are irregularly shaped and low. Although a few of these platforms may have served residential function, the purpose of the larger, low platforms remains unknown, though they may relate to public displays, performance, or other activities. Excavations may reveal further divided, interior space within these large, low platforms.

The archaeological site of Arroyo Jerusalén extends into the village to the southwest, and many of the modern houses appear to have been constructed on top of prehispanic terraces and platforms. One of these surveyed areas consists of two platforms located behind a modern home, with abundant remains of ceramics, obsidian, lithics, and polished stone visible on the surface. Another home further to the southwest at a slightly higher elevation above the Usumacinta river was constructed on a large structure measuring at least 3 m high.

Ijik Xajlel

A small, quaternary site located 1 km to the northwest of the archaeological site and modern community of Arroyo Jerusalén is locally known as Piedras Negras, based on the presence of a number of dark conglomerate stones on the bank of the Usumacinta river. So as not to confuse this area with the Guatemalan archaeological site of the same name, the Mexican site was named Ijik Xajlel, based on the Ch’ol gloss. Although informally designed, with structures of varying orientation, some of the architecture is large and further investigation may define a site core, possibly elevating the site to a tertiary level (Figure 6.26). Alternatively and more likely, Ijik Xajlel may be considered
an extension of settlement associated with the archaeological site of Arroyo Jerusalén to the southeast.

**Figure 6.26** Sketch map of Ijik Xajlel.

Six structures are oriented to magnetic north, in the direction of Piedras Negras, Guatemala, while four of the largest structures are oriented closer to 60°, the more traditional Late Classic period orientation of sites in the region. Although heavily-looted, the largest north-facing structure was topped by a small shrine where ejidatarios discovered a ceramic spindle whorl incised with a zoomorphic design, likely a bird motif known from Terminal Classic period spindle whorls (Becquelin and Baudez 1982) (Figure 6.27).
Figure 6.27 Terminal Classic period spindle whorl from Ijik Xajlel.

Ijik Xajlel is located directly opposite a narrow canyon across the Usumacinta river in Guatemala. This canyon is thought to provide the main terrestrial travel route to Piedras Negras from the south (Houston et al. 2003). Ijik Xajlel was positioned at an important travel node, and perhaps the inhabitants of the site controlled the river crossing in this area. A natural feature below Ijik Xajlel on the southwestern bank of the Usumacinta river resembles a large, monumental stairway that could have been used for landing canoes during the rainy season when beaches would have been flooded. This evidence suggests that even lower ranked sites could control access to important landscape features like travel routes and river crossings.

Witsiljá

To the south of the modern ejido of Arroyo Jerusalén and 5 km north of the archaeological site of El Cayo is an area of settlement associated with a hill and spring known as Witsiljá, meaning “place where water emerges from the hill” in Ch’ol. At least four large hills are modified in this area, each larger than the last. At the base of the
largest hill is the aforementioned spring filled with basins and metates. At least 6 platforms cover these modified hills, and each was marked with a GPS point; however, no clear pattern emerged to the design of the site. Witsiljá is not so much a site as dispersed settlement covering the landscape. The largest concentration of mounds occurs at the summit of the largest hill. Near these mounds are two vertical cave entrances that are too deep to enter without equipment. An ejidatario in the area found a complete tecomate, with brown and black paint and deep gouging-incising, perhaps an imitation of Terminal Classic to Early Postclassic period forms known in fine orange and plumbate pastes (Figure 6.2).

![Figure 6.28 Terminal Classic to Early Postclassic period tecomate from Witsiljá.](image)

**San Vicente**

San Vicente is a tertiary site with a definable core and abundant habitational platforms that cover the crest and base of a long, low ridge. This site is located between
Nueva Esperanza Progresista and San Luis, not far from other known sites including Santa Lucia and El Porvenir (Mexico), each located approximately 2 km to the southwest and southeast, respectively. The center of the site consists of ten structures, though numerous other platforms are visible across the hill (Figure 6.29). At least three structures measure at least 2 m high, and exposed exterior walls reveal formal basal platforms that supported perishable superstructures. The largest platform is L-shaped and supports three lower platforms. To the south a large terrace follows the same orientation as the other structures, descending to the valley to the south where other platforms are located. From the main L-shaped structure, nearby sites including La Mar, El Chuzo, El Esfuerzo, and Maracas are clearly visible in the distance.

Figure 6.29 Sketch map of San Vicente.
Busiljá (Línea Eléctrica)

The ejido of Busiljá, not to be confused with the archaeological site of Budsilha located in Nueva Esperanza Progresista, lies along the Carretera Fronteriza between the junction toward Nueva Esperanza Progresista and Nuevo Francisco León. To the northwest of the community, on a ranch with no name, a series of large mounds and platforms were given the tentative name of Busiljá (Línea Eléctrica), named for the power line that crosses over the main structure (Figure 6.30). This site was apparently recorded by the archaeologist Alejandro Tovalin in the early 2000s as part of the salvage archaeology project before the placement of the power lines. However, according to the current landowner, the archaeologists did not notify the community of their plans, and they were ejected from the site before excavations could begin. This account has been confirmed by Alejandro Tovalin (personal communication, 2017).

Figure 6.30 Sketch map of Busiljá (Línea Eléctrica).
The archaeological site of Busiljá (Línea Eléctrica) is currently classified as a tertiary center. The main structure is at the northwestern end of the site core and is a large L-shaped platform measuring 4 m tall with additional structures at its crest. The footprint of this substructure measures 65 x 50 m and is oriented 130°, along with the rest of the site. The platform was modified out of a natural landform, based on the presence of abundant bedrock. At the western corner of the substructure, another rectangular platform serves as a substructure for an additional two platforms. Alternatively, these two platforms may be part of a single structure that was bisected by a looter’s trench.

To the southeast, a square structure on top of the L-shaped substructure measures at least 2 m high. A stairway climbs the southeastern side of this structure from the base of the large substructure. Halfway up this stairway, a carved limestone block measuring approximately 100 x 50 cm lies in a central area. This limestone appears to represent a different, yellowish variety of landscape that is distinct from the building material of the architecture. Although blank, the monument is assigned the label Altar 1 based on its formal carving and prominent location on the main structure of the site.

At the northeastern extreme of the L-shaped main substructure, abundant tabular blocks of limestone appeared to have been removed from the bedrock. These stones resemble the limestone used for the construction of stone masonry superstructures at other nearby sites, including Budsilha and La Selva. However, no evidence at Busiljá (Línea Eléctrica) suggests that these stones were used in the construction of the site. According to the landowner’s description, a vaulted structure may lie immediately to the west across the fence and entering the adjacent plot of land. This area is currently under medium canopy vegetation and was not visited without the permission of the other
landowner. If further reconnaissance confirms a vaulted structure, the site may instead be
classified as a secondary center.

Approximately 170 m to the southeast, another large structure measuring
approximately 4 m high marks the other end of the site core as it is currently understood.
On top of this structure, no other structures were noted, but the substructure forms ample,
flat space. The tall grass may have obscured other platforms in this area. Between the two
monumental structures, at least three smaller mounds were noted. In this area, the site is
bisected by a dry arroyo that runs roughly west-east just to the south of the main, L-shaped structure.

Laguna de la Culebra

Approximately 4 km to the southeast of the archaeological site Busiljá (Línea
Eléctrica), another concentration of structures lies within the ejido of Busiljá. In this area,
a small lagoon is known locally as the Laguna de la Culebra, and the nearby site was
assigned the same name. The edge of this small lagoon has abundant yellowish clay,
which suggests that this area could have been a possible source for the production of
ceramics. Indeed, some of the ceramics recovered from the archaeological site of Laguna
de la Culebra have pastes that resemble the yellowish color of the clays.

Like Busiljá (Línea Eléctrica), the settlement at Laguna de la Culebra is dispersed
(Figure 6.31). The main structure is located 115 m to the northeast of the lagoon.
Unfortunately, this structure is heavily looted and collapsed, complicating an
understanding of its form and construction. The collapsed superstructure was built on top
of a large terrace of a modified hill, more than 5 m tall. Further reconnaissance should
focus on establishing the size of the footprint of this main structure, which is likely larger than the current sketch map suggests. This main structure resembles on a smaller scale the pyramidal structures of secondary sites like Arturo and Laguna Oscura. According to the landowner, the structure was until recently in much better condition with facing or worked stones, all of which were removed for the construction of the two nearby bridges that cross the Busiljá River to the south. Without evidence of such worked stones, the identification of the main structure as having been vaulted is uncertain; thus, the site is currently classified as a tertiary center.

Figure 6.31 Sketch map of Laguna de la Culebra.

To the east, approximately 70 m, lies a well-preserved patio group, with no evidence of looting. This patio group consists of 5 low platforms oriented 30° around a
small patio. Approximately 130 m to the northeast, a large platform is isolated from the rest of the site. Unfortunately, half of this platform has been completely looted for reusing stone for construction. The stone used in the fill of this platform is of a notably high quality, although it is irregular and uncarved. The profile of the looter’s trench reveals two phases of construction with well-preserved, thick stucco floors, similar to the construction of the main structure at La Selva, located 5 km to the northwest. In addition, Laguna de la Culebra has the same 30° orientation as La Selva and Piedras Negras. Inside the looter’s pit, abundant polychrome ceramic sherds were collected. All examples date to the Late Classic period, and the recognizable forms were beakers, dishes, and bowls. Based on a brief observation by Socorro Jiménez Álvarez (personal communication, 2018), one of the beakers shows polychrome decoration similar to examples from Toniná. Another bowl belongs to the Chablekal Fine Gray group, with incised decoration, which places the final phase of construction of the platform sometime between AD 750 and 800.

Santa Clara Syncline

Arturo

The large site tentatively named Arturo, after the landowner Arturo García Pablo, remains to be fully surveyed, but initial impressions of the scale of architecture indicated that the site was a secondary center, tentatively classified as Category 5-1. The site is today located in the municipality of Ocosingo between the communities of Nuevo Francisco León and Nuevo Jerusalén.

The main feature of the site is a large pyramidal structure with an approximate 50 x 50 m footprint, measuring about 20 m high (Figure 6.32). Whether this construction
was a modification of a natural hill is unclear, but a retaining wall extends down to the base of the structure. The main structure is covered in medium canopy vegetation. The pyramid was constructed in two terraces, one halfway up the structure, and the other at its summit. On the lower terrace, a fragment of a blank stela was noted, although this monument may not have been in its original location (Figure 6.33). This stela is reminiscent of the monument documented at Laguna Oscura and is in the form of a column, similar to some of the larger stelae known from Lacanjá Tzeltal and the column altars excavated at Plan de Ayutla. The remains of superstructures are visible on the upper terrace, though they are in an exceptionally poor state, caused by a combination of intensive looting and natural tree falls. This architectural complex at the structure’s summit is in the form of a patio group with three structures. The westernmost structure appears to have been the main building, though a similarly-sized structure is at the southern end of the patio group. A longer, range structure is at the northeastern side of the architectural complex.

An intriguing feature associated with the westernmost structure is the base of a stone masonry wall constructed in two wythes of well-worked tabular stone with consistent sizes and forms. This wall forms a square measuring approximately 1 x 1 m, and it may have previously supported a square column, suggesting that the superstructure had at least two entrances. The base of this “column” also has a small window in the form of a cross or a “T” (Ik’ sign for wind), as known from sites like Palenque (Figure 6.34). This column, therefore, may represent either a collapsed portion of the exterior wall of the superstructure, or more of the wall may be interred beneath the ground. The landowner claims that this column or wall was much taller (approaching a likely
exaggerated 4 m) before the site had been heavily looted. The remaining architecture had fallen, but portions of construction are currently held together by tree roots. The southernmost structure also shows evidence of a stone masonry superstructure in a worse state of preservation than the westernmost structure. The range structure does not appear to have had stone masonry and likely supported a perishable superstructure.

**Figure 6.32** Sketch map of the main structure of Arturo and the possible location of other structures in parts of the site yet to be surveyed.
Figure 6.33 Blank stela or column altar on the lower terrace surrounding the main structure at Arturo.

Figure 6.34 Ik’-shaped window or drainage feature in collapsed superstructure on the main structure of Arturo.
From the eastern base of the main pyramidal structure, a long platform extends nearly 100 m to the northeast, where a smaller structure is located on the platform. Abundant material is notable on the surface in this area, including ceramics, lithics, and metates, suggesting a domestic function for the smaller structure. The function of the long platform, however, is less certain, but resembles a low wall designed to restrict access. This feature is reminiscent of similar, larger features at Lacanjá Tzeltal and Plan de Ayutla that appear to divide plaza space.

After examining Google Earth satellite imagery, the milpa is located in a large plaza that is delimited by the pyramidal structure and the long platform. Therefore, the main pyramidal structure is at the southwestern side of the plaza. To the northwest and northeast of this plaza two hills covered by medium canopy vegetation are likely to be other pyramids or modified hills. One of the sons of the landowner has since confirmed these suspicions, but this area remains to be surveyed.

To the southeast, a lower hill is covered by a smaller group of platforms, one with a square base and the other with a rectangular base. A high likelihood exists that more settlement is located in this area. The presence of multiple fragments of metates between these two platforms suggests a domestic function for this part of the site overlooking the main plaza.

The archaeological site of Arturo is located 6 km to the southeast of El Cayo, a known secondary center that participated in political and ritual acts with rulers from Piedras Negras and Sak Tz’i’. The orientation of the structures at Arturo are 50° from magnetic north, in the direction of El Cayo. This orientation may be coincidental or may relate to a potentially hierarchical relationship between Arturo and El Cayo, the latter
which is oriented roughly north in the direction of Piedras Negras (Maler 1903). Finally, the equidistance of Arturo to El Cayo and Lacanjá Tzeltal implies that Arturo may have been part of the kingdom of Sak Tz’i’s strategy to assert dominance over El Cayo and its environs. The architectural similarities between Arturo and Lacanjá Tzeltal bolster this hypothesis. Arturo also resembles Laguna Oscura, with its monumental pyramidal structure and a large plaza, suggesting that they represent an ideal design for a certain type of secondary center in the Piedras Negras hinterlands.

**Nuevo Mariscal Stela**

An opportunity to photograph an unprovenanced stela fragment was granted by a ranch owner in Nuevo Guerrero, Ocosingo (Figure 6.35). The ranch owner’s father had purchased the stela fragment from someone in either Lazaro Cardenas, near the archaeological site of El Cayo, or Nuevo Mariscal, a village at the northwestern end of the Santa Clara (Anaite) lagoon.

![Stela fragment from the Santa Clara region.](image)

**Figure 6.35** Stela fragment from the Santa Clara region.
The stela appears to have fragmented naturally, without the use of a chainsaw or other tools. The dimensions are 74 cm (right side), 60 cm (left side), 55 cm (upper side), 49 cm (lower side) with a 5 to 9 cm thickness. The fragment is a part of the upper portion of the stela, which was carved only on one side. The carving done in mid-relief depicts a man (likely a local lord) in profile with an elaborate headdress and a lance. The fragment shows only a portion of the individual’s face in the lower right, looking left, part of the headdress in the upper right, and the lance in the left side. The lance is decorated, possibly wrapped with cloth that forms triangular shapes on either side of the shaft, while the obsidian spearpoint emerges from the jaws of a centipede. The main element of the headdress resembles a large leaf or bird plumages on top of a zoomorphic head, perhaps a reptilian animal like a caiman. A type of visor is attached to the man’s head, from which a quatrefoil motif and tassel hang in front of his face. The man also wears headgear that reaches to the lower jaw. These accoutrements may be part of a larger backrack that is missing in the preserved stela fragment. According to Stephen Houston (personal communication, 2016), the man’s name may be written in the space formed by his forehead, but if so, the glyphs are too eroded to interpret. No other inscriptions are evident on this fragment.

Similar iconography is known from other monuments in the Usumacinta region and the Maya lowlands. Such figures with lances are common during the latter half of the Late Classic period. The specific style of lance depicted in the Mariscal Stela is also represented in the monumental Bonampak Stela 1, which was erected in AD 780 and shows the ajaw Chaan Muwan (Mathews 1980). Another similar monument is La Mar Stela 4, which bears a remarkable likeness to the Mariscal Stela (Grube citation).
Charles Golden (personal communication, 2016) has suggested that the Mariscal Stela may be a fragment of El Cayo Stela 3, first documented and sketched by Maler (1903). Stela 3 was originally located in the middle temple of Structure 1 and shows a figure in profile with a lance. The sketch, unfortunately, omits most detail and thus an exact match cannot be made. In addition, Maler (1903) claimed that the headdress had no detail or elaboration with plumage, which is a description that does not characterize the Mariscal Stela. Furthermore, Maler’s measurements of El Cayo Stela 3 report a width of 45 cm, whereas the fragment of the Mariscal Stela measures 55 cm and would have measured more when it was complete. Finally, the photograph and drawing of El Cayo Stela 3 by Peter Mathews (Mathews and Aliphat 1992) do not match, though they resemble in style, the Mariscal Stela. The stela therefore most likely represents a previously unregistered monument. If its origin lies somewhere near Nuevo Mariscal, as local informants maintain, then the stela may be from any number of known or unknown sites in the region of the Santa Clara (Anaite) lagoon, for example Chicozapote or Anaite II.

La Cabaña

The ranch and now defunct restaurant La Cabaña (and its eponymous archaeological site) are located along the Carretera Fronteriza, approximately 2 km to the northwest of the modern community of Nuevo Guerrero. The archaeological site itself is to the southwest of the ranch, in the uncleared foothills of the Sierra Guiral, along the Busiljá River. La Cabaña consists of at least two architectural groups, and others are likely located in the nearby foothills (Figure 6.36). The main group consists of two small
patio groups with 8 structures. Two of these structures were likely vaulted, based on the quality of the tabular limestone blocks, as well as the appearance of some intact walls enclosed by tree roots. Unfortunately, the original form of these two structures is unclear due to looting and natural tree fall.

**Figure 6.36** Sketch map of La Cabaña.

An odd feature at the site, associated with one of the vaulted structures is a stone column of dry-laid, stacked tabular stone. Evidently, this column does not represent an original construction as part of the structure, but according to the landowner it was present when she first purchased the ranch (Figure 6.37). The most likely explanation is that the people who had looted the structure also constructed the column. Perhaps the looters were selecting the best stones to remove from the site at a later date and never returned, or the column was used for a specific purpose by a logging camp.
The second patio of the main group is in better condition than the first. This patio is immediately to the south of the collapsed, vaulted structures and is formed by the platform of these two structures and four other structures. These structures likely supported perishable superstructures. Approximately 200 m to the north of the main group of La Cabaña, a second group consisting of a large pyramidal structure lies in the cattle pasture. This structure is made up of a long basal platform, with a larger mound on the northeastern end.

The size of La Cabaña is unclear, although it certainly represents a secondary center within the political landscape, based on the presence of vaulted structures and a pyramidal structure. The site is tentatively assigned as a Category 5.3. The political role of La Cabaña cannot be determined without excavations, although the site would appear
to lie at the furthest edge of the Piedras Negras polity. The site’s proximity to Uch Chan 8 km to the northwest and Arturo 5 km to the northeast suggests a closer relationship to those secondary centers than to Piedras Negras itself.

**La Aurora/La Ceiba**

The modern *colonia* of Nuevo Guerrero contains many sites, including La Cabaña, that are visible from the Carretera Fronteriza. These sites typically abut the foothills of the Sierra Guíral and the Busiljá River that runs along the base of the mountains. Nearly 2 km to the northwest of La Cabaña, two adjacent ranches, from southeast to northwest, La Aurora and La Ceiba appear to be a continuation of dispersed settlement between La Cabaña and Uch Chan (Figure 6.38).

![Sketch map of La Aurora/La Ceiba](image)

**Figure 6.38** Sketch map of La Aurora/La Ceiba.
The La Aurora portion of the site lies behind the restaurant of the same name. Approaching the site from the northeast, the main structure is visible on a natural, low hill. From a distance, this feature appears to be a natural rock outcrop. On top of the low hill, a large platform between 2 and 4 m high, built of loose, irregular limestone cobbles, is evident. The platform together with the natural hill, forms a large structure more than 5 m tall. Although the structure is not elevated on a high hill, the view, especially to the north and northwest, is commanding of much of the surrounding valley. Furthermore, the low cliff on the northeastern side of the hill provides natural protection. Abundant material covers the surface of the platform, including chert flakes, manos, metates, and few non-diagnostic ceramic sherds.

Like the sites known within the nearby ejido of Busiljá, the site plan of La Aurora/La Ceiba is notably dispersed. The main structure of La Aurora overlooks a large plaza, bounded by three other structures separated by 80 to 100 m. Other, low structures obscured by the grasses may also be located within this large plaza.

The second group associated with the site, known as La Ceiba, is located 130 m to the northwest. Like La Aurora, the structures at La Ceiba were built on a natural, modified, low hill. Much of this low hill also consists of an outcrop of limestone, and the access to the site is via a natural ramp formed by the space between two low cliffs on the northeastern side of the hill. After climbing this ramp, reaching the top of the hill, the architectural complex was built on two terraces. The upper terrace contains two mounds, while to the southwest, the lower terrace follows a similar pattern, with three structures. The largest range structure on the lower terrace is to the southeast, while to the northwest sit two parallel platforms. These two platforms appear to mimic a small ballcourt,
reminiscent to the example from Rancho Nuevo, except in a T-shaped construction. Still, the two low parallel platforms probably formed a small residential patio space with the upper terrace to the northeast. This possibility was confirmed by the documentation of a large, intact mano in the vicinity of this patio group. Presently, the northeastern side of the natural hill is used as a quarry, though these activities so far do not appear to have affected the site, which shows no evidence of looting.

La Aurora/La Ceiba likely represents part of the settlement between La Cabaña and Uch Chan. This pattern resembles the settlement surrounding La Mar and extending south to El Esfuerzo. The placement of primary and secondary centers and their associated settlement along the foothills continues near Palenque and Chinikiha, suggesting that one of the purposes of these centers was to monitor the trade routes along the valleys. Thus, the dispersed settlement of La Aurora/La Ceiba likely continues to the northwest and southeast throughout the valley.

**Nuevo Jerusalén**

Some sites and their accompanying architecture are so large that even lacking obvious vaulted structures, their classification as significant administrative or secondary centers seems appropriate. This issue arises in the project area especially when sites are observed from a distance but are not visited due to land access issues. An example of such a site lies on the road between Nuevo Jerusalén and Nuevo Mariscal. This segment of road consists of an extensive area of agricultural land, and the boundary between the two *ejidos* is not clear. The site is tentatively named Nuevo Jerusalén until the landholder
can be identified and a more suitable name chosen. The site is only 1.5 km to the east of the modern community of the same name.

The archaeological site becomes clear as settlement increases dramatically and suddenly, consisting of multiple large mounds between 2 and 5 m tall on both sides of the road. The apparent center of the site lies to the south of the road and consists of a large terrace covered with collapsed superstructures (Figure 6.39). Without the opportunity to examine the site by foot, establishing the organization of the site was impossible. The site center consists of this main, pyramidal structure, much of which appears to be built through accretion rather than through the modification of a natural hill. The presence of vaulted structures is possible but unverifiable. Thus, Nuevo Jerusalén should be tentatively classified as a secondary center, under Atasta Flores Esquivel’s (2011) category of problematic sites; however, with further work civic-ceremonial architecture may be identified, or in contrast the site could be demoted to a tertiary center, albeit a large one.

Figure 6.39 View of Nuevo Jerusalén, east of the modern community of the same name.
The site is obvious from the roadway, suggesting that it may have been identified or registered previously. In particular, the El Cayo project directed by Peter Mathews was based near ejidos of Nuevo Jerusalén and Lazaro Cardenas. In addition, Mario Aliphat (1994) registered the site of Santa Clara on the eastern side of the lagoon of the same name, which is approximately 12 km to the southeast. Marcello Canuto also conducted survey in the region at the same time. However, the area appears to have been recently burned, and perhaps the site was under tree cover and not visible from the road previously. While the site is closest to El Cayo, Teobert Maler (1903) may have observed settlement in the area, especially associated with the site of Anaite II, although Maler places the latter site much closer to the laguna Santa Clara. Nuevo Jerusalén should also be considered as a plausible candidate for the provenance of the stela described above as the Nuevo Mariscal stela.

**El Pozo/Nuevo Tumbalá**

Located within land held by the *colonia* of Nuevo Guerrero, this archaeological site is actually located closer to the ejidos of Nuevo Tumbalá and 20 de Noviembre/El Naranjito. The name of this ranch is unknown, but the site is currently named El Pozo/Nuevo Tumbalá based on the nearby ejido and the presence of a unique feature consisting of a cistern or well within one of the hilltop groups (Figure 6.40). The current condition of the site of El Pozo is poor due primarily to human actions, primarily the use of stone from the site for the construction of a nearby bridge. For this reason, classifying the site politically is difficult without excavation. Based on the scale of architecture, the site is tentatively assigned as a tertiary center, though the well-constructed cistern
suggests that other structures at the site may have been made with stone masonry before being destroyed.

Figure 6.40 Cistern associated with a small hilltop patio group at El Pozo/Nuevo Tumbalá.

El Pozo consists of at least two architectural groups, one located in an extensive flat area of the valley and the other at the summit of a steep and inaccessible hilltop. Within the valley, three large, heavily looted mounds were noted. The landowner lamented the destruction of the site and spoke of a “cancha” that was no longer visible. In Spanish, cancha generally refers to an open space typically used for sports like basketball, and in this context may better refer to a plaza or large platform. When asked to clarify, the landowner confirmed that the area could have been a plaza. However, this description is still ambiguous, as a plaza would not have been a likely source for construction material. Instead, the landowner may have referred to the looting of
buildings around the plaza space, but if that scenario were true, these buildings would have had to have been completely demolished, as no evidence for structures was visible on the surface. Based on this information, El Pozo may have previously had a clearer site core that can no longer be discerned.

To the southeast, settlement continued on a line of hills. This hill is far more inaccessible than any other so far surveyed. The summit is surrounded by high (10 m) cliffs that can only be traversed using basic rock climbing techniques, as no easy route could be found. Once summiting the hill, the well was clear of debris and well built. The well measures approximately 70–80 cm, and local villagers had excavated to a depth of approximately 150 cm, which is likely close to the actual base of the well. At the time of observation, at the end of the dry season, the well was dry. Only two small house platforms were noted at the summit of the hill, a surprisingly low density of structures for such an important water feature.

Despite the lack of defensive features, the hilltop portion of El Pozo is in a defendable location, typical of settlement throughout the region at sites like El Infiernito and Na Wits. El Infiernito is one of the few defendable hilltop centers that lacks a water collection feature, although the well at El Pozo is also far more elaborate than the water feature excavated at Na Wits. El Pozo’s well resembles more closely features known from Tecolote, east of El Pozo (Scherer and Golden 2009). In line with centers like Bayal, associated with Yaxchilán (Golden et al. 2008), El Pozo may actually be more closely associated with the Yaxchilán kingdom than that of Piedras Negras. The defensive location may be indicative of a continuation of the defenses known from La Pasadita and Tecolote, and the similarity to the wells at the latter site may indicate
another difference between Yaxchilán and Piedras Negras-affiliated sites. The former may have relied more on the centralization of water features than did Piedras Negras. Still, El Pozo may still be just far north to be associated with Piedras Negras. Only more survey in the region can clarify these questions.

Pedregal

The archaeological site of Pedregal is another example of a site registered and observed from a distance. Within the modern community of Nuevo Pedregal, located at the southern end of the laguna Santa Clara, Pedregal consists of numerous low mounds built on a terrace overlooking the lagoon to the north. Although permission was not granted to visit the site, satellite imagery suggests that the site core is within a rectangular plot of land measuring 120 x 60 m, though settlement likely continues throughout the community. The modern context of the site and the architecture resemble the archaeological site of Arroyo Jerusalén, and Pedregal may have served a similar purpose as a landing for canoes to cross the laguna Santa Clara. The edges of the lagoon may have also served as a base for wetland agriculture during the dry season, as the water receded. Another important feature is a water spring that flows out of the main architectural complex to the northeast into the lagoon. This spring serves today as the main source of water for the community, as this village does not yet have running water or electricity. Members of the community also placed a wooden cross on top of one of the mounds above the spring to bless the water source. Although the site is under tree cover, the mounds themselves are clear of low vegetation, aside from cut grass. Indeed, the village
appears to be curating the site in some way, and no evidence of looting was clear from the outskirts of the site.

Further settlement is apparent along the road connecting the next ejido, Ojo de Agua Zapote, to the Carretera Fronteriza near the crossroads to Nueva Palestina. This segment of road passes through high canopy forest and two concentrations of mounds were recorded with GPS. These sites were not assigned names, as further reconnaissance is necessary to identify their organization. These concentrations of mounds are between 2.5 and 3.5 km from the community of Nuevo Pedregal and are roughly in line with the sites of La Pasadita and Tecolote, Guatemala, and El Chicozapote and Santa Clara, Mexico, and are within the known boundaries of the Yaxchilán kingdom.

El Jovero

The El Jovero ranch lies on a side road off of the main gravel road that connects the modern towns of Nuevo Francisco León and Nuevo Jerusalén. This ranch is extensive and completely deforested, with visible evidence of settlement in all directions on top of the surrounding low hills. During the short visit to the site, the landowner did not offer an opportunity to survey completely or draw a sketch map of the site; however, he led me to the largest structure, measuring approximately 5 m high. Near the base of this structure was the intact wall of its substructure. According to the landowner, he was aware of a nearby cave but he could not recall its location.

From the ground and a cursory visit, the site plan appears to be haphazard, however a closer analysis of satellite imagery suggests that El Jovero may actually have a clear site core, overlooking a large plaza (Figure 6.41). This site core consists of a series
of modified hills topped with platforms or mounds to form a rectilinear space. At least 8 large structures, including the main structure with the exposed substructure wall, are visible in the satellite imagery, and possible smaller structures appear to dot the plaza area. Based on these initial observations, El Jovero represents a tertiary site in the region between La Cabaña, Arturo, and El Cayo.

Figure 6.41 Possible location of structures at El Jovero based on satellite imagery. Only the large structure near the center of the image was confirmed on the ground.
CHAPTER 7
Excavations at El Infiernito

From 2015 to 2017, I and a team of local collaborators focused on the excavations of El Infiernito due to the site’s intriguing defendable location, extensive settlement, well-preserved architecture, and surface finds dating to the Late to Terminal Classic periods. Excavations consisted of 20 operations placed across the Upper, Lower, and West Groups, as well as selected peripheral structures (Figure 7.1). The objectives of these operations in general included the reconstruction of the chronology of the site, especially to establish the relative chronology among structures and architectural groups. As outlined in Chapter 5, excavations were also planned to document evidence relating to changes in architectural design, to identify features relating to defense and landesque capital or patrimony, to recover evidence of craft production, household status, and access to trade goods, and to investigate manifestations of domestic and landscape ritual. Combined with artifact analysis, archaeological survey, and remote sensing, these efforts addressed questions relating to the role of the people and households at El Infiernito in relation to the regional politics of the Usumacinta region, the integration of the Piedras Negras polity, and attempts at political reorganization and resilience during the Terminal Classic period. I discuss the most relevant operations below, while a more comprehensive discussion of all excavation data, including from nearby secondary and tertiary centers (La Selva, Rancho Nuevo, and Santa Marta) is presented in Appendix 1.
Figure 7.1 Map of El Infiernito and excavation operations.

Operation 1: Investigations of Structures E1-4, E1-5, and E1-6

Operation 1 centered on the patio group formed by Structure E1-6, immediately north of Structure E1-1, one of the largest structures within the Upper Group of El Infiernito. This patio is bounded on the southeast by Structure E1-1, on the northeast and northwest by the L-shaped Structure E1-4, on the west by a smaller Structure E1-5, and on the southwest by the edge of the basal platform of Structure E1-6 that descends to a small terrace below. This patio may have represented one of the most elite patio groups at the site, based on its proximity to Structure E1-1 and the quality of the construction of its platforms. To investigate the relationship between these structures, their function, and
chronology, we excavated four suboperations covering patio space and interior areas within house platforms.

**Figure 7.2** Map of excavation units in Operations 1 and 2.

Suboperation 1A, placed alongside the rise of the patio, Structure E1-6, and Suboperation 1B, located within the same patio closer to Structure E1-4, provided data relating to the construction phases of this part of the site (Figure 7.2). IN-1A-1 included a wide mix of Late Classic period (Tepeu 1-3), few Tepeu 3 to Early Postclassic, and Late Preclassic (Chicanel) period ceramics throughout the first three lots, likely associated in part with a refuse area used throughout the Late Classic to Terminal Classic periods. The
fourth lot was made up entirely of Late Preclassic Chicanel ceramics. The appearance of Chicanel ceramics throughout the unit can be attributed to refuse associated with the construction of Structures E1-1 and E1-6 and the razing of Late Preclassic period structures. IN-1B-1 was located in the northern corner of patio E1-6, formed by the L-shaped Structure E1-4. Between 7 and 20 cm below the surface, the presence of gravel suggested the final floor level of the patio. This floor was constructed immediately above the natural bedrock of the hilltop, with no large cobble fill. Though the unit was shallow, artifact density was high, including ceramics dating primarily to the Tepeu 2 and 3 horizons, obsidian, chert flakes, and a tubular greenstone bead.

We placed IN-1B-2 in the same patio to document the context of Altar 1, a crude, round stone monument with an approximate diameter of 33 cm (Figure 7.3). Due to its location at the center of the patio, as well as its undisturbed context covered in humus, this altar had likely not been moved since the site’s abandonment. Artifacts documented in this unit included greenstone beads, hematite mirror fragments, obsidian, chert, three projectile points, ceramics, metate fragments, shell, faunal bone, and ceramics dating primarily to the Tepeu 2 and 3 horizons. A small, retouched flake may have represented a crude, small arrowhead, though it was not worked bifacially. A possible cache of tools may have been associated with Altar 1, including a serpentine adze and a crescent-shaped, or lunate chert biface. The final floor of the patio was documented in better preservation beneath Altar 1, confirming the stratigraphic interpretation of the patio, Structure E1-6. The bedrock in the northwestern half of IN-1B-2 was 25 cm higher than the level of bedrock in the southeastern half of the unit. Both areas of bedrock had clearly been leveled, likely in preparation for the construction of the patio. Without more
horizontal clearing of the area, the extent of this leveling is limited. Altar 1 seems to have been placed to mark the highest point of the bedrock in the immediate patio area, though the actual natural summit of the hill was located between Structures E1-1 and E1-2 to the south.

Figure 7.3 Altar 1, located at the center of the patio group formed by Structures E1-1, E1-4 (background center and right), and E1-5 (background left).

IN-1B-1 suggests that this part of the site was constructed in a single phase, likely during the Late Classic period. In contrast to the southern part of the Upper Group, Late Classic period structures were built directly on bedrock in patio E1-6. The presence of Late Preclassic period ceramics in some units suggests that if structures from that period had previously existed in this part of the site, they were razed and used for later constructions.

Suboperation 1C consisted of the horizontal excavations of Structure E1-4, a residential platform on the eastern side of the patio group centered on Structure E1-6.
Before excavation, the shape of Structure E1-4 was discernible as an L-shaped structure, similar to many of the platforms at the site. Also visible on the surface were a series of interior low walls built of faced stone in good preservation. The location of Structure E1-4 at the northeastern side of the patio, as well as its proximity to Structure E1-1, one of the largest pyramidal shrines at the site, suggests an elite or ritual function for the building (Figure 7.4). In addition, the main access to Structure E1-1 appears to have been via a stairway rising from the patio group centered on Structure E1-6, suggesting the integration of that pyramidal shrine with the residential structures within the patio group.

![Figure 7.4 Structures E1-4 (left) and E1-1 (background) from Structure E1-5 (center right foreground) facing southeast.](image)

We placed horizontal excavations to reveal Structure E1-4’s architecture and the design of its interior walls or bench. These excavations also had the goal of documenting
the structure’s final occupation and its construction directly on bedrock. We excavated
two units vertically, and one, IN-1C-3, unexpectedly showed at least two earlier
construction phases and a significant amount of fill, in contrast to the data resulting from
excavations of surrounding patio space in Suboperations 1A and 1B.

Suboperation 1C consisted of a grid of seven squares placed over Structure E1-4,
all measuring 2 x 2 m and oriented 50° from magnetic north, although after excavations
the axis of Structure E1-4 was shown to be closer to 60°. This grid lay primarily within
the eastern portion of the structure, to reveal the exterior and interior walls visible on the
surface. We later expanded the grid to document fully the burials and other features
encountered during excavation. The majority of units were only excavated to the level of
the final floor of Structure E1-4. These excavations uncovered ritual evidence in the form
of three burials, as well as the only example of obsidian blade production at the site.

I placed IN-1C-1 in the most northern portion of the suboperation on and inside
Structure E1-4 to the northwest of the interior wall, outside of the room that appeared to
be delimited by this interior wall. This unit was placed to define the form of this interior
wall and to document any activities associated with the use of the structure or its
abandonment.

Lot 1 (0.00–0.10 m) was a thin layer of humus and part of the final floor of
Structure E1-4. This floor was not well-preserved and was accidentally excavated in the
southern corner of the unit due to a lack of evidence of stucco or ballast. The presence of
this floor was inferred by reaching a level of small cobble (5–10 cm long) fill. The lot
was completed after uncovering the form of the interior wall and reaching the inferred
floor level. Artifacts included faunal bone, obsidian, chert flakes, and ceramics dating primarily to the Late Classic period Tepeu 2 and 3 horizons.

Lot 2 (0.10–0.22 m) was the inferred final floor level of Structure E1-4, poorly preserved with no evidence of stucco. As in parts of Lot 1, the presence of this floor was noted after reaching a level of small cobble fill mixed with gravel. This lot showed that the northwestern side of the interior wall had poorer preservation than other portions, due to the absence of faced stones that had possibly been removed after the structure was abandoned. Diverse artifacts were recovered, including shell, quartz, faunal bone, chert flakes, a chert tool, and ceramics dating to the Tepeu 2 and 3 horizons.

IN-1C-2 was opened to the southeast of IN-1C-1, following the interior wall, which I now identified as a bench toward the rear of the structure (Figure 7.5). The goal of IN-1C-2 was to recover any objects left on the floor of the central room of Structure E1-4. This interior wall made up the northwestern and northeastern sides of the unit.

Figure 7.5 Profile of IN-1C-2 showing the location of Burial 4.
Lot 1 (0.00–0.08 m) was a thin layer of humus. As the living surface of Structure E1-4 had not been documented in IN-1C-1, I ended the lot after reaching the base of the interior bench, where the floor level would have been located. Artifacts included shell, metate fragments, obsidian, chert flakes, two chert tools, one chert knife, one chert projectile point, and ceramics dating to the Tepeu 2 and 3 horizons.

Continuing with the excavations, Lot 2 (0.08–0.26 m) consisted of the collapse of stones measuring between 15 and 25 cm long from the interior bench and the poorly-preserved floor level of Structure E1-4. Due to the absence of stucco, the location of the floor was unclear. Due to this ambiguity, I ended the lot after the identification of a human femur in situ, representing a burial immediately beneath the final floor of Structure E1-4, numbered Burial 4. This burial was not marked by any stones or a formal cist, other than being partly covered by the interior wall of Structure E1-4. Artifact density was high, including shell, a greenstone bead, a stalactite, faunal bone, a hammerstone, obsidian, chert flakes, a chert scraper, two chert projectile points, pumice stones, and ceramics dating to the Tepeu 2 and 3 horizons.

Lot 3 (0.26–0.46 m) consisted of an expansion of the excavations of the adjacent unit IN-1C-3 into IN-1C-2 to recover the upper portion of a subsequent burial, Burial 3, initially documented in IN-1C-3. This lot was located in the southeastern side of the unit.

Lot 4 (0.26–0.41 m) was the excavation of the lower portion of Burial 4, first documented in IN-1C-2. This lot was located in the northeastern side of IN-1C-2, alongside the interior wall. We expanded the unit into IN-1C-9 to the northeast to uncover the upper portion of the burial. We closed IN-1C-2 after excavating Lot 4.
IN-1C-3 was located to the southeast of IN-1C-2, following the interior bench of Structure E1-4. Therefore, we placed IN-1C-3 in the middle of the room defined by this bench, which appeared only in the northeastern side of the unit. Excavations of IN-1C-3 focused on clearing to the level of the floor, and I planned vertical excavations to detect any ritual evidence associated with the location of the unit at the center of the room delimited by the bench (Figures 7.6–7.7).

Figure 7.6 Northeast profile of IN-1C-3 and IN-1C-4.

Figure 7.7 Southwest profile of IN-1C-3.
Lot 1 (0.00–0.12 m) represented the layer of humus on top of the final floor of Structure E1-4. Following the strategy in IN-1C-2, we excavated the humus to the level of the base of the bench, where the final floor would have been located, even if that floor was not well-preserved, as was the case in other units. The artifact density was high, including shell, a greenstone bead, faunal bone, a metate fragment, obsidian, an obsidian core, chert flakes, a chert projectile point, and ceramics dating primarily to the Terminal Classic period Tepeu 3 horizon. The presence of the obsidian core suggested that a function of Structure E1-4 was obsidian blade production, associated especially with the interior bench.

The following excavated level, Lot 2 (0.12–0.30 m) consisted of the collapse from the bench and the final floor of Structure E1-4. Due to the poor preservation of this floor, the lot was completed after reaching a level of fill. At the center of the unit, I noted a series of partially faced stones following the axis of Structure E1-4. I considered these stones to mark a burial, which was further justification for completing the lot. Artifacts included a possible fishing weight, a small shell, stucco, faunal bone, a fragment of a mano metate, obsidian, chert flakes, two chert projectile points, and a mix of ceramics dating throughout the Late Classic period, with monochrome black slipped sherds (Infierno or Bos Black type) with some Tepeu 1–2 diagnostic dish/plate forms.

Lot 3 (0.30–0.50 m) was a layer of fill associated with the line of worked stones found in Lot 2. These stones were located immediately below the final floor of Structure E1-4. I initially hypothesized that these stones had been placed over a burial, but instead they were placed to the side of the burial, creating an informal cist. Lot 3, thus, corresponded with Burial 3, which is described in more detail below. This burial had
been placed on an earlier floor of the structure, Structure E1-4 sub 1, poorly preserved but marked with stucco fragments.

After excavating Burial 3, Lot 4 (0.50–0.80 m) was a layer of fill beneath the earlier floor of Structure E1-4 sub 1. This lot was excavated in a 1 x 2 m section of IN-1C-3, at the southwestern side of the unit. Lot 4 ended after reaching an earlier level of floor, made up of better preserved stucco blocks. This floor was that of Structure E1-4 sub 2. Artifacts included quartz, stalactites, stucco, faunal bone, a fragment of a mano metate, chert flakes, and a mix of few diagnostic ceramics dating to the Late Classic period Tepeu 1 and Late Preclassic period Chicanel horizons.

Continuing with the excavation of the floor of Structure E1-4 sub 2, I noted a small feature at the center of the excavation. This feature (Lot 5) consisted of a possible offering or cache of a large limestone metate or basin with a Late Preclassic period Polvero Black rim sherd attached with thick stucco. The metate was broken into four fragments, the largest measuring 45 cm long. This metate was located at a depth of 81 cm, immediately beneath the floor of Structure E1-4 sub 2. During construction, builders likely placed this metate into the fill of Structure E1-4 sub 2 immediately before the construction of the floor. The metate, therefore, may not have been an intentional offering per se, but the object was placed there deliberately.

Lot 6 (0.81–1.60 m) consisted of a layer of fill beneath the floor of Structure E1-4 sub 2. This fill was distinct from later episodes of construction in that the rocks used were very large, measuring up to 60 cm long. Furthermore, this fill was compact and the stones were essentially glued together with copious amounts of thick stucco. Due to safety concerns, we terminated the lot and unit before reaching bedrock, though Lot 6 is thought
to represent the earliest construction in this part of the site, where the natural shape of the hill’s summit was expanded to create flat, patio space, reaching the level of the modified and leveled bedrock documented in Suboperation 1B. The artifact density was relatively low, including stucco, faunal bone, and ceramics dating entirely to the Late Preclassic period Chicanel horizon.

I placed IN-1C-4 to the southeast of IN-1C-3, following the interior bench along the axis of Structure E1-4. This bench occupied the northeastern and southeastern sides of IN-1C-4, as the bench turned to the southwest to form its “C” shape. IN-1C-4 was also the easternmost unit in the grid defined by Suboperation 1C.

Lot 1 (0.00–0.10 m) was a thin layer of humus. This layer ranged between 5 and 15 cm thick, with more humus collected in the corner where the interior bench turns. As in other excavations in Suboperation 1C, the presence of a floor was unclear, so excavations anticipated its location at the base of the interior bench based on the apparent depth of the floor from other units. Artifacts included fragmented stucco associated with this floor, obsidian, chert flakes, a hammerstone, a chert knife, and ceramics dating to the Tepeu 2 and 3 horizons.

Removing the collapse of the inner bench, the next layer was the floor of Structure E1-4, represented by Lot 2 (0.10–0.23 m). I inferred the presence of this floor from fragmentary stucco and a layer of small (10 cm long) cobbles, representing the fill or ballast immediately beneath the floor. Lot 2 ended after reaching a layer of larger cobbles. The artifact density was high, including a zoomorphic ceramic figurine, shell, stucco, faunal bone, obsidian, chert flakes, two chert projectile points, and ceramics.
dating from the Tepeu 1 through Tepeu 3 horizons. We closed the unit after excavating this floor level.

IN-1C-5 was the next unit in the grid of Suboperation 1C, located to the south of IN-1C-2, the southwest of IN-1C-3, and the west of IN-1C-4. IN-1C-5 lay nearly at the center of Structure E1-4, over the interior floor, and part of Structure E1-4’s southwestern exterior wall crossed through the southwestern side of the unit.

Lot 1 (0.00–0.05 m) was a thin layer of humus. The lot ended after reaching the floor level, surmised to have been located roughly at the same level as the exterior wall of Structure E1-4. In the northern corner of the unit, the floor was marked by a series of small flat stones measuring between 5 and 10 cm long. Artifacts included chert flakes and ceramics dating to the Tepeu 2 and 3 horizons.

Lot 2 (0.05–0.32 m) was a combination of collapse from the southwestern exterior wall of Structure E1-4 and the floor of the final phase of the building. The soil matrix consisted of a mix of small limestone cobbles and gravel, representing the ballast beneath the floor. The artifact density was high, including shell, faunal bone, obsidian, chert flakes, a chert projectile point, a chert tool, a fragment of polished stone, and abundant ceramics dating primarily to the Tepeu 2 and 3 horizons. We closed the unit after reaching a layer of larger cobble fill.

IN-1C-6 was located to the southeast of IN-1C-5, the south of IN-1C-3, and the southwest of IN-1C-4. This unit was the southernmost of the grid in Suboperation 1C. This area also marked the end of the interior, C-shaped bench, which occupied the southwestern side of IN-1C-6.
Lot 1 (0.00–0.12 m) consisted of a layer of humus and floor that was thickest in areas abutting the interior bench, where organic material collected over time. In these areas along the bench and the southeastern side of IN-1C-6, we uncovered a high density of material. These materials included stucco, a metate fragment, obsidian, chert flakes, a chert core, a chert projectile point, a chert tool, a small serpentine adze in the southern corner of the unit, and a fragment of a copper axe money in the southeastern side of the unit along the interior bench (Figure 7.8). This copper artifact appears to have been prehispanic based on its location in an undisturbed context with no evidence of looting. The assemblage of artifacts within the humus along the interior bench are also consistent with this assertion. Located in the collapsed portion of the interior bench, the copper fragment and the serpentine adze appear to have been placed intentionally into the wall of the C-shaped bench, likely part of the termination and abandonment of Structure E1-4 at the onset of the Early Postclassic period.

![Figure 7.8](image)

**Figure 7.8** Fragment of copper axe money associated with the C-shaped bench in Structure E1-4.

We documented no evidence of a floor in Lot 2 (0.12–0.34 m), suggesting that the stucco in Lot 1 belonged to that floor. Instead, the second lot represented the ballast
under the floor reaching a layer of larger cobble (20 cm long) fill. A series of small (5 cm long) flat stones may have belonged to the floor. We closed the lot and unit before excavating the larger fill. Artifacts included faunal bone, obsidian, chert flakes, a chert projectile point, a chert tool, a chert core, and ceramics dating to the Tepeu 2 and 3 horizons with some Tepeu 1-2 ceramics likely associated with the fill of Structure E1-4.

IN-1C-7 was located between IN-1C-5 and IN-1C-6, to the southwest. The northeastern portion of IN-1C-7 lay along the southwestern exterior wall of Structure E1-4, and the southwestern half of the unit occupied the surface of the patio of Structure E1-6, outside of Structure E1-4 along the exterior stair. This part of the patio formed a corner between Structures E1-4 and E1-1. I expected this area to have been significant with perhaps a burial having been placed there. This hypothesis was shown to be correct with the documentation of Burial 5 (Figures 7.9). Other goals of this unit were to uncover the form of the exterior stair of Structure E1-4 and to document a potential refuse area.

![Figure 7.9](image.jpg)

Figure 7.9 Southeast profile of IN-1C-7 showing the location of Burial 5.
Lot 1 (0.00–0.10 m) was the layer of humus that revealed the form of the stair that followed the southwestern side of Structure E1-4. This stair consisted of two low risers; the uppermost was a single stone measuring 32 cm tall, while the lower riser was made up of two tabular stones each measuring 14 cm wide (a total of 28 cm with the lower riser). Artifacts included a metate fragment, obsidian, chert flakes, and ceramics dating to the Tepeu 2 and 3 horizons.

The following lot represented the floor of the patio of Structure E1-6 with the collapse of the stair of Structure E1-4. This floor was not well preserved. Lot 2 (0.10–0.23 m) ended after reaching a layer of large cobble fill. Artifacts included faunal bone, polished bone, an obsidian core, a chert core, chert flakes, greenstone, and ceramics dating to the Tepeu 2 and 3 horizons. The presence of an obsidian core further supports the likely function of Structure E1-4 for small-scale obsidian blade production during the Terminal Classic period.

Reaching the layer of cobble fill consisting of rocks measuring 20–30 cm long, Lot 3 (0.23–0.53 m) represented the start of vertical excavations into this fill. This lot ended after recovering human remains associated with Burial 5. To document the entire burial, I expanded excavations to the northwest. Burial 5 is described in more detail below.

Lot 4 (0.53–0.73 m) was the continuation of fill beneath Burial 5. We uncovered no evidence of a formal floor beneath Burial 5. The bedrock appeared relatively rapidly, suggesting that Burial 5 was placed on a thin layer of fill on top of this bedrock. As in IN-1B-2, the bedrock appeared to have been modified and leveled, though the bedrock was located at a lower depth in IN-1C-7-4. This evidence suggests that the bedrock was
leveled in such a way to create at least three large steps: the lowest in IN-1C-7, a higher one in the southeastern side of IN-1B-2, and the highest in the northwestern side of IN-1B-2. These modifications likely took place during the Late Preclassic period along with the other major modifications to the hilltop, including terracing. The lot and unit ended after reaching this bedrock. Artifact density was low, including few ceramics dating to a mix of the Late Classic and Late Preclassic periods.

IN-1C-8 was an addition to the original Suboperation 1C grid to uncover the entirety of Burial 5, the lower half of which had been documented in IN-1C-7. IN-1C-8 measured 1 x 1 m and was located to the northwest of IN-1C-7. Lot 1 (0.00–0.11 m) was a layer of humus. Materials included shell, faunal bone, obsidian, chert flakes, and ceramics dating primarily to the Tepeu 2 and 3 horizons.

The second lot (0.11–0.20 m) consisted of the floor level of the patio of Structure E1-6, outside of Structure E1-4. This floor was based on the level from IN-1C-7 because no evidence of the floor was found. Artifacts included shell, chert flakes, an unidentified stone, and ceramics dating to the Tepeu 2 and 3 horizons.

Lot 3 (0.20 - 0.48 m) corresponded with the skull and superior portion of Burial 5, which is described in more detail below.

IN-1C-9 was another addition to the original grid, this time to uncover fully Burial 4. IN-1C-9 was a 1 x 1 m unit to the northeast of IN-1C-2 to reveal the upper half of Burial 4, which had been partially excavated in IN-1C-2. The interior bench of Structure E1-4 had been constructed over the upper half of Burial 4, therefore we placed IN-1C-9 over the bench. Due to the importance of the context of Burial 4, we excavated a
1 square meter portion of the bench. We later reconstructed this section of the bench after excavating Burial 4 (Figure 7.10).

Figure 7.10 Structure E1-4 after excavations and partial reconstruction of the C-shaped bench (background).

Lot 1 (0.00–0.40 m) consisted of the 1 square meter section of the bench from the interior of Structure E1-4. The context consisted of a combination of faced stones along the top and exterior of the bench and small cobble fill inside. The largest stones measured 30–40 cm long. The lot ended after reaching the level of Burial 4. Artifacts included faunal bone and few ceramics dating to the Tepeu 2 or Tepeu 3 horizons.

Lot 2 (0.40–0.70 m) corresponded to the superior portion of Burial 4, which is described in more detail below.

Suboperation 1D was a continuation of the excavations in the patio group surrounding Structure E1-6, focusing on the small Structure E1-5. This structure is
located in the western corner of the patio group, adjacent to Structure E1-4’s southwestern side. An alleyway passes between the two structures running from southeast to the northwest. Structure E1-5 is a square-shaped structure, much smaller than Structure E1-4 and similarly contains a C-shaped bench or wall. This C-shaped feature forms Structure E1-5’s northwestern, northeastern, and southeastern exterior walls. The opening of the C-shaped Structure E1-5 is therefore facing the southwest. Whether this side was actually exposed or closed off with perishable materials is unclear. Suboperation 1D was designed to examine the function of Structure E1-5 and its relationship to Structure E1-4. Because of Structure E1-5’s relatively small size, it was not a residential structure. Instead, its function related to other activities associated with the household that may have resided in Structure E1-4.

IN-1D-1-1 was a 2 x 2 m unit placed inside Structure E1-5, with the C-shaped wall forming the northwestern and northeastern sides of the unit. IN-1D-1-1 was oriented 50° from magnetic north. This unit took up more than half of the interior space of Structure E1-5, though a portion of the structure lay outside of the unit to the southeast. We excavated the unit only to the final level of the floor of Structure E1-5 (Figure 7.11).
Figure 7.11 Plan drawing of Structure E1-5 and rear, C-shaped wall.

Lot 1 (0.00 – 0.09 m) was the layer of humus over the final floor of the structure and the collapse of its exterior C-shaped wall. To the southwest, a series of stones appeared to have closed off the C-shaped structure, though these stones were much lower than the exterior wall, representing the exterior wall of the platform, on which the raised C-shaped wall was built. Artifacts included faunal bone, four metate fragments, obsidian, chert flakes, and ceramics dating to the Tepeu 2 and 3 horizons.

Lot 2 (0.09–0.20 m) represented a combination of collapse from the exterior C-shaped wall of Structure E1-5 and the final floor. This floor was not preserved, although we recovered fragments of stucco. The lot ended after reaching a layer of fill consisting
of 20 cm long rocks. Recovered materials included a ceramic spindle whorl, a limestone spindle whorl, shell, a shell bead, stucco, a possible fragment of a limestone figurine, faunal bone, obsidian, chert flakes, a fragment of serpentine, and ceramics. Excavations also suggested that the entrance of Structure E1-5 was via a single stair to the southwest. Another possible entryway may have been on the northeastern side of Structure E1-5, through a small gap in the C-shaped wall. The presence of two spindle whorls on the floor of Structure E1-5 suggests that a possible function of the structure was the production of cotton thread.

Burial 3

Based on the presence of worked stones following the axis of Structure E1-4, I expected a burial to be present beneath these capstones. Instead, after further excavation, we realized the burial had been placed alongside these stones, to the northeast (Figure 7.12). The remains of Burial 3 were in fair condition, including fragments of cranium, teeth, and long bones. The orientation of the burial was 320°, parallel to the interior bench to the northeast, with the feet to the southeast and the head to the northwest. The body was found in IN-1C-3-3, while the excavation was expanded into IN-1C-2-3 to recover the cranium. The body had been placed on its back, or more accurately slightly on the body’s left side with the right side leaning alongside the line of worked stones that formed the southwestern boundary of Burial 3. The head was facing northeast, the left arm was extended alongside the body, with the right arm and right hand placed across the left hip. The aforementioned line of rocks was the only formal marker of the burial, delimiting a simple, partial cist on top of the floor of Structure E1-4 sub 1. Burial 3, thus,
was placed within the final layer of fill of Structure E1-4, with the line of stones defining the amount of fill that would be placed in the final construction phase. The presence of bone from a different individual suggests that Burial 3 was intrusive to an earlier burial, and this possibility is supported by the reverse stratigraphy of Tepeu 1-2 horizon ceramics on the floor of Structure E1-4 overlying Tepeu 2 horizon ceramics within the Burial 3 cist.

**Figure 7.12** Location of burials in Suboperation 1C, associated with Structure E1-4.

Burial 3 is notable for its location in the middle of the room defined by the C-shaped bench. This bench, therefore, was either designed around Burial 3 at the time of or
shortly after interment, or the burial was specifically placed intrusively at the center of this feature after its construction. The top of the feature, marked by the line of stones to the southwest of Burial 3 was at a depth of 30 cm, while the base of the burial was at a depth of 50 cm, just above the level of the floor of Structure E1-4 sub 1. Burial 3 appears to have dated to the Late Classic period based on being placed inside the final layer of construction fill of Structure E1-4, which likely dates to the eighth century (Tepeu 2 horizon). The interior dimensions of Burial 3 are 167 cm along the northwest-southeast axis by 31 cm wide. The height of the feature was approximately 20–22 cm. The soil inside Burial 3 was a brown (7.5YR 4/3) silt, while outside the soil was a dark brown (7.5YR 3/2) sandy loam. Artifacts recovered from Burial 3 included ceramics, shell, and stucco in IN-1C-3-3, and ceramics in IN-1C-2-3. More than other burials at the site, Burial 3 contained offerings including three fragments of carved bone near the skull, a fragment of brain coral (Diploria), a polished, slightly triangular greenstone (possibly schist) disc near the skull, a projectile point near the skull, one shell bead near the body, and a hammerstone or mano metate fragment near the body.

Burial 4

Burial 4 differed from the two other burials documented in Structure E1-4 in the orientation perpendicular to Burials 3, 5, and the long axis of the interior bench. This orientation was 50° with the head to the northeast and the feet to the southwest. The general preservation was poor; no portion of the skull was preserved aside from teeth, therefore the direction of the face could not be determined. No formal cist had been constructed, though the pelvis, torso, and head had been covered by the worked stones
and fill of the interior bench. The skeleton measured 80 cm long by 50 cm wide, and the vertical height of the feature was 15 cm. Minimal fill had been placed between the burial and the interior bench, indicating that the final floor of Structure E1-4 and the interior bench had been constructed immediately on top of Burial 4. The soil inside the burial was silty and brown (7.5YR 4/2), while outside soil was somewhat sandier and dark brown (7.5YR 3/2). Between the legs, the soil was burnt and ashy, possibly by a recent tree root burning or a ritual practice. A sample of this soil was taken.

The only bones in a fair level of preservation were the femurs, though they were still fragmentary. The skull was not preserved except for a few teeth and a fragment of the mandible. The body was extended, lying on the back, with extended arms and legs. Recovered artifacts from IN-1C-2-4 included a small, dense ceramic ball (likely a burial offering of some kind) near the individual’s feet, faunal bone, obsidian, chert flakes, shell, and ceramics. In IN-1C-9-2 artifacts included shell, obsidian, chert flakes, and ceramics. Other than the ceramic ball, burial goods included a shell bead near the legs, and a projectile point near the left femur. In fact, this projectile point was excavated in situ, and due to the fragmentary nature of the femur it was impossible to determine whether this projectile point had originally been wedged in the femur. The location of the projectile point with its point down suggests an injury suffered by the individual (Figure 7.13). Such an injury in itself would not have necessarily been fatal, unless accompanied by other injuries or an infection. Of note, the lower half of the projectile point was broken and not found.
Figure 7.13 Burial 4 showing the location of the projectile point relative to the left femur.

Burial 5

Burial 5 was documented in two contexts: IN-1C-7-3 and IN-1C-8-3. The individual had not been placed in a formal cist, though the head was marked by a worked flat stone. The rest of the body had been covered with cobbles from the fill of Structure E1-6. In general, Burial 5 was in poor preservation, though the humeri and femurs were in better condition, although still fragmentary. The skull was not preserved, except for the mandible and teeth, which were nearly complete. The height of the skeleton appears to have been lower than that of Burial 3, and the individual was an adolescent. The floor of the burial was a thin layer of fill placed on top of the bedrock during the construction of Structure E1-6. The orientation of Burial 5 was the same as that of Burial 3, 320° with the head to the northwest and the feet to the southeast. The head was facing to the southwest,
while the body was positioned toward the northeast. The body had been placed on his or her left side with the right arm flexed over the right side, and the legs were also flexed.

We documented the capstone at a depth of 20 cm below the surface, or 9 cm below the original living surface of the patio. The bottom of the burial was located at a depth of 48 cm, under which a layer of approximately 20 cm of fill had been placed on leveled bedrock. Whether this bedrock had been leveled during the Late Preclassic period along with the other major modifications to the hilltop or during the Late Classic period after razing earlier structures is unknown. The soils inside and outside the burial were the same texture and color, silty and brown (7.5YR 4/2). We uncovered no burial goods although shell, chert flakes, and ceramics were intrusive to IN-1C-7-3. We documented no artifacts in IN-1C-8-3.

Operation 2: Excavations of Structures E1-1, E1-2, and E1-3

This operation focused on a set of structures that represent some of the highest quality and best-preserved stone masonry at El Infiernito. Structure E1-1 is one of two monumental pyramidal shrines in the Upper Group of the site, the other being Structure E2-4 further south. Because of Structure E1-1’s prominence, this shrine had unfortunately been looted by a series of large pits beginning southwest of Structure E1-1, cutting through Structure E1-3 (the base of Structure E1-1), up to Structure E1-1’s summit. Within this trench, three large looter’s pits had been further excavated, two inside of Structure E1-1 and two below, cutting through the base of Structure E1-3 (Figures 7.14–7.16). The northwestern, northeastern, and southeastern sides of Structure E1-1 are still largely intact. Due to this devastating looting event, the form of Structure
E1-1 is unclear, although the looted southwestern side was unlikely to have provided the main approach to the upper level of Structure E1-1. Structure E1-3, the best-preserved standing architecture of the site, is a basal platform that supports Structures E1-1 and E1-2, and the southwestern wall of this basal platform marks one of the most distinctive architectural features of El Infiernito. This feature is a stone masonry substructure, a vertical (slightly slanted inward), approximately 2 m high wall with preserved stucco (Figure 7.17). This wall extended down the length of the southwestern side of Structure E1-3 before the looting of Structure E1-1. The most likely approach up Structure E1-1 was from the patio of Structure E1-6, where the northwestern side of Structure E1-1 appears to have a collapsed stairway.

**Figure 7.14** Northeast profile of looter’s pit in upper level of Structure E1-1.

**Figure 7.15** Northeast profile of looter’s pit in the substructure E1-3 with Structure E1-1 in the background.
Figure 7.16 Southeast profile of the looter’s pit showing the base of Structure E1-1 (left) and the expansion of Structures E1-2 and E1-3 (right).

Figure 7.17 Exposed portion of the southwestern wall of substructure E1-3 facing north toward Structure E1-1. Structure E1-2 is immediately above Structure E1-3, out of view.

Structure E1-2, located to the southeast of Structure E1-1, is a long platform on top of Structure E1-3 and likely served a residential function. Indeed, Structure E1-2’s location high on top of Structure E1-3, and its proximity to Structure E1-1 suggest that it represents one of the most elite households at El Infiernito. Structure E1-2’s proximity to
the largest plaza in the Upper Group, immediately to the southeast also may indicate that it is a type of “large house” or relatively elite compound (Arnauld 2001). A stairway likely ascended Structure E1-3 to the southeast. No stairway is visible on the southeast side of Structure E1-1, a well-preserved portion of the latter structure. Although Structure E1-2 is proximal to Structure E1-1, the main access would have been from the area around Structure E1-6, suggesting perhaps a stronger connection between that patio and the pyramidal shrine.

Operation 2 consisted of two suboperations: one associated with Structure E1-1 and the other with Structure E1-2. Suboperation 2A consisted of the excavations of interior living space as well as patio space in front of and behind Structure E1-2, a large house platform on top of Structure E1-3. I placed a grid of seven squares over Structure E1-2; we excavated two units vertically (one reaching bedrock), while we excavated all other units only to the level of the floor of Structure E1-2.

IN-2A-1 was located on top of Structure E1-2, over a circular stone feature (Figure 7.18). Due to the dense settlement located on the hill within the Upper Group, access to water would have been a concern. Although numerous springs at the base of the hill could have supported the settlement, the convenience of water access on top of the hill would have bolstered the self-sufficiency of the site’s inhabitants. Due to these issues, we investigated the circular stone feature on Structure E1-2 to assess its function as a cistern to collect rainwater. Before excavation, the circular feature was partially visible, measuring 50 cm in diameter, with stones varied in size, averaging approximately 20–30 cm long, with smaller stones measuring 5–10 cm long and larger stones measuring up to 50 cm long. Excavations inside this circular feature ended at a depth of 28 cm,
reaching a large stone that could not be removed without destroying the circular feature. The presence of this stone suggested an extension of the layer of construction fill beneath the floor of Structure E1-2. The circular feature did not continue any further, and we completed excavations inside the feature.

![Figure 7.18 Plan drawing of the circular stone feature near the northern corner of Structure E1-2.](image)

Excavations then shifted to the area outside of the circular feature, documenting the final, poorly-preserved floor with few stucco fragments recovered. The artifact density was higher than inside the circular feature. These artifacts included chert flakes, a possible fishing weight, shell, a ceramic spindle whorl with incised decoration of a quadripartite motif, fragmented and burned turtle shell, obsidian, and ceramics dating to Tepeu 2 and 3 horizons. The lot and unit ended after reaching a level of cobble fill beneath this floor.

The circular feature does not appear to have been used as a cistern. However, the exterior wall continues below the level of the floor of Structure E1-2. The feature,
therefore, appears to have been intentional, perhaps used as storage or for other household activities (including ritual). Another possibility, is that the feature was not intentional, either caused by a tree fall or recent looting. However, the feature appears to have been constructed in a consistent circular shape with rocks of similar sizes. This consistency would be unlikely in the case of either a tree fall or looting. The comparative absence of materials inside the feature is also significant.

In 2017, we expanded Suboperation 2A to include horizontal excavations of Structure E1-2, as well as a possible area of discard between Structures E1-1 and E1-2. This grid consisted of six units numbered 3–8, although we excavated only IN-2A-3, IN-2A-4, and IN-2A-8 (Figure 7.19). In addition, we excavated IN-2A-8 vertically to bedrock. The horizontal excavations reached the final floor of Structure E1-2 at a depth of approximately 5 cm beneath a thin layer of humus. These excavations uncovered a small stone ball (perhaps a boleadora, or stone projectile used in hunting or warfare).

**Figure 7.19** Plan drawing of Suboperation 2A, Structure E1-2.
IN-2A-8, the only unit in the operation excavated to bedrock, was located to the north of IN-2A-4 and was the northernmost unit of the grid in Suboperation 2A (Figure 7.20). I placed IN-2A-8 behind Structure E1-2, in a flat area behind Structure E1-1. The southeastern side of the unit followed the northwestern exterior wall of Structure E1-2. I hypothesized that this area functioned as a place of household discard. This refuse area also provided an opportunity to examine the relationship between the residential function of Structure E1-2 and the pyramidal shrine, Structure E1-1.

![Southeast profile of IN-2A-8](image)

**Figure 7.20** Southeast profile of IN-2A-8.

Excavations did not document a formal or preserved floor, although a layer of cobble fill started at a depth of 8 cm. Excavating further to a depth of 21 cm, a flat area with fragmentary stucco suggested the presence of an earlier floor, that of Structure E1-3 sub 1. Below this floor, bedrock began to appear at different depths throughout the unit. Artifact density remained high down to the level of the bedrock. Materials included metate fragments, obsidian flakes, a human tooth, chert flakes, stucco, a greenstone bead, a fragment of a hematite mirror, faunal bone, a chert projectile point, a chert axe, and
ceramics. All ceramics recovered from the fill of Structure E1-3 sub 1 dated to the Late Preclassic period, suggesting that a Preclassic period structure had been constructed over bedrock in this area. However, evidence from the looter’s pits in Structure E1-1 suggested that Structures E1-1 and E1-3 had been constructed in a single phase during the Late Classic period. This contradictory data suggest that Structure E1-3 sub 1 had been a relatively small Preclassic period construction that was later expanded both vertically and horizontally to the west and south during the Late Classic period. Therefore, Structure E1-1 had been built abutting the earlier Structure E1-3 sub 1, while Structure E1-3 was later expanded outward to become the basal platform for Structures E1-1 and E1-2.

IN-3A: Investigations of Structures D1-1 and D1-2

Suboperation 3A was located in the northernmost architectural cluster of the Upper Group, forming one of the modified local summits of this part of El Infiernito (Figure 7.21). Structure D1-1, the summit of this modified area is at a slightly lower elevation than are Structures E1-1 and E2-4. Like Structures E2-1 and E2-7, Structure D1-2 is a large architectural modification to the natural local summit, forming the basal platform and patio associated with another structure, Structure D1-1. In this case, Structure D1-2 forms the patio space surrounding a single L-shaped platform, Structure D1-1. This structure is located in the northwestern half of the large patio space created by Structure D1-2. Suboperation 3A consisted of two units to examine the construction sequence of Structure D1-2 and to document any contexts associated with the final phase and abandonment of Structure D1-1. The patio, Structure D1-2 was shown to have been constructed in possibly two phases over bedrock, although we documented no evidence
of preserved floors or ballast. I inferred the presence of an earlier, Late Preclassic period floor from an increase in ceramics dating to this period. The floor of Structure D1-2 sub 1 may have been built directly over the leveled bedrock of this local summit.

**Figure 7.21** Map of Operations 3, 11, and 12.

IN-3A-2 was located to the northwest of IN-3A-1 on Structure D1-1 near its southwestern corner. I placed this unit to document evidence of the function of Structure D1-1 and its final occupation. We had collected fragments of an incense burner on the surface, and this unit was meant to document this context and to determine if this object
was evidence of a termination, abandonment, or pilgrimage ritual. Artifact density in the humus and final living surface was high, including turtle shell fragments, a deer antler (likely used for pressure flaking or indirect percussion of lithics), chert flakes, and abundant ceramics. The excavation of this unit ended in Lot 2, at a depth of 12 cm after inferring the presence of a floor, with no evidence of stucco or ballast. The high quantities of artifacts documented in IN-3A-2 suggests a rapid abandonment of Structure D1-1, perhaps marked by an intentional termination deposit of incense burners, however, without an expansion of horizontal excavations, this possibility remains speculative. The high density of chert debitage and evidence of lithic production suggests a specialized function for this part of the site.

**IN-3B, IN-11A, and IN-12A: Excavations of the Upper Group Terraces**

The investigations of the terraces in the northern portion of the Upper Group of El Infiernito included three suboperations, IN-3B, IN-11A, and IN-12A, all placed to document the construction sequence and functions of the terraces. More specifically, the terraces were hypothesized to be defensive features or to have had agricultural uses. Furthermore, whether the terraces were constructed primarily during the Late Preclassic period or the Late Classic period would relate to the overall purpose of the site in relation to the politics of those periods.

Suboperation 3B consisted of a single unit located on Structure D1-7, the upper terrace in the northern portion of the Upper Group. This location potentially served as access to higher areas within the Upper Group, based on the presence of a collapsed stairway ascending to Structure D1-5. Due to the unit’s location alongside a possible
stairway, I considered this area to have been used to discard refuse. The unit was excavated in three lots to bedrock, with no discernible floors marking distinct construction phases. Artifacts were consistent with a midden, including obsidian, shell, lithics, quartz, chert flakes, a chert axe, faunal bone, a human tooth, a greenstone bead, a serpentine adze, and ceramics. The evidence from IN-3B-1 shows that this part of the terrace was constructed almost entirely of soil and artifacts and that the terraces may have served dual purposes as intensive agricultural features and a midden.

Excavations elsewhere in the terrace of Structure D1-7 contradicted aspects of Suboperation 3B, namely in documenting deeper fill made up of larger cobbles rather than soil. Suboperation 11A was located south of Suboperation 3B, in an area where the terrace formed by Structure D1-7 shifts in a nearly right angle to the east. The goal of Suboperation 11A was the same as that of Suboperation 3B, to determine the chronology and function of this terrace, especially whether it had an agricultural use.

IN-11A-1 was placed on Structure D1-7, between Structures D1-6 and D1-5. In this area, Structure D1-7 forms a larger patio space bounded by the L-shaped Structure D1-5 on the northern and eastern sides. A smaller structure, Structure D1-6, is a low, square-shaped platform (190 x 169 cm) taking up the center of the patio space. This position and design suggest that Structure D1-6 represented an altar. IN-11A-1 was located immediately to the southeast of Structure D1-6, with the southeastern side of the structure occupying the northwestern side of the unit. The unit was excavated in a combination of cultural and arbitrary levels, as the only indicator of early phases of fill were changes in the ceramic assemblage, which could not always be determined before washing ceramics (Figure 7.22).
The artifact density was high, with a similar assemblage as documented in Suboperation 3B, including shell, quartz, faunal bone, metate fragments, obsidian, chert cores, chert projectile points, a chert tool, chert flakes, pumice stones, and ceramics. Fill contained few rocks mixed with black soil (darker than 2.5Y 2.5/1). This soil matrix was darker than in other parts of the site and suggested that this area had contained abundant organic material, perhaps representing either the presence of a midden or agricultural features. For this reason, soil samples were collected for a subsequent flotation analysis conducted by Harper Dine.

The black soil continued to a depth of 57 cm, as the amount of rocks also increased, the majority measuring 10 cm long with fewer rocks measuring 20–30 cm long. The midden context continued, with a high artifact density mixed with organic...
earth. Another soil sample was taken. The bedrock began to appear more clearly in the
eastern and southern corners of the unit.

In Lot 4 (57 - 67.5 cm), the fill continued, though the soil color changed to a dark
brown (7.5YR 2.5/2). The artifact density remained high, including shell, faunal bone,
obsidian, chert flakes, a fragment of serpentine, and abundant ceramics restricted
primarily to the Late Preclassic period Chicanel horizon. Lot 5 (67.5 - 79 cm) was the
final layer of fill above the bedrock of the hilltop and marked another change in soil
matrix, including a higher compact clay texture, dark brown in color (7.5YR 3/2). The lot
ended after reaching the bedrock throughout the unit. The ceramics all clearly dated to
the Late Preclassic period. Other artifacts included faunal bone, obsidian, chert flakes,
and a polished stone.

Suboperation 12A was an extension of the excavations of the terraces at the
northern end of the Upper Group. This suboperation was located to the northeast of
Suboperation 3B and to the north of Structures D1-1 and D1-2. In this area, an intricate
series of terraces is notable, especially visible from the summit of Structure D1-1. Three
of these terraces, Structures D1-5, D1-7, and D1-8 are the same as those that circle the
northern portion of the Upper Group, uninterrupted. Suboperation 12A focused on
Structures D1-7 and D1-8, although at least two smaller terraces continue down the
northern slope of the hilltop. These terraces may have served an agricultural purpose, or
they may have less likely marked a possible approach to the Upper Group.

IN-12A-1 was placed on top of Structure D1-7, to the south of the retaining wall
that defines the terrace (Figure 7.23). Lot 2 (17–36 cm) was a layer of fill of black soil
(7.5YR 2.5/1), mixed with few rocks measuring 5 to 10 cm long. A few worked stones,
possibly removed from nearby architecture to be used as fill, were mixed with these irregular cobbles. The lot ended after reaching these worked stones to interpret their context. Artifacts included faunal bone, obsidian, chert flakes, a chert chopper, chert knife, and ceramics dating throughout the Late Classic period, primarily the Tepeu 2 horizon. After removing the worked stones, I determined that they were used as fill rather than meant to mark a floor. The following lot, Lot 3 (36–40 cm) was a continuation of the previous layer of fill of rocks measuring 10 cm long mixed with very dark brown soil (7.5YR 2.5/2). As in Suboperation 11A, I collected a sample of soil for flotation analysis based on its dark, organic quality. The lot ended after encountering a soil color change. Artifacts included faunal bone, obsidian, chert flakes, and ceramics dating primarily to the Tepeu 2 horizon.

Figure 7.23 East profile of IN-12A-3 and IN-12A-4.
Lot 4 (40–53 cm) was another layer of fill with dark reddish-brown soil (5YR 3/3). In the northern portion of the unit, we documented a line of stones, representing the construction of the retaining wall of the terrace. In the northwestern and southern portions of the unit, we encountered more worked stones that appear to have been removed from other architecture and used as fill. Artifacts included marine shell, carved shell, a metate fragment, obsidian, chert flakes, and ceramics dating largely to the Chicanel horizon.

Lot 5 (53–63 cm) was another layer of fill of larger rocks measuring 20 cm long mixed with dark reddish-brown soil (10YR 4/2). The lot ended after reaching a flat capstone covered with a thin layer of stucco in the center of the unit. I initially believed that this capstone had marked a burial or a formal floor, but it had been removed from nearby architecture and used as fill. We also uncovered more of the retaining wall at the northern side of the unit. The only recovered artifacts were ceramics dating entirely to the Chicanel horizon.

Removing the capstone to find no obvious significant objects beneath, the sixth lot (63–71 cm) was another layer of fill of rocks measuring 10 cm long mixed with brown soil (7.5YR 4/3). The lot ended after encountering two long bones along the eastern side of the unit (not associated with the capstone uncovered in Lot 5). These bones were a human tibia and fibula and required the expansion of the unit to the north and northeast to document the context of the burial, numbered Burial 6, in the units IN-12A-3 and IN-12A-4.

IN-12A-3 was a 1 x 1 m unit placed immediately to the northeast of IN-12A-1 to expand the excavation of Burial 6 to the north. The lower legs of Burial 6 had been located in the eastern half of IN-12A-1, and based on the orientation of the burial, I
expanded excavations to the north and the east. At a depth of 44.5 cm, two clear capstones marked the upper portion of Burial 6. These capstones were oriented northeast to southwest. Although the majority of Burial 6 was included within IN-12A-1 and IN-12A-3, an additional unit, IN-12A-4 had to be added immediately east of IN-12A-1 to uncover the entirety of the lower capstone covering the individual’s torso, due to the orientation of the burial that differed from that of Suboperation 12A (slightly east of magnetic north).

Burial 6

We first documented Burial 6 in IN-12A-1, within the fill of Structure D1-7, one of the three large terraces that encircle that northern portion of the Upper Group. The majority of this burial extended into IN-12A-3, and a smaller portion was documented in IN-12A-4 (Figure 7.24). Burial 6 was placed under the retaining wall of the terrace and at a different orientation. The terrace curves in this part of the site, while near Burial 6 the retaining wall of the terrace is oriented 110° from magnetic north. In contrast, Burial 6 is oriented 40°, which is 20° west of the perpendicular axis of the retaining wall. This discrepancy suggests that Burial 6 was interred before the construction of the retaining wall. The skull was fragmentary, but due to the clay matrix of the soil, its form was preserved in the clay. The head was at the northeastern end of the burial, facing northwest.

Burial 6 was placed in the most formal cist at the site, marked by three capstones, one on top of the head, one over the thoracic cage (which was not preserved), and a third smaller capstone over the upper legs. Single unworked construction fill cobbles covered
the pelvis and lower legs. A combination of worked stones, tabular stones, unworked cobble fill (along the northwestern side), and bedrock (along the southeastern side) defined the sides of the cist. Bedrock marked the floor of Burial 6. We measured the capstones at a depth between 45 and 50 cm, while the bedrock was at a depth of approximately 70 cm.

![Image](image.png)

**Figure 7.24** Plan drawing of Burial 6 before lifting capstones (left) and after (right).

The internal dimensions of the cist were 150 cm long by 30 cm wide at the head and 40 cm at the legs. The height of the burial was approximately 20 cm. The cist was filled with soil consisting of a dark brown (7.5YR 3/2) silty clay matrix, while outside of the cist soil was a very dark brown (7.5YR 2.5/3) silty loam. In general, the remains were in poor preservation, with the skull and long bones fragmented and all other bones absent. The individual was placed in the cist extended, with arms and legs also extended. Burial 6 represents a primary burial; however, the right femur was out of place, located over the chest, between the humeri, and below the skull. Perhaps this femur had been moved by an animal, but the compact, clay matrix inside the cist suggests that this scenario is unlikely.
Whether this location of the femur can be attributed to a cultural decision at the time of burial or a later modification or disturbance is unclear. Artifacts recovered from this context included obsidian and ceramics. The only likely burial good was a small black stone ball, possibly made of obsidian.

Based on its depth and associated ceramics, Burial 6 dates to the Late Preclassic period. The distinct orientation of the burial compared to Structure D1-7 may also relate to this early date. An alternative, which is not supported by the ceramic data, may be that Burial 6 was intrusive and that a portion of the retaining wall was removed to place the burial in its cist. The absence of large rocks over the lower portion of the burial offer support for this interpretation, but the burial is considered too deep to have been intrusive during the Classic period.

**IN-5A: Excavations of Structure E2-5**

Operation IN-5 focused on the southeastern section of the Upper Group, consisting of excavations of structure and patio spaces north and south of Structure E2-4. Beginning in 2016, IN-5A was placed on and next to Structure E2-5, the southwestern platform of the patio group made up of Structures E2-4, E2-5, E2-6, and basal platform E2-7 that forms the patio space. Structure E2-5 is a long range platform that was initially thought to extend northwest out of the base of Structure E2-4, although excavations revealed a small alley separating the two structures. The northeastern wall of Structure E2-5 runs along the patio space formed by Structure E2-7, while the southwestern wall skirts the edge of a small terrace that begins a steep descent down the hill to the southwest. Parts of the western corner of the building appear to have collapsed down the
side of the terrace, or perhaps the structure was intentionally built with a slightly skewed southwestern wall and a shortened northwestern wall, naturally following the shape of the terrace.

On the surface, parts of Structure E2-5’s exterior walls showed evidence of a staircase built in two steps; the uppermost would have been approximately level with the interior floor of Structure E2-5 and the lowermost would have descended to the level of patio E2-7. After excavations, this staircase was shown to encircle the entire structure, meaning that the final construction was made of two courses of stone and two wythes of stone. This design suggests that the structure would have had multiple entrances. In general, Structure E2-5 showed excellent preservation with no evidence of looter’s pits. The lack of collapsed stones or a mounded shape to Structure E2-5 shows that the structure represented a platform to support a perishable superstructure of pole, thatch, and bajareque construction.

Operation IN-5A was planned as a primarily horizontal excavation of Structure E2-5, with vertical excavations to be conducted when possible. The purpose of these horizontal excavations was to search for evidence of the final phase of occupation of the platform, to understand the rate of abandonment, to document evidence for refuse and activity areas, to uncover remains of interior architecture or rooms, and to investigate the function of the building during the Late and Terminal Classic periods. Vertical excavations inside and outside of Structure E2-5 were expected to find evidence for earlier constructions and to establish a chronology for this part of the site.

Operation IN-5A began as a grid of 11 units, each measuring 2 m in length by 2 m in width, oriented 60° from magnetic north, the same orientation as Structure E2-5 and
this part of the site in general (Figure 7.25). This grid covered only the southeastern half
of the structure. Ultimately, expanding this grid was necessary to cover the entire width
of Structure E2-5, to uncover refuse in the alley between Structures E2-4 and E2-5, and
to document fully any features that extended outside of units. We did not excavate all
units of this grid, and most of the excavations only reached the level of the most recent
floor of Structure E2-5. Exceptions were units IN-5A-1, IN-5A-6, and IN-5A-12, which
we excavated vertically.

Figure 7.25 Map of excavation units in Operation 5.
The first unit of the grid was IN-5A-1 located at the southeastern corner of Structure E2-5, partially covering a portion of the exterior stair and the final surface of the patio (Figure 7.26). The goal of this excavation was to reveal the exterior wall and to investigate the patio that was included in the northeastern half of the unit. We later excavated this half of the unit vertically to expose the stratigraphy of the patio, avoiding the exterior stair so as not to destroy the architecture.

![Figure 7.26 NW profile of IN-5A-1.](image)

The first lot (0.00–0.56 m), measured from the top of the higher step to the level of the patio consisted of a thin (5–10 cm thick) layer of humus covering the steps and the patio. Both steps measured 37 cm in height, though they consisted each of four tabular stones measuring between 6 and 14 cm in height. The width of the steps was
approximately 50 cm, although the lower riser was made of more uniform, rectangular stones than was the upper riser. Artifacts encountered included chert flakes and few ceramics dating to the Tepeu 2 and 3 horizons. We ended this lot after revealing the extent of the steps and presumably the final floor of the adjacent patio.

The second lot (0.56–0.69 m) represented the final floor of the patio outside of Structure E2-5. This floor was poorly preserved; the only evidence were the remains of stucco fragments. We recovered no evidence of gravel or ballast materials below this floor. Other materials included chert flakes and higher quantities of ceramics dating from the Tepeu 2 horizon through the Early Postclassic period. The lot ended after reaching evidence of large stone fill.

This fill consisted of large stones measuring 30 cm wide, making up the third lot (0.69–0.95 m). Within this rubble fill, we documented three human teeth, which did not belong to a burial. In addition to the human teeth, recovered materials included obsidian, shell, projectile points, lithics, stucco, quartz, and abundant ceramics dating primarily to the Tepeu 2 horizon.

The fourth lot (0.95–1.17 m) was a mix of fill and a possible earlier floor of Structure E2-7 sub 1, identified only by the presence of stucco, which may have instead been associated with a renovation of Structure E2-5 sub 1, which was identified in other excavations in IN-5A. We documented this stucco after lifting the four stones that marked the end of the third lot. No more human remains were encountered in the fourth lot, nor was evidence for a cist identified. Artifacts included faunal bone, a mano, shell, chert, quartz, and ceramics dating primarily to the Late Preclassic period Chicanel horizon.
Beneath the possible floor of Structure E2-7 sub 1 was the fifth lot (1.17–1.43 m), a layer of fill consisting of cobbles measuring 30 cm in width. At a depth of 1.28 m, we documented an enigmatic line of seven small stones (Figure 7.27). The stones measured between 13 and 24 cm long by 10–17 cm wide, and the entire line of stones measured 0.95 m long. Unlike the line of stones identified in the third lot, these stones were not aligned with Structure E2-5’s 60° axis and instead were oriented to 350°. Furthermore, the stones were too small to have supported architecture nor did this line of stones continue outside of the unit. The lack of noticeable curvature to the line and the absence of human remains negated the possibility of the cist of a burial. The location of this feature directly under a possible floor suggests that the stones may have been the remains of a small drain. The distinct axis of the stones also evokes an earlier date to the feature, perhaps during the Late Preclassic period. The feature may have also been more extensive in the past, forming part of earlier, razed architecture. Artifact density remained high with the recovery of two manos, stucco, shell, obsidian, chert, quartz, and ceramics. The presence of stucco suggested another, earlier floor, perhaps the floor of Structure E2-7 sub 2.

Figure 7.27 Plan drawing of the line of stones documented in IN-5A-1-5, beneath the Late Preclassic floor of the patio (Structure E2-7).
Lot 6 (1.43–1.90 m) was this possible floor, constructed directly on top of the natural bedrock of the hill. The fill beneath this floor consisted of dark brown (7.5YR 3/4) soil mixed with gravel, either further evidence of the floor of Structure E2-7 sub 2 or merely decomposing bedrock. Artifacts included shell, chert, faunal bone, obsidian, quartz, and few ceramics dating to the Chicanel horizon.

The next unit in the grid of horizontal excavations covering Structure E2-5 was IN-5A-2, located to the southwest of IN-5A-1. The unit covered the eastern corner of Structure E2-5, partially including the exterior wall and upper step of the platform along the unit’s northeastern and southeastern sides. The remaining portion of the unit contained part of the structure’s interior space (Figure 7.28).

**Figure 7.28** Plan drawing of Suboperation 5A, Structure E2-5.
Excavations of IN-5A-2 began by clearing the first lot (0.00–0.06 m) consisting of humus. Once we had cleared this thin layer to the level of the stones delimiting Structure E2-5’s exterior wall, we completed the lot, as we expected the latest floor to be at this depth. The artifact density was low, including chert, faunal bone, a fragment of a metate, and ceramics.

Lot 2 (0.06–0.18 m) consisted of the final floor level of Structure E2-5, although the floor was poorly preserved. I inferred the presence of the floor from the level of the stones forming the exterior wall of Structure E2-5, the presence of small flat stones between 5 and 10 cm long, and a thin layer of gravel beneath these stones. We uncovered no preserved stucco. The artifact density increased, representing in part materials left on the floor of the structure, as well as materials that formed part of the gravel fill representing the construction or modification of Structure E2-5’s final floor. Artifacts included obsidian, a chert projectile point, chert flakes, a hammerstone, basalt metates, shell, and abundant ceramics. Upon reaching a clear level of fill, we closed the unit.

The third unit in the grid (IN-5A-3) lay to the southwest of IN-5A-2. The majority of this unit covered interior space within Structure E2-5. The southeast side of the unit included the exterior wall of the structure. These excavations also revealed interior architecture that will be described below.

Following the pattern of a thin layer of humus above the floor level, Lot 1 (0.00–0.05 m) was the first level excavated. After clearing this humus layer, clear evidence of an interior stone feature was revealed. This feature consisted of worked, faced stone measuring 40–50 cm long, similar to the stones used in the exterior wall of Structure E2-5. The majority of stones consisted of unworked cobbles, which made up the fill of the
interior feature. The relatively low amount of worked stone suggested two possibilities: 1) this feature was constructed out of cobbles and worked stones removed either from the exterior wall of Structure E2-5 or the adjacent Structure E2-4, or 2) this feature had originally been faced with more worked stone that was removed at a later date to be used elsewhere at the site. Although both scenarios are plausible, the evidence suggests a degree of modification and reuse of architecture in this part of the site at a late date. During excavation, I considered the feature to have represented a bench, but after further excavations of Structure E2-5 that uncovered similar interior architecture, I identified this feature as the base of an interior wall that would have supported perishable materials. This wall delimited a separation of space, perhaps distinct rooms for a large household. The exact dimensions of this interior wall were unclear due to poor preservation (or perhaps cultural modification as previously stated), but the wall measured approximately 1 m wide by 1 m long, measured from the exterior wall of Structure E2-5. We recovered few ceramics in Lot 1.

Lot 2 (0.05–0.19 m) consisted of the collapse of the interior wall and floor level of Structure E2-5 around the wall. We left the wall in situ so as not to destroy the architecture. Unlike in the section of floor excavated in IN-5A-2, we recovered stucco representing a poorly preserved floor. Artifact density increased, especially along the southwestern edge of the interior wall, where objects had either made up the fill of the interior wall or were unintentionally deposited culturally through cleaning and maintenance of the floor. These materials included a metate fragment, unworked serpentine, obsidian, a limestone polishing tool, and ceramics. After reaching the same level of IN-5A-2, we closed the unit.
We placed IN-5A-4 in line with the previous units, to the southwest of Unit 3. The limits of the unit were the edge of the interior wall uncovered in Unit 3 on the northeastern side of Unit 4, the exterior wall of Structure E2-5 to the southeast, the southern corner of Structure E2-5 and the upper riser of the steps of the southwestern exterior wall, and the edge of another interior wall at the unit’s northwestern side. This clear delineation of space suggested that Unit 4 covered the entirety of a small room at Structure E2-5’s southern corner, perhaps used for storage, based on its small size.

Lot 1 (0.00–0.08 m) was a slightly thicker level of humus, due to the location of the unit in Structure E2-5’s southern corner, where soil had collected. This lot contained few ceramics, again primarily along the northeastern side of the unit, or the southwestern side of the interior wall revealed in Unit 3. The lot ended at the level of the exterior wall, at the expected level of the floor.

Excavating Lot 2 (0.08–0.18 m), we found no evidence of stucco or flat stones marking the floor. Instead, Lot 2 represented a thin layer of gravel above larger cobble fill. The lot and unit were closed beneath this gravel layer, reaching the same level as previous units. Artifacts included a chert projectile point, shell, and ceramics.

The grid covering Structure E2-5 continued with IN-5A-5, located to the northwest of Unit 2. I placed IN-5A-5 on and inside the structure, with the exterior wall running along the unit’s northeastern edge. Lot 1 (0.00–0.07 m) was a thin layer of humus. Beneath this layer, small flat stones like those in Unit 2 represented the final floor of Structure E2-5. Artifacts included a projectile point and ceramics.

Lot 2 (0.07–0.19 m) consisted of the best preserved evidence of a floor within Structure E2-5, marked by a combination of flat stones, poorly-preserved stucco, and
gravel beneath the flat stones. Artifact density was low, including few ceramics, suggesting that this open area of the structure was kept clean and maintained even leading up to the structure’s abandonment. This portion of the structure, therefore, may be the best candidate for the location of an entrance or doorway along the unit’s northeastern side. The lot and unit were closed after reaching a level of larger cobble fill.

IN-5A-6 was the next unit in the grid, located to the southwest of IN-5A-5 and the northwest of IN-5A-3, at the center of the southeastern half of Structure E2-5, likely the center of a large room and the continuation of the possible entrance documented in IN-5A-5. We excavated this unit as part of the horizontal excavations of Structure E2-5, and based on the lack of a preserved floor or interior architectural features, I selected IN-5A-6 as the only unit inside of Structure E2-5 to be excavated vertically, to investigate earlier construction phases. Lot 1 (0.00–0.05 m) consisted of the clearing of the thin humus layer and the recovery of fragments of basalt metates and ceramics.

Lot 2 (0.05–0.14 m) was the final floor level of Structure E2-5, documented in other units. Although stucco was absent, small flat stones covering a layer of limestone pebbles and gravel marked this floor. Artifact density increased, including obsidian, chert flakes, metate fragments, and ceramics.

I halted excavations of IN-5A-6 until we had excavated all units in the grid to the level of the floor. Based on the lack of preservation of the floor or architectural features in IN-5A-6, the absence of any trees or other vegetation obstructing the unit, and the unit’s potentially significant location at the center of the room at Structure E2-5’s southeastern half, we excavated the unit vertically to document earlier phases of construction or possible ritual deposits associated with these events (Figure 7.29). To
minimize the destruction of this portion of the floor, we excavated only the northeastern half of IN-5A-6. Lot 3 (0.14 - 0.64 m) consisted of the excavation of a 1 by 2 m unit of fill beneath the final floor of Structure E2-5. This fill consisted of large, 50 cm long, irregular cobbles. Artifact density increased dramatically, especially along the southwestern side of the unit, approaching a subsequent floor level. These artifacts included faunal bone, a metate fragment, chert flakes, obsidian, a carbon sample, and ceramics.

![Southwest profile of IN-5A-6 showing the location of the cache.](image)

**Figure 7.29** Southwest profile of IN-5A-6 showing the location of the cache.

Due to the increase in artifact density, we changed to Lot 4 (0.64–0.88 m), representing the end of the level of fill in Lot 3 and the floor below it, belonging to the substructure Structure E2-5 sub 1. In the process of excavating this lot, we recovered special artifacts, including shell and stone beads, primarily from the southwestern side of the unit. Upon closer examination of the southwestern profile of IN-5A-6, I noticed a
small enclosure in Lot 3’s fill where some of these artifacts had been encountered. I assigned this enclosure a separate lot number, Lot 5. The floor of Structure E2-5 sub 1, documented in Lot 4 was marked not by a clear stucco floor but by a series of flat stones (20 cm long and up to 10 cm thick), larger than those recovered in the final floor of Structure E2-5. Materials increased substantially, reflecting a mix of ceramics and stone tools. These tools included chert projectile points, a fragment of a chert axe 70 cm from the eastern corner of the unit at a depth of 0.76 m, a projectile point 63 cm from the eastern corner of the unit at a depth of 0.81 m, a fragment of a chert axe 63 cm from the eastern corner of the unit at a depth of 0.86 m. Other artifacts included metate fragments, obsidian, chert flakes, faunal bone, and shell.

Lot 5 was a small cache of objects placed in an intentional opening formed between the floor of Structure E2-5 sub 1 (Lot 4) and the fill above that floor (Lot 3). This cache was located in the southwestern profile of IN-5A-6, approximately 60 cm from the western corner of the 1 x 2 m unit, at a depth of 0.78 m. The cache was delimited at its base by a series of six small stones (20 cm long by up to 15 cm thick) that may have originally formed the floor of Structure E2-5 sub 1. The top and northwestern side of the cache were marked by large cobble fill (Lot 3). The shape of the cache was irregular, approximately rectangular, measuring 45 cm long by 15 cm high. Artifacts associated with this cache included carved bone, carved shell, two disc-shaped white stone beads, shell beads (one of which was made of spondylus shell), a bone needle, and ceramics, not necessarily directly associated with the cache.

The next excavation level, Lot 6 (0.88–1.31 m) consisted of large cobble (30 cm long) fill beneath the floor of Structure E2-5 sub 1. This lot ended with the
documentation of a partially preserved stucco floor, designated the floor of Structure E2-5 sub 2. Artifacts recovered from the fill of Lot 6 included faunal bone, shell, obsidian, a stone bead, stucco, chert flakes, and ceramics.

Lot 7 (1.31–1.38 m) represented the floor of Structure E2-5 sub 2, a likely Late Preclassic period structure beneath Late Classic period modifications of Structure E2-5 sub 1 and Structure E2-5. I identified this floor on the presence of well-preserved stucco, which differed from that documented in later floors. The stucco that formed the floors of Structure E2-5 and Structure E2-5 sub 1 was fragmentary, light, and amorphous, and individual pieces of stucco rarely measured more than 5 cm long. In contrast, the stucco recovered from the floor of Structure E2-5 sub 2 was larger, measuring up to 20 cm long, with a denser consistency. The upper portions of these blocks of stucco also had a single flattened side. The differences between the Late Preclassic period and the Late Classic period stucco can best be attributed to divergent technologies rather than preservation.

After excavating this level of floor, we completed Lot 7 after reaching another layer of fill. Artifacts recovered included chert flakes, shell, and ceramics.

Beginning with Lot 3, we had subdivided IN-5A-6 into a 1 x 2 m unit, but after completing Lot 7, we excavated the southwestern half of IN-5A-6 to improve the documentation of the cache recovered in Lot 5. We had documented this cache in the southwestern profile of Lot 3; thus, by excavating this portion of the profile, we could approach the cache from above rather than from the side. This excavation level of the southwestern half of IN-5A-6 was Lot 8 (0.14–0.63 m), which consisted of the fill beneath Structure E2-5, equivalent to Lot 3 in the northeastern half of IN-5A-6. We completed Lot 8 after reaching the fill immediately above the cache. Recovered materials
included shell, faunal bone, a fragment of a ceramic figurine of the torso of a seated figure, and ceramics.

The next level, Lot 9 (0.63–0.80 m) corresponded to the fill surrounding the cache documented in Lot 5. To excavate this lot, we further subdivided the remaining 1 x 2 m unit at the southwestern side of IN-5A-6 into a 1 x 1 m unit at the western corner of IN-5A-6. We removed the fill surrounding the cache, uncovering evidence of ash, possibly associated with a burning ritual after the cache was placed or a decomposing tree root that had disturbed this part of the unit. Therefore, many of the artifacts recovered in Lot 9 were originally not directly related to the cache. However, assuming that the cache represented a ritual associated with the construction of Structure E2-5, any artifacts recovered in this fill should correspond to this event. Recovered artifacts included chert flakes, a chert projectile point, turtle shell, faunal bone, animal teeth (including a canine tooth with an incised hole, presumably used as a bead), shell, a fragment of a ceramic figurine of the head of an elderly man wearing a turban found 123 cm from the western corner of the unit, a mano, and ceramics.

The context of the cache suggests that it was placed above the floor of Structure E2-5 sub 1, likely constructed out of stones that had originally formed this floor. The presence of a bone needle may indicate that the objects associated with the cache had been placed in a cloth bundle sealed with the needle and placed in the opening before the final construction of fill. The irregular shape of the cache may have been intentional, or cultural formation processes (e.g., the subsequent placement of large cobble fill) or natural formation processes (e.g., tree roots) may have altered its design. The high quantity of artifacts found in Lot 4, especially near the cache may have originally been
placed inside the opening in the fill, or more likely, the entire floor of Structure E2-5 sub 1, at least immediately surrounding the cache, may have been covered by materials as part of the construction ritual (Connell 2010).

Lot 10 (0.63–0.80 m) consisted of the remaining 1 x 1 m unit at the southern corner of IN-5A-6, to the southeast of Lot 9. Like Lot 9, Lot 10 was a level of fill equivalent to Lot 3, immediately above the cache discovered in Lot 5. The extent of this cache had been defined by portions along the northeastern side of Lot 9 and the southwestern side of Lot 3. Lot 10, therefore, was merely a level of fill with no evidence of this cache. Lot 10 was excavated down to the same level as the end of Lot 9, so that we could continue with the 1 x 2 m unit in the southwestern side of IN-5A-6 in subsequent lots. The artifact density remained high, including ceramics, faunal bone, obsidian, shell, chert flakes, a semicircular chert biface, a zoomorphic figurine, the latter two both recovered 80 cm from the southeast side of the unit, 50 cm from the southwest side of the unit, at a depth of 0.80 m. This assemblage of artifacts confirms that the floor of Structure E2-5 sub 1 was intentionally covered with artifacts before the construction of Structure E2-5.

Once Lot 9 and Lot 10 had reached the same level, we excavated Lot 11 (0.80–1.10 m), representing a mix of the floor of Structure E2-5 sub 1 and the fill beneath that floor in the 1 x 2 m unit at the southwestern side of IN-5A-6. This cobble fill, consisting of large rocks measuring 30 cm long, was equivalent to Lot 4 and the upper portion of Lot 6 in the northeastern side of IN-5A-6. We completed the lot after excavating the floor of Structure E2-5 sub 1. Artifacts included faunal bone, a stone bead, obsidian, shell, chert flakes, a chert projectile point, and ceramics.
Lot 12 (1.10–1.31 m) was the remaining layer of fill beneath Structure E2-5 sub 1, in the 1 x 2 m unit at the southwestern side of IN-5A-6, equivalent to the lower portion of Lot 6. The size of the cobble fill increased to include stones between 70 and 80 cm long. The soil matrix changed slightly to smaller limestone cobbles and gravel, suggesting the level of the floor of Structure E2-5 sub 2, documented in Lot 7. Artifacts included chert flakes, shell, faunal bone, obsidian, and ceramics.

The northwestern profile of IN-5A-6 suggested some patterns in the construction of the Late Classic period fill between the floors of Structures E2-5 sub 2 and E2-5 sub 1. This cross section of the structure showed three sections of vertically-stacked stones, with an overall appearance of walls or “bins” beneath the floor of Structure E2-5 sub 1. These small bins of stone were spaced roughly one meter apart. This pattern suggests that these bins represented informal interior retaining walls that would have supported the fill as it was being placed to construct Structure E2-5 sub 1. This construction technique demonstrates an ordered, organized effort. This evidence contrasts with the fill above Structure E2-5 sub 1, suggesting that when the final phase of Structure E2-5 had been constructed, this method was no longer in use. The fill beneath Structure E2-5 shows a more haphazard form of construction. These data suggest a chronological difference but also perhaps a change in the social organization of workers at El Infiernito toward the Terminal Classic period.

Lot 13 (1.31–1.38 m) was the level of the floor of Structure E2-5 sub 2, the Late Preclassic period structure beneath Structures E2-5 and E2-5 sub 1. This floor had the same characteristics as the floor in Lot 7, marked by well-preserved stucco blocks.
end of this lot, the entirety of IN-5A-6 had reached the same depth. Artifacts recovered included stucco and shell.

The final level of IN-5A-6 was Lot 14 (1.38–1.88 m), a 1 x 1 m unit in the southwest corner of IN-5A-6, representing the fill beneath Structure E2-5 sub 2. This fill consisted of large cobbles larger than 50 cm long. We completed the lot and unit before reaching bedrock due to the paucity of materials (few ceramics) and the danger of excavating the unit deeper than two meters. The fill may continue at least two meters down to the next level of the natural hill, where fill is visible along the side of the terrace on which Structures E2-5 and E2-4 were constructed. Earlier structures may be located within this fill, but this possibility is unlikely, as these structures would have been lower than the lowest level of the patio documented in IN-5A-1. Any fill beneath Structure E2-5 sub 2 would have contributed to the expansion of the earliest patio, Structure E2-7 sub 2.

IN-5A-7 was the next unit in the grid of horizontal excavations of Structure E2-5. This unit was located immediately southwest of IN-5A-6 and northeast of IN-5A-4. The southwest side of the unit was aligned with the southwestern exterior wall of Structure E2-5. Before excavation, we noted a possible stone feature underneath the roots of a small tree. Excavations of IN-5A-7 determined that this feature was intentional rather than the effect of construction fill that had been pushed upward by the natural actions of the tree’s roots.

Lot 1 (0.00–0.06 m) was a thin layer of humus covering the final floor of Structure E2-5 and the stone feature noted before excavations. After completing Lot 1 and removing the small tree, I determined that the stone feature had been intentional. This
feature lacked worked stone, suggesting as in IN-5A-3 that such stone had been removed or had not been available at the time of its construction. The measurements of the stone feature were 0.9 m wide by 1.9 m long, measured from the exterior wall of Structure E2-5. This feature, therefore, represented another base of an interior wall that served to delimit a small room at the southern corner of Structure E2-5. Due to the actions of tree roots, the partial collapse of the exterior wall downslope to the west, and possible cultural modification, this interior wall was the least preserved in Structure E2-5. Artifacts recovered included fragments of metates and ceramics.

Lot 2 (0.06–0.11 m) represented the final floor of Structure E2-5. This floor was poorly preserved, lacking any evidence of stucco, flat stones, or gravel. We closed the lot and unit upon reaching this level. Artifacts included a metate fragment and ceramics.

IN-5A-8 was placed to the northwest of IN-5A-5, following the line formed by the northeastern exterior wall of Structure E2-5. Lot 1 (0.00–0.10 m) consisted of the layer of humus. Artifacts recovered included a possible limestone fishing weight and ceramics.

After removing the thin layer of humus, I noted the presence of a larger interior wall in the northwestern half of IN-5A-8. This wall continued to the northwest, where I later added IN-5A-11 to the grid. The second lot (0.10–0.18 m) represented the final floor of Structure E2-5, poorly preserved and lacking the defining features of the floor that had been documented in other units. Artifact density was low, including few ceramics, primarily due to the reduced excavation area determined by the interior wall that occupied much of the unit.
IN-5A-9 and IN-5A-10 were unexcavated units initially included and numbered in the grid covering Structure E2-5. Instead, I added IN-5A-11 to the grid to the northwest of IN-5A-8 to uncover the extent of the large interior wall documented in the latter unit. Lot 1 (0.00–0.07 m) represented the layer of humus containing ceramics. We completed the lot after reaching the level of the floor and revealing a circular depression inside the interior wall.

Lot 2 (0.05–0.15 m) consisted of the excavation of soil that had collected inside the circular depression identified in the previous lot. This depression measured 40 cm in diameter and was suspected to have been an intentional modification to the interior wall. We excavated the depression approximately 10 cm until reaching larger fill at the base of the depression. Materials included few ceramics within the fill of the interior wall.

Examining the opposite, southwestern side of Structure E2-5, I identified another possible interior wall on the surface. Such features had become easily identifiable after excavating multiple examples in Structure E2-5. Part of this interior wall continued into IN-5A-10, which we did not excavate. The remainder of the wall was located to the northwest of IN-5A-10, outside of the grid established in Sub-operation 5A. In addition, in the middle of this feature, I noted a circular depression roughly the same size as that excavated in IN-5A-11-2. This evidence points to symmetry in this part of the structure, possibly designed to divide Structure E2-5 in half and to form an entrance to a large room at the northwestern half of the structure. The depressions in the two interior walls, therefore, may have been formed by postholes that would have supported pole and thatch construction to separate distinct parts of Structure E2-5. The overall size of the platform
suggests that such interior architecture would have been necessary to support a large roof covering Structure E2-5.

The third and final lot (0.07–0.18 m) of IN-5A-11 represented the final floor of Structure E2-5. This portion of floor was also poorly preserved. Recovered materials included obsidian, chert flakes, and ceramics. We completed the lot and unit after reaching the same level as surrounding units.

Once we had excavated all units to the level of the floors of Structures E2-5 and E2-7, I added IN-5A-12 to the southwest of IN-5A-4 to cover the entire width of Structure E2-5 and to reveal a cross section of the northeast-southwest axis of the platform. IN-5A-12 also revealed part of the southwestern stair of Structure E2-5, demonstrating an overall symmetry to the structure. Another objective of IN-5A-12 was to detect evidence of a floor in this area, along the southwestern exterior of Structure E2-5 to determine if the interior could have been accessed from this direction, or, alternatively, if this area had been used for discard. As the southwestern half of this unit was located outside of the Structure E2-5, IN-5A-12 was one of the vertical excavations in Suboperation 5A (Figure 7.30).

Figure 7.30 Southeast profile of Structure E2-5.

Lot 1 (0.00–0.49 m, measured from the top of the upper riser) consisted of the layer of humus and the recovery of chert flakes and abundant ceramics. The steps
revealed after clearing the humus had similar dimensions and design to the steps excavated in IN-5A-1. The lower riser was made up of larger, more rectangular stones measuring approximately 50 cm long. In contrast to the steps in IN-5A-1, the upper riser was much shorter, measuring 12 cm high, made up of tabular stones measuring up to 9 cm thick. The lower riser measured 34 cm high, made up of a single, faced stone measuring 28 cm thick with a smaller tabular stone on top measuring 6 cm thick. In total, the two steps in IN-5A-12 measured a combined 46 cm high compared to the combined 74-cm height of the two steps in IN-5A-1. These measurements suggest that Structure E2-5 was not perfectly symmetrical, rising higher above the patio of Structure E2-7 on its northeastern side. Though the two risers encircle the entire structure, the front (northeastern side) clearly represented the main access to Structure E2-5.

Lot 2 was unintentionally omitted due to a field error; thus, the next layer was labeled Lot 3 (0.49–0.73 m). This lot ostensibly represented the floor or surface behind Structure E2-5 during the final phase of the structure. However, we recovered no evidence of stucco or a floor. Instead, Lot 3 was a level of fill or refuse, made up of abundant discarded ceramics. Other artifacts included obsidian, chert flakes, faunal bone, and shell. Although I noted no change in stratigraphy, we ended the lot arbitrarily to document potential chronological changes.

The subsequent level, Lot 4 (0.73–1.20 m) was a continuation of the fill from the previous level. Due to the precarious location of the unit near a slope and to prevent the collapse of the southern corner of Structure E2-5, we ended the lot and unit. We recovered a fragment of well-preserved stucco similar to that documented in the floor of Structure E2-5 sub 2 (IN-5A-6-7 and IN-5A-6-13). This stucco, approximately at the
same level as the possible floor of Structure E2-7 sub 1, documented in IN-5A-1-4, could represent a continuation of that same floor, although the stucco recovered from IN-5A-1-4 was not typical of the well-preserved, dense Late Preclassic stucco. More likely, the stucco recovered from IN-5A-12-4 may not have represented a formal floor but instead may have been evidence of a modification of the floor of Structure E2-5 sub 2; perhaps this stucco was discarded during the construction of Structure E2-5 sub 1. Other materials recovered in Lot 4 included few ceramics.

IN-5A-13 was the final addition to the grid of Suboperation 5A. I placed this unit to the southeast of IN-5A-2. To the northeast of IN-5A-13, an approximately 1 m high wall of stacked, dry-laid cobbles rising slightly higher than the base of Structure E2-5 ran along the same axis as the northeastern exterior wall of the structure. This wall appears to have been constructed expeditiously, based on its informal design and lack of worked stone. This feature also appears to have blocked the small alley that runs from southwest to northeast between Structures E2-5 and E2-4. Based on these characteristics, this wall was hypothesized to have served the purpose of either defending or restricting access to this part of the site. The patio formed by Structure E2-7 is fairly inaccessible; the main access was likely from the northwest, where a now collapsed stairway might have been located to ascend to the area between Structures E2-5 and E2-6. Accessing this area from the east or the west requires passing between Structures E2-4 and E2-6 or Structures E2-4 and E2-5, respectively. The alley between Structures E2-4 and E2-5 is slightly larger and could have been used to access the patio formed by Structure E2-7. Perhaps, the low wall between Structures E2-4 and E2-5 was placed to hinder such an approach. Alternatively, this alleyway may have been more open during earlier phases of occupation and
sometime during the Terminal Classic period the function of this alleyway shifted to trash disposal. In such a scenario, the wall may have sealed off access to this alleyway from the patio of Structure E2-7, separating refuse areas from other activity areas.

To avoid the collapse of this small wall, I placed IN-5A-13 at least one meter to the southwest. To determine if this alleyway had indeed been used for refuse, the dimensions of this unit measured 1 x 1.8 m (limited by the space between Structures E2-5 and E2-4). Lot 1 (0.00–0.13 m) consisted of a layer of humus. Recovered materials included few ceramics.

Lot 2 (0.13–0.24 m) was a level of collapse, primarily from Structure E2-4. Lot 3 (0.24–0.60 m) was a continuation of this collapse. We closed the lot and the unit after reaching the stones marking the floor between Structures E2-5 and E2-4. Artifact density was relatively low, including stucco, shell, chert flakes, and ceramics, especially high proportions of fine orange wares. These data suggest that this area was only used for refuse during the Terminal Classic period, and some of this refuse was left on already collapsing buildings (Structure E2-4). The lack of any earlier materials may indicate that this alley was kept clean and traversed until the Terminal Classic period. At this time, the wall that blocked off the alley from the patio of Structure E2-7 was constructed. Although the unit was small, the low amount of refuse suggests that the alley may have been sealed off for reasons other than discarding trash. Alternatively, further excavations along this alley may uncover more evidence of such practices.
Suboperation 5D: Excavation of Structure E2-4

Suboperation 5D consisted of a single vertical excavation into the monumental Structure E2-4, one of the largest and tallest structures within the Upper Group of El Infierno. Unlike the other large pyramidal shrine within the Upper Group, Structure E1-1, Structure E2-4 is in excellent preservation, with no evidence of looting. Therefore, I selected Structure E2-4 for excavation to compare its construction phases with the evidence for a single construction phase in the looter’s trench in Structure E1-1. Furthermore, the chronology of Structure E2-4 could be compared with the excavation data from the adjacent patio and range structure, Structure E2-5 to understand the process of construction of this southeastern part of the Upper Group. I placed Suboperation 5D on Structure E2-4, in a corner formed by a low C-shaped structure toward the back of the summit of Structure E2-4. This C-shaped structure likely represented an addition to Structure E2-4 (Figure 7.31).

Figure 7.31 West profile of IN-5D-1 (drawing by Moisés Talavera and Whittaker Schroder).
I placed IN-5D-1 on Structure E2-4 in one of the outer corners formed by the C-shaped structure or bench. This unit measured 2 x 2 m and was oriented 75°, which is the same orientation as the C-shaped structure, which was not aligned to the same orientation as Structure E2-4. Lot 1 (0.00–0.15 m) was a thick layer of humus that had collected in the outer corner of the C-shaped bench and part of the floor on top of Structure E2-4. Recovered artifacts included ceramics, shell, a carved shell, faunal bone, metate fragments, chert flakes, and two chert projectile points.

Lot 2 (0.15–0.27 m) was the layer of the final floor of Structure E2-4, indicated by the presence of fragmentary stucco and small rocks measuring less than 10 cm long that represented the ballast beneath this floor. The lot was terminated after reaching a level of larger rocks, corresponding with the final layer of construction fill. Artifacts included ceramics, shell, a serpentine bead, a greenstone bead, stucco, obsidian, chert, and a chert projectile point.

The construction fill, Lot 3 (0.27–1.20 m) was thick and consisted of large cobbles measuring more than 30 cm long. We ended the lot after encountering evidence of the earlier floor of Structure E2-4 sub 1, based on the presence of abundant stucco and a flat area. We recovered abundant artifacts, including ceramics, shell, stucco, a bone needle, faunal bone, obsidian, an unidentified stone or fragment of stucco, two chert tools, and three chert cores.

Lot 4 (1.20–1.46 m) was the layer of construction fill under Structure E2-4 sub 1. Unfortunately, due to unstable large rocks in the profile of the unit, the lot and unit were terminated before reaching bedrock. However, the fill likely continues at least to the level of the patio, Structure E2-7, if not deeper. Artifact density continued, including ceramics,
faunal bone, chert flakes, and shell that came primarily from the northwestern side of the unit.

*Defensive Wall, Structure D1-9: Suboperation 13A*

Suboperation 13A focused on excavations near the freestanding wall, numbered Structure D1-9, which is located to the northwest of the Upper Group, 40 m west of Structure D1-8. Because this freestanding wall is not associated with any other nearby structures, appears to block off access to the Upper Group from the west, lies within a natural saddle between two local summits, and resembles similar features throughout the Usumacinta region the main hypothesis as to Structure D1-9’s function was that it was defensive. Suboperation 13A was placed near this wall to determine if it could be dated by ceramics.

IN-13A-1 was a 1 x 2 m unit oriented 75° from magnetic north, with the long axis following the length of Structure D1-9. Instead of placing the unit over the freestanding wall, I placed the unit immediately to the southeast of Structure D1-9 on a natural terrace. I expected this area to contain ceramics as it was “inside” the site relative to the wall where materials would have collected over time. Excavations revealed no evidence for construction fill, in fact a mixture of gravel and decomposed bedrock appeared early in the first 10 cm. We recovered artifacts including a chert tool, chert flakes, and a mix of Late Classic and Late Preclassic ceramics. Suggesting a possible construction of the freestanding wall during the Late Classic period.
Lower Group

Excavations in the Lower Group focused on documenting activity areas and assessing the chronology of this part of the site in relation to the Upper Group (Figure 7.32). Due to differences in construction techniques, involving larger, unworked cobbles with no facing stones in the Lower Group, I hypothesized that this area dated to an earlier period. Unfortunately, due to the compact, clay texture of the soil in this area, no excavations reached bedrock. Furthermore, artifact density was low or absent in most units. Still, the presence of Late Preclassic period ceramics in all units, as well as in surface finds across the Lower Group, suggests that the Lower Group dates entirely to the Late Preclassic period.

Figure 7.32 Map of excavation units in the Lower Group.
Operations 6, 7, 14, and 15: Investigations of Structures D2-1, D2-2, C2-3, and C2-1

Structures D2-1 and D2-2 are large mounds located within the northeastern extent of the Lower Group of El Infiernito. These two mounds are rectangular and roughly parallel, although the shape of Structure D2-1 is especially difficult to discern due to significant looting. The design of these structures is reminiscent of a ballcourt, but this function is unlikely. Structure D2-2, the better preserved of the two mounds, has evidence of a stairway ascending its southwestern side. These two structures lie on top of a large terrace, Structure C2-3, which forms a secondary plaza, slightly elevated above the main plaza of the Lower Group, Structure C2-4. Finally, the plaza formed by Structure C2-3 is surrounded by Structure D2-3, a footslope terrace that lines the base of the hill. We placed Suboperations 6A and 14A on Structure C2-3 between and adjacent to Structures D2-1 and D2-2 to document areas of refuse associated with this part of the site.

We placed Operation 7 on and around Structure C2-1, a monumental terrace built into the side of the hill, at the base of the West Group. This terrace measures approximately 50 m long by 8–10 m in height. The terrace was constructed in at least two levels. The top of the terrace is leveled and forms a large open space, approximately 40 m long by 10 m wide. The front of the terrace shows no evidence of a preserved stairway, so perhaps the approach would have been from either the southwestern or northeastern sides of Structure C2-1. No features are visible on top of the terrace, apart from a large boulder near its center. Operation 7 consisted of three suboperations, one on top of Structure C2-1 and two at its base to determine the chronology of construction. Few artifacts were recovered from Operation 7; all ceramics dated to theLate Preclassic period Chicanel horizon.
**IN-8A, IN-9A, and IN-15A: Excavations of Terraces within the Lower Group**

Due to the compact soils and general lack of materials in the Lower Group of El Infiernito, we placed excavations along the low, long terraces at the base of the hill where soil was silty and less compact. I expected these areas to be easier to excavate, providing an opportunity to place more units with a higher success rate of encountering artifacts. These excavations consisted of three suboperations, two located on and along the base of Structure D2-3 and one suboperation along the rise of Structure C2-3.

The second unit in Suboperation 8A, IN-8A-2 was placed in line with the base of the terrace wall of Structure D2-3, three meters to the southwest of IN-8A-1. IN-8A-2 was oriented 60° from magnetic north and measured 1 x 2 m with the long side parallel to the terrace. This unit, along with those of operation 9, revealed a relatively higher density of artifacts than other units in the Lower Group.

Lot 1 (0–15 cm) consisted of a layer of humus that revealed the base of the terrace wall of Structure D2-3. Artifacts included ceramics dating to primarily to the Chicanel horizon. The following level, Lot 2 (15–21 cm) consisted of erosion from above the terrace with few rocks and collapse from Structure D2-3. Few artifacts were recovered, including Chicanel horizon ceramics. Lot 3 (21–31 cm) was a continuation of this layer of collapse and erosion with few rocks. This lot ended after reaching the base of the terrace wall of Structure D2-3. Artifact density increased, including a chert biface, chert flakes, and Chicanel horizon ceramics.

Upon reaching the base of Structure D2-3, some evidence of the floor of the plaza, Structure C2-3, was apparent. This evidence consisted of gravel in the southeast
profile of the unit. The amount of rocks (measuring 20 cm long) increased, suggesting a level of fill. This fourth lot (31–48 cm) included Chicanel horizon ceramics.

Suboperation 9A consisted of a small trench excavated perpendicular to the terrace wall, Structure D2-3, to document the form of its construction. This excavation was similar to Suboperation 8A in its location at the base of the terrace, an area of less compact, siltier soil with a higher artifact density. IN-9A-1 was located 16 m to the northeast of Suboperation 6A and 13 m to the southeast of Suboperation 8A. The orientation of IN-9A-1 was 40° from magnetic north, and the unit measured 1 x 2 m with the shorter side parallel to the terrace wall. Lot 1 (0–13 cm) was the layer of humus with few artifacts including chert lithics and few ceramics dating to the Chicanel horizon.

Below the humus, Lot 2 (13–22 cm) represented a combination of humus and colluvial deposition in the northeastern half of the unit (on Structure D2-3) and collapse of the terrace wall in the southwestern half of the unit. These collapsed stones measured on average 10 cm long. We recovered few ceramics dating to the Chicanel horizon.

Excavations of IN-9A-1 continued only in the southwestern half of the unit, as the northeastern half of the unit had reached the level of the terrace wall, which was left in situ. Lot 3 (22–27 cm) was a continuation of the collapse of the terrace wall of Structure D2-3, consisting of 10 cm long rocks. The artifact density increased, including chert flakes, a polished stone, and a higher quantity of ceramics dating to the Chicanel horizon.

The fourth lot (27–36 cm) was a continuation of the collapse of Structure D2-3 in the southwestern half of IN-9A-1. The size of these rocks increased to an average of 30 cm in length. We completed the lot after reaching the base of the terrace wall and the
level of the plaza floor. Artifact density remained at a similar level as in Lot 3, including Chicanel horizon ceramics. Beneath the plaza floor, Lot 5 (36–50 cm) was a level of fill consisting of rocks measuring between 10 and 30 cm in length. Artifact density was relatively low, including eroded Chicanel horizon ceramics.

In general, the excavations of Structure D2-3 produced few artifacts, but they provided some data regarding the form of construction of the terrace. The majority of excavated soil was deposited by erosion from the hillside, which points to a likely function for the terrace. The only construction consisted of the retaining wall that runs along the northeastern side of the Lower Group. This retaining wall was designed to take advantage of this eroded soil, perhaps for agricultural purposes. The absence of large cobble fill inside this terrace also supports this possibility. Nearly all of the ceramics belong to the Late Preclassic period, suggesting that these terraces were abandoned and not reused during the Classic period, in contrast to the terraces surrounding the Upper Group.

*Operation 16: Excavations of Structures B4-1 and B4-2*

Operation 16 consisted of the investigations of Structure B4-1, a large terrace that forms the first rise on the approach to the Lower Group from the west. Structure B4-1 is located 200 m to the southwest of the Lower Group. The function of Structure B4-1 is unclear, although it is noteworthy for crossing a deep, dry arroyo that is likely associated with the spring located 250 m to the east, which appears to follow a subterranean path beneath Structure B4-1, resurfacing as a series of springs further west. Behind Structure
B4-1, a large, flat area, likely part of the terrace construction, forms a type of plaza, although no other structures are nearby. This plaza may have formed an agricultural field in the past, and the function of Structure B4-1 may have been related to water management. An alternative function may be defensive because Structure B4-1 seals off the natural opening formed by the West Group hilltop and the South Group ridge. The monumentality of Structure B4-1, measuring up to 3 m tall and and 20 m long, suggests a possible defensive function.

A possible addition, Structure B4-2, is well-preserved at the southeastern side of Structure B4-1. Structure B4-2 is a freestanding wall that is nearly 1 m tall and was likely longer in the past. Much of Structure B4-2 is now collapsed and lying at the bottom of the dry arroyo. Finally, the two proposed functions, defensive and agricultural, are not mutually exclusive, and the function of the structures may have changed over time. Operation 16 was designed to address these issues, especially to determine if Structure B4-2 was a later addition to Structure B4-1 and to determine if these features represented defensive features during the Preclassic period, the Classic period, or both.

Suboperation 16A was focused on Structure B4-1, at its northwestern end, near a small looter’s pit. IN-16A-1 measured 1.5 x 2 m and was oriented with the terrace, 50° from magnetic north. Lot 1 (0–14.5 cm) was a layer of humus, reaching a layer of large cobble construction fill associated with Structure B4-1 and the large plaza space to the east. The artifact density was low, consisting of shell, chert flakes, and ceramics.

Lot 2 (14.5–35 cm) was a layer of construction fill consisting of rocks measuring on average 30 cm long. The artifact density was low, including shell, faunal bone, and ceramics. All of the eroded ceramics in Suboperation 16A appeared to date to the Late
Preclassic period, consisting of primarily Sierra Rojo type sherds and eroded yellow carbonate pastes that are typically associated with the Sierra Rojo surface finish.

Suboperation 16B was a single unit located at the southeastern end of Structure B4-1, to the east of Structure B4-2, the freestanding wall thought to be a later addition. Following a similar strategy established in Suboperation 13A, I placed the unit on the interior side of Structure B4-2, where artifacts would have collected. Excavations aimed to determine if Structure B4-2 dated to the same period as Structure B4-1 or a later. We excavated IN-16B-1 in a single lot.

Lot 1 (0–34 cm) was a layer of humus that varied throughout the unit between 9 and 34 cm thick. We recovered abundant ceramics in the upper levels of the humus, although the artifact density diminished after approaching the fill of Structure B4-1 underneath. Other artifacts included a small amount of shell. We ended the lot and unit after reaching the layer of fill associated with Structure B4-1. Ceramics consisted of a mix of Late Preclassic and Late Classic period sherds, suggesting that Structure B4-2 was a later addition to Structure B4-1.

West Group: Investigations of Structures A3-1 and B2-8

Excavations in the West Group consisted of two suboperations: Suboperation 17A and Suboperation 18A (Figure 7.33). The goal of these excavations was to establish a chronology for the West Group and to determine if the majority of the architecture were coeval to that of the Upper Group. Suboperation 17A was placed over Structure B2-8, the northernmost terrace of the West Group that forms a patio surrounded by Structures B2-1, B2-2, B2-5, and B2-6. I had assumed that this patio group dated to the Late Classic
period; however, excavations suggested that the entire terrace was constructed during the
Late Preclassic period.

**Figure 7.33** Map of excavation units in the West Group.

IN-17A-1 was located within Structure B2-8, the northern terrace of the West Group, to the southeast of Structure B2-1, a low platform that may have served a residential function. In this area, I recovered a Protoclassic period tetrapod support on the surface. IN-17A-1 measured 2 x 2 m and was oriented 20° from magnetic north, the same alignment as the majority of structures within the West Group. This orientation differs from the rest of the site, perhaps indicating a chronological difference or an alignment with the natural shape of the hilltop.
Lot 1 (0–9 cm) was the humus layer that varied between 9 and 15 cm thick. The lot ended after reaching the level of the base of Structure B2-1 (Figure 7.34). This base of the structure was marked by two worked stones that may have represented a type of low outset stair on the southeastern side of Structure B2-1, documented in the northwestern side of the unit. These stones each measured between 50 and 60 cm long by 40 cm high. These two stones were side by side and would have represented a single riser reaching the level of the floor of Structure B2-1. This architecture differs from platforms in the Upper Group that rather than having a single outset stair were fully encircled by two risers. Artifacts recovered included chert flakes and ceramics.

![Northwest profile of IN-17A-1 showing a single construction phase.](image)

**Figure 7.34** Northwest profile of IN-17A-1 showing a single construction phase.

Lot 2 (9–26 cm) represented the floor level of Structure B2-8, outside of Structure B2-1. Stucco was absent, and we ended the lot after reaching a layer of construction fill. Bedrock began to appear in the northeastern side of the unit. The artifact density was low, including chert flakes and ceramics.
The construction fill was Lot 3 (26–51 cm), consisting of large rocks measuring on average 30 cm long. Bedrock began to appear at the center of the unit, at the level of the base of the outset stair. This evidence suggests that the outset stair had been partially interred by the construction fill, with approximately half of the height of the stair exposed, about 20 cm above the patio floor. Artifacts included chert flakes and ceramics.

We found no evidence of an earlier floor; thus, Lot 4 (51–98 cm) was a continuation of the same level of fill documented in Lot 3. At a depth of 81 cm, we documented a small cave entrance in the exposed bedrock in the northeastern side of the unit. This entrance measured 30 x 40 cm, and the actual tunnel measured only 3 m long. This small cave was empty, with no stone or soil fill, and no artifacts inside. After reaching bedrock throughout the entire excavation, we closed the lot and unit. Artifacts included shell and ceramics.

Suboperation 18A was a single unit focused on the principal structure of the West Group, Structure A3-1, a small shrine structure forming the prominent local summit in this part of the site. From Structure A3-1, the most extensive vista from the hilltop would have encompassed much of the valley to the west and south. Unfortunately, Structure A3-1 is one of the most severely looted structures at the site, with a large 2 x 3 m trench cut through its southeastern side. This looter’s trench showed evidence of three floors, the most recent being that of Structure A3-1, with at least two earlier floors represented by stucco and gravel ballast, belonging to Structure A3-1 sub 1 and A3-1 sub 2. At the bottom of the looter’s trench I documented a waxy Sierra Red sherd, although this sherd may have been part of the collapse of the profile of the looter’s trench. At the level of the floor of Structure A3-1 sub 1, I recovered a glossy ceramic sherd, suggesting that at least
Structures A3-1 and A3-1 sub 1 dated to the Classic period. In the northeastern profile of the looter’s trench, as well as in the collapse of this wall at the bottom of the trench, we documented evidence of human remains. These remains were assigned the designation Burial 1, which is described in more detail below. To interpret this context, we placed Suboperation 18A in the looter’s trench to clean the northeastern profile and to document any other remains that had fallen to the bottom of the trench.

**Burial 1**

Burial 1 was originally interred beneath Structure A3-1, the most prominent structure in the West Group. Based on the context, Burial 1 was placed under Structure A3-1 sub 1, with evidence of that structure’s floor in the northeastern profile of the looter’s trench. The entirety of the burial had been looted and was not recoverable in its original context. Based on the presence of a thin layer of humus, this looting event may have been fairly recent, within a few decades. According to the landowner, the structure had already been looted by the time he acquired the land. The majority of the remains of Burial 1 had collapsed to the bottom of the looter’s trench due to the partial collapse of the northeastern side of Structure A3-1. The date of the burial was likely during the Classic period, perhaps the Late Classic period based on the recovery of a single glossy sherd from the northeastern profile of the looter’s trench, at the level of the floor of Structure A3-1 sub 1. The form of the original burial is unknown, with no evidence of a cist or worked stone, although such evidence may have been removed or destroyed during the looting event. Based on the recovery of some remains perhaps in their original context, the head was likely originally at the northwestern end of the burial.
Peripheral Structures: Operations 19 and 20

Operation 19 was located outside of the four core groups (Upper, Lower, West, and South Groups) identified at El Infiernito. Operation 19 consisted of two suboperations to investigate small architectural clusters in the valley to the west of the Lower Group, not included in the map of the site produced with a total station. This area lies approximately 250 m to the west of the monumental terrace and wall (Structure B4-1) excavated in Operation 16. The settlement density in this valley area is low, and the only identified structures were excavated as part of Operation 19. Further survey and clearing of vegetation may reveal low, “invisible” structures in this area that is susceptible to alluvial deposition.

Suboperation 19A was located in the valley 250 m to the west of Structure B4-1. This area lies within the low, flat valley surrounding the El Infiernito hilltop. Operation 19 aimed to address whether these valley areas related chronologically to the Late Preclassic structures of the Lower and West Groups or the Late Classic structures of the Upper Group. This valley area also lies outside of the defensive features and is physically unprotected based on its natural surroundings. These characteristics suggest that this part of the site was used during periods of relative peace. Another interesting feature is the proximity to the natural, low conical hill 200 m to the northwest, known locally as “El Volcán” based on its shape. This natural feature was modified with a staircase ascending its southern side and a platform of loose cobbles constructed at its summit. This hill has a view of the surrounding areas, including the West and Upper Groups, as well as the monumental wall, Structure B4-1. These factors suggest that this area could have been used in coordination with other parts of the site in a small network of defense to protect
settlement on and around the hilltop. The structures associated with Operation 19 may have been in a less defendable location, but their proximity to natural and built defensive features may have aided in their protection. In turn, these structures may have been seasonal, or they may have been abandoned as populations later sought refuge in more defendable areas by the end of the Late Classic period.

I placed IN-19A-1 on a range structure in the valley area to the south of the hill known as “El Volcán.” This structure resembles Structure E1-4 from the Upper Group in the presence of an interior, rectangular bench toward the rear of the platform. A staircase is also apparent at the structure’s northwest side, although this stair does not appear to encircle the entire structure as in the Upper Group. I placed IN-19A-1 on top of the structure along the northwestern edge of the interior bench to document any evidence of the final phase of occupation. The artifact density was low, including few eroded, likely Late Classic period ceramics and a finely incised shell.

IN-19A-2 was located outside of the structure, to the west of IN-19A-1, following the exterior wall of the structure. This unit aimed to define the form of the stair on the northwestern side of the structure and to perhaps document an area of refuse associated with the activities in the structure. This area was likely not a formally constructed floor with stucco, rather it may have been a dirt floor. Artifacts included chert flakes and eroded, Late Classic ceramics. At a depth of 25 cm, we reached a layer of fill under the plaza space outside of the structure. The soil matrix was increasingly made up of compact clay. The lot and unit ended before documenting earlier stages of construction. Artifact density increased, including obsidian, chert flakes, an unidentified rock, unworked serpentine, and ceramics.
Suboperation 19B was also located in the ample, flat valley space to the west of the Lower Group. This suboperation focused on a complex courtyard 180 m to the northwest of Suboperation 19A. This courtyard consists of an elevated patio surrounded on three sides by four structures, with a small stairway rising to the courtyard on its northeast side. This courtyard was likely associated with the other peripheral structure excavated in Suboperation 19A and the natural hill known as “El Volcán,” and the large, flat space between them perhaps represented a plaza. I placed IN-19B-1 within the elevated patio, in its western corner, against the basal platform that supported the four surrounding structures. Unfortunately, due to the increasingly compact, blocky clay matrix, the unit could not be completed to bedrock. Still artifacts suggest a Late Classic period occupation, including chert flakes, eroded ceramics, shell, obsidian, two chert tools, and unworked serpentine.

*South Group: Suboperation 20B*

Suboperation 20B consisted of a surface collection of ceramics from the mound group to the south of Suboperation 20A. This area is part of the lower slope of the South Group, although it lies on the land parcel adjacent to Rancho El Infiernito. This area had been recently burned in preparation of planting, and we took the opportunity to collect ceramics to determine the date of the final occupation of this area. We recovered a few diagnostic ceramic sherds dating primarily to the Late Classic period.
The following chapter consists of a discussion of the results of research, primarily at El Infiernito with a following interpretation of current data from the surrounding Piedras Negras kingdom in the current study area of Mexico. The discussion will focus on the ceramics and chronology; form and function of architecture; defense; landesque capital, trade, household status, and craft production; and domestic and landscape ritual. The extent to which these lines of data address the primary research questions and aims of the project will then be assessed in the concluding chapter.

Ceramics and Chronology

Excavation data across El Infiernito suggest the presence of three construction phases within the Upper and West Groups, with limited data from the Lower Group pointing to at least one construction phase. The earliest phase dating to the Late or Terminal Preclassic/Protoclassic period reveals an intensive period of construction on a massive scale. The second major occupation of the site in the Late Classic period focused almost exclusively on the Upper Group and partly on the West Group, demonstrating a concerted effort to transform the site into a defensive refuge, taking advantage of the already heavily modified landscape. Finally, construction activities during the Terminal Classic period were limited to specific structures, particularly Structures E1-4 and E2-5, although based on analogy, similar structures consisting of C-shaped benches (Structures E2-3 and E2-10) also likely date to this period.
These constructions consisted of formal C-shaped benches, as well as more informal interior walls in Structure E2-5 to divide space. In the case of Structure E2-5, the interior walls consisted of unworked stone with a limited reuse of cut facing stones. C-shaped benches in Structures E1-4, E2-3, and E2-10 may have involved the creation or reuse of more formal, cut facing stones. Although occupation of the site seems to have extended as late as the Early Postclassic period (if defined as beginning in the middle to late 10th century), formal constructions are absent after the 9th century.

Middle Preclassic Period

Use of the landscape around El Infiernito dates as early as the Middle Preclassic period despite no constructions being assigned to this period. Public architecture dating to this period is absent at El Infiernito with few Muxanal Red-on-Cream sherds dating to the Mamom horizon documented in the earliest construction fill within Suboperation 11A. However, this fill dates to the Late Preclassic period based on the majority of sherds documented. Most likely, these Middle Preclassic sherds were removed through the processes of collecting construction material from the caves around the site. Thus, activities during the Middle Preclassic period seem to have been restricted to pilgrimage associated with the surrounding ritual landscape. Based on the scale of Late Preclassic period constructions in the Lower Group, deeper vertical excavations in this area may uncover further Middle Preclassic period evidence, but the limited excavations and low artifact density in this area did not document such evidence.
Late/Terminal Preclassic Period

A sudden, intensive period of construction took place at the site during the Late to Terminal Preclassic periods. At Piedras Negras, the Late Preclassic period began with the Abal ceramic phase (300 BC–AD 175) and continued with the Pom ceramic phase (AD 175–350). According to Arturo René Muñoz (2004:12), the Pom phase ceramics are nearly indistinguishable from Abal. However, diagnostic modes from Terminal Preclassic or Protoclassic period ceramics, including Usulután-style decoration, hooked-grooved rim plates, Aguila-like orange slips, mammiform supports, and early polychrome decoration are useful for classifying Pom ceramics. Generally, such diagnostic features seem to be far more common at El Infiernito than at Piedras Negras, as these Protoclassic period modes listed by Muñoz are present from the earliest contexts in the Upper Group, with solid tetrapod supports being especially abundant.

Pom phase ceramics are absent from the Lower Group. The generally sparse artifact density in this part of the site may account for this discrepancy. Still, the Lower Group appears to be the earliest part of the site, likely dating to the Abal phase. This period involved the leveling of large plazas and terraces along the base of the crescent-shaped hill, the construction or modification of Structure B4-1 possibly for defensive or agricultural reasons, and the construction of a monumental pyramidal shrine or terrace (Structure C2-1) and two large range structures (Structures C2-1 and C2-2). The scale of this architecture suggests that the Lower Group of El Infiernito emerged at this time as a small ceremonial center.

During the Pom phase, corresponding with the Protoclassic period, the West and Upper Groups (and likely the South Group, which was not excavated) were heavily
modified, with local summits being leveled to form large platforms, and the material collected from these efforts used in the construction of monumental terraces along the slopes of the hills. The West Group became the site of a small Terminal Preclassic period village, constructed in a single event, with Pom phase (Protoclassic period) ceramics occurring throughout the fill. The monumental terraces of the Upper Group (Structures D1-7 and D1-8) were also constructed during this period.

Late Preclassic period structures within the Upper Group are less clear due to their modification during the Late Classic period, although Structures E1-4 sub 2 and E2-5 sub 2 were built on top of the leveled summit of the Upper Group. These constructions consisted of fill using large, irregular limestone cobbles with excessive amounts of stucco placed between the gaps formed by the stones. A possible cache of a large basin metate and a Polvero Black sherd in the fill of Structure E1-4 sub 2 may have dedicated these constructions. Burial 6 also appears to date to the Pom ceramic phase, as this individual was placed on top of bedrock and covered by the first layer of construction fill of Structure D1-7. Transitional Early Classic period Tzakol 1 ceramics appear in small quantities, indicating that by the late third or early fourth century, El Infiernito was abandoned like most sites in the region, as populations were attracted to the recently-founded royal dynasty at Piedras Negras (Houston et al. 2003).

**Late Classic Period**

El Infiernito was reoccupied early in the Late Classic period, by approximately the early to middle sixth century AD, based on the presence of transitional Naba (AD 350–560) and Balche (560–620) phase ceramics within the earliest Late Classic period
layers of construction fill within the Upper Group. These ceramics include rounded or incurving bowls with brown and black slips with incised decoration of triangular and geometric motifs around their rims. The brown-slipped bowls belonging to the Ka Incised type date primarily to the Naba phase of the Early Classic period, while the black-slipped examples (Lucha Incised) extend into the Balche phase and the onset of the Late Classic period.

The Lower Group shows almost no evidence for Late Classic period constructions. One of these Late Classic period constructions is a modification of Structure B4-1 consisting of the addition of a freestanding wall (Structure B4-2) to the Late Preclassic period terrace. I interpret this modification as primarily oriented toward defense. Outlying structures, along the middle slope of the South Group hill, overlooking Structures B4-1 and B4-2, and the range structure and courtyard excavated as part of Operation 19 also appear to date to the Late Classic period, although ceramics were too eroded to date more precisely. At this time, the small platform on top of the low hill known locally as “El Volcán” was also likely constructed, to integrate viewsheds with Structure B4-2, the middle slope of the South Group, the Upper Group, and the West Group.

Within the West Group, the small shrine or lookout, Structure A3-1, was modified, and Burial 1 was placed to dedicate its first Late Classic period construction phase. The terrace, Structure A3-2, and Structure A3-1 were reoriented to match more closely the 50–60° orientation of Late Classic period constructions at the site. Still, the West Group does not appear to have been reoccupied at this time, as the northern portion of the West Group was left relatively untouched.
The majority of Late Classic period construction focused on the Upper Group, which was completely redesigned. These modifications likely began with the razing of Late Preclassic period structures at the hill summits down to the monumental substructures on top of which Late Classic period structures were built. Patio excavations of Structures D1-2 and E1-6 suggest a single construction phase during the Late Classic period. Based on this evidence, Late Preclassic period constructions were either minimal, involving only the leveling and removal of stone, or again, perhaps such structures were completely razed. The exception appears to be the patio of E2-7, which shows three phases of construction fill, the earliest dating to the Late Preclassic period, and although excavations of Structure E2-1 were limited, the monumental scale of this substructure and the documentation of at least one earlier floor (Structure E2-1 sub 1) suggests a Late Preclassic period construction followed by two Late Classic period levels.

Based on the profile of the looter’s trench, Structure E1-1 seems to have been built in a single phase. We recovered no ceramics from this profile, but I propose that this construction dates to the first half of the Late Classic period, based on analogy from a vertical excavation of Structure E2-4, which shows two construction phases during the Late Classic period.

House platforms, Structures E1-4 and E2-5 also show an early construction during the Late Classic period. These constructions are readily distinguishable from Late Preclassic period structures in two clear ways, aside from the ceramic data. First, artifact densities are generally much higher during the Late Classic period, and second, construction techniques were transformed during the Late Classic period. The size of limestone cobbles decreases in the Late Classic period, and stucco was no longer used in
the fill. Furthermore, the construction of Structures E1-1 and E2-5 reveal that retaining walls or bins were utilized in marking off or dividing areas of fill. This technique is most visible in the vertical excavation of IN-5A-6, where retaining walls were separated by approximately 1 m and filled with smaller cobbles and soil. Finally, both phases of Late Classic period floors were distinct from each other as well as earlier Late Preclassic floors. Late Preclassic floors consisted of well-preserved, thick, flattened stucco, while stucco was far more fragmentary during the Late Classic period. The use of thick stucco during the Late Preclassic period was likely due to the use of large cobble fill with no presence of ballast or gravel beneath the floors. Instead, the earliest phase of Late Classic period fill involved the placement of roughly 10 cm thick, tabular stones on top of fill, which was then covered with a gravel ballast and thin stucco.

The Late Classic period continued with the expansion of Structure E1-3 around Structure E1-1. The former substructure was not only expanded in height but amplified horizontally to the southwest, at which point the stucco wall along the southwestern side of the structure was built. The pyramidal shrine, Structure E1-1, however, does not seem to have been altered alongside this construction. Structure E1-2 was also built on top of this enlarged substructure, creating one of the largest and most restricted house platforms at the site.

Structures E1-4, E2-4, and E2-5 reveal a second construction phase during the Late Classic period. This phase was marked in Structure E2-5 with a cache or dedicatory ritual of a bundle of shell artifacts. Ceramics suggest that this construction dates to the Tepeu 2 horizon, although the presence of few sherds of barrel-shaped vases suggests a
date during the Tepeu 1/2 transition, likely consistent with the Early Yaxche ceramic phase.

This construction also differs from the earlier Late Classic period construction phase, with the abandonment of the strategy of retaining walls in the fill, and a change in floor construction. At this time, floors were constructed with thin (5 cm thick), tabular limestone placed on top of small cobble fill of rocks measuring 10 cm long, covered with a gravel ballast, finally topped with scant, fragmentary stucco. Particularly in Structure E2-5, this style of floor may actually be a later modification during the Early to Late Chacalhaaz phases (Late to Terminal Classic period transition). The addition to Structure E2-5 dates slightly later, with fragments of a Late Yaxche or Early Chacalhaaz Buul Brown plate in the final stages of fill of the structure. The terraces around the Upper Group were also modified at least once during the Late Classic period, with some limited evidence that their function may have shifted to a partial agricultural purpose. Structure A3-1 in the West Group was also modified one last time, with a well-preserved stucco floor in the profile of the looter’s trench.

**Terminal Classic Period**

The final occupation of El Infiernito is impossible to date based on the absence of overlying stratigraphy or carbon dating, due to a recent wildfire. However, this occupation certainly dates after AD 850, when fine orange wares and Tres Naciones fine gray group ceramics were introduced to the Upper Group. All activity dating to the Terminal Classic period is restricted to the Upper Group at this time, although a single Palenque-style Balunte phase (AD 770–850) support on the footslope terrace of the
Lower Group suggests some reuse of these agricultural features. All house platforms in the Upper Group show evidence of occupation during the Terminal Classic period, either from data collected through excavation or surface collection. Burials 3, 4, and 5 were likely buried around AD 750–850 and were intrusive to at least one earlier burial within the only formal cist dating to this period under Structure E1-4.  

After the shallow burial of the individual in Burial 4, the C-shaped bench at the back of Structure E1-4 was constructed. Local, “Porous Cork with Carbonates” paste jars dating to the Terminal Classic period were included in the fill of this bench. These jars, along with fine orange, fine gray, and imitation plumbate ceramics were also deposited on top of Structure E1-4, as well as in refuse pits alongside the structure. These same wares were also deposited across the terraces of Structure D1-7 and D1-8, suggesting continued modification and use of these features.  

Structure E2-5 also underwent extensive modification during the Terminal Classic period. This modification involved the construction of informal interior walls to subdivide interior space. This structure was subdivided into at least three rooms. The smallest room at the southern corner of Structure E2-5 may have been used for storage, while the largest room to the northwest was restricted by a large interior wall that appears to have supported large wooden posts.  

Two additional C-shaped benches also seem to date to the Terminal Classic period. One of these benches was added to the substructure of Structure E2-1. This particular bench could have seated multiple people, and its form and orientation suggest that it was meant to overlook the large plaza space to the northwest. This area could have
been associated with a gathering or performance area, intended to view or to be viewed by individuals seated on the bench of Structure E2-3.

A similar design is oriented on Structure E2-11, a C-shaped structure built on top of the monumental Structure E2-4. This structure was also similarly oriented to the northwest, overlooking the patio of Structure E2-7. This C-shaped structure would have represented the most important or elite household at the site during the Terminal Classic period, based on its location at the highest point of the site and on the largest structure in the Upper Group. Furthermore, excavations documented fragments of a Silho Fine Orange vase with Early Postclassic period iconography of God K, or K’awiil.

The site was likely abandoned gradually near the outset of the Early Postclassic period, as only a single sherd possibly dating to the Late Postclassic period was documented. The reasons for this abandonment were likely manifold, as defense probably ceased to be as influential to settlement, as the largest political dynasties of the Classic period had collapsed. Although, the households of El Infiernito appear to have waited out the crisis longer than most communities at this time, they were eventually drawn to better opportunities elsewhere.

*Form and Function of Architecture*

Structures were classified based on Rodrigo Liendo’s (2011) and Atasta Flores Esquivel’s (2011) typology of buildings in the Palenque and Chinikiha regions. Function of structures can be difficult to discern based merely on form, and even excavations can provide ambiguous evidence relating to the purpose of constructions. However, based on the principle of abundance (Ashmore 1981), the majority of range structures with surface
areas larger than 8 square meters were assumed to be domestic, and excavations have generally confirmed this assumption. Other types of structures classified include ancillary structures, which are often square, generally associated with range structures and patio groups, and usually smaller than 8 square meters. In some cases, I determined that even structures less than 10 square meters were unlikely to be domestic platforms. I classified such ancillary structures as altars when they occupied a central location in patio groups.

Other structures included terraces or substructures that occasionally supported other platforms or created patio or plaza space. Terraces that may have served defensive or agricultural purposes are discussed in more detail later in this chapter. I generally interpreted benches as interior architecture within larger residential structures, but in some cases, notably Structures E2-3 and E2-10, such architecture was placed directly on a larger substructure, thus treated as separate structures. Finally, pyramidal shrines were the largest structures at the site, generally taller than 4 m, although in the West Group, Structure A3-1 resembles a shrine based on its location at the local summit despite measuring only 1.5 m high.

The mapped portions of El Infiernito contain a total of 78 structures divided among three architectural groups. The Lower Group is comprised of the lowest number of structures, totaling 9 buildings, including a monumental pyramidal shrine made up of 2 terraces (C2-1, C2-2), 2 large plazas (C2-3, C2-4), 2 range structures (D2-1, D2-2), a footslope terrace (D2-3), a large terrace (B4-1), and a freestanding defensive wall (B4-2). Although the number of structures is relatively low, the extent of construction covers a horizontal area of 9,493.79 square meters, with structures ranging in height from 1 m to the combined 10.9 m of Structures C2-1 and C2-2. Unfortunately, excavations in these
areas uncovered few artifacts, suggesting that the Lower Group’s primary function was not domestic and was perhaps intentionally left clean for ritual reasons. The presence of a fragment of a large metate at the summit of Structure C2-1 may have served either a communal food preparation purpose (although no food remains or ceramic vessels accompanied this area) or may have served as a type of throne for a Late Preclassic period leader of the site.

The West Group reveals a more dense concentration of structures, including a total of 20 structures, made up of 5 terraces forming elevated patio space, 7 domestic platforms, 7 ancillary or small domestic structures, and a small shrine built on a terraced portion of the local summit of the hill. This shrine (Structure A3-1) and its substructure (Structure A3-2) were modified during the Late Classic period, while the majority of the West Group appears to have been built exclusively during the Late Preclassic period. Structure B2-8, the terrace on which the northern structures of the West Group were built, shows a single construction phase during the Late Preclassic period, and surface collections in this area date entirely to the Protoclassic period. In general, the structures in the West Group are much smaller than elsewhere in El Infiernito; domestic platforms average 21.8 square meters or 17.8 square meters if certain smaller ambiguous domestic or ancillary structures are included. These values are consistent with Ashmore’s (1981) average household size of 20 square meters, although they are on the lower end of the spectrum for houses within the Palenque region (Liendo 2003).

The Upper Group exemplifies the most complex architecture at El Infiernito, including 18 terraced areas forming architectural, agricultural, or patio space, 13 domestic structures, 4 ancillary structures (perhaps 3 of which are altars), 2 pyramidal
shrines, 1 defensive wall, 2 C-shaped benches unassociated with other structures, and 7 substructures, and 2 lookout platforms. Of the likely 13 domestic structures, 5 are range structures, 3 are square, 4 are L-shaped, and 1 is C-shaped. These structures show a high average surface area of 100.5 square meters, nearly 3 times Liendo’s average and 5 times Ashmore’s average and the average of El Infiernito’s West Group. These data suggest an increase in structure size by the end of the Late to Terminal Classic period, consistent with an increase in population levels.

Furthermore, the distribution of structure sizes in the Upper Group of El Infiernito may relate to increasing household inequality toward the end of the Late Classic period. When cumulative structure sizes are compiled, following the methodology outlined by Michael E. Smith and colleagues (2014), a relatively high level of inequality is revealed by the Gini index of 0.37 (where a value of 0 represents no inequality and 1 represents maximum inequality) (Ames 2008; McGuire 1983). For a rural, primarily farming community, 0.37 is high, and more on par with urban centers analyzed by Smith and colleagues in Late Postclassic Morelos. Unfortunately, more complete data is lacking from El Infiernito to assess changes in house size over time, although the Gini index from the West Group (0.29) suggests lower inequality during the Late Preclassic period (Figures 8.1–8.2).

However, increasing house sizes can also be explained by increasing populations in a small area. This explanation would be consistent with overall increasing populations during the Late Classic period, as well as the function of El Infiernito as a refuge that experienced an influx of occupants during periods of crisis. Furthermore, the house platforms at El Infiernito may not represent single households, as evidence suggests the
construction of room divisions during the Terminal Classic period. Indeed, the fairly common occurrence of L-shaped structures within the Upper Group may skew the average. When considered alone, the average size of L-shaped structures is 171.2 square meters, covering more than twice as much space as Ashmore’s average. The spatial design of L-shaped structures oriented around a central patio and the high surface areas of the structures suggest that in terms of household size, perhaps such structures should be counted as two structures rather than a single one.

Figure 8.1 Box and whiskers plot of living area of domestic structures in the West and Upper Groups.
Defense

The hilltop position of the majority of settlement at El Infiernito suggests a clear concern with defense. The Upper, West, and South Groups are all located either at the crest of hills or along their middle slopes. Even the Lower Group, situated at the base of the hill, is slightly elevated above the valley and naturally surrounded on three sides by
the main crescent-shaped hill. The natural topography of the crescent-shaped hill creates a single opening toward the southwest, and even there the approach is inclined. In this area, the South Group hill, a long east-west trending landform, also extends toward the opening in the crescent-shaped hill, further restricting this entrance to the site. Elsewhere, behind the Upper Group to the east and southeast, the hilltop naturally meets high cliffs that block access from these directions. The West Group is similarly situated, in a slightly more accessible position. The only area that may be climbed with minimal effort is to the north of a saddle in the crescent-shaped hill between the Upper and West Groups.

However, no settlement was documented in this area. This saddle may have threatened the Lower Group to the south, but from this location, the Upper and West Groups would have remained inaccessible.

The natural landscape alone points to El Infiernito’s inhabitants as concerned with defense or protection. However, clear modifications to the hilltop and the surrounding landscape confirm beyond reasonable doubt that defense was absolutely crucial to the people of El Infiernito. Isolated or freestanding stone constructions, especially walls or terraces are almost always located in the areas where defensive walls would be expected. Still, admittedly, the functions of some of these features remains ambiguous, as some may relate to architectural or design considerations, while others may have served agricultural purposes. However, even in these ambiguous cases, a construction may have served multiple purposes, and concerns with defense and increasing agricultural yields are not mutually exclusive. In fact, agricultural features would have been of the utmost importance to protect.
At El Infiernito, defensive features can be classified into three categories: freestanding walls, terraces, and watchtowers or lookouts. Of these three categories, freestanding walls and watchtowers are the most likely features to relate to defense. Often, all of these three features are integrated with viewsheds to improve their levels of defendability.

Freestanding walls are made of large, irregular limestone cobbles, essentially the same material used in the construction fill of buildings in the Upper Group. These freestanding walls are elevated above the ground surface on all sides, typically less than 1 m high. Such walls may be isolated in the sense that they seem to protect parts of the landscape rather than structures, while at other times such walls may be more closely associated with structures. In the latter case, the freestanding walls differ from other constructions in their lack of facing stones. As Andrew Scherer and Charles Golden (2009) have outlined, the most likely function of such freestanding walls was to serve as the base of palisades, a construction technique known archaeologically from the Petexbatun region and recorded in ethnohistories across the Yucatán peninsula.

The second category, terraces, are most common at El Infiernito, and as such they represent the most ambiguous defensive features at the site. Terraces are leveled areas surrounded by retaining walls that are typically associated with the sides or summits of hills. Indeed, all architectural groups at El Infiernito were constructed on top of terraces. Thus, in many cases, terraces are merely architectural features that serve to create flat areas for constructions and to influence how people interact with space as they approach or walk across the site. In other cases, however, when terraces are located along the slopes of hills, their primary purpose is to increase surface area for agriculture or other
activities. Some of the largest terraces on hillslopes also appear to have aided, rather than restricted access to certain parts of the site. These two possible functions of terraces are considered in the sections on agriculture and domestic ritual below.

However, the extent of terracing across the El Infiernito hilltop resembles other features known from the Maya area, revealed in recent LiDAR studies, including the Western Belize LiDAR project (Chase et al. 2014) and the PACUNAM LiDAR Initiative (Canuto et al. 2018). In the former, the epicenter of Xunantunich was shown to have been protected by a system of terraces along the hillslope, while in the latter, especially near El Zotz, Holmul, and other parts of the Northeastern Petén, terraces have been interpreted as forming ditch, embankment, and rampart systems. These features exhibit a ditch in the area closest to the slope of a hill, climbing to a slightly elevated embankment at the edge of the terrace. These terraces would have served the dual purpose of hindering the approach to the hill summit and providing a protected area for defenders of the site to take advantage of high ground.

The third category of defensive features known from El Infiernito is the lookout. Scherer and Golden (2009) documented such features near Tecolote, referring to them as “watchtowers.” At El Infiernito, these features resemble watchtowers in function rather than form. Such lookouts are merely platforms or mounds that were built on top of natural summits, lacking any formal design. Furthermore, these lookouts tend to be larger in surface area than in height. At Tecolote, such watchtowers tend to occur alongside the freestanding walls. In these contexts, freestanding walls connect the footslopes of hills, while the summits of these hills were modified into watchtowers (Scherer and Golden 2009). These lookouts are unlikely to represent domestic contexts due to the lack of
livable space, their isolated and inaccessible locations, and the lack of abundant ceramics, metates, or other household objects on the surface. As at Tecolote, these watchtowers overlook other defensive features, particularly terraces, as well as clusters of house platforms and water sources. These characteristics suggest that such features likely served primarily a defensive function.

Surveys around El Infiernito only documented two freestanding walls that appear to have served a defensive purpose. However, Juan Carlos Pérez (personal communication, 2017) who frequently hunts in the region recalls encountering others in the nearby hills. The first suspected defensive feature at the site was a freestanding wall (Structure D1-9) located directly along the approach to the Upper Group. This freestanding wall is located to the west of Structure D1-8, one of the largest terraces that encircles the northwestern portion of the Upper Group. At its highest point, the freestanding wall measures approximately 80 cm tall by 140 cm wide. The construction fill consists of large cobbles measuring up to 80 cm long stacked with no mortar. However, the spaces between these stones is filled with small cobbles 5–10 cm in length. The wall is oriented 75° and measures roughly 10 m long, blocking a natural entrance between two low cliffs. The wall lies on top of a leveled area, although excavations there did not suggest a constructed or elevated terrace. Artifacts were generally limited, with the recovery of some lithic debitage and ceramics. The highly eroded ceramics showed a mixture of Late Classic and Late Preclassic period sherds, consistent with the occupations known from the Upper Group.

This freestanding wall is located closest to the Upper Group, suggesting that it was oriented to protect that part of the site (Figure 8.3). This wall is oriented more to
protecting the access to the site from the northeast rather than the southwest. This orientation suggests that the wall may have also protected access to the Lower Group to the southwest. The ambiguous data and orientation of the wall suggest that it would have benefited both parts of the site. The presence of Late Preclassic ceramics suggests construction may have started in that period; however, Late Classic ceramics confirm that the area was also used at that time. The construction of the wall resembles more Late Classic period constructions in the Upper Group, incorporating smaller stones into the fill without the use of stucco mortar. The minimal modification to the terrace on which the wall was built is also inconsistent with other efforts known from the site during the Late Preclassic period. For these reasons, this freestanding wall is interpreted as a Late Classic period construction oriented toward the defense of the Upper Group, especially from invaders to the northeast.

Figure 8.3 Freestanding wall to the west of the Upper Group.
A second freestanding wall is also located within the Upper Group between Structures E2-4 and E2-5. Unlike the other freestanding wall (Structure D1-9) discussed above, the freestanding wall between Structures E2-4 and E2-5 is directly associated with surrounding architecture. The wall’s construction resembles that of Structure D1-9, although the stones are generally smaller, consisting of a mix of cobbles measuring 5–10 cm long and the largest measuring 20 cm long. The construction appears to have been expeditious, and it clearly postdates the final constructions of Structures E2-4 and E2-5, placing the freestanding wall’s construction at least within the Terminal Classic period (circa AD 800–850, if not later).

This wall blocks a narrow alley between Structures E2-4 and E2-5, which was left open and clear during the Late Classic period. Excavations in this alley revealed no refuse dating to the Late Classic period. Instead, remains of fine paste ceramics, in relatively small quantities, were recovered. These data suggest that during the Late Classic period, this alley was used as a form of access to the main patio, Structure E2-7. The preferred access to this patio would have been to the northwest, from the terrace of Structure E2-9, but access would have been possible to this patio between Structures E2-4 and E2-5 from the southwest. Still, this access would have been narrow and cumbersome.

One interpretation, of course, is that this freestanding wall was constructed to prevent access to the main patio Structure E2-7 from the southwest. This interpretation does not necessarily assume the wall’s function was oriented toward defense; rather, it may relate more to restricting access to this patio space. However, another possibility is that the wall did the opposite, blocking off access from the main patio to the alleyway.
and space behind Structure E2-5. The location of the wall at the eastern corner of Structure E2-5 lends support to this scenario because if the desire were to restrict access to the patio, the wall would have been better placed further to the southwest, at the western corner of Structure E2-4. Thus, the interpretation of the freestanding wall between Structures E2-4 and E2-5 was that it related to shifts in discard practices, whereby the elite, Terminal Classic period household centered on Structure E2-5 chose to utilize the alley between Structures E2-4 and E2-5, as well as the space behind Structure E2-5 for their own use.

The second category of defensive features at El Infiernito include the extensive terracing at the site. As previously stated, many of these terraces served either architectural or agricultural purposes. The clearest architectural examples of terraces are in the Lower Group, where the terracing of Structures C2-1 and C2-2 created a monumental structure. Agricultural examples will be discussed in the following section. The majority of terracing that may have related to defense is located within the Upper Group, especially along the northwestern and southwestern ends of this part of the site. The largest terraces are Structures D1-7 and D1-8, which are elaborated with a series of other smaller terraces that continue to encircle the western portion of the site.

These terraces encircle much of the Upper Group, sometimes terminating in cliffs, especially along the eastern side of the Upper Group. Structures D1-7 and D1-8 are especially notable because their location overlooking the freestanding defensive wall, Structure D1-9, suggests that these features were integrated toward defense. These terraces create ample space and provide high ground, similar to ramparts; however, they lack clear ditches and embankments. In fact, these terraces are almost perfectly flat.
According to excavations, these features were first constructed during the Late/Terminal Preclassic or Protoclassic period due to the abundance of Sierra Red and Usulutan ceramics, as well as tetrapod supports. However, these terraces were modified throughout the Late Classic period, and a consistent layer of refuse from the Terminal Classic period suggests that they were maintained as level areas throughout the occupation of the site.

A second major concentration of terraces lies along the southwestern approach to the Upper Group. The first terrace reached when approaching the Upper Group from this direction is Structure D3-8, followed by a massive terrace (Structure D3-6) measuring approximately 18 m high. Although we did not conduct excavations in this area, this monumental scale of terracing recalls similar features at Macabilero, a primarily Preclassic period fortified center. In contrast to Macabilero, however, the construction of this terrace was not made with megalithic stones, rather it seems to have been modified by removing stone to create a steeper slope. A small terrace (Structure D3-7) lies below and to the north of Structure D3-6, which resembles an observation point overlooking cliffs toward the north. In fact, this orientation places the freestanding wall (Structure D1-9) well within the viewshed, integrating the southwestern and northwestern parts of the Upper Group, the two most heavily fortified parts of the site.

A series of further terraces surround a large but shallow cave entrance, rising to the northeast to the space behind Structure E2-4. This area exemplifies the third category of defensive features known from the site, lookouts or watchtowers. The terracing does not continue at the southeastern end of the Upper Group, but in this area two small structures (Structures E2-8 and E3-1) were placed against the summit of a cliff face that descends to the valley below. Excavations on top of Structure E2-8 showed that this
structure was built on top of a natural rock outcrop. This type of construction is characteristic of lookouts at El Infiernito, whereby small platforms were built on top of natural promontories likely for the purpose of defense.

In addition to overlooking the cliffs and valley to the southeast, these Structures E2-8 and E3-1 are in line with a unique set of watchtowers and a terrace in the South Group. The South Group of El Infiernito is the least studied portion of the site, although we completely surveyed the landform and recorded each feature with a GPS unit. Unlike the Upper and West Groups, the South Group has almost no clear architectural clusters or concentrations of house platforms along the hill summit. Instead, abundant house platforms are located along the middle slopes of the hill. The entire hilltop was terraced, similar to the southwestern end of the Upper Group, where improving access to caves seems to have been the primary goal. One interesting exception is the aforementioned cluster of two lookouts and a terrace overlooking the Upper Group to the north and the valley to the south. Much of the terracing of the South Group is hypothesized to date to the Late Preclassic period (based on analogy with the Upper Group rather than excavations in the South Group), this cluster of lookouts may date to the Late Classic period (based on its possible integration with Structures E2-8 and E3-1 in the Upper Group).

This part of the South Group was constructed on top of a unique terrace. This terrace differs from others in that it does not create a flat space. Instead, it appears to have been built expeditiously, following the natural terrain of the saddle on which it sits. This construction creates a type of ramp that ascends two lookouts that straddle the terrace. Another platform lies in the middle of the terrace between the two lookouts. This
platform could have conceivably been used as a permanent or temporary residence, while the two lookouts are steep and inaccessible. Furthermore, like the lookouts near Tecolote, they have minimal areas at their summits to create livable space.

The largest terrace at the site that may have served partially a defensive purpose is located in the southwest of the Lower Group. In this area, the main, crescent-shaped hill meets the western end of the South Group hill, forming the only entrance to the Lower Group of the site. A large, monumental terrace blocks off this natural aperture in the topography. This terrace measures approximately 20 m long by 4 m high and was built out of large cobble fill, at least 20–30 cm long, some of which was filled with stucco mortar. This construction technique matches similar Late Preclassic constructions in the earliest construction phases of the Upper Group. Excavations on top of this terrace also revealed Late Preclassic ceramics, primarily Sierra Red types.

However, to the southeast, a separate construction (Structure B4-2) of a freestanding wall was placed on top of the terrace, Structure B4-1. This Structure B4-2 was thought to have represented a later addition to the terrace, which excavations confirmed, revealing a large amount of eroded, Late Classic period ceramics. These data suggest a function of the wall and terrace during the Late Classic period oriented toward defending the approach to the Upper Group, as well as the protection of the site’s main water source 500 m to the northeast, in the valley between the Upper and South Groups. The terrace, Structure B4-1, may have served a similar function during the Late Preclassic period, especially to defend the Lower Group, but other functions, including related to agriculture, will be considered in the next section.
One of the most notable natural features visible during the approach to El Infiernito from the southwest is a large, conical hill in the valley to the west of the main, crescent-shaped hill. This hill measures approximately 30 m above the surrounding valley and offers a 360° viewshed of the surrounding valley. The summit is approached from the south, where the slope of the hill was modified by removing stones to create a staircase. At the summit, a small platform was built out of small, loose cobbles. This hill, therefore, appears to have been modified into a watchtower to overlook the valley. Furthermore, to the east, the large terrace (Structure B4-1) and its accompanying freestanding wall (Structure B4-2) are clearly visible, suggesting that these three features were integrated toward defense of the approach to El Infiernito from the west. A GIS analysis of intervisibility confirms that defensive features, especially lookouts, were placed in the most prominent areas, visible from multiple places (Figure 8.4).

The current data overwhelmingly support that El Infiernito was positioned toward defense. Notably, much of this defensive character of the site had already been established by the end of the Late Preclassic period; however, in all cases these features were modified and reused during the Late Classic period. Unfortunately, the chronology cannot be refined to a great extent to determine when defense became a crucial element during the Late Classic period. But based on the chronology of the settlement, defense was likely important as soon as El Infiernito was reoccupied early in the Late Classic period, by the end of the sixth century, well into the Terminal Classic period, and as late as AD 950–1000. This conclusion suggests that crisis was not a temporary concern to the people of El Infiernito but a constant threat, likely related to the site’s position between the dynastic capital of Piedras Negras, and its contested secondary center, La Mar.
Figure 8.4 GIS model of intervisibility among lookouts and other defensive features at El Infiernito.

Landesque Capital

Much of the terracing at El Infiernito appears to have served primarily an architectural or defensive purpose, but I hypothesize that other features related to agriculture when I could dismiss other potential functions through a process of elimination. Additionally, defense and agriculture are not mutually exclusive functions, and agricultural terraces tend to be closely associated with possible defensive features.

Terraces at El Infiernito can be divided into three categories, influenced by Nicholas Dunning’s (1996) studies in the Petexbatun. The first category includes the large architectural terraces described previously in terms of defense, the second category
refers to dense clusters of smaller terraces (contour or box terraces), and the third corresponds to footslope terraces.

I described the first category of terraces in more detail in the previous section in relation to defense. However, their possible use in agriculture should not be immediately discarded. The scale of such features suggests that their primary purpose was architectural or defensive; these terraces measure up to 10 m wide and at their longest can extend nearly 150 m as they wend around the Upper Group of El Infiernito. Other indications suggest that such terraces may not have been initially constructed for an agricultural purpose. For one, such terraces are at least 2 m tall, with the largest measuring nearly 18 m tall. In addition, these large terraces were built into steep slopes of nearly 20°, a fairly high inclination. Andrew Wyatt (2008:113) classified such a slope as moderate at Chan, Belize, with the highest proportion of terraces located on such slopes, while Dunning (1996:62) observed that in the Petexbatun, slopes of more than 10° were generally avoided for agricultural terraces.

Excavations showed that the initial construction of Structure D1-7, one of the large terraces at the northwest of the site, dated to the Late Preclassic or Protoclassic period. This construction involved the use of massive stones, measuring up to 80 cm long, to construct a retaining wall along the edge of the terrace. The remaining portions of the terrace were filled in with abundant ceramics and smaller stones, measuring 20–30 cm long. These stones were quarried from the upper portions of the site as well as the slopes to create large, level areas. The scale of such modifications is impressive as such constructions took place at least within the Upper, West, and South Groups, and perhaps other hills yet to be surveyed in the region. Such landscape modifications have also been
documented in LiDAR transects provided by NASA elsewhere in the Western Maya Lowlands (Golden et al. 2016).

The Upper Group terraces were modified during the Late Classic period, showing a notable shift toward a distinct change in soil color to a consistently dark brown or black. In some areas, this layer of soil occurred in multiple lots, up to 50 cm thick, with a further 50 cm of Late Preclassic period fill below. Unfortunately, flotation samples of this soil revealed only a single carbonized remain (Morell-Hart et al. 2018). The cobble fill continued but included generally smaller stones. These data are inconclusive, but the appearance of dark soils and changes in construction techniques of the terraces suggests that they were used at least in part as agricultural terraces during the Late Classic period. In contrast, the initial scale of their construction and their location on a high slope may indicate that during the Late Preclassic period, the function was oriented more toward defense or large-scale landscape modification known from this period across the Southern Lowlands.

Included within this first category of terracing is the large, monumental terrace at the entrance to the Lower Group, Structure B4-1. I propose that this terrace served a defensive purpose during the Late Preclassic and Late Classic periods, however, its location suggests a possible agricultural function. Today, Structure B4-1 runs perpendicular to a dry arroyo that descends from the water spring 500 m to the northeast. Additional water springs further down the hill alongside the dry arroyo suggest the presence of an underground stream in this area. In the past, the water table may have been higher and the arroyo, at least seasonally, may have contained more water. Even during
the rainy season, the water spring increases in size and a small stream flows toward Structure B4-1.

The large flat area, or slight depression, immediately to the east of Structure B4-1 also becomes more saturated during the rainy season. Thus, an additional function for Structure B4-1 is that the terrace related to water management, forming a large dam to prevent water from flowing further down the hill. Such an attempt would not have contributed to retaining drinking water; however, it would have created a moist area behind Structure B4-1 for planting crops that require excess water, including cotton or cacao. Again, the possible defensive and agricultural functions of this terrace are not mutually exclusive. However, in relation to landesque capital, the addition of Structure B4-2 during the Late Classic period would not have contributed to the agricultural role of Structure B4-1; instead, Structure B4-2 indicates that the function of this terrace had shifted more toward defense.

The second category of terracing refers to clusters of smaller terraces that in form match more closely other features identified as agricultural terraces in the Maya area. Dunning (1996:62) refers to these features as contour or box terraces that consist of small rubble walls that trap soil in the cavity left behind. Furthermore, these terraces were typically restricted to slopes measuring 3–10°. Generally, in the Usumacinta region, such terraces are difficult to identify on the ground, although extensive terracing has been noted at El Edén, Ocosingo as well as Dos Coyotes, Palenque. At El Infiernito, we observed such terraces in surveys in two specific places, although more terracing is likely present in areas with more vegetation. Contour or box terraces generally occur alongside the first category of defensive terraces or behind clusters of houses. Contour terraces are
visible from the top of Structure D1-1 at El Infiernito, immediately north of Structure D1-8, one of the large terraces that encircles the northwestern portion of the site. In this area, the largest terraces, Structures D1-7 and D1-8 appear to diminish in size as two smaller contour terraces were added to the north. Due to the sheltered location of these contour terraces near possible defensive features and behind a cluster of settlement, they certainly served an agricultural purpose, likely during the Late Classic period when Structures D1-7 and D1-8 also appear to have been modified for such a function. These contour terraces were built of much smaller rock cobbles, measuring approximately 10–20 cm long, and the length of the terraces themselves, approximately 10 m long, would not have been conducive to defense.

Another cluster of contour terraces occurs immediately to the north of the West Group (Figure 8.5). These terraces are visible in aerial imagery in a milpa that was recently burned. This area reveals the densest concentration of agricultural terraces at El Infiernito, approaching nearly 20 contour terraces. These terraces are larger than the terraces north of Structure D1-8, ranging between 20 and 40 m long, suggesting that some may belong to the first category of architectural or defensive features. Based on proximity, these terraces seem to relate more to the West Group, which dates almost entirely to the Late Preclassic period. However, these terraces could have been used during the Late Classic period as well, based on modifications to the West Group that took place during the latter period.
The third category of terraces, footslope terraces, are the least common at El Infiernito, in contrast to Dunning’s (1996:62) observations in the Petexbatun where footslope terraces were common in steep areas to take advantage of soil erosion with minimal construction effort. The only footslope terrace documented at El Infiernito is within the Lower Group, corresponding with Structure D2-3. This crescent-shaped terrace that parallels the shape of the hill measures in total nearly 150 m long. Excavations in this area revealed a low retaining wall that collected abundant soil with minimal stone cobbles fill. The construction, like the rest of the Lower Group, dates to the Late Preclassic period, and the techniques in its design are a stark contrast to the Late Preclassic terraces in the Upper Group that formed the foundations of Structures D1-7 and D1-8. These distinct construction techniques likely relate to different intended functions; the terraces in the Lower Group clearly seem to have served an agricultural

Figure 8.5 Terraces near the West Group.
purpose. Of note, the only Late Classic ceramics documented in the Lower Group were found on the surface of this foottslope terrace suggesting that like the other examples of landesque capital at El Infiernito, they were used and maintained across different occupations of the site.

*Trade, Household Status, and Craft Production*

The extensive proportion of non-local ceramics, especially of the Silho Fine Orange group, as well as imitations of other trade wares, including Tohil Plumbate, suggest shifting trade networks north toward the Gulf Coast and south toward the Soconusco, although without a detailed paste analysis of the imitation plumbates, such vessels could have originated elsewhere. In fact, the paste and reddish brown slips evident from some sherds resembles Postclassic period varieties of Tinaja Red jars, which may point to an origin from the east in the Petén. Still, the relatively low proportion of imitation plumbates at El Infiernito, especially compared to the more common Tinaja Red sherds suggests a distant locale, perhaps a production locus somewhere between the Petén and Soconusco.

A complete understanding of the proportion of Silho Fine Orange ceramics in relation to Altar Group ceramics requires a more detailed elemental paste analysis, yet currently only Silho Fine Orange group ceramics can be identified at El Infiernito based on form, surface finish, and decoration. Notably, some of these examples are imitations of fine orange ceramics, with visible temper in the pastes. These examples also exhibit a slightly redder hue than the genuine Silho group sherds. The slips on fine orange ceramics are heavily weathered, but some examples of Silho group sherds reveal an
orange or red slip similar in color to the paste, while other visible slips occur in smaller quantities, including white and faded black (or brown) slips. The faded black slips or washes were identified as Altar Fine Orange sherds at Ceibal (Sabloff 1975:189), while the examples with white slips may be tentatively assigned to the Balancan Orange type.

Decorative motifs on Silho Fine Orange bowls match examples cited by James Aimers (2014) in his discussion of ceramic systems dating to the Terminal Classic and Postclassic periods at Lamanai, Belize (Figure 8.6). Silho Fine Orange ceramics are rare at Lamanai, but motifs associated with this ceramic group occur on other vessels of different pastes. These motifs include scroll-like or floral patterns that are typical of Postclassic period decorations during the Early Postclassic period, and even into Aztec Black on Orange ceramics of the Late Postclassic period. At El Infiernito, these decorations are incised and typically placed immediately below the rim of bowls. We recovered no complete bowls of the Silho ceramic group at El Infiernito, however based on analogy with other vessels from Chichen Itza’s Sotuta phase (Brainerd 1941), these bowls either had no supports or had pedestal bases.

Figure 8.6 Example of an incised Early Postclassic period decorative motif on a Silho Fine Orange bowl.
Similar to Aimers’ observation of the ubiquity of such motifs across different paste classes, these same decorative motifs occur on imitation plumbate vessels at El Infiernito. Portions of such sherds are heavily eroded, and the slip not preserved, although the incising remained visible as it penetrated through the slip or was performed prior to firing. One example from El Infiernito preserves a tripod rattle support that also echoes a bowl form made locally out of “54. Fine Porous” paste, however without decoration. Of note, we documented these motifs in two house platform contexts at El Infiernito, in Structure E1-4 toward the northern portion of the Upper Group and in Structure E2-5 toward the southern portion of the Upper Group. This motif occurred strictly on Silho group sherds within Structure E2-5 and only on imitation plumbate sherds from Structure E1-4, despite otherwise recovering both Silho and imitation plumbate sherds from these contexts. These data suggest restrictions in decorated Silho group ceramics at the site. Indeed, the only other structure at the site to have an example of complex decoration on a Silho group vessel was recovered from Structure E2-4, immediately to the east of Structure E2-5. Imitation plumbate sherds from Structure E2-5 and Silho group sherds from Structure E1-4 show simplified decorations, typically consisting of parallel incised, concentric lines along the rims of jars or vases.

We documented a partial Silho Fine Orange vase Structure E2-4 in an area of refuse associated with the C-shaped addition to the structure (Figure 8.7). Fragments of the decorated register reveal an important example of rare Early Postclassic period iconography at El Infiernito. The decoration occurs on the side of a pedestal vase and consists of gouged-incised decoration. Unfortunately, the decorated panel is heavily eroded, but a crude, abstract design of a figure, embellished with various fluid, geometric
shapes is apparent. The exact shape and design of the figure is unclear; however, it appears to match similar Silho group vessels known from the Early Postclassic period in Chiapas, notably examples from the sites of Moxviquil and Yaxchilán. Such vessels have the same form of a pedestal vase with incised lines below the rim and depict stylized images of God K, or K’awiil (Taube 1992:71).

The example from Moxviquil is more detailed, while the Yaxchilán vessel more closely matches the fragment from El Infiernito. The eye, teeth, and nose of K’awiil are the most readily identifiable elements on the El Infiernito sherd, although parts of the headdress, as well as the body and arm of K’awiil are present. Such depictions of K’awiil, especially with teeth, seem to be restricted to Early Postclassic period Chiapas, including the well-known example from the Grolier Codex recovered from a cave in the Chiapas foothills and recently dated between AD 1021 and 1154 (INAH 2018).

Figure 8.7 Silho Fine Orange vase with God K iconography recovered from Structure E2-4.

Evidence for household-level craft production was documented across the Upper Group of El Infiernito but particularly associated with the households centered on Structures D1-1, E1-4, E1-5, and E1-2 in the northern portion of the site. This craft production is associated primarily with stone tool production and textile production.
We recovered lithic debitage in most excavation contexts at El Infiernito, within the Upper, Lower, and West Groups. The majority of debitage was comprised of chert flakes, or cryptocrystalline quartz, but some debitage may have been made of limestone or coarse chert extracted from the limestone deposits across the site. Primary, secondary, and tertiary flakes were documented at El Infiernito: the majority of flakes were tertiary (59.82%), with secondary flakes and primary flakes representing 33.86% and 6.33% of the assemblage, respectively (Figure 8.8). The high proportion of tertiary flakes suggests that stone tool production was focused on late stage reduction of chert, while evidence for some primary flakes points to a degree of early stage reduction, indicating either local sourcing of material or trading in raw material. In addition, 7 bifacial thinning flakes, representing 0.54% of the assemblage by mass, indicates evidence for minimal early stage tool production at El Infiernito.

The highest proportion of secondary flakes was documented in the Lower Group, in Late Preclassic period contexts (Figures 8.9–8.10). These data suggest that perhaps raw material was first reduced in the Lower Group during the Late Preclassic period before being transferred to the Upper and West Groups. During the Late Classic period, contexts with higher proportions of primary flakes were focused on Suboperations 1D (Structure E1-5), 2A (Structure E1-2), 3A (Structure D1-1), 3B (Structure D1-7), and especially 4B (Structure E2-3). An analysis of the density of all chert flakes relative to excavation lot volume also suggests that Suboperations 3B (Structure D1-7), 1C (Structure E1-4), 3A (Structure D1-1), 1C (Structure E1-4), and 11A (Structure D1-7), in descending order, had especially dense concentrations of chert debitage. These data, therefore, suggest that nearly all households at El Infiernito participated in chert
reduction and stone tool preparation, although the occupants of Structure D1-1 were especially prolific, based on the high quantities of debitage in surrounding refuse areas along the nearby terrace (Structure D1-7). Furthermore, the documentation of a deer antler in the excavations of Structure D1-1 suggests that this household was involved in pressure flaking, also consistent with the higher proportion of tertiary flakes in this area.

Figure 8.8 Proportion of chert flakes by percentage of cortex.
Figure 8.9 Proportion of chert flakes classified by percentage of cortex, by suboperation.
Figure 8.10  Density of chert debitage by excavation unit
Evidence for obsidian craft production is much more limited at El Infiernito, both spatially and temporally. An analysis of the spatial density of obsidian across the site, in fact, demonstrates that obsidian was restricted only to Late Classic and Terminal Classic period contexts (Figures 8.11–8.14). In fact, the overwhelming majority of obsidian was only documented in the first two excavation lots in most units, corresponding with the humus and final living surface layers. Evidence from Suboperation 5A, the vertical excavations of Structure E2-5 suggest the presence of small densities of obsidian in construction fill, but even this fill is associated with Late Classic period construction; the last major phase of construction at the site. Late Preclassic period contexts at the site, in the Upper, Lower, and West Groups reveal consistently zero grams of obsidian. The lack of obsidian in the Lower and West Groups does not correlate with distance from the Upper Group, as small densities of obsidian reemerge in Operation 19, which focused on an outlying Late Classic period courtyard and house platform 700–800 m to the southwest of the Upper Group.

The households with the clearest evidence for obsidian blade production were centered on Operation 1, which involved excavations of Structures E1-4, E1-5, and their associated patio, Structure E1-6. Structure E1-4 demonstrated the greatest diversity of obsidian tools (blades, flakes, and cores). We recovered only 2 cores from El Infiernito in the excavations of Structure E1-4, specifically in Unit 3 at the center of the C-shaped bench and in Unit 7 in the patio adjacent to Structure E1-4’s southern corner. These cores represent the only examples excavated from El Infiernito, La Selva, Rancho Nuevo, and Santa Marta. Flakes represent a relatively high proportion in Operation 5, centered on
Structure E2-5, while Structure E1-4 demonstrates the largest quantity of obsidian at the site.

When plotted as a box and whiskers chart, the high density of obsidian by mass at Structure E1-4, as well as within the terraces of Structure D1-7, can be explained largely as outliers at the site, although the range and mean of obsidian densities by lot number remain highest in Suboperations 1C and 12A. Associated with the C-shaped bench, this part of the site seems to have controlled the manufacture of obsidian blades at El Infiernito. Intriguingly, the blades recovered from Structure E1-4 also represent the most diverse obsidian sources at El Infiernito. While the 2 cores both belong to the Chayal source in Guatemala, blades from excavations of Structure E1-4 show diverse origins across Mexico and Guatemala. This diversity of sources contrasts with other sites in the region, including Santa Marta and La Selva. Obsidian assemblages from these two sites, belonging entirely to the Late Classic period, consisted only of blades and flakes from the Chayal source. Although the majority of obsidian from El Infiernito also originated from Chayal, trade routes appear to have expanded to increase access to more distant sources, including Ixtepeque, Guatemala and Zaragoza and Pachuca, Mexico (Figure 8.15).
Figure 8.11 Frequency of obsidian blades, cores, and flakes by suboperation.

Figure 8.12 Proportion of obsidian blades, cores, and flakes from El Infiernito.
Figure 8.13 Density of obsidian by excavation unit.
Figure 8.14  Box and whiskers plot showing obsidian density by suboperation.

Figure 8.15  Biplot graphic showing obsidian sources for the El Infiernito assemblage (by Max Seidita).
Chert and obsidian represent the most conspicuous forms of craft production at El Infiernito; however, indirect evidence for textile production was also documented through the recovery of three spindle whorls. Two of these spindle whorls were ceramic, while one was carved out of limestone. The stone spindle whorl and one of the ceramic spindle whorls both originated in excavations of Structure E1-5, at the center of the small C-shaped bench located on the northeastern side of this ancillary structure, at the final floor level. The third spindle whorl was documented in excavations of Structure E1-2, also on that structure’s final floor. This quantity of spindle whorls presents a fairly small sample, but the documentation of three spindle whorls, when accounting for sampling bias and the relatively small size of El Infiernito’s Upper Group, is significant, especially when all three belong to the same section of the northern portion of the Upper Group. In fact, this area forms some of the most formal architecture of the site, as well as the location of at least two of the most elite households at the site, centered on Structures E1-2 and E1-4. Structure E1-5 would have been too small to form living space. Instead, the evidence of obsidian and two spindle whorls suggests that this small C-shaped bench was associated with craft production.

The two spindle whorls documented in Structure E1-5 depict similar iconography (Figures 8.16–8.17). The ceramic spindle whorl is incised on both sides. The reverse side consists of a single incised circle concentric to the outer edge of the spindle whorl. The obverse side, in contrast displays a diamond motif with concave sides, creating a roughly symmetrical geometric design with four points. This simple iconography of a quadripartite motif likely connotes a cosmological symbolism of the axis mundi concept of a center surrounded by the cardinal directions, which is represented through the
practice of spinning thread (Brumfiel 2008:37). The second spindle whorl from this same context, made of limestone displays a variation on this same iconography, with a series of three ticks repeated four times to create a quadripartite motif. Dorothy McMeekin (1992) has compared this linear iconography to the arrangement of seeds in the cross-section of a squash, or perhaps more appropriately, the appearance of an open mature cotton boll.

Figure 8.16 Ceramic spindle whorl recovered from Structure E1-5.

Figure 8.17 Limestone spindle whorl recovered from Structure E1-5.

A third spindle whorl, made of ceramic, reveals a slightly more complex design (Figure 8.18). This spindle whorl was recovered from a different but nearby context, on Structure E1-2, one of the most physically elevated house platforms at El Infiernito, approximately 15 m to the southeast of Structure E1-5. Intriguingly, this spindle whorl
was associated with an enigmatic circular feature with a relatively high density of faunal remains, especially burnt turtle shell. Although highly eroded, the pattern of incised areas, encircling the spindle whorl, with a small incised circle representing the eye of a creature, most closely resembles feathered serpent motifs known from the Terminal to Postclassic periods (Becquelin and Baudez 1982; Houston and Inomata 2009:273). The use of such iconography in weaving may have charged textiles with the power of the emerging cult of Quetzalcoatl (McCafferty and McCafferty 1999).

These three spindle whorls point to the production of cotton thread or perhaps textiles at El Infiernito during the Terminal Classic period, supporting the argument that the site was not merely a military outpost but a community of households, with men and women engaged in diverse forms of craft production. Furthermore, the cosmological iconography on these spindle whorls reflects a traditional worldview of a quadripartite division, while introducing emerging concepts of the feathered serpent known throughout Mesoamerica during the Epiclassic period.

**Figure 8.18** Spindle whorl with Terminal Classic period feathered serpent iconography, recovered from Structure E1-2.
Domestic and Landscape Ritual

Because the majority of structures at El Infiernito relate to household functions, much of the documented ritual at the site was in a household context. Still, the karstic and hilly landscape was conducive to ritual oriented more toward non-household contexts. The latter was focused on caves and other modifications to the natural topography of the region, in line with the archaeological and ethnographic understandings of the ritual importance of caves and hills to the Maya (Vogt 1969).

Following Chelsea Blackmore’s (2008) typology of household ritual, El Infiernito exhibits clearly two of her four categories: 1) ancestor veneration and 2) house dedication/termination. The remaining two categories, 3) agricultural/calendrical ritual and 4) feasting are not as conspicuous in the archaeological record of El Infiernito, but I will also discuss possible examples of such rituals.

Ancestor veneration and house dedication/termination manifest primarily in construction phases of structures, particularly in house platforms, pyramidal shrines, patios, and terraces. The focus of ancestor veneration occurred in the construction of Structure E1-4, a platform that we exposed horizontally. Structure E1-4 is an L-shaped platform overlooking a small patio space formed by Structure E1-5, a small ancillary structure, and Structure E1-1, a large, looted pyramidal shrine. Horizontal excavations revealed a C-shaped bench along the northeastern side of Structure E1-4. Our excavations were only expected to reveal the final floor of the structure, but we documented two burials underneath this floor, at a fairly shallow depth. We uncovered a third burial in the patio immediately to the southwest of the southern corner of Structure E1-4, alongside the stair that follows the western side of the structure.
These three burials were placed to dedicate the final construction phase of Structure E1-4, which involved the construction of a C-shaped bench. Burial 3 was placed parallel to the C-shaped bench, along its southwestern side, Burial 4 was perpendicular to the bench, with the upper body underneath the bench just southeast of its northern corner, and Burial 5 was underneath the patio parallel to Structure E1-4. Based on stratigraphy, all three burials are believed to date to the same period. The best indicator of the date of the remains was from Burial 4, which was placed immediately beneath the final floor of Structure E1-4. After this burial, the C-shaped bench was constructed on top of Burial 4. Ceramics from this C-shaped bench suggest that it was constructed after 850, based on the presence of Kumche phase or Tepeu 3 horizon ceramics.

Burial 3 was more ambiguous, however, the presence of the remains of two individuals within Burial 3 suggests that Individual A was intrusive to an earlier burial of Individual B, dating to the Tepeu 2 ceramic horizon of the Late Classic period. Individual A is therefore considered to have been intrusive to the final floor of Structure E1-4, and a portion of Individual B’s cist was reused for Individual A. Burial 5 was placed slightly above the shallow bedrock that had likely been leveled during the Late Preclassic period, although the burial did not appear to be intrusive to this floor, despite no formal floor being documented. Thus, Individual A of Burial 3 and the individual in Burial 4 appear to date to the Late to Terminal Classic period, while Burial 5 is believed to date to the same period, although Burial 5 could be slightly earlier during the Late Classic period, coeval to Individual B of Burial 3.
All three burials reveal evidence for pathologies relating to osteoporosis and/or periostitis. In Burial 3, these pathologies can be attributed in part to Individual A’s advanced age, certainly more than 35 years old. However, Burials 4 and 5 both represented adolescents, younger than 18 years old, with Burial 4 even younger, between 12 and 15 years old (Schnell and Scherer 2018). Although based on such a small sample of a total of 5 analyzed burial remains, the presence of 2 subadults within the El Infiernito assemblage is a fairly high proportion. As both Burial 4 and Burial 5 reveal periostitis, this infection may have contributed to their deaths. In the example of Burial 4, the presence of a projectile point discovered in situ near the individual’s left, upper leg may relate to this infection and ultimate death.

Burial 3 appears to have been the focus of the domestic ritual associated with ancestor veneration. First, as the oldest individual, he likely was an important person associated with the household. Second, the location of his burial at the center of the space formed by the C-shaped bench dedicated this area, and the specific placement of Burial 3 would have not been forgotten in relation to the activities associated with the bench (Geller 2004:287). Finally, Burial 3 is the only burial with multiple burial offerings, carefully placed in important parts of the burial. Offerings were specifically placed on top of the skull of Individual A, including a fragment of brain coral, a projectile point, three fragments of carved bone, and a polished greenstone or schist disc, possibly worn as a pectoral. Other offerings located closer to the body included a single shell bead and a hammerstone or mano metate.

The symbolism of the burial goods within Burial 3 highlight Individual A as an important ancestor (Figure 8.19). The symbolism of the projectile point, clearly placed
within the burial rather than the more ambiguous location of a similar artifact within Burial 4 possibly embedded in that individual’s left femur, suggests, of course a relationship to warfare, hunting, or the production of stone tools. The defensive location of El Infiernito suggests that the symbolism of warfare would have been appropriate, while the activities associated with the C-shaped bench in Structure E1-4 suggest that stone tool production (primarily obsidian) may have been an important theme related to Individual A. Personal adornment in burials, including the shell bead and the stone pectoral is uncommon at El Infiernito, and burials within the Piedras Negras and Usumacinta region are notably artifact poor.

That this individual was buried with these objects is significant as a means of setting him apart from other burials at the site. Carved bone is known from mortuary contexts in the Maya area, sometimes associated with leadership and masculinity (Dacus 2005). Finally, the brain coral suggests long distance ties, most likely with the Gulf Coast, which relates to the increasing influence of the Chontal or Putún Maya in the Southern Lowlands during the Terminal Classic period. Rare in Maya contexts, the presence of brain coral in abundance in offerings of the Templo Mayor during the Late Postclassic period suggests a link with the Aztec cosmovision related to water and the sea (Broda 1987). Such a symbolic understanding could have conceivably emerged during the Terminal Classic period.
Figure 8.19 Offerings recovered from Burial 3 from top left, clockwise: carved bone, polished stone, brain coral, projectile point.

Burial 1, another Late Classic period burial may also be associated with household ritual, however, the location is more accurately described as a pyramidal shrine rather than a house platform. Burial 1 was buried in the West Group of El Infiernito, which according to test excavations dates almost entirely to the Late Preclassic period. However, at the southern point of the West Group, at the local summit in this area, Structure A3-1 and the terrace on which it sits (Structure A3-2) were modified during the Late Classic period. Part of this modification involved the burial of the individual in Burial 1, probably underneath the floor of Structure A3-1 sub 1. This
prominent location suggests this dedication during the Late Classic period served to mark this local summit as an important place. The apparent lack of Late Classic period households in the West Group suggests that the Upper Group served as the focus of settlement. Still, the West Group formed part of the Late Classic period interpretation of the landscape that involved the dedication of a prominent part of the crescent-shaped hill. Furthermore, this pyramidal shrine provides more extensive viewsheds than does the Upper Group, suggesting that this location could also have been used for defense or rituals that required a more complete viewshed.

Burial 6 presents another example of ancestor veneration, separated from household ritual. Based on stratigraphy and ceramics, Burial 6 dates to the Late Preclassic period. This individual was placed directly on top of bedrock to dedicate the first stages of modification to the hilltop during the Late Preclassic period. The retaining wall of the terrace of Structure D1-7 was built around and over Burial 6. The individual in Burial 6 was likely 35–50 years old or older based on significant dental wear. Like the other burials at El Infiernito, Burial 6 exhibits advanced periostitis, which in the case of Burial 6 was likely the cause of death. The burial of the individual in Burial 6 is an outlier in relation to the structures at the site. The nearest house platforms are to the south approximately 20 m (Structure D1-1). However, the presence of a major transformation of the site during the Late Classic period makes the reconstruction of the site’s Late Preclassic design difficult to reconstruct. The evidence from Burial 6 suggests that part of the massive scale of landscape modification at El Infiernito required a dedication of the terracing with the burial of at least one individual.
Human remains also marked important aspects of landscape ritual at El Infiernito, based on the discovery of a single human vertebra in the largest cave at the site. This cave is located at the southwestern end of the Upper Group, where the terrace of Structure D3-2 was built. Another platform, Structure D3-3 also extends outward from the cave entrance. This cave shows the largest entrance at the site, approximately 20 m long by 1–3 m high, with an open but shallow interior. Toward the rear of the cave, we noted a single human vertebra, likely associated with a burial that we labeled Burial 2. Excavations in this area would likely uncover more remains. The entirety of the cave floor was covered with broken ceramics, including jars, basins, and platters. The remains of Tepeu 1-2 horizon platters demonstrate the most finely decorated polychrome ceramics from El Infiernito. Based on descriptions from local ejidatarios in the modern community of La Selva, many of the complete, decorated vessels in people’s homes seem to have originated from this cave.

Smaller caves are also notable across the karstic landscape of El Infiernito. Surrounding the Upper Group, one cave is located to the east of the architectural group centered on Structure E2-4. Another cave is located near the terrace of Structure E1-9 and a narrow cave that cannot be entered lies underneath Structure E1-3 (visible underneath the main stairway that climbs the southeastern side of this structure). We documented at least two caves underneath Structure D1-2, and another large cave entrance is between Structures D1-8 and E1-9. This pattern suggests that following conventions of Maya construction, many of the largest structures at El Infiernito were built on top of or near caves. However, in all cases, these caves are shallow.
An interesting feature of the caves, especially those in the Upper and South Groups, is that they seem to be associated with the construction of terraces. Notable examples are near Structures D1-8, E1-9, D1-5 (near the northern side of Structure D1-2), Structure E1-10 (near Structure E2-4), and Structure D3-1. In these cases, these large terraces appear to guide movement toward these caves, rather than to impede access. Seemingly contradictory, the function of such terraces as relating to defense and improving access to parts of the site is not mutually exclusive. Relating to landscape ritual, these terraces appear to have served as pathways to guide horizontal foot traffic toward caves, while hampering vertical movement to the more restricted domestic and ritual contexts at the local summits of the Upper Group. Interpreted in this light, the various defensive features at El Infiernito may have been used at least in part to monitor or keep track of ritual visitors to the site. In otherwise contested landscapes between the sites of Piedras Negras and Yaxchilán, Charles Golden and colleagues (2012) have observed that ceramics associated with both dynastic centers were left in caves, suggesting that ritual places may have provided some type of neutral zone where people could gather in peace regardless of their social identities.

A final form of ritual that seems to be associated with these terraces, possibly confirming both an agricultural and processional purpose for these features was identified in near surface deposits across the large terrace of Structure D1-7. In multiple excavations of Structure D1-7, a similar form of a tripod bowl made of the same paste (54. Fine Porous, suggesting a post AD 850 date) was documented face down, as an offering (Figure 8.20). We recovered ceramic sherds in abundance in excavations of Structure D1-7, but only this tripod bowl form was found in nearly intact examples.
These findings suggest an intentional deposition of these bowls as a dedication or termination ritual of Structure D1-7. These tripod bowls also have rattle feet that suggest a partially ritual function for such objects. One can imagine a ritual procession of people carrying such tripod bowls to dedicate the terraces. Such a ritual could be considered a termination ritual, based on the late date of the bowls, but the association of this particular vessel form with the terraces may relate to an agricultural ritual, in which these bowls were left as offerings to encourage a productive harvest. According to Juan Carlos Perez, some Tzeltal communities in the area will offer a chicken broth *caldo* to farmers and to the earth on the day of planting to encourage the growth of maize; the chicken broth is symbolic in that maize is later eaten by chickens. Furthermore, at Metzabok, Lacandón communities continue to conduct rituals associated with caves and terraces at hilltop sites throughout the region (Palka 2005). Direct connections between such rituals is unlikely; however, a ritual procession or offering of such bowls is interesting to consider when interpreting the function of the terracing around El Infiernito.
A common yet ambiguous form of household ritual at El Infiernito took place in dedication or termination events associated with specific architecture. Such offerings occurred as early as the Late Preclassic period through the final uses of the site as late as the Early Postclassic period. The earliest example of a possible dedication ritual during the Late Preclassic period took place in Structure E1-4, the same location of the Late to
Terminal Classic period Burials 3–5. In fact, we documented this possible dedication ritual in the same unit IN-1C-3, which we excavated vertically beneath Burial 3. Immediately beneath the earliest floor of Structure E1-4 sub 2, the fill included large limestone cobbles binded together with a thick form of stucco. In the middle of the unit, a large basin metate was placed, glued to a Late Preclassic Polvero Black sherd. The reason for the placement of this object is unclear; the metate could have been placed merely as fill along with the limestone cobbles, however, its presence in the middle of the fill under Structure E1-4 sub 2 stands out as a possible dedication of this first major construction phase. A possibility is that this basin metate was used to mix the stucco that was used in the fill, and when construction was completed, it was left in this location as an offering.

A clearer example of a cache associated with a construction phase took place during the Late Classic period, before the construction of the final phase of Structure E2-5. This structure is a long range structure that like Structure E1-4 was built in three phases: one in the Late Preclassic period and two in the Late Classic period (likely Tepeu 1 and the Tepeu 1–2 transition). During the latter phase, the floor of Structure E2-5 sub 1 appears to have been covered by a thick layer of broken ceramics, figurines, and other materials. After these offerings, the fill was placed over the floor, and a small cavity was created. This cavity lies roughly at the center of the southern half or room of Structure E2-5. Within this cavity, personal objects made out of shell, especially beads were left and apparently burned. The presence of a bone needle suggests that these objects were placed with a bundle that had been sealed shut with this needle (Scherer personal communication, 2016). A royal example of such a bundle is depicted on Yaxchilán Lintel 1, offered by Lady Great Skull, the wife of Bird Jaguar IV.
The role of offerings that date to the final phases of occupation at El Infiernito can be difficult to interpret, as they may reflect termination rituals or later deposits from pilgrimage. To distinguish these two types of termination rituals, the relative locations of offerings is informative. For example, the surfaces of Structures E2-5 and E1-4 were covered in fragments of ceramics, metates, and other objects, but the presence of these same objects, dating to the same Terminal Classic period in refuse pits next to these structures suggests that they relate to household refuse. In fact, when compared, the density of materials in refuse pits is higher than on the surface of structures (Figure 8.21). Still, in some cases the spatial extent of ceramic sherds and metates on top of structures suggests some form of termination ritual. For example, although completely intact vessels were not recovered from any surface contexts from El Infiernito, partial vessels were documented on Structures E2-5, E1-4, and D1-1. In some cases, especially on Structure E2-5, sherds that were refit were found in different units, suggesting that some vessels were intentionally scattered across the floor.

Still, such evidence does not indicate a termination of the structure, rather it could relate to a renovation of the floor, which may have been made up of a combination of ceramic sherds, dirt, and stucco in the final Terminal Classic phase of the site. Furthermore, the abundance of jars, especially some with handles, suggests that such objects could have been hanging from rafters or placed within the ceilings of structures, and the scattering of ceramics could be due to the collapse of the structure after abandonment. However, the condition of basalt metates in highly fragmentary forms suggests that such objects were intentionally broken and scattered, possibly as part of a termination of these structures.
The most likely evidence for a termination ritual was documented in a surface and near surface context on top of Structure D1-1, where the partial remains of the base of an incense burner were recovered. This incense burner is of a Terminal to Early Postclassic period style also documented from Tabasco, although in a local paste (52. Porous Cork). Still, the incense burner was missing the upper decorative elements, suggesting that the object was broken and scattered intentionally, or later visits to the site led to the removal of these fragments.
Figure 8.22 Density of faunal bone by excavation lot, showing the highest densities in the Suboperation 3B terrace (Structure D1-7) and the circular feature in Structure E1-2.
Evidence for feasting is more ambiguous; however, direct evidence for feasting at some parts of the site may relate to the density of faunal assemblages within specific contexts, while indirect evidence for feasting may be apparent in the ratio of serving vessels to storage or cooking vessels at El Infiernito. Faunal remains at El Infiernito reveal a surprisingly high density of turtle shell, which has not been documented in similar densities at other sites within the study region. An especially high density of such remains was documented in excavations of Suboperation 2A, associated with a circular feature within Structure E1-2 (Figures 8.22–8.23). This house platform is one of the tallest and most restricted areas of the site, centrally located next to the pyramidal shrine (Structure E1-1), on the formal substructure (Structure E1-3) and accessible via a stairway rising up from the large plaza space to the southeast. If any location in the Upper Group were to reveal evidence for feasting, this area would be a strong contender.

Indeed, Structure E1-2 reveals the highest density of faunal remains in a household context at El Infiernito. The circular feature’s function was unclear during
excavations, but it could have been associated either with cooking or discard, especially due to its proximity to an area of refuse near the exterior corner of the structure, formed by Structure E1-2’s L shape. Accompanying this context were a relatively high proportion of serving vessels, including bowls, dishes, and beakers. An almost equally dense faunal assemblage was also documented within excavations of Structure D1-1, another restricted house platform in the Upper Group. Finally, abundant faunal remains were excavated from Suboperations 3B, 11A, and 12A, all placed along Structure D1-7, the large terrace at the northwestern end of the Upper Group, consistent with one of that structure’s likely functions as a midden.

**Figure 8.24** Kernel density of non-obsidian stone tools across El Infiernito.
Figure 8.25 Point density of non-obsidian stone tools in the Upper Group, El Infiernito.
A relatively high density of stone tools made of chert, limestone, and serpentine were documented across the site (as well as a single copper tool), especially within the Upper Group, a total of 122. Out of this total, 75 tools (61.5%) were documented in surface, humus, or above floor contexts. These tools include any bifacial or unifacial
implements apart from retouched flakes, and thus are comprised of projectile points, bifaces (early and late stage), axes, adzes, and scrapers. A common type of biface is a crescent-shaped or lunate knife, of which 5 (4.1%) were recovered. Projectile points were also common, totaling 41 examples (33.6%). Complete or near complete examples range in length from 28.1 to 71.1 mm, with all examples originating in near surface assemblages, except for an example from Burial 3 (53.2 mm) and the largest point from the final layer of fill of Structure E2-5 (71.1 mm).

The prevalence of stone tools in surface or near surface assemblages, especially within the Upper Group led to the hypothesis that they may have been left intentionally in patio and structure contexts, either through a type of termination ritual or a relatively rapid period of abandonment of the site. Although no evidence for burning (aside from a recent wildfire) was documented within the Upper Group, the possibility of a battle at the site was also considered, due to a probable defensive function for this part of El Infiernito. I mapped the frequency and provenience of stone tools, especially late stage bifaces and projectile points, across the site, and I applied an estimate of kernel density using ArcGIS. This algorithm highlighted the area around Structure E1-4 as being especially high in stone tools (Figures 8.24–8.26).

This high density of stone tools did not occur based on sampling bias, as horizontal excavations surrounding other structures at the site exposed above floor contexts to a similar degree in other parts of the Upper Group. Of note, the area around Structure D1-1, although especially high in lithic debitage, revealed zero stone tools, suggesting that late stage production may have taken place around Structure E1-4. However, the presence of a deer antler in Structure D1-1 pointed to percussion flaking in
that area. Stone tools were documented on the floor of Structure E1-4 as well as in the patio or other areas of discard. Within Structure E1-4, tools tended to cluster along the interior bench, suggesting that tools were inadvertently discarded and perhaps swept into the edges or corners of this feature. This practice was apparent in IN-1C-6-1, where a fragment of copper axe money and a small serpentine adze were documented in humus that had collected alongside the interior bench. These tools were likely intentionally placed as a termination ritual into the side of the C-shaped bench parallel to the ancestral shrine to the southeast, Structure E1-1. The area around Altar 1 also revealed a high density of stone tools, perhaps associated with a cache, including a lunate biface and a serpentine adze.

 Appearing in lower densities, I recognized similar discard practices elsewhere in the Upper Group. Structures E1-2 and E1-3 revealed 3 early to late stage bifaces and a stone ball, the latter on the surface of Structure E1-2. This stone ball could have served any number of functions, but its size (4.5–4.7 cm in diameter) would have been appropriate for its use as a *boleadora* weapon. Further south, we recovered a serpentine adze from the patio surface of Structure E2-1, immediately northwest of Structure E2-2. Similar to the interior bench of Structure E1-4, stone tools also concentrated along the interior of the C-shaped benches of Structures E2-3 and E2-10. Finally, a possible cache of a late stage bifacial axe was uncovered from Structure E2-8, one of the lookout platforms at the southern end of the Upper Group.

 Stone tools appeared in above floor contexts practically anywhere an excavation unit was placed (apart from the units of Suboperation 3A associated with Structures D1-1 and D1-2). Although a notably high density of stone tools occurred within Structure E1-4
and the adjacent patio group, the spatial data does not suggest a large-scale termination event or battle leading to the consistent deposit of projectile points or late stage bifaces across the site. Instead, the location of stone tools relates in most cases to the function of the structures, whether as an area of stone tool production or use (Structure E1-4) or discard (Structure D1-7). Still, the intentional placement of some stone tools, particularly the serpentine adze and lunate biface near Altar 1, the copper fragment and serpentine adze in the southeastern side of the C-shaped bench in Structure E1-4, the serpentine adze in the patio near Structure E2-2, and the late stage bifacial axe in Structure E2-8 support the possibility of isolated offerings or caches of objects. Whether these practices took place as part of a termination ritual or abandonment of the site is uncertain, but their placement on patio or structure floors is suggestive. However, the relatively sparse examples of such a practice within the Upper Group points to a gradual abandonment rather than a catastrophic climax.

*The Piedras Negras Kingdom*

One of the main research questions of the dissertation has been addressing the role of El Infiernito in the larger political processes across the Western Lowlands during the Late Classic period. As I have shown, the rationale for resettling El Infiernito at the beginning of the Late Classic period was unquestionably influenced by its defendable location and the beneficial Late Preclassic period modifications to the landscape. This resettlement was at least a response to the political conflict of the time, but to what extent did the inhabitants of El Infiernito contribute to the defensive or expansive strategies of the Piedras Negras rulers? Finally, how well integrated was El Infiernito with the fairly
decentralized political system of the Piedras Negras kingdom? These questions rely on a broader understanding of settlement patterns in the region and the distribution of ceramic pastes.

Armando Anaya Hernández and colleagues’ (2011) Gravity Models remain influential in the region, confirmed to some extent by the survey and excavation data discussed in this dissertation and documented by the PABC. Anaya Hernández (2001) and Mario Aliphat (1994) have argued that primary centers like Piedras Negras and Yaxchilán were not necessarily well-positioned to take advantage of trade routes. The Upper Usumacinta River is often discussed as providing a crucial artery for travel in the region, but its navigability is challenged by dangerous rapids. Indeed, the locations of both of these primary centers seem to have been selected based on defense. Yaxchilán famously sits at the center of a large horseshoe bend in the Usumacinta River, creating a defendable peninsula, and Piedras Negras covers a series of steep escarpments, protected by rapids upriver and downstream. These dynastic centers, thus relied on better-positioned secondary sites like El Cayo or especially La Mar, which controlled part of the Busiljá River valley west of the Usumacinta River, to gain access to trade routes.

Citing an earlier study by Norman Hammond (1975), Anaya Hernández (2006) contrasts strategic and tactical locations for settlements. Strategic locations relate to accessing travel routes, while tactical locations relate primarily to defense. A tactical location will often not be conducive to accessing trade routes; thus, secondary centers like La Mar were placed in valley areas, which although economically crucial were vulnerable to attack. For these reasons, warfare tended to focus on these secondary centers (Scherer and Golden 2014a). As these secondary centers became threatened
throughout the Late Classic period, tactical, tertiary sites, like El Infiernito, may have sprung up to defend the landscape and to serve as local refuges for non-royal elites. As has been documented (Golden 1999) settlement in the region tends to shift toward hilltops when approaching contested borders between kingdoms.

Tertiary sites are generally more diverse in design and location than secondary centers. Within Anaya Hernández and colleagues’ (2011) reconstruction of the Piedras Negras kingdom, secondary centers cluster in strategic locations. In Mexico, the highest density of secondary centers is located along the Busiljá River valley west of the Usumacinta River. This pattern emulates settlement within the Redención del Campesino valley. In the current study area of the Busiljá River valley, secondary centers lie on low ridges or at the base of foothills on either the western or eastern ends of this valley. La Mar is the most well known of these centers, but the PABC has documented other secondary centers, which are typically spaced between 3 and 6 km apart. The largest secondary centers, including La Mar, Laguna Oscura, Uch Chan, and Arturo tend to control one side of the valley with a smaller secondary center (Category 5.3 or 5.4, in Atasta Flores Esquivel’s typology) situated at the opposite end. In fact, these smaller secondary centers can be interpreted as subsidiary to their larger Category 5.1 or 5.2 centers. For La Mar, Budsilha is its subsidiary center, located 3 km to the east, at the opposite end of the valley. Other dual centers following this pattern include Laguna Oscura/Flores Magón, Na Wits/Rancho Nuevo-La Selva, and Arturo/La Cabaña. When mapped out, these dual centers follow a kind of “zig-zag” pattern criss-crossing the Busiljá River valley.
At a greater scale, the largest Category 5.1 and 5.2 secondary centers tend to be located furthest from Piedras Negras. Joyce Marcus (2003:93) has commented that the most efficient means of controlling a territory would be to space subordinate centers within a day’s walk from the dynastic center, roughly 30 km. The settlement patterns around the broken terrain of the Piedras Negras kingdom seem to confirm this assessment, with the largest secondary centers located between 15 and 20 km away from the Piedras Negras core. Adjusting for cost distance, rather than direct Euclidean, straight-line distance, the site of El Cayo, Arturo, La Mar, Laguna Oscura, Álvaro Obregón 2, Redención del Campesino, and Texcoco all lie approximately at the edge of this cost distance.

This pattern suggests a strategy on the part of the rulers of Piedras Negras to invest most heavily on the kingdom’s frontier, by establishing alliances with communities that could access trade routes and also expand the dynastic power outward from the site core (Figure 8.27). This strategy is similar to the Yaxchilán dynasty’s investment in its northern border, toward the sites of Chicozapote, Tecolote, La Pasadita, and others, but Yaxchilán’s rulers appear to have pursued a more centralized pattern of defense, whereas Piedras Negras relied more on already established sites with more community-focused defense. The pattern of secondary centers within Yaxchilán’s kingdom is also not as stark as that of Piedras Negras, with secondary centers more evenly scattered throughout the polity (e.g., Oso Negro).
Figure 8.27 Map of Piedras Negras and surrounding communities in relation to Anaya and colleagues’ (2011) hypothetical territorial extent of the Piedras Negras kingdom.

Piedras Negras’ heavy investment in secondary centers may have also focused on tertiary centers when necessary. El Infiernito never rose to the same level of political prominence as sites like La Mar or El Cayo for Piedras Negras or La Pasadita or Tecolote for Yaxchilán that had stone masonry and inscriptions, but the timing of major construction at the site coincides with the period when Piedras Negras’ western frontier was most heavily threatened. The seventh century marked a period when Palenque, Toniná, and Sak Tz’i’ vied to control the Busiljá River valley, and these political dynamics encouraged the expansion of populations into the landscape. El Infiernito did not merely represent a military outpost or a temporary refuge but instead a permanent
settlement throughout the Late and Terminal Classic periods. These chronological data suggest that conflict and crisis were relatively permanent threats to the region.

Aside from chronology, evidence from assemblages at El Infiernito differ from sites further west, like Budsilha and La Selva. Budsilha and La Selva have revealed a surprisingly high proportion of Palenque-style ceramics, in terms of form, paste, and surface decoration in relation to assemblages from the Piedras Negras site core. The most common forms associated with Palenque are beakers, thin-walled jars (especially those with ridges immediately below the rims), and plates and dishes with exaggerated, high tripod supports. In terms of paste, Palenque-style ceramics reveal a distinct production center that created a sandy paste, versus the carbonate pastes of Piedras Negras and the Petén. Finally, surface decoration of ceramics recovered from the Piedras Negras core more closely matches the glossy slips of the Petén, whereas Palenque and Chinikiha artisans developed a different technology based either on a wash or a matte, highly watery slip.

<table>
<thead>
<tr>
<th>Paste Class</th>
<th>Chinikiha (14,872)</th>
<th>Budsilha/La Mar (23,058)</th>
<th>La Selva (2,094)</th>
<th>El Infiernito (28,406)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Sandy</td>
<td>47.16%</td>
<td>4.99%</td>
<td>6.80%</td>
<td>1.70%</td>
</tr>
<tr>
<td>22. Carbonate</td>
<td>32.37%</td>
<td>49.80%</td>
<td>45.90%</td>
<td>27.61%</td>
</tr>
<tr>
<td>19. Peten Gloss</td>
<td>0.70% (includes polychrome)</td>
<td>1.19%</td>
<td>1.00%</td>
<td>5.59%</td>
</tr>
<tr>
<td>19A. Polychrome (Fine Carbonate)</td>
<td>No Data</td>
<td>3.94%</td>
<td>7.70%</td>
<td>0.57%</td>
</tr>
<tr>
<td>Fine Orange</td>
<td>0.12%</td>
<td>0.07%</td>
<td>0.00%</td>
<td>1.55%</td>
</tr>
</tbody>
</table>

Table 8.1 Proportion of ceramic pastes by site, with total sherd counts under site names (Jiménez 2013; Jiménez et al. 2014).

The appearance of these attributes diagnostic of Palenque-style ceramics in low quantities can be explained by various mechanisms, including down-the-line trade or
frontier markets, but higher quantities may indicate more direct influence from Palenque. Especially when bolstered by the epigraphic data that suggest influence on La Mar from Palenque, Toniná, and Sak Tz’í’ during the first half of the Late Classic period, the agreement between these two lines of evidence is significant. A comparison of pastes among the sites of La Mar, Budsilha, La Selva, El Infiernito, and Chinikiha shows a clear pattern. Chinikiha reveals the highest proportion of sandy pastes as well as the lowest proportion of Petén gloss wares and polychromes due to its proximity to Palenque. La Mar, Budsilha, and La Selva, reveal approximately half carbonate wares and half sandy pastes, with low but consistent proportions of polychrome decoration (3-6%). El Infiernito, in contrast, shows the lowest proportion of sandy pastes and a much higher proportion of Petén gloss wares. Petén gloss wares are fairly common, however, polychrome decoration occurs in extremely low proportions. These assemblages suggest El Infiernito remained more integrated with Piedras Negras throughout the Late Classic period than did other minor centers in the region.

Although excavation data point to a link between El Infiernito and the Piedras Negras kingdom, the rulers of Piedras Negras avoided making such ties explicit. Nor did the inhabitants of El Infiernito seem to have actively rejected influence from Piedras Negras. Indeed, the orientation of the settlement and its viewsheds point to a westward concern toward defense. Viewsheds also suggest an integration between El Infiernito and all other documented minor centers to the west, which are visible from the highest points of the site. The Piedras Negras dynasty appears to have relied on El Infiernito at least partially for the defense of the kingdom’s western frontier, but the rulers of Piedras Negras did not establish a clear gifting relationship through the distribution of
polychrome ceramics, even as access to monochrome surface decoration remained high. Despite evidence for craft production at El Infiernito, the site’s artisans were perhaps not able to develop their own tradition of polychrome ceramics as did nearby Budsilha, La Selva, Rancho Nuevo, and Santa Marta who decorated ceramics with simplified “false negative” techniques (Barrientos 2016).

Piedras Negras’s rulers may have incorporated El Infiernito’s local concerns with defense into their own state strategies, but the Piedras Negras dynasty never fully recognized the contributions of local leaders, as it did at La Mar and El Cayo. Perhaps doing so would have been an admission on the part of the Piedras Negras rulers that they had lost some control of their territory to Palenque, Toniná, or Sak Tz’i’. By the Late Classic period, Piedras Negras had regained control of La Mar and El Cayo, and El Infiernito would have been less important to Piedras Negras. Perhaps this decreasing integration contributed to El Infiernito’s ability to persist after the dynastic collapse early in the ninth century. Furthermore, the focus of Piedras Negras’ rulers on their western frontier throughout the Late Classic period may have been a reason for the lack of fortifications to the south, and the ability of Yaxchilán to at least temporarily achieve a pyrrhic victory over Piedras Negras at the beginning of the ninth century.
CHAPTER 9
Conclusions

Although collapse has garnered detailed scholarly attention, a clear consensus as to its causes, processes, and even definitions remains obscure. However, such complex phenomena require polysemous and diverse perspectives; indeed, scholars should welcome debate, while being explicit about their assumptions, interpretations, and definitions. Archaeologists must be especially cognizant of how their terminology can be misused to erase the presence of descendant communities. This narrative has been largely rejected by archaeologists, although it persists in popular media. Still, the other extreme perspective, that collapse does not occur cannot be seriously entertained. For this reason, archaeologists who propose integrating the concepts of collapse and resilience provide a useful middle ground that can investigate what aspects of a society, a site, or a community are abandoned and which elements remain stable or endure in altered form (Faulseit 2016; McAnany and Yoffee 2010).

A lingering challenge is reconciling the desire to generate universal explanations for culture change while highlighting the diversity within and across specific case studies. If we reject universality, attempting to agree on an appropriate and general definition of collapse may be a futile enterprise. Indeed, examples of collapse across history vary in scale, cause, and effect; thus, each case study requires, perhaps not its own definition of collapse, but at least its own identification of what interpretation of collapse is most appropriate in that specific context. Prefacing collapse and resilience with qualifiers that index what entity is being discussed can clarify this issue. For example, in some contexts political collapse may be a more useful term than societal collapse, and generally cultural or “civilizational” collapse should be avoided, although in some cases, aspects of certain
“great traditions” may have been abandoned. At the same time, types of resilience should also be assessed, including political resilience or cultural resilience. Comparative research and approaches to collapse and resilience studies can still be useful, but only after accounting for the cultural and historical variability of distinct case studies.

Building off these concerns, this dissertation addressed the processes of political collapse, resilience, reorganization, integration, and disintegration at the minor center or archaeological hamlet of El Infiernito, during the Terminal Preclassic period before a dominant center had emerged in the region, and during the Late Classic to Terminal Classic periods when the site was located in a complex political landscape most proximal to Piedras Negras, although contested by various other dynastic centers and secondary sites, including Palenque, Toniná, Sak Tz’i’, and Yaxchilán. The major arguments focused on understanding El Infiernito’s relationship to this political landscape throughout the Late Classic period, with a focus on interpreting its final occupation phase during the Terminal Classic to Early Postclassic transition, as well as any earlier periods of major construction. I interpreted El Infiernito as a tertiary political center within the polity of Piedras Negras that negotiated its political importance relative to other nearby settlements based on its prominent location on a defendable hilltop.

Construction phases indicated that rather than serving as a temporary refuge for surrounding populations, the site was continuously occupied throughout the Late Classic period, with a final occupation of the site during the Terminal Classic period unique for the region, suggesting that one of the reasons the site persisted at this time was due to its protected location, already heavily modified toward defense over the preceding centuries. Thus, the reason El Infiernito was chosen as a refuge throughout the Classic period was
due in part to this history of landscape modification (landscape patrimony), as well as its location at the edge of the Busiljá River valley, where the rugged hills begin and continue until reaching the Usumacinta River and the site of Piedras Negras. Defense was community-focused, but evidence suggests that the Piedras Negras royalty incorporated El Infiernito into its kingdom, likely to benefit the overall defense of the kingdom’s borders. Still, to the rulers of Piedras Negras, El Infiernito was less important than other sites, including La Mar and El Cayo, located more than twice as far away.

The rulers of Piedras Negras invested heavily in these latter two sites, establishing alliances recorded in epigraphic monuments, and La Mar and El Cayo would have marked the greatest extent of Piedras Negras territory, in the eyes of its rulers. When Palenque, Toniná, Sak Tz’i’, and possibly other sites threatened these borders, Piedras Negras may have relied more heavily on El Infiernito, but ambiguous evidence for strong ties between the two sites (particularly from ceramic evidence) suggests that the rulers of Piedras Negras sought to avoid acknowledging the reduced extent of their kingdom, and indeed, by the end of the eighth century, they had recovered any lost territory, either real or perceived.

**Collapse and Resilience**

This dissertation approached collapse as a political process, involving the disappearance or significant restructuring of institutions. Joseph Tainter (1988), regarding a loss in social complexity, and Norman Yoffee’s (1988) foundational definitions served as the theoretical starting points for this discussion. The use of the term collapse in archaeological studies has been challenged more recently (Aimers 2007; Faulseit 2016;
McAnany and Yoffee 2010); however, I have not chosen to reject the term but to underscore that collapse should not be considered as a single event but rather a process that involves other cultural phenomena, including resilience, reorganization, and transformation (Faulseit 2016; Iannone et al. 2014; Yaeger and Hodell 2008).

The scenario of the Classic period Maya collapse is particularly challenging due to the temporal and spatial variability of its causes and effects (Aimers 2007). In the Southern Lowlands, this collapse manifested most strongly in the cessation of monuments, the abandonment of the long count calendar, and the rejection of the institution of the royal court and worship of the k’uhul ajaw as divine lord. Effects of these processes were felt earliest in the Pasion and Usumacinta River drainages, but as a whole the Western Lowlands experienced extensive attempts at political reorganization, especially at Ceibal, Toniná, and the area around modern Comitán. Evidence for political resilience is also suggested to a smaller degree at Pomoná/Panhale and Sak Tz’i’ (Randall Stela).

The accompanying demographic shifts have proven more difficult to establish, as communities may have occupied areas distinct from Classic period settlements and their houses may be more difficult to detect archaeologically (Chase and Chase 2004a). Still, populations even at Classic period centers that felt a sudden cessation of monuments persisted at Piedras Negras until perhaps AD 900, with outlying settlements like El Porvenir and El Infiernito lasting into the Early Postclassic period. Unfortunately, these occupations cannot be securely dated due to the absence of overlying stratigraphy.

The utility of the terms collapse and resilience, especially in a political context, remains underdeveloped. When discussing a political collapse, is political resilience an
oxymoron? No doubt, cultural resilience, whether the continuity of certain worldviews or language, can take place in the context of political collapse. If the occurrence of political resilience is to be considered, archaeologists must identify what political structures were rejected and which ones remained. In addition, at what point does political resilience become political reorganization? In other words, when are political structures altered to such a degree that they can no longer be interpreted as evidence for resilience? Or is political reorganization another form of resilience? These questions highlight a major difference between ecological resilience, which has informed archaeological perspectives, and “postclassical” perspectives on resilience (Chandler 2014). Rather than considering stability and recovery, archaeologists should adopt more postclassical interpretations to understand the active forms of resilience that societies pursue in times of crisis.

Seeking Refuge from Warfare and Crisis

Surveys in the region surrounding El Infiernito suggest that the site is in fact a fairly continuous settlement, or a “region of refuge” (Aguirre Beltran 1973) covering a series of hills that rise above the Busiljá River valley and extend toward the Usumacinta River. Still, settlement clusters into four areas: the Upper, Lower, West, and South Groups, all of which surround a prominent crescent-shaped hill with abundant natural water springs. Further survey in the region is likely to document more settlement clusters. Furthermore, the entire line of hills running northwest to southeast between the Busiljá River valley and Piedras Negras may reveal other refuges like El Infiernito, especially within similar pitted landforms termed “karstic upland with hummocks” by Mario
Aliphat (1994). Numerous, albeit smaller, crescent-shaped landforms that are best characterized as dry cenotes are likely to provide similar defensive places to establish refuges.

Until other such hypothetical sites are documented, the interpretation that El Infiernito represents a community-focused strategy of defense remains. For this reason, I have avoided the term fortress, which implies a larger scale, perhaps state-driven, network of defense. This defensive strategy may better describe the landscape along Yaxchilán’s northern border (Scherer and Golden 2009) or the recently documented defenses near El Zotz (Canuto et al. 2018). Also, El Infiernito’s location clearly took advantage of a defendable place, a Preclassic fortified landscape, and Classic period defensive walls, but the primary purpose of the site was not defense; rather, the site supported numerous domestic platforms. Excavations from these structures also uncovered a diversity of materials and activities related to craft production and agriculture, including lithic production, obsidian blade production, and indirect evidence for textile production. These data support not only an array of household activities but also gendered production and space.

These data do not dispute a military presence at El Infiernito, but they suggest that whatever defensive purpose El Infiernito served, the function of the site was not limited to supporting individuals associated with a garrison. This diversity of site use reflects the idea that a refuge may be self-sustaining to a degree; however, evidence from excavations shows that throughout the Late Classic period the people of El Infiernito did not merely eke out a living by inhabiting a compromised location. In fact, by the Terminal Classic period, even as the inhabitants of El Infiernito were compelled to continue occupying the
protected Upper Group, their access to long distance objects increased. The presence of blades from diverse obsidian sources, groundstone made of non-local materials, and Silho and plumbate ceramics only in Terminal Classic period contexts suggests an increased access to these objects or perhaps that households were safeguarding and curating these artifacts, anticipating the challenges brought on by political crises. However, the size of discarded obsidian blades in Terminal Classic period contexts does not suggest that these objects were frequently reused, which lends more support to the hypothesis that trade routes did indeed expand at this time, which is also consistent with larger trends throughout Mesoamerica driven by the Chontal or Putún Maya. Refuge in this context, thus, does not imply that the choice to settle in an inaccessible area limited the opportunities of the people of El Infiernito to pursue a living in spite of crisis, rather, the location provided opportunities that supported a small population in the region at a time when other communities chose to abandon their homes.

Still, the people of El Infiernito did not avoid challenges. The evidence from all burials at the site exhibited chronic infections, which if not the direct cause of death were active at the time of death. In particular, the possibility that the individual in Burial 4 died of an infection due to a wound from an imbedded projectile point would suggest that warfare could have been a real threat to even the middle level elite populations based at El Infiernito. However, the data from El Infiernito bolster evidence from epigraphy that such crises were not restricted to the Terminal Classic period, as Burial 6, the only Late Preclassic period burial at the site exhibits similar periostitis, which admittedly could have been caused by any type of physical stress, perhaps even associated with the monumental scale of construction rapidly taking place at the time throughout the region.
Thus, living at El Infiernito did not merely reflect a strategy of avoidance, to flee the expansive efforts of competing states. Armando Anaya Hernández’s (2001) gravity models show that El Infiernito, although well within the ideal extent of the Piedras Negras kingdom, would have been threatened around the turn of the eighth century by other kingdoms with local lords who identified with the rulers of Palenque or perhaps Toniná (Anaya Hernández et al. 2011). For this reason, settling El Infiernito was not merely an act of self-preservation but a political statement, with the local community leaders of the site establishing an elevated position over the smaller settlements in the immediate vicinity, as well as the secondary centers to the west, all of which were visible from the summit. The higher proportion of Petén style ceramics at El Infiernito than sites in the Busiljá River valley, was likely a product of this choice on the part of the El Infiernito community.

Still, Piedras Negras did not make any overt political statements relative to El Infiernito. This observation relates to the role of tertiary centers within the Piedras Negras kingdom. Such centers, including Santa Marta, Esmeralda, and numerous others, had diverse architectural plans and were located in a variety of settings. Secondary centers, on the other hand, typically were placed in “strategic” locations (Anaya Hernández 2006; Hammond 1972), especially in valley or foothill areas to access trade routes. Tertiary centers generally were less well-situated; even though El Infiernito’s location was useful to Piedras Negras, the dynastic rulers did not establish explicit alliances through monument dedication or extensive gifting of polychrome serving vessels. Such an investment during the early eighth century would have been in a sense an admission on
the part of the Piedras Negras dynasty that the extent of their kingdom had shrunk, and their historic allies along the periphery had shifted allegiance.

Changes in architecture took place most dramatically beginning in the Late Preclassic period, following the resettlement of El Infiernito in the sixth century and in the final occupation of the site. The most monumental architecture dates primarily to the Late/Terminal Preclassic period and involved the leveling of the hilltops of the Upper, West, and South Groups, as well as the construction of the Lower Group and its accompanying monumental terrace or fortification. Rather than merely reoccupying the site, however, Late Classic period occupations significantly altered the design of the Late Preclassic period center, while adapting its defensive layout to suit the new occupants’ needs. The orientation of structures shifted to match more closely the northwest-southeast axis of Late Classic period sites in the region, varying between 50° to 60° and adapting to the natural shape of the Upper Group hilltop. These transformations are most evident on the surface in the West Group, where the southernmost part of that architectural cluster reveals a different orientation from the northern portion of the West Group, and the South Group which appears to have been left relatively unmodified during the Classic period, except in the possibly defensive towers and terrace construction toward the north.

In the Upper Group, two construction phases were noted during the Late Classic period. The largest Late Classic period constructions, Structure E1-1 and E2-4 revealed extensive investments. Structure E1-1 was built in a single phase, likely dating to the Late Classic period but lacking any clear chronological precision due to its looted context. However, the adjacent expansion of Structure E1-3 around Structure E1-1 suggests that the latter structure dates toward the beginning of the Late Classic period. This chronology
coincides with the first phase of construction of Structure E2-4, which was also later modified in a second construction phase during the Late Yaxche or Early Chacalhaaz ceramic phases, likely the last major construction at El Infiernito.

The final stage of construction of house platforms in the Upper Group focused on L and C-shaped structures. The variability in size of these structures suggests growing inequality toward the end of the Late Classic period, which is further bolstered by differences in access to precious materials like obsidian, greenstone, and copper, as well as a single burial (Burial 3) containing far more burial goods than any other at the site. The evidence for growing inequality may have been addressed during the Terminal Classic period, through the construction of C-shaped benches and interior room divisions. The division of rooms, especially in the large range structure, Structure E2-5, would have taken advantage of the large interior space, allowing for an increased household size, essentially doubling the occupancy. L-shaped and C-shaped structures may have served a similar purpose, as they can be interpreted not as single households, but two or more households residing in the same structure. C-shaped benches in Structures E1-4, E2-3, and E2-10 suggest a shift toward council houses that involved multiple local leaders rather than a focus on a single individual. The relatively high number of such C-shaped benches may reflect the existence of multiple councils at El Infiernito during the Terminal Classic period. Still, the largest C-shaped structure, located at the highest point of the C-shaped group, appears to have been especially important, as the presence of a Silho group vase with God K iconography may reflect an intention to connect with symbols of kingship.
While the superficial design of structures throughout El Infiernito’s three major construction phases consisted entirely of low platforms to support perishable structures, the actual construction techniques used differed significantly. During the Late Preclassic period, fill consisted of large stones (some measuring 50–100 cm long) likely quarried through the process of leveling the hilltop. These stones were also filled in with thick stucco, perhaps a form of conspicuous consumption reflecting the availability of resources at the time. Late Preclassic period floors also adopted extensive use of stucco, creating, large, blocky, and well-preserved stucco, leveled to form floors.

Late Classic period construction techniques adapted perhaps to some form of forest management by using stucco in more limited ways. Fill during the Tepeu 1 horizon consisted of smaller stones (measuring approximately 30 cm long) filled in with smaller stones rather than stucco. Floors focused on creating a sturdy ballast of gravel and tabular stones covered with minimal, poorly preserved stucco. The Tepeu 2 horizon constructions followed a similar pattern, however, with even less evidence for stucco. In fact, during this final phase, floors seem to have consisted of thin, tabular stone tiles in some places, stucco in others, and finally packed dirt. The presence of abundant ceramic sherds but a lack of complete vessels suggests that renovations of these floors involved the use of sherds, dirt, and stucco.

Late Classic period fill may also reveal changes in the social organization of labor from the Tepeu 1 to Tepeu 2 horizons. During the earlier construction phase of the Late Classic period, excavation profiles reveal the use of retaining walls or interior grids to determine and stabilize the extent of structure fill. This technique, especially evident in the excavations of Structure E2-5, revealed 1-m long grids that reflect the organization of
labor in construction. This organization would have also helped to measure the dimensions of the final structure and to plan the placement of the cache or bundle of shells found during this construction phase. In contrast, the final construction level during the Late Classic period appears to have been more haphazard, without evidence for such compartmentalization and organization of labor.

*Shifting Alliances and Borders*

The settlement changes at El Infiernito led to the conclusion that archaeologists must take into account how such shifts reflect larger political structures, even at lower ranked centers. Architecturally, the final phase of El Infiernito clearly fits regional definitions for a tertiary-level political center, with multipatio groups and the lack of vaulted structures, but excavation data suggests that even within this rigid category, political shifts took place throughout the Late Classic period. El Infiernito never achieved the political status relative to Piedras Negras of other centers in the region, including La Mar and El Cayo, or secondary centers without inscriptions like Laguna Oscura, Arturo, Budsilha, La Selva, Rancho Nuevo, and others, but the site’s households appear to have negotiated their position on the landscape relative to the conflicts during the Late Classic period.

El Infiernito’s history of community-based defense gave its inhabitants an advantage in maintaining a prominent position in the landscape after the collapse of the Piedras Negras dynasty. The Piedras Negras dynasty is quiet after AD 808 (or perhaps 864 if Bíró’s interpretation of the Randall Stela is correct), but parts of the site persist until AD 900. El Porvenir may have outlasted the Piedras Negras core in part due to its
strategic location as a trade hub, similar to El Infiernito’s benefiting from its position on the landscape. Although the Usumacinta region’s importance as a trade route throughout the Late Classic period is generally interpreted to have declined after the Classic period collapse, even remote populations like El Infiernito were able to be integrated with long distance trade of non-local ceramics, groundstone, and obsidian. The fact that a significant population remained in the Upper Group at least to the end of the tenth century, however, suggests that the landscape remained perilous at this time.

Conclusion

The chronological data, based only on an analysis of ceramics, confirmed that the El Infiernito community persisted through the Terminal Classic period and possibly into the first half of the eleventh century. Research demonstrated that the Terminal Classic period community at El Infiernito was not merely a group of squatters who established an outpost during a period of political crisis. Instead, the chronology showed that this community had occupied this hilltop since the sixth century, as populations began to settle systematically the hinterlands of the Piedras Negras kingdom.

The Late Classic period settlement was at least partially selected due to the intensive modification of the hilltop during the Late Preclassic period. Many of the reasons that people were drawn to this hilltop during the Late Classic period were likely similar to factors during the Late Preclassic period, relating to basic needs, including access to a permanent water source, as well as defense. Other more symbolic characteristics that may have served as a source of ideological power to the community at El Infiernito were the abundant caves in the region that attracted ritual activity, and the
prominent hilltop location visible to surrounding settlements. Although evidence from peripheral households outside of the Upper Group is lacking, settlement during the Late Classic period seems to be spread across the upper and middle slopes of the hilltop, as well as valley areas. A settlement shift is apparent by the Terminal Classic period, when only the Upper Group appears to have been occupied by this time.

As trade networks shifted, the community at El Infiernito was better positioned to take advantage of these networks by the Terminal Classic period. The changes in the obsidian assemblage at El Infiernito in the Terminal Classic period suggest that access to this material increased after the decline of the Piedras Negras royal court, and obsidian sources became more diverse. Access to non-local ceramics suggest a shift away from the Petén toward the Lower Usumacinta River and the Gulf Coast, consistent with the rise of the Putún Maya.

The political position of the El Infiernito community is ambiguous. However, the timing of the reoccupation of El Infiernito during the Late Classic period, as well as its location on a contested periphery suggests that conflict and territorial contestation were concerns from the outset of the Late Classic period. A higher proportion of ceramic pastes from the Petén versus Palenque suggests that El Infiernito was not as directly affected by Palenque’s efforts to control the adjacent valley as were other sites, like La Mar. Although the archaeological data suggest that the defensive works at El Infiernito were primarily oriented toward protecting the community, these efforts would have also benefited the Piedras Negras kingdom. I contend that El Infiernito was part of a decentralized defensive strategy that involved constant negotiation among elite and non-elite actors living within the Piedras Negras kingdom.
Finally, although El Infiernito does not represent a royal or non-royal elite political center at the scale of sites like La Mar or El Cayo, evidence from the most elite households at El Infiernito suggests an appropriation of royal symbols. The primary data come from the C-shaped structure located at the highest summit of the Upper Group, where a fine orange vase depicted the god K’awiil, a sign of kingship during the Late Classic period. The contrast between this sign of kingship and its location in a C-shaped structure possibly associated with multepal or council rule was likely intentional and demonstrates the diverse strategies of political reorganization taking place during the Early Postclassic period.

The El Infiernito community was resilient well into the Terminal Classic period, perhaps longer than any other known community in the immediate region at the time, but their successes were short-lived. The Upper Group was gradually abandoned sometime after 1000, although a single Late Postclassic period sherd may suggest populations remained a century or two later. Still, the absence of extensive Late Postclassic period materials indicates that El Infiernito was largely forgotten until the twentieth century. Even as Piedras Negras shows evidence for pilgrimage events well into the nineteenth to twentieth centuries, El Infiernito appears to have been unknown after its abandonment. The specific reasons for abandoning El Infiernito remain uncertain, but a likely explanation is that defense no longer influenced settlement so directly after the Early Postclassic period. Another possibility is that although the community of El Infiernito managed to benefit from trade routes toward the Soconusco, the lower Usumacinta, and northern Yucatán, they eventually were drawn elsewhere, whether to the south or north, by the emerging attempts at political reorganization during the Postclassic period. Even
this process of abandonment, involving the permanent relocation of people’s homes, the
discard of belongings, and a physical disconnect from an established place and the
ancestors interred there, marks a resilient choice for the refugees who left El Infiernito at
the outset of the Early Postclassic period.

The data from this project have highlighted a number of processes that
contributed to the resilience of the El Infiernito community in the face of political
collapse and crisis. This resilience was sustained over multiple centuries, involving the
reoccupation of a defendable hilltop, a degree of self-sufficiency, controlling a water
source and agricultural terraces, and possibly maintaining an intentionally ambiguous
relationship to the nearby ruling dynasty. An interesting future avenue of pursuit is to
separate processes and outcomes; although, archaeology is well-positioned to address
processes of resilience, specific outcomes can be elusive. In the context of collapse and
settlement abandonment, resilient outcomes can be difficult to assess. Was the El
Infiernito community resilient if in the end the people abandoned their homes merely a
century after other sites in the region? Again, if we look to ethnography, part of resilience
is knowing when to wait out a crisis and when to move on. Examining the nature of site
abandonment is crucial to assessing whether abandonment was gradual, sudden, or as in
the case of El Infiernito planned. Such planned site abandonments may suggest that
migration was intentional; in fact, instead of viewing site abandonment as a failure, we
should consider that making the choice to gather one’s family and belongings, to leave
one’s homes and ancestors behind are still qualities of a resilient people.
APPENDIX 1
Additional Excavation Data (El Infiernito, La Selva, Rancho Nuevo, and Santa Marta)

Excavations at El Infiernito

IN-2B-1

Suboperation 2B was placed inside the series of looter’s trenches dug into Structure E1-1 to recover any data pertaining to what had been destroyed. Along with the excavations of Suboperation 2B, the northeastern and southeastern profiles of the looter’s trenches were drawn, showing that Structure E1-1 was likely built in a single phase, probably at the same time as or shortly after the construction of Structure E1-3, the basal platform of Structures E1-1 and E1-2. A grid of six squares were placed to draw these profiles, and two of these units were excavated. These units all measured 2 x 2 m and were oriented 50° from magnetic north, roughly following the orientation of the looter’s trenches, which diverged slightly from that of the original Structure E1-1 (oriented to approximately 60°).

IN-2B-1 was not excavated by archaeologists, rather it represents a portion of the looter’s pit inside Structure E1-1. This pit was dug approximately down to the level of the top of Structure E1-3, on which Structures E1-1 and E1-2 were constructed. This level may represent either the latest floor of Structure E1-3 or an earlier floor of Structure E1-1, though the latter is less likely as Structure E1-1 appears to have been constructed in a single phase, and no interior space is visible. Thus, Structure E1-1 was likely constructed as a large platform mound, similar to Structure E2-4, and a perishable structure may have been placed on top of the structure in the past. A second looter’s pit was dug into the top of Structure E1-3. The northeast wall of this looter’s pit was cleaned and drawn. This
profile shows the interior and exterior construction of Structure E1-3, suggesting a single phase of construction of this basal platform.

**IN-2B-2**

IN-2B-2 was placed at the lowest point of the looter’s trench, in the southwesternmost pit placed in this trench. This pit was outside of the base of Structure E1-1 and had penetrated and destroyed the exterior stone masonry wall of the basal platform Structure E1-3. IN-2B-2 was placed to clean this looter’s pit and to document any ceramics associated with the earliest construction phase of Structures E1-3 and E1-6. Only a small portion of the unit was excavated (a 1 x 1 m pit in the northeast corner of the 2 x 2 m unit) in a single lot (0–50 cm), a mixed context of humus and gravel, collapse from Structures E1-1 and E1-3, and fill of rocks measuring 20 cm long. Artifacts included few eroded ceramics of unknown period. Two approximately 20–30 year old tin cans were also found in the looter’s pit. The lot and unit were ended due to the mixed context, lack of artifacts, and to prevent further collapse of Structure E1-3.

**IN-2B-3**

IN-2B-3 was located in the middle of the looter’s pit; thus, it had no profile to be drawn. This unit was also not excavated by archaeologists; it was merely assigned a number in the grid of units.
IN-2B-4

This unit was placed to the southeast of IN-2B-3, and like that unit and IN-2B-1, IN-2B-4 was not excavated by archaeologists. Instead, the southeastern profile of the looter’s pit was cleaned and drawn to show the construction of Structure E1-1. This profile shows no evidence of earlier floors and suggests that Structure E1-1 was constructed in a single phase on top of Structure E1-3.

IN-2B-5

IN-2B-5 was placed to the northeast of IN-2B-3 and was not excavated by archaeologists. The northeast profile of the looter’s pit was cleaned and drawn, again showing a single phase of construction of Structure E1-1.

IN-2B-6

IN-2B-6 was located 2 m to the northeast of IN-2B-2 inside of Structure E1-1, in the most shallow portion of the looter’s trench. The context was unclear, but the looters appear to have reached a floor level, likely the prepared surface of Structure E1-3 on which Structures E1-1 and E1-2 were later constructed. This level measured 120 cm below the surface of Structure E1-2. The southeastern profile of the looter’s pit in IN-2B-6 showed evidence of a formal wall, likely a retaining wall within the fill of Structure E1-1 or perhaps the exterior wall of an earlier construction of Structure E1-3 before its later expansion to the southwest.

Like IN-2B-2, IN-2B-6 was a 2 x 2 m pit oriented 50° from magnetic north, though only the southwest corner of the unit was excavated in a 1 x 1 m pit. Lot 1 (0–50
cm) was a mixed context of humus, collapse from Structure E1-1, and fill. No artifacts were recovered, nor was evidence of an earlier or interior floor to Structure E1-1 documented, suggesting that the structure was built in a single phase on top of Structure E1-3.

Operations 4 and 10: Main Plaza and Structures E2-1, E2-2, and E2-3

Operation 4 was focused on Structures E2-2 and E2-3, as well as Structure E2-1, the basal platform that supports those structures. Operation 10 was a surface collection of ceramics in the main plaza of the Upper Group, located between Structures E2-1 and E1-3. Operation 4 consisted of two suboperations. Suboperation 4A was located in and around Structure E2-2, a low platform on the southeastern side of the basal platform, Structure E2-1. Two units were excavated in this area, though they did not reach bedrock. Suboperation 4B covered areas near Structure E2-3, at the northwestern side of Structure E2-1. Like Structure E2-2, Structure E2-3 is a low platform or wall, though it’s shape and size suggest that it was not residential. Instead, Structure E2-3 resembles other C-shaped bench features at the site documented in Structures E1-4 and E2-4. Structure E2-3, however, presents a more complex shape, consisting of a long linear bench with a C-shape at the middle, flanked by two smaller L-shaped sides. This orientation faces the main plaza to the northwest, suggesting that Structure E2-3 functioned as a viewing platform of the plaza, or alternatively the plaza formed an area for viewing activities associated with Structure E2-3.
IN-4A-1

IN-4A-1 was located in the patio formed by the basal platform, Structure E2-1, immediately northwest of Structure E2-2. The unit measured 2 x 2 m and was oriented 60° from magnetic north, following the alignment of structures in this part of the Upper Group. This unit was designed to interpret the stages of construction of Structure E2-1.

Lot 1 (0–18.5 cm) was a thick layer of humus that had collected along the edge of Structure E2-2. The lot was ended after reaching the base of the exterior wall of Structure E2-2, where the patio floor of Structure E2-1 was expected to have been. Artifacts recovered included chert flakes, a serpentine adze essentially at the level of the patio floor (130 cm from the southern corner and 21 cm from the western corner of the unit), and ceramics.

Lot 2 (18.5–23.5 cm) consisted of the patio floor of Structure E2-1 and a thin layer of ballast of small rocks below the floor. Evidence of stucco was not recovered, but the floor level was inferred by the context adjacent to the base of Structure E2-2 and the presence of ballast. The artifact density was high, including obsidian, chert flakes, a bifacial chert core, a fragment of ceramic figurine in the form of the head of a toucan, and ceramics.

The size of the unit was reduced in Lot 3 (23.5–67.5 cm) to a 1 x 1 m square in the northwestern corner. This level was construction fill made up of large rocks measuring up to 30 cm long. The lot was terminated after recovering evidence of stucco in southeastern side of the 1 x 1 m unit, suggesting the presence of an earlier floor. Artifacts included faunal bone, chert flakes, stucco, and ceramics.
Lot 4 (67.5–78.5 cm) consisted of the earlier floor level of Structure E2-1 sub 1 and the construction fill beneath. The lot ended after encountering more stucco which suggested the presence of an earlier Structure E2-1 sub 2; however, the unit was not excavated further. A series of flat stones seemed to confirm this possibility. Artifacts included chert flakes, a chert core, and stucco. No ceramics were recovered from this construction fill.

IN-4A-2

IN-4A-2 was located directly to the southeast of IN-4A-1, on top of and inside of Structure E2-2. The unit measured 2 x 2 m and was oriented 60° from magnetic north. The purpose of the unit was to examine any activities or abandonment practices associated with Structure E2-2, believed to have served a residential purpose.

Lot 1 (0–5.5 cm) was the layer of humus on top of Structure E2-2. As in other range structures at the site, the depth of the humus was low and the floor level was reached quickly. Artifacts included obsidian, quartz, chert flakes, and ceramics.

Evidence of a floor was documented in Lot 2 (5.5–26 cm), consisting of small rocks and gravel that made up the ballast. No stucco was recovered. The artifact density was low, including marine shell, chert flakes, and ceramics.

IN-4B-1

Suboperation 4B consisted of two units placed side to side in the area immediately to the northwest of the center of the C-shaped bench, Structure E2-3. IN-4B-
1 was located to the northeast to uncover evidence of activities associated with the bench and to document a possible stairway that visible on the surface.

Lot 1 (0–10 cm) was a layer of humus. Instead of revealing a low stair, the removal of the humus showed a layer of collapsed worked stones from Structure E2-3. This evidence confirmed that Structure E2-3 was a long, low bench oriented toward the main plaza to the northwest. The collapsed stones represented some of the largest and well-worked stones known from the site. Artifacts included, quartz, a metate fragment, obsidian, chert flakes, and ceramics.

Lot 2 (10–26 cm) was the layer of collapse from Structure E2-3 and the floor of Structure E2-1. The lot ended after reaching a level of construction fill beneath the floor. Artifacts included a piece of worked limestone, carved shell, a metate fragment, obsidian, chert flakes, a chert projectile point, and ceramics. The unit was not excavated further.

IN-4B-2

IN-4B-2 was located to the southwest of IN-4B-1, over the patio space formed by Structure E2-1, at the center of space to the northwest of the center of the C-shaped bench. This bench occupied the southeastern and southwestern sides of the unit.

Lot 1 (0–11.5 cm) was the layer of humus over the collapsed, worked stones encountered in IN-4B-1. Artifacts recovered included a metate fragment, chert flakes, and ceramics.

Lot 2 (11.5–26.5 cm) was a layer of collapse from Structure E2-3 and the final floor of Structure E2-1. The lot ended after reaching a layer of construction fill consisting of rocks measuring up to 30 cm long. No stucco or evidence of a formal floor was
recovered. Artifacts included quartz, a greenstone bead, obsidian, chert flakes, a chert projectile point, and ceramics.

The third lot (26.5–42.5 cm) was the construction fill beneath the final floor of Structure E2-1, consisting of cobbles measuring 30 cm long. The unit was completed due to time constraints, and this layer of construction fill appeared to continue with no evidence of an earlier floor. Recovered artifacts included obsidian, chert flakes, a chert projectile point, and ceramics.

**Suboperation 10A**

Suboperation 10A was a surface collection of ceramics in the main plaza of the Upper Group, the portion of Structure E2-9 located between Structures E2-1 and E1-3. These ceramics included a fine orange water jar, along with other Terminal Classic diagnostic sherds.

**Suboperations IN-5B and IN-5C**

Suboperations 5B and 5C were placed in the large patio space behind Structure E2-4 to the southeast. This area forms a large terrace surrounded by Structures E2-4, E2-9, E2-8, and E3-1. IN-5B was placed to investigate Structure E2-9, while IN-5C was located on Structure E2-8. This area marks the furthest southern concentration of structures in the Upper Group, though a series of terraces and other platforms descend the hill to the southwest. Suboperations 5B and 5C were meant to understand the purpose of this part of the site and whether this area marked an approach to the main settlement from the south.
IN-5B-1

Suboperation 5B consisted of horizontal excavations between Structures E2-9 and E2-4. Structure E2-9 is a large platform on top of which was constructed the most monumental structure within the Upper Group, Structure E2-4. Possibly due to the natural crescent shape of the hilltop, the orientation of Structure E2-9 shifts away from the standard 50–60° orientation of the rest of the Upper Group. The location of IN-5B-1 also appeared to mark a possible point of access to this part of the site; thus, excavations were expected to find evidence of a stairway.

Four units were placed in the shape of a square made up the grid of Suboperation 5B. Each unit measured 2 x 2 m and was oriented 50° from magnetic north. Due to time constraints, most of these units were only excavated in a single lot. The space between Structures E2-4 and E2-9 formed a wide alley that appeared to have been blocked off on its northwestern side by a small rock wall. This rock wall was concluded to have represented a combination of collapse of Structures E2-4 and E2-9 rather than an intentionally-built wall. IN-5B-1 was the northernmost of the units in the grid and was located in this alley, to the southeast of the rock wall. Lot 1 (0.00–0.10 m) consisted of the humus layer, reaching a level of the collapse of Structure E2-4. Artifacts recovered included ceramics.

IN-5B-2

The next unit in the grid was IN-5B-2, located to the southeast of IN-5B-1, also covering part of the same alley between Structures E2-4 and E2-9. Along the southeastern side of the unit was the wall of Structure E2-9, which abuts the base of
Structure E2-4. Lot 1 (0.00–0.05 m) consisted of a thin layer of humus. After clearing this layer, no evidence of a stair rising to the top of Structure E2-9 was found. Artifacts included few ceramics. The purpose of this alley, therefore, is unknown, but one possibility is that it served to drain water downslope to the northwest. Alternatively, further excavations would reveal that it was used as a refuse area.

IN-5B-3

IN-5B-3 was located to the southwest of IN-5B-1, forming part of the grid to investigate Structure E2-9. IN-5B-3 was placed on top of Structure E2-9, immediately to the southwest of the alley between that structure and Structure E2-4. The purpose of the unit was to recover potential activity areas associated with Structure E2-9 and this part of the site. Lot 1 (0.00–0.14 m) represented the level of humus on top of the exterior wall of Structure E2-9. This excavation revealed that this exterior wall was thicker than expected, measuring 1.8 m wide. This exterior wall made up the majority of IN-5B-3, except for the southern corner of the unit. Artifacts included few ceramics.

IN-5B-4

Located to the southeast of IN-5B-3, IN-5B-4 was the only unit in the grid to be located partially inside of Structure E2-9. However, the northeastern half of the unit contained the exterior wall of Structure E2-9. Lot 1 (0.00–0.12 cm) consisted of the humus layer above the exterior wall and the interior space of Structure E2-9. Artifacts included few ceramics.
Lot 2 (0.12–0.25 m) was a level of collapse from the exterior wall of Structure E2-9 and the floor of the interior space of that structure. No evidence of this floor was found, but its level was inferred by the transition from collapse to the fill below. Artifact density was low, including few ceramics. The absence of metates suggests that this area did not necessarily serve a domestic function. The primary purpose of Structure E2-9 was to support Structure E2-4 and to influence the direction of foot traffic in this part of the site. The extension of this platform to the southwest, where Suboperation 5B was placed, may have further served to restrict access to the main patio, Structure E2-7 to the northeast.

**IN-5C-1**

Structure E2-8 is a low mound southeast of Structures E2-4 and E2-9. Structures E2-8 and E3-1 were built in line with the orientation of the hilltop in this location, at the edge of sharp cliffs that are typical of the eastern side of the escarpment. During mapping of this part of the site, a large chert axe was found on the surface of Structure E2-8. This area was excavated to document further evidence of this context and to determine the function of this mound.

IN-5C-1 was a 1 x 2 m unit oriented 88° from magnetic north placed on top of Structure E2-8, aligned with a stone feature immediately south of the unit. This stone feature was the location where the chert axe was found on the surface. The feature consisted of a mix of worked stone and unworked cobbles, creating a small platform on top of the mound. The unit was excavated in two lots, reaching bedrock.
Lot 1 (0–9 cm) consisted of the layer of humus on top of Structure E2-8. Artifacts were few, including chert flakes and ceramics. Lot 2 (9–12 cm) was a thin layer of collapse and dark brown soil (7.5YR 2.5/2) above bedrock. This bedrock may have been modified and leveled during the construction of Structure E2-8. Artifacts included chert flakes and ceramics. The evidence from IN-5C-1 suggests that Structure E2-8 was built on top of a natural mound of bedrock. The only construction consisted of the small platform on top of this bedrock. The location of Structure E2-8, at the edge of a steep cliff with dramatic views to the east and south may relate to defense. Indeed, combined with Structure E3-1, a likely function for this part of the site was to monitor the southern approach to the site and the valley below.

\textit{IN-6A, IN-14A, and IN-15A: Investigations of Structures D2-1, D2-2, and C2-3}

\textbf{IN-6A-1}

IN-6A-1 was located between Structures D2-1 and D2-2 and measured 1 x 1 m, oriented 50° from magnetic north. This area of the plaza, Structure C2-3, was expected to reveal the chronology of its construction. This unit was only excavated in two lots due to time constraints. The soil matrix consisted of very compact, blocky clay soils, partly due to the use of the area for cattle grazing. In general, artifact density was low.

Lot 1 (0–10 cm) consisted of the humus layer. The lot was finished after reaching what appeared to be a layer of fill. Few eroded ceramics were recovered. The following lot, Lot 2 (10–27.5 cm) of a compact fill of gravel and small cobbles measuring an average of 5 cm long. The lot was completed after uncovering a faced, worked stone in the northern corner of the unit. Artifacts included chert flakes and few eroded ceramics.
IN-6A-2

This unit was an extension to the northwest of IN-6A-1, to uncover the remainder of the worked stone documented in the northern corner of the latter unit. IN-6A-2 measured 0.5 x 1 m and was oriented 50° from magnetic north. Lot 1 (0–10 cm) consisted of the layer of humus with no artifacts. Lot 2 (10–25 cm) was a compact fill of gravel and small cobbles (5 cm long) mixed with very dark brown (10YR 2/2) clay. After uncovering the other half of the worked stone documented in IN-6A-1, the lot and unit were complete. This worked stone measured 50 cm long by 40 cm wide and was faced on three sides. The final side was fragmentary. Being the only stone of this size in the suboperation, the presence of this object is unclear. Most likely, this worked stone was originally part of Structure D2-1 and was removed to construct the fill of Structure C2-3.

IN-14A-1

Suboperation 14A was located in the Lower Group to attempt to document an area of refuse that might contain ceramics to assign this part of the site a clear chronology. This suboperation consisted of a single unit placed to the southwest of Structure D2-2, one of two structures located on the large plaza or terrace, Structure C2-3. A staircase in fair preservation was noted on the southwestern side of Structure D2-2; thus, the location at the base of this staircase was expected to show evidence of refuse practices. IN-14A-1 measured 2 x 2 m and was oriented 60° from magnetic north.

Lot 1 (0–10 cm) was the layer of humus. After clearing the humus, a series of worked stones associated with the collapse of the stairway on the southwest side of
Structure D2-2. The artifact density was low, including faunal bone, chert flakes, and ceramics.

The following lot, Lot 2 (10–31 cm) was a layer of the collapse of the stairway from Structure D2-2. These large, worked stones were removed to reveal a series of similar stones underneath. These stones differed from the collapse in that they were level and clearly in situ, meaning that they perhaps represented the floor of Structure C2-3, the large plaza space. Artifacts included chert flakes and ceramics.

Lot 3 (31–49 cm) was a layer of fill beneath the floor of St. C2-3, marked by large worked stones. This fill consisted of gravel mixed with small rocks measuring 5 cm long, though some cobbles measured up to 30 cm long. Worked stones were larger, measuring up to 50–60 cm long. Artifacts included few ceramics.

The final lot of the unit, Lot 4 (49–57 cm) was a continuation of the same level of fill consisting of gravel and rocks measuring 5 cm long. The fill was increasingly compact with a clay matrix, and the unit was ended due to time constraints and the paucity of artifacts. No artifacts were recovered from Lot 4.

**IN-15A-1**

Suboperation 15A was placed on Structure C2-3, the plaza or upper terrace of the Lower Group. Approximately 20 m to the southwest of Structure D2-2, near the initial rise of the terrace, a circular stone feature was visible on the surface. One of the stones in this feature was a fragment of a large metate. To interpret this feature, a 2 x 2 m unit was opened, oriented 40° from magnetic north.
Lot 1 (0–8 cm) was a layer of humus over and around the circular feature identified on the surface. After removing the humus, the feature was shown to have not been intentional, and it was likely caused by cattle grazing that brought large stone construction fill to the surface. The soil matrix was very compact with blocky clay. Artifacts included chert flakes and ceramics.

Lot 2 (8–16.5 cm) was a layer of construction fill consisting of large rocks measuring 30 cm long. The fill became increasingly compact. Artifacts included quartz, an unidentified stone, and few eroded ceramics.

Operation 7: Excavations Related to Structure C2-1

IN-7A-1

IN-7A-1 measured 2 x 2 m and was oriented 50° from magnetic north. This unit was placed on top of Structure C2-1, near the large boulder at its center and a fragment of a large limestone metate discovered on the surface. The top of the terrace had no soil and very little vegetation, though the sides of the terrace and the slope above leading to the West Group were covered by small trees. This vegetation indicated that almost no soil was used during the construction of Structure C2-1.

Lot 1 (0–26.5 cm) confirmed this suspicion, as no humus layer was found. Instead this lot consisted entirely of large stone (30–50 cm long) fill, with a small amount of dark reddish brown soil (5YR 3/4). What soil was present was difficult to collect, as it would continue to fall through pockets between the large stone fill. Some gravel mixed with this soil suggested the presence of a floor at one time, though it was no longer preserved. Artifact density was very low, including shell and three fragments of eroded ceramics.
(likely Preclassic period cream monochromes). The lot and unit were closed due to time constraints and the lack of material.

IN-7B-1

Suboperation 7B was placed at the base of the lower terrace of Structure C2-1, Structure C2-2 to investigate the chronology of the large plaza, Structure C2-4, and to search for evidence of a central stairway ascending Structure C2-1. This area was also expected to have a higher artifact density due to the possibility of refuse being discarded from the top of the terrace. IN-7B-1 measured 1 x 2 m and was oriented 34° from magnetic north, approximately the same orientation as the base of Structure C2-2.

Lot 1 (0–12 cm) consisted of a combination of collapse from Structures C2-1 and C2-2 and the floor of the plaza, Structure C2-4. The soil matrix consisted of a compact, blocky clay with few rocks. No artifacts were recovered, and the lot and unit were closed due to time constraints.

IN-7C-1

Not encountering evidence of refuse in other parts of Operation 7, IN-7C-1 was placed to the northeast of Structure C2-1, just below the top of the terrace in a likely area of discard. The unit measured 1.5 x 2 m and was oriented 40° from magnetic north. Similar to the top of Structure C2-1, a large boulder was located near the western corner of the unit.

Lot 1 (0–16 cm) consisted of the layer of humus with a siltier texture than the clay matrices in other parts of the Lower Group. Much of Lot 1 was likely erosion from
upslope. The lot was completed after encountering a clear color change in the soil from black (7.5YR 2.5/1) to dark brown (7.5YR 2.5/2). Few artifacts were recovered, including shell and ceramics. Lot 2 (16–40 cm) was a layer of compact, clay fill. Artifacts recovered included shell, faunal bone, and ceramics. The lot and unit were ended due to the lack of artifacts and time constraints.

South Group

IN-20A-1

Suboperation 20A focused on the westernmost point of the South Group, as the natural hilltop descends toward the valley and large plaza space between suboperations 19A and 19B. Suboperation 20A was within site of Structure B4-1, the monumental terrace wall that blocks access to the Lower Group. Structure B4-1 is 150 m to the northeast. This part of the South Group shows evidence of extensive settlement, though much of it lies on an adjacent property. This settlement consists of large mounds in no clear formation, on top of a series of elevated terraces overlooking the surroundings. This area was hypothesized to have been coordinated with Structure B4-1 and the possible defensive function of the area. The visibility from Structure B4-1 is not extensive; thus, surrounding settlement would have been crucial to monitor the movement of people nearby. Therefore, Suboperation 20A was designed to document the chronology of this part of the South Group, especially how it may have related to that of Structure B4-1.

IN-20A-1 was placed in a small patio space to the east of a low platform or terrace to attempt to document evidence of ceramics or an area of refuse. The unit measured 1.5 x 2 m and was oriented 0°, magnetic north. Lot 1 (0–10 cm) was a layer of
very compact humus with a silty clay texture. Artifacts included chert flakes and eroded ceramics.

Lot 2 (10–24 cm) was a layer of very compact soil, the result of colluvial erosion from above. This area seems to have lacked a formal floor or construction fill. This evidence suggests that the low platform was built on top of the natural, unmodified slope of the hill. Due to the compact nature of the soil and time constraints, the unit was ended after Lot 2. Artifacts included chert flakes and eroded ceramics.

**Suboperation 20B**

Suboperation 20B consisted of a surface collection of ceramics from the mound group to the south of Suboperation 20A. This area is part of the lower slope of the South Group, though it lies on the land parcel adjacent to Rancho El Infiernito. This area had been recently burned in preparation of planting, and this opportunity was taken to collect ceramics to determine the date of the final occupation of this area. Some diagnostic ceramic sherds were recovered.

*Excavations at La Selva*

*Excavations in the Main Patio, Structure C3-8*

To understand the chronology of the archaeological site of La Selva, two test pits (sub-operation 3A and 3B, respectively) were placed in the main patio of the site, numbered Structure C3-8. This patio is in fact, the leveled area of the summit of the low hill that was modified for the construction of the monumental patio group. The test
pitting was placed in the corners of the patio and the sides of other structures to document areas of refuse.

Sub-operation 3A consisted of a single test pit placed directly to the southeast of Structure C3-1 near the western corner of Structure C3-4. Structure C3-4 had initially been interpreted as an extension of the basal platform Structure C3-3, but after clearing vegetation it was determined that Structure C3-4 was in fact a separate platform.

Unit 1 measured 2 x 2 m and was oriented 30°, matching the alignment of the structures and site in general. Lot 1 (0–20 cm) was a thick layer of humus. This lot revealed two carved, tabular stones that represented the partial collapse of the facing stones of the basal platform of Structure C3-3, or likely part of a stairway that climbed the southeastern side of Structures C3-3 and C3-1. The limestone used in the carving of facing stones was a notably fine-grained limestone that resonated when tapped, similar to stones used in the constructions of other secondary centers in the region, like Budsilha. Artifacts recovered included a medium bag of ceramics and a small bag of quartz.

The presence of fragmentary stucco suggested the presence of the patio floor of Structure C3-8. Lot 2 (20–113 cm) was this thin floor level followed by a major level of construction fill. This fill consisted of large, irregular limestone blocks, sourced locally and distinct from the limestone used in the facing stones. In addition to the small bag of stucco, excavations resulted in the recovery of one small bag of shell, a chert biface, a chert projectile point, a medium bag of chert flakes, a small bag of obsidian, a small bag of quartz, and abundant ceramics. The lot was ended arbitrarily, as no evidence of an earlier floor could be discerned.
Though a second floor was not noted, Lot 3 (113–133 cm) was a continuation of the same level of fill, though the irregular blocks of limestone gradually increased in size. The artifact density diminished substantially, consisting of a barkbeater and a medium bag of ceramics. The lot ended either when reaching bedrock or construction fill that was too large to be removed.

Sub-operation 3B consisted of a single unit investigating the same patio, Structure C3-8 at its eastern end, between Structures C3-4 and C3-7. The objective of this sub-operation was the same as sub-operation 3A, to confirm the chronology of the patio and to document areas of discard. Unit LS-3B-1 was oriented 30° and measured 2 x 2 m.

Lot 1 (0–3 cm) was a thinner layer of humus, as the southeastern side of the unit had uncovered a stairway along the northwestern side of Structure C3-7. This humus was mixed with small cobbles measuring roughly 5 cm long, possibly associated with the floor of the patio, Structure C3-8, and the floor that would have covered the stairway of Structure C3-7. At this time of excavation, the stairway was not yet clear. Artifacts recovered included a medium bag of shell, a small bag of chert, a small bag of quartz, and a medium bag of ceramics.

Lot 2 (3–14 cm) consisted of a layer of collapse of Structures C3-7 and C3-4 and the floor of the patio. At this time, the presence of the stairway rising up to Structure C3-7 became clear. This stairway took up the entire southeastern side of the unit and appeared to be outset from Structure C3-7, rather than following the entire northwestern side of the structure. Artifacts included a small bag of obsidian, a small bag of chert, and a medium bag of ceramics.
After reaching the uppermost step, excavations continued to the northwest in the unit to uncover evidence of a lower step. Thus, Lot 3 (14–39 cm) consisted of the layer of collapse of Structure C3-7 and the floor above this second step. This collapse consisted of medium-sized rocks between 10 and 20 cm long. The second step was documented 20 cm below the first. The upper riser consisted of equally-sized stones, measuring 50–60 cm long by 25 cm wide. The lower riser was made up also of equally-sized stones, though larger than the stones of the upper stair. These lower stones measured approximately 50 cm along the edge of the stair and at least 70–80 cm long extending under the upper stair. Each stair consisted of a single wythe of stone, the uppermost measuring about 20 cm high and the lower stair approximately 30 cm high. Artifacts included a small bag of chert flakes, a fragment of a mano metate, a small bag of obsidian, and a medium bag of ceramics.

The stair was left in place, and excavations continued in the northwestern side of the unit. In Lot 4 (39–109 cm), no evidence of a formal floor of the patio was documented, however the presence of fill consisting of large rocks measuring 30 cm long indicated that the unit had reached the layer of major construction documented in sub-operation 3A. Few materials were recovered, including a small bag of faunal bone, a small bag of obsidian, and a medium bag of quartz. A small bag of obsidian, and a medium bag of obsidian.

The lot was changed arbitrarily to continue documenting the single layer of construction fill. Lot 5 (109–119 cm) was ended due to the increasing size of fill that precluded continuing further in the confined space formed by the stair taking up half of the unit. Artifacts included a small bag of shell and a medium bag of ceramics.
Investigations of Structure C3-1

Structure C3-1 is the main structure at La Selva, and the only structure with clear evidence of having been vaulted. As such, Structure C3-1 has suffered the most destructive looting at the site. This destruction amounts to a massive looter’s pit measuring approximately 6 m long and 7 m deep, all excavated by hand over multiple decades. The majority of the structure is, therefore, no longer standing. Still the base of the southeastern exterior wall of the structure is in relatively good condition, constructed of worked masonry consisting of 10 cm long stones stacked with a conservative amount of stucco. The remaining walls of the superstructure are in poor condition or absent; in fact, carved stones associated with the northwestern side of the structure are visible as far down as the base of the hill to the northwest. In spite of this destruction, information relating to the construction of Structure C3-1 was recoverable, especially in the southeastern and northeastern profile of the looter’s pit. The southeastern profile, in particular, showed evidence of three stucco floors. The construction fill is also characteristic of other structures in the region, especially those associated with Piedras Negras that consist of massive, irregular stone cobbles packed together and covered by thick stucco floors (measuring up to 30 cm wide in places). The 30° orientation of the structure, which appears consistent throughout the entire construction history of Structure C3-1, also matches the orientation of Piedras Negras.

The looting of Structure C3-1 was relatively recent, taking place perhaps 20 years ago. Thus, many of the excavators during the 2015 season were familiar with some of the materials recovered from the site. According to the landowner, at approximately 7 m below the surface, three complete burials were encountered. The cists in which these
burials were discovered were encountered during the 2015 excavations and cleaning of the looter’s pit. Six units were placed within the looter’s pit, but only two of these units were formally excavated. The other four units represented the northeastern and southeastern profiles of the looter’s pits, respectively.

Suboperation 2A consisted of six units in the looter’s pit that penetrated Structure C3-1. LS-2A-1 measured 2 x 2 m and was oriented 30°. The unit was located in the deepest part of the looter’s pit, well removed from any of the profiles of the looter’s pit to avoid further collapse. The goal of this unit was to document any evidence of the burials associated with the looter’s pit. Lot 1 (0–19 cm) consisted of a mix of humus and collapse associated with the profiles of the looter’s pit. The lot was ended after documenting two features consisting of lines of stone that were thought to represent the remains of cists or cripts. Both of these features were also oriented to 30° suggesting that these stones did not merely represent a random collapse. Artifacts included a small bag of shell, a small bag of faunal bone (including a rib and vertebra), a chert hammerstone, and a medium bag of ceramics.

Lot 2 (19–37 cm in the northern corner of the unit and 19–80 cm in the rest of the unit surrounding Lot 3 and Burial 2) was a continuation of a level of collapse, suggesting that the lines of stones documented in the previous lot were in fact associated with a collapse of the southeastern profile of the looter’s pit. Lot 2 was terminated after encountering subsequent capstones thought to represent the remain of cists associated with the burials. Recovered artifacts included a small bag of chert flakes, a small bag of shell, and human remains (three fragments of ankle bone and the fibula). These remains
were associated with Burial 1, which extended into LS-2A-2, discussed in further detail below.

Lot 3 (37–80 cm) was located in the northern corner of the unit and corresponded with Burial 2, discussed below.

Burial 2

La Selva Burial 2 was located in a cist in the northern corner of LS-2A-1. The presence of a burial was evident in the remains of a rectangular cist constructed of irregular stones, with its long axis oriented from north to south (150° east of north). This orientation is not consistent with the 30° orientation of the final version of Structure C3-1, suggesting perhaps a change in orientation beginning with the construction of Structure C3-1 sub 2. Though the cist was intact, no human remains were recovered from this location, indicating that the skeleton had been completely removed by looters. The interior length of the cist was relatively small, measuring 1 m long. This size suggests that the burial belonged either to a child in an extended position or an adult in a flexed position. The cist narrows toward the north, suggesting the head would have been located at the northern side with the feet at the south, with room at the south for a flexed or fetal position of the legs. Artifacts recovered from the cist included a small bag of chert flakes and a medium bag of ceramics, that may have been intrusive to the burial.

LS-2A-2 was placed directly to the southeast of Unit 1, still within the deepest point of the looter’s pit inside Structure C3-1. Unit 2 also measured 2 x 2 m and was oriented 30°. Evident on the surface of LS-2A-2 was a large, well-carved capstone measuring 80 x 70 cm that was fragmentary and would have measured slightly more than
80 cm long. This capstone was not in its original location and was likely moved from its original context associated with Burial 3, whose formal cript was visible in the northeastern profile of the looter’s pit.

Lot 1 (0–14 cm) consisted of a mix of humus and collapse from the profiles of the looter’s pit. A line of stones, related to those documented in LS-2A-1-1 were drawn, but were later concluded not to have been associated with one of the three burials. Artifacts included a small bag of stucco associated with a partial collapse of the southeastern profile of the looter’s pit, a small bag of quartz, a small bag of shell, a small bag of chert flakes, and a medium bag of ceramics.

Lot 2 (14–37 cm) consisted of a level of collapse from the southeastern profile of the looter’s pit. Abundant stucco indicated that a large section of the profile had fallen, likely associated with the third lowest stucco floor visible only in a small portion of the southern corner of the looter’s pit. After documenting evidence of a cist associated with Burial 1 in the northern corner of the unit, the lot was changed. Recovered materials included a small bag of shell, a medium bag of stucco, and a large bag of ceramics.

Lot 3 (37–75 cm) was the final level of LS-2A-2 and corresponded with Burial 1, described below.

**Burial 1**

Burial 1 was documented in the northern corner of LS-2A-2 and the western corner of LS-2A-1. The burial was marked by a cist oriented 120° on its long axis, with the individual’s feet to the west and the head to the east. The dimensions of the cist were 110 x 38 cm, slightly larger than the cist associated with Burial 2. Few human remains
were recovered; these bones included fragments of a tibia and fibula in LS-2A-2-3 and fragments of fibula and ankle in LS-2A-1-2. Artifacts included a small bag of chert flakes, a projectile point, and a medium bag of ceramics, likely intrusive to the burial.

LS-2A-3 was not excavated but consisted of the cleaning and documentation of a portion of the southeastern profile of the looter’s pit inside Structure C3-1. As such this unit followed the grid established by Units 1 and 2 and was located directly to the southeast of LS-2A-2. This portion of the profile revealed the form of construction fill, the two most recent floor levels, and the final version of the superstructure of Structure C3-1. Much of this profile had collapsed and is likely to collapse in the future. No artifacts were recovered from this portion of the profile.

LS-2A-4 was placed to the south of LS-2A-3 and was not excavated. The southeastern profile of Unit 4 is similar to that of Unit 3; however, the lower portion of the southeastern profile of LS-2A-4 was in better condition had not collapsed, thus revealing the third earliest floor associated with Structure C3-1 sub 2. All three of the burials documented during the season of 2015 appear to have been placed beneath this earliest floor. No artifacts were recovered in this portion of the southeastern profile of the looter’s pit.

LS-2A-5 consisted of the cleaning and documentation of the northeastern profile of the looter’s pit in Structure C3-1. Unit 5 was placed to the northeast of LS-2A-2. The majority of the profile contained within LS-2A-5 represents the partially-preserved interior wall of Structure C3-1, marked on the drawing as LS-2A-5-4. The portion of the profile that consisted of construction fill did not reveal any preserved floors, though this
lack of stucco is due entirely to the collapse of the northeastern profile of the looter’s pit. Artifacts were not recovered from this portion of the northeastern profile.

LS-2A-6 was a continuation of the cleaning of the profiles of the looter’s pit in Structure C3-1. This unit, therefore, was not excavated. Unit 6 was placed to the southeast of LS-2A-5 and to the northeast of LS-2A-3. LS-2A-6 was located within the eastern corner of Structure C3-1, thus, it is bounded on the northeast and the southeast by portions of the profile of the looter’s pit. In the southeastern profile of Unit 6, the two most recent levels of floors were documented. In the uppermost and most recent floor, fragments of polychrome ceramics consistent with the Yaxche phase of Piedras Negras were recovered. Similar fragments were also recovered approximately at the level of the burials, suggesting that 1) the burials date to the same period as the final construction event and were therefore intrusive, 2) the three phases of construction all date to the Yaxche ceramics phase, or 3) the ceramics in the burials were due to the collapse of the profiles of the looter’s pit. Some combination of the second and third hypotheses is most likely, as the burials do not appear to have been intrusive to Structure C3-1. However, the lack of the earliest floor of Structure C3-1 sub 2 in Unit 6 may be due not to the collapse of the profile but rather the excavation of that floor to place the intrusive burials. This possibility seems less likely.

The northeastern profile of LS-2A-6 shows evidence of the cist of Burial 3, which is described below.
Burial 3

Burial 3 was not excavated, rather the remains of the cist associated with Burial 3 were documented in the profile formed by the looter’s pit in Structure C3-1. Burial 3 was located in the northeastern profile of the looter’s pit and clearly appears to have been placed prior to the construction of Structure C3-1 sub 2. The appearance of carved stone delimiting the sides, floor, and roof of the burial indicated that Burial 3 was a simple crip, representing the most elaborate burial in Structure C3-1. The capstone that covered the southeastern side of the burial was relocated to the deepest part of the looter’s pit, within LS-2A-2. The long axis of Burial 3 corresponds with the 30° orientation of Structure C3-1. The long axis currently measures 75 cm long, but this measurement only applies to a fraction of the original interior space of the crip that was largely destroyed due to looting. The crip measures 70 cm wide with a height of 40 cm. No artifacts or human remains were recovered from this crip.

Suboperation 5A referred to the context of a surface collection of ceramics from another looter’s pit to the southwest of Structure C3-1 that penetrated Structure C3-3. This portion of the looter’s pit was not excavated or drawn due to its location on adjacent land.

Documentation of the Looting of Structure C3-5

The majority of looting at La Selva was focused on the main structure, Structure C3-1; however, one other structure, Structure C3-5 was also minimally looted. The footprint of Structure C3-5 is roughly the same size as Structure C3-1, though unlike Structure C3-1, Structure C3-5 does not show evidence of a stone superstructure. Thus,
Structure C3-5 likely represents the substructure of a perishable superstructure. The placement of Structure C3-5 at the northeastern end of a large basal platform, Structure C3-7 echoes the placement of Structure C3-1 at the northeastern side of the basal platform of the basal platform, Structure C3-3. Thus, Structures C3-1 and C3-5 face each other on opposite sides of the main patio, Structure C3-8, creating a symmetry to the main group of La Selva.

Structure C3-5 was not excavated; however, the existing looter’s pit that penetrated the structure was cleaned and documented. This looter’s pit measures roughly 1 m wide by 1.25 m deep. Sub-operation 1A and LS-1A-1 represented this looter’s pit. Immediately below the humus, the presence of stucco indicated the location of the interior floor of Structure C3-5. Unfortunately, no artifacts were found in the profile of the pit, though sherds belonging to the Late Classic period were recovered from the surface of the structure. According to evidence from the profile of the looter’s pit, Structure C3-5 was constructed in a single event, likely during the Late Classic period.

This evidence suggests that much of the site of La Selva, aside from Structure C3-1, was constructed in a single, late phase as an addition to the single Structure C3-1. However, no other portion of the eastern side of La Selva was investigated, so it is likely that excavations of Structure C3-7 would reveal earlier phases of construction.

Excavations to the North of the Main Patio

Sub-operation 4A was placed directly to the north of the main patio of La Selva. The initial visit to the site in 2014 suggested that much of the surrounding area appeared to have been modified to create additional patio space. Upon closer inspection in 2015,
much of this additional space was thought to have been natural. To confirm this latter
suspicion, excavations were placed in the area to the north of the main patio. This area
was at a lower level than the patio of Structure C3-8 and surrounded by this elevated
main patio of the site to the south and possibly two additional platforms to the northwest
and northeast. After excavations, this area and the “platforms” were determined to be
natural, though this area may have been modified by removing stone for other
constructions. More likely, this area likely formed a point of access to the main epicenter
of the site.

   Unit LS-4A-1 measured 2 x 2 m and was placed directly to the southeast of a low
line of stones that was thought to represent the base of a low platform. The orientation of
this line of stones and the unit was 40°. The goal of this unit was to determine if this line
of stones represented a natural feature or a construction and to document evidence of
construction fill of a possible secondary patio to the north of the patio formed by
Structure C3-8.

   Lot 1 (0–4 cm) was a thin layer of humus. Artifact density was very low,
consisting of a small bag of shell and a small bag of ceramics.

   Continuing with Lot 2 (4–12 cm) after a soil color change, the line of stones was
revealed to be part of the natural bedrock of the landform. Artifacts were few, consisting
of a medium bag of ceramics, likely associated with erosion from the site center above
and to the south.

   Lot 3 (12–33 cm) was the final level of excavation and was made up of natural
soil. Artifacts were minimal, including a small bag of obsidian and a small bag of
ceramics. Though cultural evidence was limited in sub-operation 4A, the excavations
confirmed that activity was focused on the main epicenter of the site, which consisted of a single, monumental patio group. Unfortunately, areas to the south of the main patio group could not be investigated due to a landowner dispute, but these area are currently assumed to also represent a primarily natural area. Though construction was not evident to the north of the main epicenter of La Selva, the flat nature of this area does suggest that it was modified to quarry stone for the construction of the elevated area to the south. The high quantity of stone needed to elevated this area more than 1 m above bedrock suggests that much of this material was sourced locally.

Excavations at Rancho Nuevo

To understand the chronology of Rancho Nuevo, as well as its relation to La Selva and other sites, two operations focused on the epicenter of the site. These two operations were located at the southwestern end of the site center, focusing on the main structure, Structure C4-1, and the possible ballcourt, Structures C4-4 and C4-5. Despite being minimal, these excavations were successful in documenting an area of refuse behind the ballcourt, as well as an unexcavated burial under Structure C4-1.

Suboperation 1A focused on the ballcourt at the southwestern extreme of the main group of Rancho Nuevo. This ballcourt is made up of two low, parallel structures, Structures C4-4 and C4-5. The presence of apparently worked stones inside the alley formed by these structures were hypothesized to represent ballcourt markers, leading to the excavations in this area. After excavations, these stones were found to represent collapse from either Structure C4-4 and C4-5. Though clear evidence that these structures served as a ballcourt was not documented, excavations did no suggest that this area
served a domestic purpose. The current conclusion is that due to the excavated materials and the design of the structures, Structures C4-4 and C4-5 most likely did in fact represent a small ballcourt.

RN-1A-1 was placed at the center of the alleyway formed by Structures C4-4 and C4-5, slightly southwest of center, above a worked stone thought to have served as a ballcourt marker. The unit measured 2 x 2 m and was oriented 40°. Lot 1 (0–7 cm) was a thin layer of humus, revealing the form of the worked stone, which clearly had not been used as a ballcourt marker and was instead collapse from either Structure C4-4 or C4-5. Unfortunately, the lot and unit had to be ended prematurely after reaching an impassable level of thick roots from the large tree growing on top of Structure C4-4. Materials recovered included a polished stone and a medium bag of ceramics.

To avoid more roots associated with the large tree, Suboperation 1B was placed behind Structure C4-5, to the southeast of the structure’s eastern corner. This area was thought to have been a likely area of discard associated with Structure C4-5, which would provide data relating to the function of this part of the site. RN-1B-1 measured 2 x 2 m and was oriented 60°, better matching the orientation of the site than Suboperation 1A. Lot 1 (0–13 cm) consisted of the layer of humus. The lot was ended after revealing a portion of the base of Structure C4-5 at the western edge of the unit. Materials recovered included a small bag of quartz, a small bag of chert flakes, and a medium bag of ceramics.

Lot 2 (13–33 cm) was the floor level of the activity area behind Structure C4-5, though no evidence of a formal floor was documented. In fact, the absence of fragments of stucco suggests that this area behind Structure C4-5 never formed patio space. Bedrock
began to appear in the northwestern profile of the unit. Few to no rocks were present in this level, neither collapse from Structure C4-5 or fill underneath the floor. Due to the lack of stones indicating a level of fill, the lot was ended arbitrarily after excavating 20 cm. A high density of artifacts consistent with an area of refuse were recovered, including two small bags of shell, two small bags of quartz, a serpentine bead, two small bags of obsidian, two medium bags of chert flakes, a chert core, a chert projectile point, a small bag of unworked serpentine, and two large bags of ceramics.

The following lot, Lot 3 (33–65 cm), was a continuation of the refuse area. Very few rocks were noted, indicating that this area was not made up of construction fill. Bedrock continued to appear at the northwestern and southeastern sides of the unit. Near the bedrock, the soil color began to change from brown (10YR 5/3) to very pale brown (10YR 7/4), representing a level of decomposing bedrock, or a C horizon. At the center of the unit, however, along the northeast/southwest axis, no color change was noted, and the refuse pit continued. This evidence suggests that the people of Rancho Nuevo had excavated a trench parallel to Structure C4-5 to discard trash, which would account for the abundance of materials in this area. After excavating a further 19 cm at the center of the unit, the C Horizon began to appear and the artifacts diminished or were absent. Artifacts included a medium bag of shell, a medium bag of quartz, a metate fragment, a small bag of obsidian, a medium bag of chert flakes, a chert axe, a medium bag of unworked serpentine, and two large bags of ceramics. A large proportion of these ceramics consisted of polychrome serving vessels. These data suggest that Structures C4-4 and C4-5 formed an important space for public activities, perhaps associated with
feasting. The small size of the ballcourt is consistent with a multifunctional use not necessarily focused on playing the ballgame.

Suboperation 2A was placed to the southwest of the main structure of Rancho Nuevo, Structure C4-1, on top of the basal platform, Structure C4-3 that extends to the southwest and northwest of Structure C4-1. This area was covered with collapsed stones from the looter’s pit that penetrated Structure C4-1. This goal of this suboperation was to recover the form of Structure C4-3 and to document the chronology of the construction of Structure C4-3 and in turn Structure C4-1.

RN-2A-1 was placed on top of Structure C4-3 immediately to the southwest of Structure C4-1. Unit 1 measured 2 x 2 m and was oriented 60°. Lot 1 (0–5 cm) consisted of a layer of humus. Artifacts included a small bag of chert flakes and a medium bag of ceramics.

Lot 2 (5–26 cm) was a mix of the collapse and fill of Structure C4-1 that was associated with the looter’s pit that penetrated Structure C4-1, as well as the floor level of Structure C4-3 underneath this rubble. These stones were removed, except for a single capstone that was placed vertically on its site and extended a number of centimeters into the fill of Structure C4-3. The lot was ended after reaching a level of cobble fill consisting of stones measuring up to 20 cm long. Artifacts recovered from Lot 2 included a small bag of quartz, a small bag of chert flakes, a chert knife, and a medium bag of ceramics.

The following level, Lot 3 (26–39 cm) was a level of construction fill in the platform of Structure C4-3 mixed with gravel associated with decomposed bedrock. Immediately beneath the construction fill, the same C horizon documented in
Suboperation 1B was encountered. The lot was completed after reaching this C horizon, apart from the eastern corner of the unit. In this eastern corner, the bottom half of Burial 1 was located. Artifacts in Lot 3 included a small bag of shell and a medium bag of ceramics.

Lot 4 (20–35 cm) corresponded with Burial 1, which was not excavated but is described below.

Burial 1

Due to time constraints, Rancho Nuevo Burial 1 was not excavated, but observations were made that can be elaborated in future excavations. Burial 1 was located beneath Structure C4-3, and the upper body appears to extend to the northeast under Structure C4-1. Thus, Burial 1 was either buried before the construction of Structures C4-1 and C4-3 or it is intrusive to these levels. Though Burial 1 was not marked by clear capstones, the burial was located immediately to the southeast of a vertical capstone placed on its side, to the left of Burial 1. This stone was in fact visible from the surface before excavations and was initially thought to have been part of the collapse of Structure C4-1. However, this capstone extended well into the fill of Structure C4-3. Perhaps the capstone was placed in this way intentionally, or it was originally placed flat and covering Burial 1 in a more typical fashion and was moved into its vertical position through natural or cultural formation processes. The placement of the capstone within the fill of Structure C4-3 suggests an intentional, cultural process. The orientation of the burial was 30°, while the orientation of the vertical capstone was 60°. Only the lower portion of Burial 1 was documented, including the tibia and fibula; the upper portion of
the body extended to the northeast, outside of the unit. The visible portion of Burial 1 measured 65 cm long by 40 cm wide. The space containing Burial 1 was likely excavated into the C horizon of the soil. All human remains were left in their original position and covered with backfilled soil.

*Excavations at Santa Marta*

Archaeological excavations at Santa Marta focused entirely on Structure B3-1, a large range structure or elite residence located at the western end of the site. On the southeastern side of Structure B3-1, a large outset stairway climbs to its summit, where the bases of various superstructures (likely supporting perishable roofs) are visible. An alleyway between two of these superstructures leads to a sunken patio at the western corner of Structure B3-1.

Suboperation 1A focused on this sunken patio to investigate the phases of construction of Structure B3-1 and to examine this restricted activity area and the potential function of the structure as an elite residence. SM-1A-1 was placed near the southern corner of the sunken patio. This corner was also a possible area of discard associated with the superstructures on top of Structure B3-1. Unit 1 measured 2 x 2 m following the orientation of the structure, 35°.

Lot 1 (0–12 cm) consisted of the layer of humus. Artifact density was high, indicating an area of refuse above the floor of the sunken patio. These artifacts included a small bag of shell, a small bag of stucco, a fragment of a metate, a small bag of obsidian, a medium bag of chert flakes, a chert tool, a small bag of unworked serpentine, and a large bag of ceramics.
Lot 2 (12–24 cm) was a mix of collapse from the substructure and superstructures of Structure B3-1 and the floor of the sunken patio. This floor was in fair preservation, with clear evidence of having been formally covered with stucco. The lot ended after reaching a leve of fill beneath the floor of the sunken patio. Artifact density remained high consisting of a medium bag of shell, a medium bag of stucco, a fragment of a hematite mirror, four fragments of metates, a medium bag of obsidian, a medium bag of chert flakes, and a large bag of ceramics.

The first layer of construction fill, Lot 3 (24–37 cm), was made up of large irregular cobbles measuring on average 30 cm long. The southwestern corner of the unit had especially large cobbles measuring at least 50 cm long, which supported the southwestern wall of the sunken patio, preventing further excavation in that side of the unit to avoid the collapse of this wall. The lot was ended after reaching a series of flat stones with evidence of stucco, suggesting an earlier floor of Structure B3-1 sub 1. A high density of artifacts was documented including a small bag of shell, a small bag of quartz, a medium bag of stucco, a small bag of faunal bone, a small bag of obsidian, a small bag of chert flakes, and a large bag of ceramics.

Lot 4 (37–54 cm) was a second layer of construction fill beneath Structure B3-1 sub 1. This fill consisted of irregular cobbles slightly smaller on average (approximately 20 cm long) than those encountered in the later construction fill below the final version of Structure B3-1. This fill was also more fragile, suggesting a mix of construction fill and decomposed bedrock. The lot was ended after encountering human remains in the northern corner of the unit, corresponding with Burial 1, which was not excavated. Abundant artifacts continued, including a small bag of shell, a small bag of stucco, a
medium bag of faunal bone, a fragment of a metate, a small bag of obsidian, a small bag of chert flakes, a round stone, a small bag of unworked serpentine, and a large bag of ceramics.

Avoiding Burial 1, Lot 5 (54–83 cm) was a 1 x 1 m unit placed at the western corner of Unit 1. This lot was a continuation of the same layer of construction fill beneath Structure B3-1 sub 1, a mix of limestone blocks, decomposing bedrock, and dark brown soil (7.5YR 3/2). The unit did not reach bedrock due to reaching a stone that was larger than the unit. Though bedrock was not reached, the presence of decomposing bedrock suggested that bedrock was not much deeper. Artifact density diminished substantially, consisting of a small bag of shell, a small bag of obsidian, a small bag of chert flakes, and a medium bag of ceramics.

Burial 1

Santa Marta Burial 1 was encountered during the excavations of SM-1A-1-4, but due to time constraints, this burial was left in place. The observed human remains consisted of a mix of teeth, mandible, and arm long bones. The proximity of the arms to the head suggests that the burial was disarticulated, either being a secondary burial or possibly having been disturbed during the construction of Structure B3-1 sub 1. Burial 1 was not marked by capstones or a cist and was placed within the construction fill of Structure B3-1 sub 1, in the northern corner and the northeastern side of Unit 1. All human remains were left in place and covered with backfilled soil.

Suboperation 1B was located along the southeastern side of Structure B3-1, within a corner between the structure and the northeastern side of the outset stairway,
roughly near the midpoint of the structure’s southeastern side. The goal of this suboperation was to look for an area of refuse associated with the activities of Structure B3-1, hypothesized to have been an elite residence.

The only unit in Suboperation 1B, SM-1B-1 measured 2 x 2 m and was oriented 35°. Lot 1 (0–10 cm) consisted of a layer of humus. Artifacts included a medium bag of chert flakes and a medium bag of ceramics.

Lot 2 (10–26 cm) was a layer of fill associated with a midden based on the high density of artifacts encountered and dark, black soil (7.5YR 2.5/1). Due to the presence of a midden, the lot was ended arbitrarily after excavating approximately 20 cm. Artifacts included a ceramic figurine, a medium bag of shell, a medium bag of obsidian, a medium bag of chert flakes, two chert tools, and three large bags of ceramics.

This same midden continued in Lot 3 (26–43 cm) with few rocks and slightly lighter soil, dark brown (7.5YR 3/2). The lot was changed arbitrarily after excavating approximately 17 cm. The artifact density remained high, consisting of a medium bag of shell, two fragments of a hematite mirror, a medium bag of obsidian, two medium bags of chert flakes, two chert tools, two non-local, unidentified stones, and six large bags of ceramics.

Lot 4 (43–53 cm) was the final layer of the midden associated with Structure B3-1. The soil changed to a very dark gray (7.5YR 3/1). The lot was ended after reaching a layer of construction fill, consisting of limestone cobbles. Artifacts included a ceramic figurine, a medium bag of shell, a medium bag of obsidian, two medium bags of chert flakes, two chert projectile points, one chert biface, two worked stones, a pumice stone, and three large bags of ceramics.
Lot 5 (53–62 cm) was a layer of construction fill consisting of limestone cobbles mixed with black soil (7.5YR 2.5/2). The lot and unit ended after reaching bedrock. Though the midden had formally ended in the previous lot, artifact density remained high until arriving at the bedrock. These artifacts included a small bag of shell, a medium bag of obsidian, a medium bag of chert flakes, a chert axe, a chert projectile point, a non-local, unidentified stone, and three large bags of ceramics.

The excavations associated with Structure B3-1 indicated that the structure was likely an elite residence, associated with a household that had access to valuable objects, including abundant polychrome serving vessels and hematite mirrors. The presence of a midden, which likely extends along Structure B3-1’s southeastern side suggests a center of activity during the Late Classic period, though the ceramics suggest that most of this activity took place during the Yaxche ceramic phase.
APPENDIX 2
Ceramic Paste Classes

1. Talcous (Late Classic period)

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
**El Infiernito:** 0 fragments (0.00%), 0.0 g
**La Selva:** 7 fragments (0.30%), 27.5 g

**Description of Paste:** Chalky light brown (10YR 7/4) with a fine to medium texture and low compactness.

**Surface Finish:** All fragments have a smoothed surface finish with no evidence of a slip.

**Form Sub-categories:**
6.8 – Tripod plate with flared sides and exterior folded rim

**Decoration:** None.

**General Observations:** Few examples are known from La Selva and none from El Infiernito, although the latter does have higher proportions of similar fine talcous pastes. Jiménez has noted similar forms to talcous paste vessels at Chinikiha in Balancán (Fine Z) group ceramics from Jonuta (Berlin 1956), as well as at Palenque during the Balunté phase (Rands et al. 1982). Núñez Ocampo (2015) has since identified a greater diversity of talcous pastes from the Metzabok region dating to the Late Postclassic period. At La Selva, the only diagnostic form is a Late Classic period tripod plate, suggesting that medium-texture talcous pastes may have emerged from incipient fine paste traditions in the Palenque and Lower Usumacinta regions.

2. Fine Gray (Late Classic to Early Postclassic periods)

**Paste established by:** Smith 1955:34

**Quantity, proportion, and weight by paste:**
**El Infiernito:** 32 fragments (0.11%), 236.6 g
**La Selva:** 1 fragment (0.00%), 2.4 g

**Description of Paste:** Paste consists of primarily two types with varying degrees of hardness and a bluish gray (5B 6/1) color. Chablekal Fine Gray pastes appear in the region after AD 750 and are fine-textured and medium to compact. Tres Naciones Fine Gray enter the region after AD 850 and are fine-textured and fragile to medium compact.
**Surface Finish:** Examples are smoothed and eroded with the surface the same color as the paste. Chablekal Fine Grey types appear to have been slipped, although the slip is eroded.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet
6. – Plates
6.5 – Thin-walled tripod plate with outcurved sides, exterior folded rim, flat base, and hollow ovoid feet

**Decoration:** Most examples are eroded and lack decoration. One example of a dish or bowl from El Infiernito has an incised, geometric decoration along the rim similar to Silho Fine Orange vessels from the same context, although fine orange examples are more compact and better preserved.

3. Fine Orange (Terminal Classic to Early Postclassic periods)

**Paste established by:** Smith 1955:28

**Quantity, proportion, and weight by paste:**
**El Infiernito:** 441 fragments (1.55%), 4137.8 g
**La Selva:** 0 fragments (0.00%), 0.0 g

**Description of Paste:** Paste consists of a fine to medium texture and a hardness of fragile to medium compact. Paste colors range from reddish yellow (7.5YR 6/6) to strong brown (7.5YR 5/6) or yellowish brown (10YR 5/6).

**Surface Finish:** Most examples are smoothed with a surface the same color as the paste. Some examples have an orange to red slip or wash slightly darker than the paste. Few examples have a white or cream slip, while others may have a poorly-preserved black or brown slip.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
1.1 – Thin-walled dish with flared or slightly outcurved sides, with or without feet
1.4 – Thin-walled bowl/dish with slightly incurved sides
1.5 – Thin-walled bowl/dish with slightly outcurved sides
2. – Vases, with pedestal
2.2 – Thin-walled vase with outcurved sides
3. – Jars, with handles
3.9 – Thin-walled jar with markedly outcurved neck
6.5 – Thin-walled tripod plate with outcurved sides, exterior folded rim, flat base, and hollow ovoid feet
8. – Incense burners
**Decoration:** The majority of sherds lack decoration, but some show a range of techniques including incised, striated, stamped, and modelled.

**General Observations:** As with fine grays, multiple types are present within this paste category; however, absent diagnostic form or decoration these types may be indistinguishable. The Altar Fine Orange group enters the region after AD 850, while Silho group ceramics may appear slightly later. However, the distinction among different fine orange groups may be based on different production regions rather than chronological differences. Some examples have a gray core (2.5Y 5/4); indeed, some fine orange ceramics differ from Tres Naciones Fine Grey only by different firing techniques. In general, the darker pastes are more compact with macroscopic volcanic temper, consistent with Silho group ceramics.

4. Fine Black (Late Classic period)

**Paste established by:** Jiménez 2015

**Quantity, proportion, and weight by paste:**
- **El Infiernito:** 16 fragments (0.06%), 38.7 g
- **La Selva:** 8 fragments (0.40%), 21.8 g

**Description of Paste:** Medium texture, low to fragile compactness, light brown (7.5YR 6/4) in color with a greenish gray (10Y 3/1) core. Although classified as a fine paste, tiny particles are occasionally visible macroscopically. The surface has a gritty and chalky feel.

**Surface Finish:** The majority of sherds are either smoothed or exhibit the remains of a black slip darker than the paste (dark gray 10YR 4/1). Some examples from El Infiernito reveal a brown slip. This color may be due to a faded or eroded black slip. One example from El Infiernito shows a possible cream or white slip.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls

**Decoration:** Examples from El Infiernito are undecorated, apart from the monochrome slips. Some examples from La Selva were impressed, likely with a rock or similar material.

**General Observations:** Fine black ceramics with impressed decorations have been described throughout the Lower Usumacinta region (Berlin 1956), the San Pedro Martir region of Tabasco (Hernández 1981), and Palenque (Rands 1967b, 2007, Rands and Rands 1957). These vessels typically have notably thin walls. San Román (2007:7) has denominated fine black pastes as the Yalcox group at Palenque, dated to the Murciélagos phase (AD 700–770). However, the final inscription from Palenque dated to 799 was recorded on a pedestal vase made of a fine black paste (Martin and Grube 2008; Stuart and Stuart 2008), suggesting that transitional Yalcox and Chablekal pastes were used.
during the first half of the Balunté phase (AD 770–850). Jiménez (2015) distinguishes between fine black and Yalcox pastes, attributing the former to a generalized paste known across the Middle and Lower Usumacinta basins of Tabasco and Chiapas, as well as its tributary, the San Pedro Mártir in Tabasco. Cited in Jiménez and colleagues (2018), Rands considered the fine black paste to be similar to Yalcox.

5. Fine Brown (Late Classic period)

**Paste established by:** Rands and Rands 1957

**Quantity, proportion, and weight by paste:**
- **El Infiernito:** 6 fragments (0.02%), 23.4 g
- **La Selva:** 0 fragments (0.00%), 0 g

**Description of Paste:** Fine texture, medium compactness, pinkish gray (5YR 6/2) in color with a dark greenish gray (10G 4/1) core.

**Surface Finish:** Examples are either unslipped and smoothed or covered with an eroded slip or wash the same color as the paste. Smoothed examples have polished surfaces with an external radiance.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
6. – Plates

**Decoration:** The only example of decoration is an incised example.

**General Observations:** Fine brown ceramics are part of the larger tradition of fine paste wares throughout the Palenque and Lower Usumacinta regions. Fine brown pastes appear to date primarily to the Murciélagos phase (AD 700–770), according to Jiménez (2013) and San Román (2007).

6. Sandy (Late Classic to Early Postclassic periods)

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
- **El Infiernito:** 482 fragments (1.70%), 4877.4 g
- **La Selva:** 142 fragments (6.80%), 602.2 g

**Description of Paste:** Paste is medium textured and medium compact. Paste color is pale reddish brown (7.5YR 7/6). Some examples have a dark gray core (10YR 4/1). A fine paste variety known only from El Infiernito is fine textured and medium compact, occasionally with small white particles as temper. This fine paste variety has a light brown paste color (7.5YR 6/4). These examples appear to be a local imitation of Silho Fine Orange ceramics, in texture and form (shallow bowl) rather than paste color, which
more closely approaches Tres Naciones paste color. This latter paste class may be separated in the future.

**Surface Finish:** The majority of fragments are smoothed lacking preserved evidence of slip. Some examples have a preserved cream underslip, suggesting that they were originally polychrome. Other sherds have brown, black, buff, and red slips, while black and brown washes or poorly preserved slips are especially abundant. Such washes are common on thin-walled jars.

**Form Sub-categories:**

1. – Dishes, beakers, and bowls
   1.1 – Thin-walled dish with flared or slightly outcurved sides, with or without feet
   1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet
   1.4 – Thin-walled bowl with slightly incurved sides
2. – Vases
   2.1 – Thin-walled vase with flared sides
   2.3 – Barrel-shaped vase/bowl
3. – Jars
   3.2 – Thin-walled jar with outflared neck and medial or labial flange
   3.11 – Thin-walled jar with low, slightly outflared neck
4. – Tecomates
5. – Basins
   5.9 – Medium-walled basin with incurved sides, exterior folded rim
6. – Plates
   6.2 – Tripod plate with flared sides, horizontal everted rim, basal flange, flat base, and hollow, elongated ovoid feet
   6.4 – Tripod plate with flared sides, direct rim, and flat base
   6.5 – Thin-walled tripod plate, lightly outcurved with exterior folded rim, flat base, and hollow ovoid feet
7 – Platters with Basal Rings

**Decoration:** The remnants of polychrome decoration are present on some sherds. Other forms of decoration include incised (the most common), punctated, and trickled painting.

**General Observations:** Sandy pastes have a variety of forms, but the most common are beakers that were made in the Palenque region throughout the Late Classic period, from the Otolum through the Balunté phases (AD 600–850), most common during the Murciélago phase (AD 700–770) (San Román 2007:32). López (1991:64-65) notes the presence of punctated ceramics in the Rosario Incised type during the Pomoncab phase of Pomoná. Sandy paste vessels with a cream or white slip may belong to the Marqués Cream type known from Palenque (San Román 2007). Jiménez notes that the sides of beakers generally become more direct through time, as Murciélago phase (AD 700–770) beakers exhibit a higher degree of outcurving compared to those of the Balunté phase (AD 770-850). At El Infiernito, fine sandy pastes approaching the texture and color of Tres Naciones fine gray ceramics are common in Terminal to Early Postclassic contexts,
likely forming a distinct imitation fine paste category so far not known from other sites in the region.

8. Micaceous (Late Preclassic and Late Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 72 fragments (0.25%), 645.1 g
La Selva: 3 fragments (0.10%), 60.3 g

Description of Paste: Fine to medium-textured paste of medium compactness, brown (7.5YR 4/3) in color with a dark gray (7.5YR 4/1) core. Late Preclassic examples generally have a higher compactness.

Surface Finish: Surface is generally smoothed, the same color as the paste, although some examples have evidence of an eroded slip. Micaceous pastes seem to have been common in both the Late Preclassic and Late Classic periods. Some Late Preclassic period examples have a poorly preserved cream slip (Flor Cream), while Late Classic period examples show a greater range of slip colors, including buff, brown, and cream, with some examples of a black wash, similar to examples from the Late Classic period with a sandy paste.

Form Sub-categories:
1. – Dishes, beakers, and bowls
3. – Jars
6. – Plates

Decoration: Aside from the few sherds with an eroded slip or wash, no examples from Late Classic period contexts show decoration. One Late Preclassic period example is incised and has an appliqué decoration.

General Observations: Late Classic period micaceous pastes are known in small proportions from Chinikiha (Jiménez 2013). The abundance of micaceous pastes during the Late Preclassic period led to Robles’s (2006) establishment of the Macho Micaceous ware. Examples from El Infiernito with a cream slip, therefore, can be classified in the type variety system as Karst Cream.

9. Kaolinite (Late and Terminal Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 10 fragments (0.04%), 258.8 g
La Selva: 6 fragments (0.30%), 31.4 g
**Description of Paste:** Medium compact paste, light brown (10YR 7/4) with a greenish gray (10G 5/1) or dark greenish brown (10YR 4/2) core.

**Surface Finish:** Most examples are smoothed, the same color as the paste; however, some sherds have the remains of a white slip.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls  
1.2 – Thin-walled dish with markedly outcurved sides, with or without feet  
6. – Plates  
6.2 – Tripod plate with flared sides, horizontal everted rim, basal flange, flat base, and hollow, elongated ovoid feet  
6.3 – Tripod plate with flared sides, direct rim, basal flange, flat base, and hollow oven feet  
6.5 – Thin-walled tripod plate with outcurved sides, exterior folded rim, flat base, and hollow ovoid feet

**Decoration:** All examples lack decoration, aside from the few sherds with a white slip.

**General Observations:** Jiménez (2013) observes that diagnostic sherds from Chinikiha with a kaolinite paste resemble tripod plates with elongated ovoid or oven feet common during the Balunté phase (AD 770–850) of Palenque (Rands and Bishop 2003; San Román 2007:38). The limited data from La Selva and El Infiernito confirm this chronological placement toward the end of the Late Classic period and beginning of the Terminal Classic period.

10. **Alluvium (Late Classic period)**

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
- **El Infiernito:** 8 fragments (0.03%), 27.3 g  
- **La Selva:** 4 fragments (0.20%), 14.0 g

**Description of Paste:** Medium-textured paste typically dark gray (10YR 4/1) in color. Some examples exhibit a seemingly finer texture, and in fact the texture is generally finer than sherds classified as sandy pastes. Although the paste shows a relatively uniform oxidized, black tone, the presence of white particles indicates the use of temper.

**Surface Finish:** Smoothed surface, the same color as the paste. One example from La Selva has remnants of a black slip.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls  
3. – Jars  
5. – Basins
5.9 – Medium-walled basin with incurved sides, exterior folded rim

**Decoration:** Aside from the smoothed surface and an example with black slip, no examples were decorated.

**11. Black Core with Soapy Texture (Late Classic period)**

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**

El Infiernito: 0 fragments (0.00%), 0.0 g  
La Selva: 1 fragment (0.00%), 5.2 g

**Description of Paste:** Medium-textured paste, light red (2.5YR 6/6) to reddish yellow (7.5YR 6/6) with a dark greenish gray (10Y 4/1 to 5G 4/1) core.

**Surface Finish:** The example from La Selva has a partially preserved slip with a soapy texture. At Chinikiha, these pastes are smoothed to a bright bluish gray (10B 8/1) or light brown (7.5YR 5/4) finish or have a white wash.

**Form Sub-categories:**

6. – Plates

**Decoration:** The single example from La Selva has no evidence of decoration.

**General Observations:** Tripod plates resemble examples from the Lower Usumacinta Basin (Berlin 1956; Hernández 1981). These plates appear to date to the transitional period between the Murciélagos (AD 700-770) and Balunté (AD 770-850) phases (Jiménez 2013; Rands and Bishop 2003). The presence of a soapy texture suggests a poorly preserved glossy slip.

**19. Carbonate with Remains of a Petén Gloss Slip (Late Preclassic to Terminal Classic periods)**

**Paste established by:** Smith 1955

**Quantity, proportion, and weight by paste:**

El Infiernito: 1589 fragments (5.59%), 11396.8 g  
La Selva: 20 fragments (1.00%), 181.8 g

**Description of Paste:** Medium-textured carbonate paste ranging in color from a light brown (7.5YR 6/4) to a pink (7.5YR 7/4) hue, sometimes with a darker core, from dark gray (10YR 4/1) to reddish yellow (5YR 7/6).

**Surface Finish:** The glossy slip is diagnostic of this paste class and has been classified as a common ware (Petén Gloss), belonging to the Classic period in the Southern Lowlands.
Slips are generally thin and poorly-preserved, with a distinct glossy shine and a soapy texture. Sherds have a range of colors, including red, black, brown, buff, orange, and cream.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
   1.1 – Thin-walled bowl/dish with flared or slightly outcurved sides, with or without feet
   1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet
   1.4 – Thin-walled bowl/dish with slightly incurved sides
   1.5 – Thin-walled bowl/dish with slightly outcurved sides
   1.7 – Medium-walled bowl/dish with outcurved sides and exterior thickened or folded rim
   1.9 – Medium-walled bowl/dish with slightly outcurved sides and exterior thickened rim
2. – Vases
   2.3 – Barrel-shaped vase/bowl
3. – Jars
   3.5 – Medium-walled jar with medium, outcurved neck
   3.9 – Thin-walled jar with markedly outcurved neck
5. – Basins
   5.9 – Medium-walled basin with incurved sides, exterior folded rim
6. – Plates
   6.1 – Tripod plate with outcurved sides and horizontal everted rim
   6.3 – Tripod plate with flared sides, direct rim, basal flange, flat base, and hollow oven feet
   6.4 – Tripod plate with flared sides, direct rim, and flat base
   6.6 – Thin-walled tripod plate with flared sides, lightly convex base, with or without basal flange
   6.8 – Tripod plate with flared sides and exterior folded rim
   6.9 – Plate with outcurved sides and no feet
7. – Platters

**Decoration:** Monochrome glossy slips often have no additional decoration, but some examples are incised, gouged-incised, striated, or impressed. Other examples are bichrome, with some examples including an orange body with a black rim, and a triclle design combining a red or orange (sometimes with hematite) with buff. Other examples have different slips on the interior and exterior, primarily black and buff/brown/orange.

19A. Polychrome (Late Preclassic to Late Classic periods)

**Paste established by:** Smith 1955

**Quantity, proportion, and weight by paste:**
El Infiernito: 163 fragments (0.57%), 1620.5 g
La Selva: 161 fragments (7.70%), 1030.1 g
Description of Paste: Same medium-textured carbonate paste as Petén Gloss ranging in color from a light brown (7.5YR 6/4) to a pink (7.5YR 7/4) hue, sometimes with a darker core, from dark gray (10YR 4/1) to reddish yellow (5YR 7/6). One example of a red/buff paste over a cream underslip has a sandy paste and may be a rare example of a polychrome tradition associated with Palenque.

Surface Finish: The glossy slip is diagnostic of this paste class and has been classified as a common ware (Petén Gloss), belonging to the Classic period in the Southern Lowlands. Slips are generally thin and poorly-preserved, with a distinct glossy shine and a soapy texture. Sherds show a range of colors, including red, black, brown, buff, orange, and cream.

Form Sub-categories:
1. – Dishes, beakers, and bowls
   1.1 – Thin-walled bowl/dish with flared or slightly outcurved sides, with or without feet
   1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet
   1.4 – Thin-walled bowl/dish with slightly incurved sides
2. – Vases
6. – Plates
   6.1 – Tripod plates with outcurved sides and horizontal everted rims
   6.2 – Tripod plates with flared sides, horizontal everted rims, basal flanges, flat bases, and hollow, elongated ovoid feet
   6.3 – Tripod plate with flared sides, direct rim, basal flange, flat base, and hollow oven feet
   6.7 – Tripod plate with outcurved sides and lightly convex base
   6.8 – Tripod plates with flared sides and exterior folded rims
   6.10 – Dish/plate with basal z-angle
7. – Platters

Decoration: Polychrome decoration consists of the use of multiple slips and paints (black, red, yellow) typically over an orange or cream background. Examples are rare and poorly-preserved from El Infiernito, while La Selva revealed a high proportion of polychrome ceramics consistent with the Saxche-Palmar group. Santa Rosa group ceramics, utilizing a resist-reserve or false negative decoration were documented at both sites, represented in higher proportions at La Selva. Additional decoration occasionally accompanied polychrome painting, including incised and impressed techniques.

Illustrations:

20. Compact Carbonate (Late Preclassic and Late Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infierno: 24 fragments (0.08%), 629.3 g
La Selva: 102 fragments (4.90%), 2259.9 g

Description of Paste: Very compact, pink-colored paste with a coarse texture. Abundant, large fragments of crystallized white calcite are present.

Surface Finish: Late Classic period sherds reveal a range of monochrome slips, with variable preservation, including black, red, brown, and buff. Other examples are merely smoothed with a surface finish the same color as the paste. One example from El Infierno has a cream paste.

Form Sub-categories:
1. – Dishes, beakers, and bowls
3. – Jars
3.8 – Thick-walled jar with long, outcurved neck and exterior folded rim
3.9 – Thin-walled jar with markedly outcurved neck
5. – Basins
5.9 – Medium-walled basin with incurved sides, exterior folded rim

Decoration: Most sherds lack additional decoration. Jars are striated, while one example of a basin was decorated with an impressed rock pattern.

General Observations: A. René Muñoz (2004) identified the Texcoco Unslipped: Temper Drag variety that belongs to the Naba phase (AD 350-560) at Piedras Negras. This variety is characterized by striated jars with very compact pastes (Jiménez 2013). Abundant examples from La Selva were documented at the bottom of the large looter’s pit through Structure C3-1, dated to the Balche (AD 560-620) or early Yaxche phases (AD 620-750). Examples of compact carbonate pastes at El Infierno belong to Late Preclassic contexts. These data suggest that this paste was common throughout the Terminal Preclassic to Early Classic and first half of the Late Classic periods.

22. Carbonate (Late Preclassic to Late Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infierno: 7,844 fragments (27.61%), 121,920.2 g
La Selva: 961 fragments (45.90%), 12,199.5 g

Description of Paste: Paste is slightly compact and coarse, ranging in color from pink (5YR 7/4) to light brown (7.5YR 6/4), brown (7.5YR 4/3), or reddish brown (5YR 5/4).

Surface Finish: To be classified as carbonate, sherds generally lack any diagnostic slip. Examples with such slips are generally classified as 19. Carbonate with Remains of a Petén Gloss Slip or 25. Miscellaneous Preclassic. Still, some ambiguous examples were classified as carbonate that revealed poorly preserved black, red, or brown slips or a black
wash. Some examples of striated jars can be assigned to the Zapote Unslipped type but were classified as carbonate due to the lack of slip, however these examples could be moved to the Miscellaneous Preclassic category. Some of these striated jars show a smoothed surface finish resulting in a color lighter than the paste, approaching a buff or cream surface finish.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
   1.1 – Thin-walled bowl/dish with flared or slightly outcurved sides, with or without feet
   1.4 – Thin-walled bowl/dish with slightly incurved sides
   1.9 – Medium-walled bowl/dish with slightly outcurved sides and exterior thickened rim
3. – Jars
   3.1 – Thin-walled jar with vertical neck and exterior folded rim
   3.5 – Medium-walled jar with medium, outcurved neck
   3.8 – Thick-walled jar with long, outcurved neck and exterior folded rim
   3.9 – Thin-walled jar with markedly outcurved neck
   3.14 – Thin-walled jar with low neck and exterior, semi horizontal folded rim
5. – Basins
   5.9 – Medium-walled basin with incurved sides, exterior folded rim
6. – Plates
7. – Platters
8. – Incense burners

**Decoration:** Jars are striated, impressed, or modelled, while basins are generally undecorated except one example with impressed decoration. Incense burners are either undecorated or modelled and impressed. Plates, dishes, beakers, and bowls are typically undecorated but occasionally were incised. One example of a basin or large bowl has monochrome red decoration in the form of a band below the rim.

**General Observations:** Carbonate pastes are the most common pastes in the region and typically make up the majority of assemblages in the Upper Usumacinta Basin. El Infiernito is an exception due to the high proportion of Late Preclassic and Terminal Classic period pastes, the latter which replace the carbonate pastes of the Late Classic period. These carbonate pastes correspond with production centers associated with the Central Petén of Guatemala and southern Campeche (Jiménez 2013). Carbonate pastes make up less than half of the assemblage at Chinikiha, but their appearance suggests increasing influence from the Petén during the Late Classic period (Jiménez 2013).

23. Pumaceous (Late to Terminal Classic periods)

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
El Infiernito: 32 fragments (0.11%), 304.0 g
La Selva: 0 fragments (0.00%), 0.0 g

**Description of Paste:** Paste has a coarse texture and a medium compactness. The color is brown (7.5YR 5/4) with a dark gray core.

**Surface Finish:** All sherds show evidence of smoothing, the same color as the paste. The texture of the surface is gritty. Gray-colored fire clouding is common on the surface.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls
   1.1 – Thin-walled dish with flared or slightly outcurved sides, with or without feet
   1.4 – Thin-walled bowl with slightly incurved sides
3. – Jars
   3.4 – Medium-walled jar with low neck and direct rim
   3.13 – Thin-walled jar with low, insloped neck and exterior folded rim
8. – Incense burners

**Decoration:** No sherds have decoration or slip.

**General Observations:** This paste class is largely restricted to jars at Chinikiha (Jiménez 2013), while at El Infiernito, a larger range of forms was noted. Forms from Chinikiha resemble jars known from Palenque dating to the Balunté phase (AD 770-850). The absence of this paste class at La Selva and its appearance in low quantities at El Infiernito in near surface contexts suggests a chronological placement toward the end of the Late Classic into the Terminal Classic periods.

25. Miscellaneous

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
**El Infiernito:** 751 fragments (2.64%), 8282.0 g  
**La Selva:** 33 fragments (1.60%), 206.5 g

**Description of Paste:** This class includes a range of pastes that could not be assigned to an established class. Many examples date to the Terminal Classic period and consist of imitation plumbates and imitation fine paste ceramics.

26. Miscellaneous Preclassic (Middle to Late Preclassic periods)

**Paste established by:** Jiménez 2013

**Quantity, proportion, and weight by paste:**
**El Infiernito:** 3,426 fragments (12.06%), 29,454.4 g  
**La Selva:** 0 fragments (0.00%), 0.0 g
**Description of Paste:** At least four pastes were noted, each of which at a future date may be separated into its own category.

1) Yellowish carbonate (already established as 34. Yellowish Carbonate) consists of a fine texture and a fragile to medium compact hardness with hematite and iron incrustations. Paste color is yellow (7.5YR 7/6 to 10YR 7/6).

2) Paste is similar to carbonate pastes consisting of a medium texture and a fragile to medium compact hardness with calcite and hematite incrustations and a brown (7.5YR 5/4) to dark brown paste color (10YR 5/2). Absent a diagnostic slip, such sherds may have been classified as 22. Carbonate (as were striated jars likely belonging to the Zapote Striated type).

3) Paste is similar to the 52. Porous Cork with Carbonates category; however it is distinguishable by a waxy surface finish (even when the slip is eroded), and the porous holes are less uniform, larger, and deeper than in the porous cork category. Texture is medium to coarse and hardness is fragile to medium compact.

4) A micaceous paste is nearly indistinguishable from Late Classic period micaceous pastes, absent preserved surface finish and diagnostic forms. The texture is generally medium to coarse and the hardness is fragile to medium compact. Examples without preserved slip were included in the 8. Micaceous category.

**Surface Finish:** Sherds were only classified as Miscellaneous Preclassic if a characteristic slip was preserved or if a diagnostic form could be reconstructed from rim sherds. When doing so was impossible, sherds were assigned to the paste categories described above (34. Yellowish Carbonate, 22. Carbonate, and 8. Micaceous). The exception is 52. Porous Cork with Carbonates, which was reserved only for Terminal Classic period pastes. However, as Preclassic period examples generally preserved their waxy finish, these sherds could be safely categorized as Miscellaneous Preclassic. A variety of slips were noted in the Miscellaneous Preclassic category, associated with well-known ceramic types. All slips had a waxy finish, often thick and well-preserved (except for some cream and black slips), and a matte to semi-glossy sheen.

1) Sierra Red types were defined by the characteristic red slip (2.5YR 4/6-2.5YR 4/8). Some examples were bichromes, with a red slip on the exterior and a black slip on the interior, or vice versa. These red slips tend to become more glossy over time.

2) Polvero Black types have a black slip, sometimes quite glossy and difficult to distinguish from Petén gloss types when poorly preserved. However, Polvero Black tends to have a waxy finish, and the slip is generally thicker than in Petén gloss examples. Some Polvero Black examples may actually be overfired cream slips.

3) Various Flor Cream examples were noted, ranging from light brown (7.5YR 6/4) often with crazing and black speckles. A cream/buff category was also identified ranging from light brown to brown (7.5YR 6/4-7.5YR 5/4). Finally, a white cream category consisted of a well-preserved pink (7.5YR 7/3) slip.

4) One example of a highly polished semi-glossy brown (7.5YR 4/4) to strong brown (7.5YR 4/6) was documented, the only clear Middle Preclassic period example in the collection. This example may be classified as a faded example of the Chunhinta Black type or a Muxanal Red-on-cream variety.
Form Sub-categories:
Preclassic period forms were not classified in the same system as the Late Classic period. At a future date, Preclassic period form categories may be developed.
1. – Dishes, beakers, and bowls
2. – Vases
3. – Jars
4. – Tecomates
5. – Basins
6. – Plates
8. – Incense burners

Decoration: A variety of decoration is evident, including channeled, striated, fluted, bichrome painting (including Guacamayo, La Vaca, and Copal), Usulután resist-reserve painting, incised, gouged-incised, stamped, and molded.

General Observations: The most developed ceramic analyses dating to the Preclassic period in the Upper Usumacinta are compiled in Muñoz (2006), Robles (2006) and Dobereiner (2016).

30. Coarse Carbonate (Late Preclassic and Late Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 225 fragments (0.79%), 1875.1 g
La Selva: 184 fragments (8.80%), 3,231.2 g

Description of Paste: Paste is similar to 20. Compact Carbonate in texture, consisting of a coarse mix of large calcite crystals and other particles. Coarse carbonate pastes, in contrast to compact carbonate, are fragile or slightly compact. Colors vary from brown (7.5YR 5/6) to reddish brown (10YR 6/6) and dark gray (10YR 4/1).

Surface Finish: The surface is smoothed and heavily eroded with a gritty texture, typically the same color as the paste. Jars and basins will sometimes have the remains of a black, red, or buff slip, generally only on the interior of the vessel, or a waxy (Preclassic period) cream slip on the exterior of jars.

Form Sub-categories:
3. – Jars
3.8 – Thick-walled jar with long, outcurved neck and exterior folded rim
4. – Tecomates
5. – Basins
5.9 – Medium-walled basin with incurved sides, exterior folded rim
Decoration: Decoration is limited to striated jars, belonging both to the Late Classic period and to the Zapote Striated type of the Late Preclassic period.

General Observations: Ball (1980) lists a variety of coarseware jars from Chinkultic throughout the Preclassic to Postclassic periods, which resemble some forms from El Infiernito. In contrast, Núñez Ocampo (2015) assigns this paste category only to the Preclassic and Protoclassic periods, although he notes that such examples are compact. In the current study, such pastes were included in the 20. Compact Carbonate class, but the latter class was still noted in both the Late Preclassic and Late Classic periods. Coarse carbonate pastes occur in Late Classic period contexts at La Selva and both Late Classic and Late Preclassic period contexts at El Infiernito. Coarse carbonate pastes, therefore, reflect a technology used for utilitarian jars and basins for an extended time.

31. Fine Carbonate (Late Preclassic to Terminal Classic periods)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 1,218 fragments (4.29%), 7997.9 g
La Selva: 99 fragments (4.70%), 469.9 g

Description of Paste: Fine to medium-textured paste with a high compactness and abundant fine calcite particles and incrustations of iron oxide (hematite). Paste color ranges from pink (5YR 6/6) to reddish brown (5YR 5/4) and various shades of brown (7.5YR 5/2, 7.5YR 5/3, 7.5YR 5/4). Some examples have a dark gray core (5Y 4/1).

Surface Finish: This paste class is typically reserved for thin to medium-walled vessels with a smoothed and eroded surface. Therefore, such sherds lack slip, although they likely had monochrome or even polychrome decoration, probably with a Petén gloss slip, that has since eroded. Some examples have heavily eroded black, brown, or red slips or a brown wash.

Form Sub-categories:
1. – Dishes, beakers, and bowls
   1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet
   1.4 – Thin-walled bowl with slightly incurved sides
1.8 – Medium-walled bowl/dish with incurved sides and interior thickened rim
1.9 – Medium-walled bowl/dish with slightly outcurved sides and exterior thickened rim
   2. – Vases
   2.3 – Barrel-shaped vase/bowl
   3. – Jars
   3.1 – Thin-walled jar with vertical neck and exterior folded rim
   3.2 – Thin-walled jar with outflared neck and medial or labial flange
3.9 – Thin-walled jar with markedly outcurved neck
   5. – Basins
5.9 – Medium-walled basin with incurved sides, exterior folded rim
6. Plates
6.4 – Tripod plate with flared sides, direct rim, and flat base
6.5 – Thin-walled tripod plate with outcurved sides, exterior folded rim, flat base, and hollow ovoid feet
6.7 – Tripod plate with outcurved sides and lightly convex base
6.8 – Tripod plate with flared sides and exterior folded rim
6.9 – Plate with outcurved sides and no feet
6.10 – Dish/plate with basal z-angle
7. – Platters

Decoration: Many vessels associated with this paste class likely previously had monochrome or polychrome surface finishes and decoration before erosion. Typically, the only preserved decoration on such sherds is incised or appliqué.

General Observations: Fine carbonate pastes are the same paste class as 19. Carbonate with Remains of a Petén Gloss Slip only without the preserved slip. Still, diagnostic forms can aid in a chronological placement even absent such diagnostic slips. These pastes generally belong to the Classic period, although Petén gloss slips, notably those associated with the Aguila Orange group appear toward the end of the Late Preclassic period.

32. Waxy Carbonate (Late Preclassic period)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 1 fragment (0.00%), 4.9 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Medium-textured carbonate paste, established to classify Preclassic period sherds with eroded waxy slips. Even after erosion, this waxy texture is present. This paste class was generally not used, and any carbonate pastes clearly belonging to the Preclassic period were placed in the 26. Miscellaneous Preclassic class.

Surface Finish: Surfaces are smoothed and have a waxy texture. These examples would have had waxy monochrome slips before erosion.

Form Sub-categories:
1. – Dishes, beakers, and bowls

33. Thin-walled Carbonate (Late Classic period)

Paste established by: Jiménez 2013

Quantity, proportion, and weight by paste:
El Infiernito: 1017 fragments (3.58%), 9870.8 g
La Selva: 299 fragments (14.30%), 1,265.7 g

Description of Paste: This paste class is a subdivision of carbonate pastes, consisting of a medium texture and medium compactness, reserved for thin-walled jars or dishes.

Surface Finish: Surfaces are smoothed, occasionally with preserved red, brown, or black pastes or a brown or black wash. Vessel interiors are generally very rough, due to the constricted orifices of thin-walled jars that prevented their smoothing.

Form Sub-categories:
1. – Dishes, beakers, and bowls
3. – Jars
3.2 – Thin-walled jar with outflared neck and medial or labial flange
3.9 – Thin-walled jar with markedly outcurved neck

Decoration: Decoration is restricted to exterior striations and sometimes punctated decoration around the base of the neck or shoulder of jars.

General Observations: At Pomoná, López Varela (1994:34-35) noted thin-walled jars with outcurved necks similar to Petén and Piedras Negras forms, belonging to the Triunfo Striated type. Similar forms have also been assigned to the Quintal Unslipped type at Calakmul and Uaxactun (Domínguez 1994:104; Smith 1955:131). Jiménez (2013) has also noted the presence of thin-walled jars in carbonate and sandy pastes at Chinikiha. A variety of thin-walled jar with outflared neck and medial or labial flange (3.2) is especially common in the Palenque and Chinikiha orbits, and these forms extend into the Upper Usumacinta region, typically made with a sandy paste. Rare examples of such forms in carbonate pastes are known from La Selva and El Infiernito and may represent a local imitation of this form. Such forms appear to be absent from the Piedras Negras site core.

34. Yellowish Carbonate (Late Preclassic period)

Paste established by: Méndez 2012:79

Quantity, proportion, and weight by paste:
El Infiernito: 388 fragments (1.37%), 2112.3 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Fine to medium-textured paste with fine calcite temper with a medium compactness. Paste color ranges from yellow (10YR 6/4 to 7.5YR 7/8) to reddish yellow (7.5 YR 6/6). Paste is similar to fine orange but usually distinguishable through color, texture, and the higher vessel thicknesses during the Late Preclassic period.
**Surface Finish:** Yellow carbonate pastes are heavily eroded but originally had a Sierra Red, Preclassic period slip or occasionally a Polvero Black slip.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls  
3. – Jars  
6. – Plates

**Decoration:** Decoration is absent from all examples.

**General Observations:** Yellowish carbonate pastes can be difficult to distinguish from fine orange pastes; however, Preclassic period yellowish carbonate pastes are generally more yellowish, while fine orange pastes are slightly darker shades of orange, red, or brown. Yellowish carbonate pastes will also have calcite temper. Preclassic forms also tend to have thicker walls than thin-walled Terminal to Early Postclassic period fine wares. Robles (2006) notes that yellowish carbonate pastes are especially common in the Paso Caballos ware, alongside red and black waxy slips.

**52. Porous Cork with Carbonates (Terminal Classic to Early Postclassic periods)**

**Paste established by:** Núñez Ocampo 2015

**Quantity, proportion, and weight by paste:**
- **El Infiernito:** 3,552 fragments (12.50%), 33,870.2 g  
- **La Selva:** 0 fragments (0.00%), 0.0 g

**Description of Paste:** Carbonate paste with abundant oxidized iron incrustations with a medium to coarse texture and medium to high compactness. Paste color varies considerably depending on firing temperature but tends to range from brown (7.5YR 4/4 or 7.5YR 5/4) to dark brown (7.5YR 4/2) or dark gray (10YR 7/4). Occasionally a dark gray (2.5Y 4/1) core was present.

**Surface Finish:** Surface is smoothed, sometimes to the same color as the paste, sometimes darker and more rarely lighter than the paste. Fragments are heavily eroded, leading to a porous texture where carbonates (or some other inorganic or organic material) have separated to affect the surface of sherds more than the paste, giving sherds an appearance of cork material. In rare cases, a thick matte cream or black (possibly burnt cream) slip is present, especially on bowls.

**Form Sub-categories:**
1. – Dishes, beakers, and bowls  
1.2 – Thin-walled bowl/dish with markedly outcurved sides, with or without feet  
1.4 – Thin-walled bowl/dish with slightly incurved sides  
1.8 – Medium-walled bowl/dish with incurved sides and interior thickened rim  
3. – Jars  
3.9 – Thin-walled jar with markedly outcurved neck
3.11 – Thin-walled jar with low, slightly outflared neck
3.12 – Thin-walled jar with low, vertical neck and direct rim
3.13 – Thin-walled jar with low, insloped neck and exterior folded rim
4. Tecomates
5. – Basins
5.9 – Medium-walled basin with incurved sides, exterior folded rim
6. – Plates
8. – Incense burners

Decoration: Some jars are striated or punctated, while jars and incense burners show modelled, impressed, and appliqué decoration.

General Observations: Núñez Ocampo (2015) initially assigned this paste class to sherds dating across the Preclassic to Late Postclassic periods. However, at El Infiernito, this paste class clearly dates to the Terminal Classic to Early Postclassic periods based on its association with fine wares, copper, and surface or near surface assemblages. Porous carbonate pastes dating to the Preclassic period generally differ enough in their texture and surface finish to separate from the Porous Cork paste class. The appearance of porous cork at El Infiernito marks a change in form, to thin-walled, low neck jars. The relatively high proportion of this paste at El Infiernito during the Terminal Classic period and its absence at other sites, even nearby Santa Marta, suggest a local production center.

53. Talcous with Carbonates (Terminal Classic to Early Postclassic periods)

Paste established by: Núñez Ocampo 2015

Quantity, proportion, and weight by paste:
El Infiernito: 41 fragments (0.14%), 444.0 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Fine to medium-textured paste and a fragile to medium compactness with fine carbonates and oxidized iron incrustations. Paste color is light, ranging from light gray (2.5Y 8/4) to reddish (2.5YR 6/8).

Surface Finish: Examples are heavily eroded, smoothed to the same color as the paste.

Form Sub-categories: 
  3. – Jars

Decoration: No decoration is evident from the El Infiernito assemblage, aside from an example of a striated jar.

General Observations: Núñez Ocampo (2015) assigns this paste class to the Late Postclassic period, although the contexts at El Infiernito suggest an earlier appearance possibly during the Terminal Classic to Early Postclassic periods. The low proportion of this paste class at El Infiernito, however, may indicate an occupation approaching the
beginning of the Late Postclassic period. More likely, the paste class 53. Talcous with Carbonates represents an extension of the 1. Talcous paste class from the Late Classic period into the Terminal to Early Postclassic periods.

54. Fine Porous (Terminal Classic to Early Postclassic periods)

Paste established by: Núñez Ocampo 2015

Quantity, proportion, and weight by paste:
El Infiernito: 69 fragments (0.24%), 1400.8 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Carbonate paste with hematite and mica incrustations with medium hardness and medium texture, carbonates much finer than 52. All examples show heavy burning and fire clouding, causing at times a dark gray (2.5Y 4/1) core surrounded by a yellowish (10YR 6/4), reddish (5YR 6/6), or brown (7.5YR 4/2) paste. Generally finer than 52. Porous Cork with Carbonates, some examples have occasional larger pebble or gravel temper from 2 to 5 mm long.

Surface Finish: All examples are smoothed with well-preserved evidence for a matte cream or light brown (7.5 YR 6/3 or 7.5YR 4/3) slip approaching the paste color in much higher proportions than the 52. Porous Cork with Carbonates paste class.

Form Sub-categories:
1. – Dishes, beakers, and bowls
1.4 – Thin-walled bowl/dish with slightly incurved sides
3. – Jars

Decoration: Decoration is not evident on any sherds.

General Observations: The fine porous paste class is a finer version of the 52. Porous Cork with Carbonates with less temper or more finely ground temper. Unlike the 52. Porous Cork with Carbonates, the dominant form is a bowl with hollow bulbous rattle feet. Thus, Fine Porous belongs to a similar chronological placement, likely during the Early Postclassic period.

56. Fine Talcous (Terminal Classic to Early Postclassic period)

Paste established by: Núñez Ocampo 2017

Quantity, proportion, and weight by paste:
El Infiernito: 65 fragments (0.23%), 166.3 g
La Selva: 0 fragments (0.00%), 0.0 g
Description of Paste: Medium texture, medium compact paste, ranging in color from pink to light brown (7.5YR 7/4 to 7.5YR 6/4). Some examples appear to be an imitation Silho, in form and decoration, rather than paste color.

Surface Finish: All surfaces are smoothed and unslipped or with an unrecognizable, eroded slip.

Form Sub-categories:
1. – Dishes, beakers, and bowls
1.4 – Thin-walled bowl/dish with slightly incurved sides
3. – Jars
6. – Plates

Decoration: Some sherds have incised decoration, with motifs similar to those known from Silho Fine Orange vessels.

General Observations: Fine talcous pastes are an example of the chalky pastes known from the Late to Early Postclassic periods throughout the region, especially in the vicinity of Metzabok where they date to the Postclassic period.

57. Ferroginous (Terminal Classic to Early Postclassic periods)

Paste established by: Núñez Ocampo 2017

Quantity, proportion, and weight by paste:
El Infiernito: 17 fragments (0.06%), 159.9 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Paste reveals a range of colors due to the variable degree of firing, from reddish brown (7.5YR 6/6), yellowish brown (10YR 6/4), to black 10YR 3/1), with a black core (10YR 4/1). The paste also contains abundant inclusions of iron oxidation (hematite).

Surface Finish: All fragments have a smoothed, unslipped or eroded surface, the same color as the paste.

Form Sub-categories:
3. – Jars

Decoration: No decoration is present in the El Infiernito assemblage.

General Observations: The Ferroginous paste class is poorly understood at El Infiernito and Metzabok, where Núñez Ocampo (2017) established the category. At Metzabok, the Ferroginous paste class is known from Late Postclassic period contexts.

59. Carbonate with Xute (Late Classic to Terminal Classic periods)
Paste established by: Present study

Quantity, proportion, and weight by paste:
El Infiernito: 220 fragments (0.77%), 3762.9 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Carbonate paste, low to fragile compactness with a gritty texture. The paste has a pink (7.5YR 7/4) color, although some examples are darker perhaps due to fire clouding. The diagnostic characteristic of the Carbonate with Xute paste is the presence of abundant large (up to 1 cm long) inclusions of xute shell used as temper.

Surface Finish: All examples are smoothed and unslipped.

Form Sub-categories:
1. – Dishes, beakers, and bowls
   1.4 – Thin-walled bowl/dish with slightly incurved sides
   1.9 – Medium-walled bowl/dish with slightly outcurved sides and exterior thickened rim
3. – Jars
   3.5 – Medium-walled jar with medium, outcurved neck
   3.8 – Thick-walled jar with long, outcurved neck and exterior folded rim
   3.13 – Thin-walled jar with low, insloped neck and exterior folded rim
5. – Basins
   5.9 – Medium-walled basin with incurved sides, exterior folded rim

Decoration: The only observed decoration is on striated jars.

General Observations: The Carbonate with Xute paste class is a coarseware that appears at El Infiernito in low quantities. This paste class was also present at La Selva; however, the paste class was established during the analysis of El Infiernito ceramics. Thus, to separate Carbonate with Xute sherds from Carbonate sherds, a reanalysis of the La Selva materials is necessary.

61. Yalcox (Late Classic period)

Paste established by: Berlin 1956

Quantity, proportion, and weight by paste:
El Infiernito: 6 fragments (0.02%), 49.6 g
La Selva: 0 fragments (0.00%), 0.0 g

Description of Paste: Fine to medium texture, medium compactness, light brown (7.5YR 6/4). Small white or red particles are also visible in the paste.

Surface Finish: A black slip is present on Yalcox ceramics, darker than the paste.
**Form Sub-categories:**
- 1. – Dishes, beakers, and bowls

**Decoration:** No decoration is evident on the single example of this paste.

**General Observations:** As described in the section under 4. Fine Black, Yalcox pastes are similar, although they do not have a dark core and reveal a generally finer paste. Both paste categories have similar forms. No decorated examples are known from the current study, but San Román (2007:43) notes the same decorative techniques and motifs on Chablekal Fine Gray ceramics.
APPENDIX 3  
Ceramic Form Classes

**Figure A3.1** Ceramic form classes and sub-classes (Jiménez 2013:95)

<table>
<thead>
<tr>
<th>Form Classes and Sub-classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1. Bowls and Dishes</strong></td>
</tr>
<tr>
<td>1.1 Thin-walled bowl/dish with flared or slightly outcurved sides, with or without feet</td>
</tr>
<tr>
<td>1.2 Thin-walled bowl/dish with markedly outcurved sides, with or without feet</td>
</tr>
<tr>
<td>1.3 Thin-walled tripod bowl/dish with basal angle</td>
</tr>
<tr>
<td>1.4 Thin-walled bowl/dish with slightly incurved sides</td>
</tr>
<tr>
<td>1.5 Thin-walled bowl/dish with slightly outcurved sides</td>
</tr>
<tr>
<td>1.6 Thin-walled bowl/dish with incurved sides and vertical neck</td>
</tr>
<tr>
<td>1.7 Medium-walled bowl/dish with outcurved sides and exterior thickened or folded rim</td>
</tr>
<tr>
<td>1.8 Medium-walled bowl/dish with incurved sides and interior thickened rim</td>
</tr>
<tr>
<td>1.9 Medium-walled bowl/dish with slightly outcurved sides and exterior thickened rim</td>
</tr>
<tr>
<td><strong>Class 2. Vases</strong></td>
</tr>
<tr>
<td>2.1 Thin-walled vase with flared sides</td>
</tr>
<tr>
<td>2.2 Thin-walled vase with outcurved sides</td>
</tr>
<tr>
<td>2.3 Barrel-shaped vase/bowl</td>
</tr>
</tbody>
</table>
### Class 3. Jars

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Thin-walled jar with vertical neck and exterior folded rim</td>
</tr>
<tr>
<td>3.2</td>
<td>Thin-walled jar with outflared neck and medial or labial flange</td>
</tr>
<tr>
<td>3.3</td>
<td>Thin-walled jar with low, incurved neck</td>
</tr>
<tr>
<td>3.4</td>
<td>Medium-walled jar with low neck and direct rim</td>
</tr>
<tr>
<td>3.5</td>
<td>Medium-walled jar with medium, outcurved neck</td>
</tr>
<tr>
<td>3.6</td>
<td>Thick-walled jar with low neck and exterior thickened rim</td>
</tr>
<tr>
<td>3.7</td>
<td>Thin-walled jar with low, vertical neck and exterior folded rim</td>
</tr>
<tr>
<td>3.8</td>
<td>Thick-walled jar with long, outcurved neck and exterior folded rim</td>
</tr>
<tr>
<td>3.9</td>
<td>Thin-walled jar with markedly outcurved neck</td>
</tr>
<tr>
<td>3.10</td>
<td>Miniature jar with low, vertical neck</td>
</tr>
<tr>
<td>3.11</td>
<td>Thin-walled jar with low, slightly outflared neck</td>
</tr>
<tr>
<td>3.12</td>
<td>Thin-walled jar with low, vertical neck and direct rim</td>
</tr>
<tr>
<td>3.13</td>
<td>Thin-walled jar with low, insloped neck and exterior folded rim</td>
</tr>
<tr>
<td>3.14</td>
<td>Thin-walled jar with low neck and exterior, semi horizontal folded rim</td>
</tr>
</tbody>
</table>

### Class 4. Tecomates

### Class 5. Basins

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Basin with outflared everted, downward rim</td>
</tr>
<tr>
<td>5.2</td>
<td>Basin with horizontal everted rim</td>
</tr>
<tr>
<td>5.3</td>
<td>Basin with markedly open, outflared rim</td>
</tr>
<tr>
<td>5.4</td>
<td>Thin-walled basin with outflared everted, downward rim</td>
</tr>
<tr>
<td>5.5</td>
<td>Thin-walled basin with horizontal everted rim</td>
</tr>
<tr>
<td>5.6</td>
<td>Thin-walled basin with markedly open, outflared rim</td>
</tr>
<tr>
<td>5.7</td>
<td>Thin-walled basin with incurved sides, small outcurved rim, recurved sides</td>
</tr>
<tr>
<td>5.8</td>
<td>Medium-walled basin with incurved sides, interior thickened rim</td>
</tr>
<tr>
<td>5.9</td>
<td>Medium-walled basin with incurved sides, exterior folded rim</td>
</tr>
</tbody>
</table>

### Class 6. Plates

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Tripod plate with outcurved sides and horizontal everted rim</td>
</tr>
<tr>
<td>6.2</td>
<td>Tripod plate with flared sides, horizontal everted rim, basal flange, flat base, and hollow, elongated ovoid feet</td>
</tr>
<tr>
<td>6.3</td>
<td>Tripod plate with flared sides, direct rim, basal flange, flat base, and hollow oven feet</td>
</tr>
<tr>
<td>6.4</td>
<td>Tripod plate with flared sides, direct rim, and flat base</td>
</tr>
<tr>
<td>6.5</td>
<td>Thin-walled tripod plate with outcurved sides, exterior folded rim, flat base, and hollow ovoid feet</td>
</tr>
<tr>
<td>6.6</td>
<td>Thin-walled tripod plate with flared sides, lightly convex base, with or without basal flange</td>
</tr>
<tr>
<td>6.7</td>
<td>Tripod plate with outcurved sides and lightly convex base</td>
</tr>
<tr>
<td>6.8</td>
<td>Tripod plate with flared sides and exterior folded rim</td>
</tr>
<tr>
<td>6.9</td>
<td>Plate with outcurved sides and no feet</td>
</tr>
<tr>
<td>6.10</td>
<td>Dish/plate with basal $z$-angle</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Class 7. Platters with Basal Rings</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Class 8. Incense Burners</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Class 9. Comals</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Class 10. Miscellaneous</strong></td>
</tr>
</tbody>
</table>

Table A3.1 Ceramic form classes and sub-classes (adapted from Jiménez 2013:95).
## APPENDIX 4
Typology of El Infiernito Structures

<table>
<thead>
<tr>
<th>Group</th>
<th>Structure</th>
<th>Horizontal Dimensions (m)</th>
<th>Height (m)</th>
<th>&quot;Living&quot; Surface</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Group</td>
<td>B4-1</td>
<td>11 x 55.8</td>
<td>4.1</td>
<td>404</td>
<td>Terrace</td>
<td>Agricultural, Defensive</td>
</tr>
<tr>
<td>Lower Group</td>
<td>B4-2</td>
<td>.6 x 5</td>
<td>1</td>
<td>3</td>
<td>Freestanding Wall</td>
<td>Defensive Wall</td>
</tr>
<tr>
<td>Lower Group</td>
<td>C2-1</td>
<td>18.2 x 37.1</td>
<td>5.6</td>
<td>514</td>
<td>Terrace</td>
<td>Pyramidal shrine</td>
</tr>
<tr>
<td>Lower Group</td>
<td>C2-2</td>
<td>26 x 50</td>
<td>5.3</td>
<td>227</td>
<td>Substructure</td>
<td>Pyramidal shrine</td>
</tr>
<tr>
<td>Lower Group</td>
<td>C2-3</td>
<td>62 x 64</td>
<td>3</td>
<td>3210</td>
<td>Terrace</td>
<td>Plaza</td>
</tr>
<tr>
<td>Lower Group</td>
<td>C2-4</td>
<td>57.4 x 93.9</td>
<td>1.5</td>
<td>4030.3</td>
<td>Terrace</td>
<td>Plaza</td>
</tr>
<tr>
<td>Lower Group</td>
<td>D2-1</td>
<td>12.1 x 20.8</td>
<td>2</td>
<td>251.68</td>
<td>Range structure</td>
<td>Unknown</td>
</tr>
<tr>
<td>Lower Group</td>
<td>D2-2</td>
<td>8.1 x 17.1</td>
<td>2.1</td>
<td>138.51</td>
<td>Range structure</td>
<td>Unknown</td>
</tr>
<tr>
<td>Lower Group</td>
<td>D2-3</td>
<td>5.3 x 130</td>
<td>2.2</td>
<td>715.3</td>
<td>Terrace, footslope</td>
<td>Agricultural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-1</td>
<td>11.7 x 16</td>
<td>1.5</td>
<td>178</td>
<td>L-shaped Structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-10</td>
<td>2 x 10</td>
<td>0.6</td>
<td>20</td>
<td>Terrace</td>
<td>Agricultural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-11</td>
<td>2 x 5.5</td>
<td>0.5</td>
<td>11</td>
<td>Terrace</td>
<td>Agricultural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-2</td>
<td>20.3 x 25.3 (Total), 12.9 x 15.3 (Patio)</td>
<td>3.7</td>
<td>159.5</td>
<td>Substructure</td>
<td>Patio SE of D1-1</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-3</td>
<td>7.7 x 8.1</td>
<td>1.2</td>
<td>62.4</td>
<td>Terrace/Platform</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-4</td>
<td>5.8 x 7.4</td>
<td>1.3</td>
<td>42.92</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Group</td>
<td>Structure</td>
<td>Horizontal Dimensions (m)</td>
<td>Height (m)</td>
<td>&quot;Living&quot; Surface</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>----------------------------</td>
<td>------------</td>
<td>-------------------</td>
<td>------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-5</td>
<td>31.2 x 56</td>
<td>1.9</td>
<td>897.7</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-5</td>
<td>17.6 x 28.9</td>
<td>1.9</td>
<td>275.6</td>
<td>L-shaped Structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-6</td>
<td>3 x 3</td>
<td>0.4</td>
<td>9</td>
<td>Square platform</td>
<td>Altar, Ancillary</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-7</td>
<td>6.5 x 88</td>
<td>2.2</td>
<td>390.9</td>
<td>Terrace, W of D1-2</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-7</td>
<td>12.5 x 14.4</td>
<td>2.2</td>
<td>180</td>
<td>Near D1-5 and D1-6</td>
<td>Patio</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-8</td>
<td>4 x 157</td>
<td>2</td>
<td>498.6</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D1-9</td>
<td>1.4 x 10</td>
<td>0.8</td>
<td>14</td>
<td>Freestanding Wall</td>
<td>Defensive Wall</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-1</td>
<td>5.9 x 6.3</td>
<td>0.5</td>
<td>37.17</td>
<td>Square platform</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-2</td>
<td>8.9 x 27.3</td>
<td>1</td>
<td>225</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-3</td>
<td>4.1 x 10.1</td>
<td>0.5</td>
<td>35.4</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-4</td>
<td>1.2 x 1.2</td>
<td>0.2</td>
<td>1.44</td>
<td>Square platform</td>
<td>Altar, Ancillary</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-5</td>
<td>4.8 x 35.7</td>
<td>0.9</td>
<td>134.5</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-6</td>
<td>6.8 x 100 (Total), 6.8 x 17.7 (Patio)</td>
<td>18.5</td>
<td>510</td>
<td>Terrace</td>
<td>Architectural, Patio</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-7</td>
<td>3.5 x 15.3</td>
<td>0.8</td>
<td>45</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>D3-8</td>
<td>8.4 x 45.6</td>
<td>1.4</td>
<td>281</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-1</td>
<td>7.2 x 8.7</td>
<td>2.9</td>
<td>62.64</td>
<td>Substructure</td>
<td>Pyramidal shrine</td>
</tr>
<tr>
<td>Group</td>
<td>Structure</td>
<td>Horizontal Dimensions (m)</td>
<td>Height (m)</td>
<td>&quot;Living&quot; Surface</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>---------------------------</td>
<td>------------</td>
<td>------------------</td>
<td>----------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-10</td>
<td>30.2 x 33.1</td>
<td>1.2</td>
<td>999.62</td>
<td>Substructure, Terrace</td>
<td>Plaza</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-2</td>
<td>12.7 x 13.3</td>
<td>0.7</td>
<td>161.4</td>
<td>L-shaped Structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-3</td>
<td>18.7 x 28.1 (Total), 5.7 x 10.7 (Patio)</td>
<td>1.6</td>
<td>60.99</td>
<td>Substructure</td>
<td>Patio (SW of E1-2)</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-4</td>
<td>9.1 x 10.7</td>
<td>0.3</td>
<td>69.6</td>
<td>L-shaped Structure, C-shaped bench</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-5</td>
<td>2.6 x 2.9</td>
<td>0.2</td>
<td>7.54</td>
<td>Platform, C-shaped bench</td>
<td>Ancillary</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-6</td>
<td>27.2 x 43.2 (Total), 9.7 x 10 (Patio)</td>
<td>2.3</td>
<td>77.1</td>
<td>Substructure</td>
<td>Patio (E1-4, E1-5)</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-7</td>
<td>0.9 x 1</td>
<td>0.1</td>
<td>0.9</td>
<td>Square platform</td>
<td>Altar, Ancillary</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-8</td>
<td>25.5 x 34.2</td>
<td>1.2</td>
<td>960</td>
<td>Terrace</td>
<td>Patio</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E1-9</td>
<td>12.3 x 36.8</td>
<td>0.9</td>
<td>288.9</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-1</td>
<td>20.6 x 25.2 (Total), 8.4 x 18.3 (Patio)</td>
<td>2.2</td>
<td>177.1</td>
<td>Substructure</td>
<td>Patio between E2-3 and E2-2</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-1</td>
<td>6 x 15.4</td>
<td>2.2</td>
<td>65.7</td>
<td>Substructure</td>
<td>Patio NE of E2-3</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-10</td>
<td>8.4 x 14.8</td>
<td>0.6</td>
<td>81.8</td>
<td>C-shaped bench</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-11</td>
<td>2.8 x 9.7</td>
<td>0.3</td>
<td>27.16</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-2</td>
<td>3.5 x 12.4</td>
<td>0.3</td>
<td>43.4</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-3</td>
<td>1.7 x 16.7</td>
<td>0.3</td>
<td>37.6</td>
<td>C-shaped bench</td>
<td>Ancillary</td>
</tr>
<tr>
<td>Upper Group</td>
<td>E2-4</td>
<td>18.3 x 24.2 (Base), 12.2 x 15.2 (Summit)</td>
<td>4 – 6</td>
<td>59.1</td>
<td>Substructure</td>
<td>Pyramidal shrine, Patio</td>
</tr>
<tr>
<td>Group</td>
<td>Structure</td>
<td>Horizontal Dimensions (m)</td>
<td>Height (m)</td>
<td>&quot;Living&quot; Surface</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
<td>----------------------------</td>
<td>------------</td>
<td>------------------</td>
<td>------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Upper</td>
<td>E2-5</td>
<td>7.6 x 13.2</td>
<td>0.9</td>
<td>100.32</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Group</td>
<td>E2-6</td>
<td>5.4 x 11.9</td>
<td>0.4</td>
<td>64.26</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Upper</td>
<td>E2-7</td>
<td>38.2 x 48.3 (Total),</td>
<td>2.2</td>
<td>166.44</td>
<td>Substructure</td>
<td>Patio, E2-4, E2-5, E2-6</td>
</tr>
<tr>
<td>Group</td>
<td>E2-8</td>
<td>5.4 x 6.6</td>
<td>1.4</td>
<td>35.64</td>
<td>Platform</td>
<td>Lookout platform</td>
</tr>
<tr>
<td>Upper</td>
<td>E2-9</td>
<td>12.9 x 48</td>
<td>1.2</td>
<td>266</td>
<td>Substructure</td>
<td>Domestic</td>
</tr>
<tr>
<td>Group</td>
<td>E2-9</td>
<td>16 x 33</td>
<td>1</td>
<td>474.3</td>
<td>Substructure</td>
<td>Patio between E2-1 and E2-7</td>
</tr>
<tr>
<td>Upper</td>
<td>E3-1</td>
<td>5.9 x 6.6</td>
<td>1.4</td>
<td>38.94</td>
<td>Platform</td>
<td>Lookout platform</td>
</tr>
<tr>
<td>Group</td>
<td>E3-2</td>
<td>16.4 x 68.3</td>
<td>2.9</td>
<td>915</td>
<td>Terrace</td>
<td>Plaza</td>
</tr>
<tr>
<td>Upper</td>
<td>E3-3</td>
<td>9.8 x 17.5</td>
<td>2</td>
<td>126.6</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Group</td>
<td>E3-4</td>
<td>15.4 x 19</td>
<td>3</td>
<td>231.5</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Upper</td>
<td>E3-5</td>
<td>5.7 x 18.4</td>
<td>0.8</td>
<td>83.8</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>West</td>
<td>A3-1</td>
<td>4.9 x 4.9</td>
<td>1.5</td>
<td>24.01</td>
<td>Square platform</td>
<td>Shrine, lookout</td>
</tr>
<tr>
<td>Group</td>
<td>A3-2</td>
<td>10.6 x 19.2</td>
<td>1.7</td>
<td>159.5</td>
<td>Substructure</td>
<td>Patio</td>
</tr>
<tr>
<td>West</td>
<td>A3-3</td>
<td>7.8 x 21.6</td>
<td>2.5</td>
<td>107.8</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Group</td>
<td>B2-1</td>
<td>4.7 x 6.9</td>
<td>0.7</td>
<td>32.43</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West</td>
<td>B2-10</td>
<td>9.1 x 11.6</td>
<td>1.1</td>
<td>105.6</td>
<td>Terrace</td>
<td>Architectural</td>
</tr>
<tr>
<td>Group</td>
<td>Structure</td>
<td>Horizontal Dimensions (m)</td>
<td>Height (m)</td>
<td>&quot;Living&quot; Surface</td>
<td>Description</td>
<td>Function</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>---------------------------</td>
<td>------------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-11</td>
<td>2.9 x 3.7</td>
<td>0.9</td>
<td>10.73</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-12</td>
<td>2.6 x 12.1</td>
<td>0.8</td>
<td>31.46</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-13</td>
<td>3.1 x 3.3</td>
<td>0.8</td>
<td>10.23</td>
<td>Square platform</td>
<td>Domestic, ancillary</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-2</td>
<td>3.6 x 4.9</td>
<td>0.7</td>
<td>17.64</td>
<td>Platform</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-3</td>
<td>1.1 x 1.2</td>
<td>0.2</td>
<td>1.32</td>
<td>Square platform</td>
<td>Ancillary</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-4</td>
<td>2.7 x 3.6</td>
<td>0.4</td>
<td>9.72</td>
<td>Platform</td>
<td>Ramp</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-5</td>
<td>2.5 x 3</td>
<td>0.8</td>
<td>7.5</td>
<td>Square platform</td>
<td>Ancillary, domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-6</td>
<td>2.6 x 2.9</td>
<td>0.5</td>
<td>7.54</td>
<td>Square platform</td>
<td>Ancillary, domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-7</td>
<td>2.7 x 5.2</td>
<td>0.5</td>
<td>14.04</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-8</td>
<td>17.8 x 33.9</td>
<td>1</td>
<td>448</td>
<td>Terrace</td>
<td>Patio</td>
</tr>
<tr>
<td>West Group</td>
<td>B2-9</td>
<td>2 x 2.4</td>
<td>0.6</td>
<td>4.8</td>
<td>Square platform</td>
<td>Ancillary</td>
</tr>
<tr>
<td>West Group</td>
<td>B3-1</td>
<td>4.2 x 7.6</td>
<td>0.7</td>
<td>31.92</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B3-2</td>
<td>2.9 x 4.9</td>
<td>0.6</td>
<td>14.21</td>
<td>Range structure</td>
<td>Domestic</td>
</tr>
<tr>
<td>West Group</td>
<td>B3-3</td>
<td>13.8 x 23.8</td>
<td>1.7</td>
<td>214.3</td>
<td>Terrace</td>
<td>Patio</td>
</tr>
<tr>
<td>West Group</td>
<td>B3-4</td>
<td>1.5 x 1.8</td>
<td>0.5</td>
<td>2.7</td>
<td>Square platform</td>
<td>Ancillary</td>
</tr>
</tbody>
</table>

**Table A4.1**  Typology of El Infiernito structures
APPENDIX 5
Artifact Analyses

Table A5.1  Lithics ................................................................. 539
Table A5.2  Obsidian .............................................................. 558
Table A5.3  Groundstone ......................................................... 571
Table A5.4  Faunal Bone ......................................................... 576
Table A5.5  Shell ................................................................. 580
Table A5.6  Stucco ................................................................. 585
Table A5.7  Quartz ................................................................. 587
Table A5.8  Greenstone and Hematite ........................................ 589
Table A5.9  Special Lithics ....................................................... 591
<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>5.92</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>5.91</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>58.20</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>27.16</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>9.59</td>
<td>Tertiary</td>
<td>Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>22.82</td>
<td>Tertiary</td>
<td>Blocky</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>28.99</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>43</td>
<td>105.03</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>29.82</td>
<td>Tertiary</td>
<td>Blocky</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>11</td>
<td>17.37</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>16.47</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>22.98</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>23.75</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>9.71</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>46.36</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>7.03</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert/resin</td>
<td>Medium</td>
<td>1</td>
<td>18.07</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.50</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-3</td>
<td>Limestone</td>
<td>Fine</td>
<td>1</td>
<td>3.74</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>10.98</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-1</td>
<td>Chert/coarse</td>
<td>Medium</td>
<td>1</td>
<td>51.15</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>7.20</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-1</td>
<td>Chert/coarse</td>
<td>Medium</td>
<td>3</td>
<td>10.85</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-1</td>
<td>Chert/coarse</td>
<td>Medium</td>
<td>1</td>
<td>4.34</td>
<td>Secondary</td>
<td>Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>3.18</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>---------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>25.03</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>16.92</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>2</td>
<td>3.04</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-1-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>1.91</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>19.15</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>47</td>
<td>80.15</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>22</td>
<td>67.88</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>13.02</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>11</td>
<td>27.10</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.89</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>3.17</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>33.23</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>18.70</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Fine</td>
<td>3</td>
<td>5.26</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>7.32</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.70</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>17.94</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>31</td>
<td>56.72</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>20.44</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>2.94</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.12</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>5.01</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>0.35</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.86</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>4.64</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>4.29</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>6.07</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.82</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.30</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>13.81</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>21.88</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>13.38</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.30</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>150.74</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>9.05</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>7.60</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>11.14</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>1.83</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.46</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>10</td>
<td>22.93</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.93</td>
<td>Tertiary</td>
<td>Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>21.72</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>8.27</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>1.83</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.16</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>10</td>
<td>16.32</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>0.66</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>23</td>
<td>32.14</td>
<td>Tertiary</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>10.05</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>6.14</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.89</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>5.54</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>8.30</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.24</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.89</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>28.13</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.58</td>
<td></td>
<td>Tertiary Fire altered</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>16.30</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>15.88</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>20.88</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.24</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.12</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>9.64</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>2</td>
<td>148.28</td>
<td></td>
<td>Possibly early stage tool</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>1.64</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>21.65</td>
<td></td>
<td>Tertiary Possible scrapers</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>4.13</td>
<td></td>
<td>Primary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Fine</td>
<td>11</td>
<td>33.22</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>0.93</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.28</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Medium</td>
<td>13</td>
<td>40.43</td>
<td></td>
<td>Secondary</td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>7.94</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.18</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>1.17</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-4</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.61</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.39</td>
<td>Tertiary</td>
<td>Utilized</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>6.30</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>7.00</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.07</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>3.53</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>20.09</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>16.28</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>2.17</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.76</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.86</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>7</td>
<td>54.41</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>36</td>
<td>59.26</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>9.32</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>7</td>
<td>18.41</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.88</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>4.97</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>20</td>
<td>47.27</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>14.48</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.28</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>19.79</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>1.34</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.03</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>23.17</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>5</td>
<td>34.85</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td>Chert</td>
<td>Medium</td>
<td>9</td>
<td>13.99</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>2</td>
<td>4.75</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.59</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>6.91</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>1.47</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>47</td>
<td>108.22</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>14</td>
<td>49.95</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>14</td>
<td>54.59</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>7</td>
<td>58.94</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>5.65</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>18.93</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.91</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-3</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>19.22</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-3</td>
<td>Chert</td>
<td>Medium</td>
<td>35</td>
<td>53.46</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.33</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.82</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>13</td>
<td>51.92</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>37</td>
<td>66.35</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>4.97</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>9</td>
<td>2.63</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>------------------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>3.85</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.56</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>15.15</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert</td>
<td>Medium</td>
<td>37</td>
<td>38.28</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>0.48</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>6.76</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-9-2 Burial 4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.38</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.88</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.02</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>9.33</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>19.20</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>5.13</td>
<td>Tertiary Fire altered</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>35.16</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>20</td>
<td>38.64</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>4.03</td>
<td>Tertiary Fire altered</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>5</td>
<td>7.43</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>2</td>
<td>1.76</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>7</td>
<td>6.97</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>4.79</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>5.52</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>9.60</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>17.01</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>10.04</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>9.22</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.56</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>3.00</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.88</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>7.67</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td>Chert</td>
<td></td>
<td>2</td>
<td>7.69</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>32.84</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>17.47</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>5.80</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>44.17</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>14</td>
<td>46.90</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>14.40</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>43.12</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-2-1</td>
<td>Chert</td>
<td>Fine</td>
<td>2</td>
<td>2.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>18.55</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>18.73</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>8</td>
<td>62.19</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>42</td>
<td>31.89</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>5</td>
<td>125.12</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>10.75</td>
<td>Tertiary</td>
<td>Long blocky blades?</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>11</td>
<td>12.13</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>142</td>
<td>172.27</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>21.44</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>9</td>
<td>64.59</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>7.48</td>
<td>Tertiary</td>
<td>Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>104</td>
<td>132.59</td>
<td>Tertiary</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Infierno</td>
<td>IN-3B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>11</td>
<td>45.49</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>5.44</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>12.86</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>12</td>
<td>41.60</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-1-3</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.60</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.32</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.17</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>5</td>
<td>17.05</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>4.16</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.72</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Fine</td>
<td>3</td>
<td>6.00</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>6.18</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>16.58</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.48</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.89</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-1-1</td>
<td>Chert</td>
<td>Fine</td>
<td>3</td>
<td>15.22</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-1-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>2</td>
<td>54.05</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>1</td>
<td>1.96</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>4</td>
<td>8.92</td>
<td>Tertiary</td>
<td>1 fire altered</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.82</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.34</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>3.34</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.05</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-4B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>8.20</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>6.75</td>
<td>Tertiary</td>
<td>Retouched edge</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>1.51</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>1.73</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>4</td>
<td>21.82</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>1.56</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.02</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>7.10</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>8.92</td>
<td>Tertiary</td>
<td>Fire altered</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.22</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>22.99</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>15.54</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>21.38</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>37</td>
<td>75.48</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>13.93</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>9.81</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>17</td>
<td>21.04</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>3.65</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>10.16</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.41</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>4.24</td>
<td>Tertiary</td>
<td>Possible scraper</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>10.14</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.91</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-3</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>19.44</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.05</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Fine</td>
<td>3</td>
<td>2.85</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Medium</td>
<td>8</td>
<td>37.90</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>27.11</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.76</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.91</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>10.76</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-5</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.76</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.88</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.63</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.01</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>3.66</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-7</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.66</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-7</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.94</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-9</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.94</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-9</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>7.95</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.74</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>31.35</td>
<td>Tertiary</td>
<td>Retouched edge</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.23</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>Chert</td>
<td>Coarse</td>
<td>9</td>
<td>28.02</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-12</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.42</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-12</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.28</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-12</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>5.48</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-11-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>20.80</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>8.10</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>5.71</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>20.17</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>29.42</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.32</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.10</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-13-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>5.95</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>14.65</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5C-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.63</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>23.71</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>4.71</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.32</td>
<td></td>
<td>Tertiary Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>8.13</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>7.42</td>
<td></td>
<td>Secondary In same bag as L171</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>6.22</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.58</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-6A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.72</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-8A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.48</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-8A-2-3</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.02</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-9A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.53</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-9A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.16</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>16.66</td>
<td></td>
<td>Secondary Blocky</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>3.75</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.04</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>5.66</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>10.27</td>
<td></td>
<td>Tertiary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>11.48</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>62.82</td>
<td></td>
<td>Secondary</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>15</td>
<td>79.71</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.22</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>16</td>
<td>122.95</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>2.79</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.63</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>26</td>
<td>91.49</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>6.21</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>1.61</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>30.19</td>
<td>Tertiary</td>
<td>Possible scraper</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>49.80</td>
<td>Tertiary</td>
<td>Possible scraper</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>5.62</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>4.85</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>11</td>
<td>26.29</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>4.93</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>66</td>
<td>118.57</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>9.35</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>9.47</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.98</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>7.50</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.33</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.83</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>34.89</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>13</td>
<td>47.97</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>6.25</td>
<td>Secondary</td>
<td>Bifacial thinning</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.04</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-5</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>0.81</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.06</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>7.78</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>5.67</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>7.55</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>4.65</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>Chert</td>
<td>Fine</td>
<td>2</td>
<td>6.81</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>41.08</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.25</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>6.99</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-6</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.42</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-6</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.45</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-2-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>6.70</td>
<td>Tertiary</td>
<td>Retouched edge</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>101</td>
<td>184.32</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.95</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>10</td>
<td>85.37</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>3.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.74</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.89</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.51</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>1.90</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-13A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.26</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-13A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.36</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-14A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.41</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-14A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>3</td>
<td>35.25</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-15A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.55</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.45</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-17A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.51</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-17A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>16.94</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-17A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>7.67</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19A-2-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.58</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19A-2-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.96</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19A-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.93</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19A-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.45</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.85</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>63.72</td>
<td>Tertiary</td>
<td>Blocky</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.50</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>11.52</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.53</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>4.13</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-20A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.93</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-20A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>3.53</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-20A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.84</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>4</td>
<td>6.69</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>2.65</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>7.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>17.04</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>10.68</td>
<td>Secondary</td>
<td>Blocky</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.69</td>
<td>Tertiary</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>29.35</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>18</td>
<td>64.48</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>17.63</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>1</td>
<td>0.74</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.25</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>4.64</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>0.73</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.74</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-3</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>2.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>8.47</td>
<td>Secondary</td>
<td>Retouched edge</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.62</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>2.87</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-1</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>1.40</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>3.79</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>0.46</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>41.01</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>31.14</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.74</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>4.77</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>61.99</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>1</td>
<td>2.76</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>19</td>
<td>46.12</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>51.34</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>Chert/chalcedony</td>
<td>Medium</td>
<td>2</td>
<td>5.86</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>7.99</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Texture</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>% Cortex</td>
<td>Comment</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>----------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-2</td>
<td>Chert</td>
<td>Coarse</td>
<td>2</td>
<td>16.97</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.50</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.52</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.78</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>3</td>
<td>4.31</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>9</td>
<td>26.27</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>3</td>
<td>37.20</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>2</td>
<td>13.59</td>
<td>Secondary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>3</td>
<td>59.98</td>
<td>Tertiary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>1</td>
<td>2.36</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>1</td>
<td>39.16</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>5</td>
<td>47.00</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>16</td>
<td>36.64</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.84</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>17.65</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>4.76</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.33</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>1.80</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>4.55</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>1.49</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>62.18</td>
<td>Tertiary</td>
<td>Monofacial scraper?</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>0.61</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-5</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>5.41</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-1</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>0.68</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td>4</td>
<td>16.59</td>
<td>Tertiary</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-1</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>8.36</td>
<td>Primary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-1</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>5</td>
<td>50.65</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>13</td>
<td>21.39</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>7</td>
<td>94.25</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>1.68</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.15</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>2.98</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Coarse</td>
<td>1</td>
<td>114.38</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Fine</td>
<td>10</td>
<td>51.54</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>20</td>
<td>59.85</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>2.30</td>
<td>Primary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>17</td>
<td>98.18</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>5</td>
<td>13.36</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>10</td>
<td>175.88</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>42.49</td>
<td>Primary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>3.24</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Chert</td>
<td>Medium</td>
<td>1</td>
<td>0.18</td>
<td>Tertiary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>2.18</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Fine</td>
<td>1</td>
<td>4.79</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>24</td>
<td>60.60</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>2</td>
<td>44.54</td>
<td>Tertiary</td>
<td>Possible cores</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>3</td>
<td>25.91</td>
<td>Secondary</td>
<td>Blocky</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>6</td>
<td>23.34</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>12</td>
<td>25.26</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>Chert</td>
<td>Medium</td>
<td>9</td>
<td>29.66</td>
<td>Secondary</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.1: Lithics

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Texture</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>% Cortex</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>1</td>
<td>18.74</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>5</td>
<td>115.30</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>Chert/limestone</td>
<td>Medium</td>
<td>12</td>
<td>44.85</td>
<td>Tertiary</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1A-1-1</td>
<td>O729</td>
<td>3.64</td>
<td>6.21</td>
<td>1.78</td>
<td>0.33</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1A-1-1</td>
<td>O730</td>
<td>0.53</td>
<td>1.70</td>
<td>1.03</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1A-1-1</td>
<td>O731</td>
<td>0.44</td>
<td>1.56</td>
<td>0.98</td>
<td>0.21</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1A-1-2</td>
<td>O724</td>
<td>0.71</td>
<td>2.31</td>
<td>1.03</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1A-1-2</td>
<td></td>
<td>0.14</td>
<td>1.18</td>
<td>0.77</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-1-1</td>
<td>IN-1B-1-1a</td>
<td>0.63</td>
<td>1.97</td>
<td>1.05</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td>O676</td>
<td>0.89</td>
<td>3.16</td>
<td>1.10</td>
<td>0.21</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td>O677</td>
<td>0.79</td>
<td>2.75</td>
<td>0.94</td>
<td>0.20</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td>O678</td>
<td>0.61</td>
<td>2.00</td>
<td>1.09</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td></td>
<td>0.54</td>
<td>1.28</td>
<td>1.03</td>
<td>0.37</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td></td>
<td>0.36</td>
<td>1.16</td>
<td>0.91</td>
<td>0.27</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td></td>
<td>0.22</td>
<td>1.71</td>
<td>0.66</td>
<td>0.17</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td></td>
<td>0.29</td>
<td>1.42</td>
<td>0.75</td>
<td>0.24</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-1</td>
<td></td>
<td>0.24</td>
<td>1.06</td>
<td>0.73</td>
<td>0.21</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-2</td>
<td></td>
<td>0.69</td>
<td>2.08</td>
<td>1.45</td>
<td>0.41</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-2</td>
<td>O718</td>
<td>0.62</td>
<td>2.00</td>
<td>1.07</td>
<td>0.24</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-2</td>
<td></td>
<td>0.48</td>
<td>1.31</td>
<td>1.01</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-2</td>
<td></td>
<td>0.15</td>
<td>1.18</td>
<td>0.75</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-2</td>
<td></td>
<td>0.18</td>
<td>1.30</td>
<td>0.82</td>
<td>0.24</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1B-2-4</td>
<td></td>
<td>0.55</td>
<td>1.23</td>
<td>1.26</td>
<td>0.41</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1C-1-1</td>
<td></td>
<td>0.20</td>
<td>1.23</td>
<td>0.72</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1C-1-1</td>
<td>O702</td>
<td>0.63</td>
<td>1.73</td>
<td>1.24</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1C-2-1</td>
<td>O629</td>
<td>2.38</td>
<td>5.50</td>
<td>1.32</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1C-2-1</td>
<td>O630</td>
<td>1.92</td>
<td>4.32</td>
<td>1.15</td>
<td>0.34</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-1C-2-1</td>
<td>O631</td>
<td>1.20</td>
<td>3.45</td>
<td>1.00</td>
<td>0.18</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O632</td>
<td>0.36</td>
<td>1.98</td>
<td>0.83</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O633</td>
<td>0.45</td>
<td>2.31</td>
<td>1.00</td>
<td>1.60</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O634</td>
<td>0.21</td>
<td>2.73</td>
<td>0.61</td>
<td>0.13</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O632</td>
<td>0.09</td>
<td>1.01</td>
<td>0.50</td>
<td>0.17</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O634</td>
<td>0.20</td>
<td>1.44</td>
<td>0.73</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O633</td>
<td>0.25</td>
<td>2.82</td>
<td>0.52</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O634</td>
<td>0.05</td>
<td>1.34</td>
<td>0.52</td>
<td>0.20</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>O633</td>
<td>0.12</td>
<td>1.22</td>
<td>0.84</td>
<td>0.13</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>O679</td>
<td>3.02</td>
<td>4.55</td>
<td>1.53</td>
<td>0.33</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>O680</td>
<td>0.35</td>
<td>1.96</td>
<td>0.95</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>O681</td>
<td>0.47</td>
<td>3.30</td>
<td>0.57</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>O681</td>
<td>0.24</td>
<td>1.77</td>
<td>0.72</td>
<td>0.18</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>O680</td>
<td>0.14</td>
<td>1.01</td>
<td>0.83</td>
<td>0.13</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>O707</td>
<td>0.55</td>
<td>1.55</td>
<td>1.07</td>
<td>0.31</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>O708</td>
<td>0.67</td>
<td>1.41</td>
<td>1.61</td>
<td>0.27</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>O708</td>
<td>0.46</td>
<td>1.78</td>
<td>0.91</td>
<td>0.30</td>
<td>Retouched flake -- refit</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>O708</td>
<td>0.70</td>
<td>1.87</td>
<td>0.91</td>
<td>0.32</td>
<td>Retouched flake -- refit</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>O707</td>
<td>0.66</td>
<td>1.88</td>
<td>1.05</td>
<td>0.40</td>
<td>Retouched flake -- refit</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O603</td>
<td>6.06</td>
<td>6.96</td>
<td>1.82</td>
<td>0.35</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O604</td>
<td>2.25</td>
<td>5.45</td>
<td>1.56</td>
<td>0.26</td>
<td>Full blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O605</td>
<td>1.20</td>
<td>3.70</td>
<td>1.21</td>
<td>0.23</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O606</td>
<td>2.18</td>
<td>2.76</td>
<td>2.40</td>
<td>0.62</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O607</td>
<td>0.72</td>
<td>2.01</td>
<td>1.21</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O608</td>
<td>0.63</td>
<td>1.87</td>
<td>0.92</td>
<td>0.22</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O609</td>
<td>0.31</td>
<td>1.57</td>
<td>0.97</td>
<td>0.24</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O610</td>
<td>0.47</td>
<td>2.14</td>
<td>0.98</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O611</td>
<td>0.34</td>
<td>2.57</td>
<td>0.66</td>
<td>0.13</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O612</td>
<td>0.82</td>
<td>4.17</td>
<td>0.70</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O613</td>
<td>0.40</td>
<td>2.20</td>
<td>0.69</td>
<td>0.21</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O614</td>
<td>0.78</td>
<td>3.15</td>
<td>1.18</td>
<td>0.13</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O615</td>
<td>0.27</td>
<td>1.88</td>
<td>0.75</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>O640</td>
<td>4.30</td>
<td>3.85</td>
<td>0.97</td>
<td>0.96</td>
<td>Core</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>0.09</td>
<td>1.81</td>
<td>0.62</td>
<td>0.11</td>
<td>Medial blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>0.05</td>
<td>0.72</td>
<td>0.75</td>
<td>0.11</td>
<td>Medial blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>0.10</td>
<td>1.00</td>
<td>0.86</td>
<td>0.15</td>
<td>Medial blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>0.22</td>
<td>1.51</td>
<td>0.80</td>
<td>0.20</td>
<td>Proximal blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O620</td>
<td>1.34</td>
<td>4.11</td>
<td>0.98</td>
<td>0.23</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O621</td>
<td>2.62</td>
<td>5.08</td>
<td>1.60</td>
<td>0.27</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O622</td>
<td>0.83</td>
<td>3.41</td>
<td>0.75</td>
<td>0.32</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O623</td>
<td>0.45</td>
<td>1.96</td>
<td>0.93</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O624</td>
<td>1.25</td>
<td>3.92</td>
<td>1.05</td>
<td>0.24</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O625</td>
<td>0.38</td>
<td>2.61</td>
<td>0.65</td>
<td>0.15</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>O626</td>
<td>0.88</td>
<td>2.25</td>
<td>1.10</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-1</td>
<td>O717</td>
<td>0.30</td>
<td>2.28</td>
<td>1.00</td>
<td>0.13</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>0.11</td>
<td>1.52</td>
<td>0.45</td>
<td>0.12</td>
<td>Medial blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>0.10</td>
<td>1.17</td>
<td>0.92</td>
<td>0.08</td>
<td>Medial blade</td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>O701</td>
<td>1.43</td>
<td>4.33</td>
<td>1.17</td>
<td>0.30</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>O669</td>
<td>1.83</td>
<td>4.11</td>
<td>1.38</td>
<td>0.28</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>O670</td>
<td>0.50</td>
<td>1.57</td>
<td>1.14</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.33</td>
<td>1.05</td>
<td>1.05</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.09</td>
<td>1.36</td>
<td>0.42</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.08</td>
<td>1.32</td>
<td>0.60</td>
<td>0.13</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.07</td>
<td>0.70</td>
<td>0.67</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.06</td>
<td>0.73</td>
<td>0.65</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.14</td>
<td>0.84</td>
<td>1.07</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td></td>
<td>0.31</td>
<td>1.97</td>
<td>0.63</td>
<td>0.32</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td></td>
<td>0.76</td>
<td>1.24</td>
<td>1.74</td>
<td>0.32</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-1</td>
<td></td>
<td>0.28</td>
<td>1.37</td>
<td>0.88</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O656</td>
<td>1.05</td>
<td>2.87</td>
<td>1.21</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O657</td>
<td>1.14</td>
<td>3.40</td>
<td>1.02</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O658</td>
<td>0.78</td>
<td>2.42</td>
<td>0.86</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O659</td>
<td>0.50</td>
<td>2.32</td>
<td>0.96</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O660</td>
<td>0.65</td>
<td>1.76</td>
<td>1.30</td>
<td>0.35</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>O661</td>
<td>0.41</td>
<td>1.22</td>
<td>1.10</td>
<td>0.32</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-1</td>
<td></td>
<td>0.12</td>
<td>1.35</td>
<td>0.60</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-1</td>
<td></td>
<td>0.25</td>
<td>1.06</td>
<td>1.06</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>O627</td>
<td>8.28</td>
<td>4.10</td>
<td>1.23</td>
<td>1.07</td>
<td>Core</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>O628</td>
<td>1.31</td>
<td>2.81</td>
<td>1.27</td>
<td>0.32</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>O645</td>
<td>1.46</td>
<td>3.43</td>
<td>1.42</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>O650</td>
<td>0.44</td>
<td>1.81</td>
<td>0.92</td>
<td>0.23</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-9-2</td>
<td>O655</td>
<td>0.40</td>
<td>2.23</td>
<td>0.75</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-1</td>
<td>O641</td>
<td>2.35</td>
<td>6.06</td>
<td>1.30</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>O642</td>
<td>1.08</td>
<td>2.95</td>
<td>1.14</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>O643</td>
<td>1.33</td>
<td>2.82</td>
<td>0.32</td>
<td>0.27</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td></td>
<td>0.19</td>
<td>2.32</td>
<td>0.53</td>
<td>0.15</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td></td>
<td>0.16</td>
<td>1.69</td>
<td>0.56</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td></td>
<td>0.22</td>
<td>1.92</td>
<td>0.66</td>
<td>0.15</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td>O725</td>
<td>3.89</td>
<td>7.18</td>
<td>1.28</td>
<td>0.34</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td></td>
<td>0.28</td>
<td>3.18</td>
<td>0.53</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-2-2</td>
<td>IN-2A-2-2a</td>
<td>0.55</td>
<td>1.71</td>
<td>1.05</td>
<td>0.23</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-2-2</td>
<td>IN-2A-2-2b</td>
<td>0.66</td>
<td>1.91</td>
<td>1.28</td>
<td>0.21</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-1</td>
<td></td>
<td>0.21</td>
<td>1.55</td>
<td>0.70</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-1</td>
<td></td>
<td>0.27</td>
<td>1.36</td>
<td>1.10</td>
<td>0.25</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-1</td>
<td>O700</td>
<td>1.15</td>
<td>2.58</td>
<td>1.26</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>O682</td>
<td>0.93</td>
<td>2.98</td>
<td>1.01</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>O683</td>
<td>0.45</td>
<td>2.41</td>
<td>0.65</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>O684</td>
<td>0.69</td>
<td>2.12</td>
<td>1.10</td>
<td>0.24</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td></td>
<td>0.29</td>
<td>1.58</td>
<td>0.74</td>
<td>0.21</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td></td>
<td>0.14</td>
<td>1.61</td>
<td>0.54</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td></td>
<td>0.35</td>
<td>1.67</td>
<td>0.63</td>
<td>0.28</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td></td>
<td>0.23</td>
<td>1.36</td>
<td>1.07</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td></td>
<td>0.69</td>
<td>2.24</td>
<td>0.99</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td></td>
<td>0.19</td>
<td>1.24</td>
<td>1.16</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>O746</td>
<td>1.21</td>
<td>2.51</td>
<td>1.71</td>
<td>0.20</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>O749</td>
<td>0.83</td>
<td>3.17</td>
<td>0.97</td>
<td>0.22</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td></td>
<td>0.50</td>
<td>1.77</td>
<td>0.92</td>
<td>0.36</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>O744</td>
<td>0.93</td>
<td>2.28</td>
<td>1.03</td>
<td>0.32</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td></td>
<td>0.26</td>
<td>0.96</td>
<td>0.83</td>
<td>0.32</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td></td>
<td>0.36</td>
<td>1.39</td>
<td>1.16</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4A-1-2</td>
<td>IN-4A-1-2a</td>
<td>0.51</td>
<td>2.06</td>
<td>1.06</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4A-1-2</td>
<td></td>
<td>0.30</td>
<td>1.37</td>
<td>1.03</td>
<td>0.26</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4A-1-2</td>
<td></td>
<td>0.24</td>
<td>1.45</td>
<td>0.76</td>
<td>0.21</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4A-2-1</td>
<td></td>
<td>0.35</td>
<td>0.31</td>
<td>1.19</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-1-1</td>
<td></td>
<td>0.33</td>
<td>3.12</td>
<td>0.48</td>
<td>0.17</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-1-2</td>
<td></td>
<td>0.18</td>
<td>0.51</td>
<td>0.68</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>O651</td>
<td>1.50</td>
<td>2.98</td>
<td>1.47</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>O652</td>
<td>0.90</td>
<td>3.61</td>
<td>0.82</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>O664</td>
<td>0.63</td>
<td>1.97</td>
<td>1.02</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-2</td>
<td>O665</td>
<td>0.69</td>
<td>1.72</td>
<td>1.28</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-3</td>
<td></td>
<td>0.60</td>
<td>0.56</td>
<td>1.08</td>
<td>0.41</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4B-2-3</td>
<td></td>
<td>0.23</td>
<td>1.11</td>
<td>0.95</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td>IN-5A-1-3a</td>
<td>0.53</td>
<td>2.16</td>
<td>0.83</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td>IN-5A-1-3b</td>
<td>0.55</td>
<td>3.70</td>
<td>0.78</td>
<td>0.16</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td></td>
<td>0.10</td>
<td>0.96</td>
<td>0.76</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-3</td>
<td></td>
<td>0.21</td>
<td>0.85</td>
<td>1.35</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-5</td>
<td></td>
<td>0.45</td>
<td>1.43</td>
<td>0.92</td>
<td>0.32</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-5</td>
<td></td>
<td>0.26</td>
<td>1.18</td>
<td>0.61</td>
<td>0.33</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-5</td>
<td></td>
<td>0.10</td>
<td>0.88</td>
<td>0.53</td>
<td>0.22</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td></td>
<td>0.17</td>
<td>1.30</td>
<td>1.25</td>
<td>0.11</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td></td>
<td>0.18</td>
<td>1.16</td>
<td>0.52</td>
<td>0.28</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td></td>
<td>0.26</td>
<td>0.98</td>
<td>1.01</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td></td>
<td>0.25</td>
<td>1.19</td>
<td>0.87</td>
<td>0.27</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td></td>
<td>0.27</td>
<td>0.60</td>
<td>1.12</td>
<td>0.37</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-2-2</td>
<td></td>
<td>0.63</td>
<td>2.40</td>
<td>1.00</td>
<td>0.23</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-3-2</td>
<td>O748</td>
<td>2.06</td>
<td>4.52</td>
<td>1.41</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-2</td>
<td>O745</td>
<td>2.09</td>
<td>5.01</td>
<td>1.24</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>0.12</td>
<td>1.03</td>
<td>0.91</td>
<td>0.11</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-3</td>
<td></td>
<td>0.07</td>
<td>1.16</td>
<td>0.53</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>IN-5A-6-4a</td>
<td>1.38</td>
<td>4.02</td>
<td>1.05</td>
<td>0.26</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>IN-5A-6-4b</td>
<td>1.18</td>
<td>2.84</td>
<td>1.05</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>IN-5A-6-4c</td>
<td>0.53</td>
<td>2.50</td>
<td>0.77</td>
<td>0.20</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>IN-5A-6-4d</td>
<td>0.32</td>
<td>2.80</td>
<td>1.11</td>
<td>0.14</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.20</td>
<td>1.84</td>
<td>1.10</td>
<td>0.12</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.26</td>
<td>1.81</td>
<td>1.16</td>
<td>0.18</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.37</td>
<td>2.05</td>
<td>1.36</td>
<td>0.14</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.27</td>
<td>1.73</td>
<td>1.32</td>
<td>0.15</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.22</td>
<td>1.68</td>
<td>1.24</td>
<td>0.14</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>0.07</td>
<td>0.87</td>
<td>0.81</td>
<td>0.10</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td></td>
<td>0.15</td>
<td>1.17</td>
<td>1.15</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td></td>
<td>0.53</td>
<td>1.31</td>
<td>1.41</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td></td>
<td>0.31</td>
<td>1.96</td>
<td>0.66</td>
<td>0.17</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td>O743</td>
<td>1.52</td>
<td>4.25</td>
<td>1.12</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td></td>
<td>0.33</td>
<td>1.13</td>
<td>0.78</td>
<td>0.31</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td></td>
<td>0.09</td>
<td>0.82</td>
<td>0.63</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td></td>
<td>0.23</td>
<td>1.28</td>
<td>0.87</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.22</td>
<td>1.61</td>
<td>1.15</td>
<td>0.17</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.20</td>
<td>1.53</td>
<td>1.31</td>
<td>0.14</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.21</td>
<td>1.12</td>
<td>1.26</td>
<td>0.15</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.16</td>
<td>1.16</td>
<td>1.27</td>
<td>0.16</td>
<td>Flake</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.02</td>
<td>0.91</td>
<td>0.62</td>
<td>0.07</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-6-11</td>
<td></td>
<td>0.12</td>
<td>1.47</td>
<td>0.91</td>
<td>0.14</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-6-12</td>
<td>IN-5A-6-12</td>
<td>0.32</td>
<td>1.74</td>
<td>1.06</td>
<td>0.17</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-6-12</td>
<td></td>
<td>0.03</td>
<td>0.98</td>
<td>0.72</td>
<td>0.07</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-11-3</td>
<td>O747</td>
<td>2.05</td>
<td>4.16</td>
<td>1.20</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-12-3</td>
<td></td>
<td>0.72</td>
<td>1.53</td>
<td>1.32</td>
<td>0.41</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5D-1-2</td>
<td>O716</td>
<td>1.00</td>
<td>1.21</td>
<td>1.62</td>
<td>0.50</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5D-1-3</td>
<td>O637</td>
<td>0.38</td>
<td>1.68</td>
<td>0.96</td>
<td>0.20</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-1</td>
<td>O638</td>
<td>0.73</td>
<td>3.20</td>
<td>0.75</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-1</td>
<td>O638</td>
<td>0.35</td>
<td>1.78</td>
<td>0.63</td>
<td>0.27</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O660</td>
<td>0.68</td>
<td>3.30</td>
<td>0.82</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O661</td>
<td>0.64</td>
<td>2.64</td>
<td>0.92</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O666</td>
<td>0.97</td>
<td>2.61</td>
<td>1.41</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O667</td>
<td>0.80</td>
<td>3.39</td>
<td>0.87</td>
<td>0.24</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O668</td>
<td>0.35</td>
<td>1.09</td>
<td>1.35</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O671</td>
<td>1.00</td>
<td>1.18</td>
<td>1.93</td>
<td>0.66</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O672</td>
<td>0.38</td>
<td>1.56</td>
<td>0.91</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O673</td>
<td>0.50</td>
<td>3.70</td>
<td>0.70</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O674</td>
<td>0.10</td>
<td>1.20</td>
<td>0.62</td>
<td>0.14</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O675</td>
<td>0.44</td>
<td>1.31</td>
<td>1.16</td>
<td>0.31</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O676</td>
<td>0.45</td>
<td>1.44</td>
<td>1.22</td>
<td>0.33</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O677</td>
<td>0.47</td>
<td>1.06</td>
<td>1.15</td>
<td>0.46</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O678</td>
<td>0.16</td>
<td>1.16</td>
<td>0.91</td>
<td>0.23</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-11A-1-2</td>
<td>O679</td>
<td>0.28</td>
<td>1.27</td>
<td>0.91</td>
<td>0.21</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-3</td>
<td>O639</td>
<td>1.43</td>
<td>1.53</td>
<td>1.78</td>
<td>0.53</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-3</td>
<td>O644</td>
<td>0.80</td>
<td>1.20</td>
<td>1.55</td>
<td>0.37</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-3</td>
<td>O644</td>
<td>0.15</td>
<td>0.82</td>
<td>1.17</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-3</td>
<td>O674</td>
<td>0.81</td>
<td>2.57</td>
<td>1.51</td>
<td>0.23</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>O644</td>
<td>0.34</td>
<td>1.42</td>
<td>1.27</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>O674</td>
<td>0.50</td>
<td>1.17</td>
<td>1.11</td>
<td>0.35</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>O644</td>
<td>0.37</td>
<td>0.80</td>
<td>1.23</td>
<td>0.35</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>O674</td>
<td>0.32</td>
<td>0.80</td>
<td>1.15</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-5</td>
<td>O618</td>
<td>0.16</td>
<td>0.72</td>
<td>0.94</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-1</td>
<td>O712</td>
<td>0.42</td>
<td>1.83</td>
<td>1.09</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-1</td>
<td>O713</td>
<td>1.28</td>
<td>1.61</td>
<td>1.82</td>
<td>0.51</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-2</td>
<td>O618</td>
<td>0.25</td>
<td>1.54</td>
<td>0.75</td>
<td>0.16</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-2</td>
<td>O644</td>
<td>0.26</td>
<td>1.21</td>
<td>0.93</td>
<td></td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-3</td>
<td>O618</td>
<td>1.77</td>
<td>2.89</td>
<td>1.41</td>
<td>0.42</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>O617</td>
<td>1.01</td>
<td>2.75</td>
<td>1.35</td>
<td>0.30</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>O675</td>
<td>0.47</td>
<td>1.52</td>
<td>0.78</td>
<td>0.33</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>O713</td>
<td>0.15</td>
<td>1.83</td>
<td>0.66</td>
<td>0.16</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-5</td>
<td>O714</td>
<td>0.57</td>
<td>1.91</td>
<td>1.14</td>
<td>0.22</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-5</td>
<td>O653</td>
<td>0.26</td>
<td>0.21</td>
<td>0.62</td>
<td>0.46</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-5</td>
<td>O654</td>
<td>0.24</td>
<td>1.31</td>
<td>0.66</td>
<td>0.31</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-5</td>
<td>O618</td>
<td>0.17</td>
<td>0.76</td>
<td>0.80</td>
<td>0.24</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>O653</td>
<td>2.02</td>
<td>5.05</td>
<td>1.14</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-1</td>
<td>O654</td>
<td>1.25</td>
<td>3.24</td>
<td>1.21</td>
<td>0.30</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-3-3</td>
<td>O654</td>
<td>0.60</td>
<td>1.66</td>
<td>1.10</td>
<td>0.41</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-1</td>
<td>O600</td>
<td>1.34</td>
<td>4.63</td>
<td>1.07</td>
<td>0.31</td>
<td>Distal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-1</td>
<td>O601</td>
<td>4.96</td>
<td>5.52</td>
<td>1.88</td>
<td>0.33</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-4-1</td>
<td>O602</td>
<td>1.35</td>
<td>3.67</td>
<td>1.23</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19A-2-3</td>
<td></td>
<td>0.75</td>
<td>1.50</td>
<td>1.22</td>
<td>0.51</td>
<td>Flake</td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td></td>
<td>0.74</td>
<td>1.43</td>
<td>1.36</td>
<td>0.37</td>
<td>Flake</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>O738</td>
<td>1.02</td>
<td>2.25</td>
<td>1.39</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>O739</td>
<td>1.04</td>
<td>2.05</td>
<td>1.26</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>O740</td>
<td>1.11</td>
<td>2.60</td>
<td>1.21</td>
<td>0.27</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>O741</td>
<td>0.48</td>
<td>1.57</td>
<td>1.08</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>O742</td>
<td>0.61</td>
<td>1.72</td>
<td>1.15</td>
<td>0.25</td>
<td>Distal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td></td>
<td>0.32</td>
<td>1.18</td>
<td>1.19</td>
<td>0.20</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>O733</td>
<td>0.72</td>
<td>1.51</td>
<td>1.26</td>
<td>0.31</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>O734</td>
<td>0.77</td>
<td>3.10</td>
<td>0.82</td>
<td>0.27</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>O735</td>
<td>0.58</td>
<td>1.64</td>
<td>1.04</td>
<td>0.32</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>O736</td>
<td>0.65</td>
<td>1.69</td>
<td>1.23</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>O737</td>
<td>0.32</td>
<td>1.97</td>
<td>0.88</td>
<td>0.11</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td></td>
<td>0.18</td>
<td>0.89</td>
<td>0.84</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-3</td>
<td>O732</td>
<td>0.50</td>
<td>1.69</td>
<td>1.07</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-3</td>
<td></td>
<td>0.25</td>
<td>1.32</td>
<td>0.83</td>
<td>0.17</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-3</td>
<td></td>
<td>0.70</td>
<td>1.74</td>
<td>1.10</td>
<td>0.33</td>
<td>Flake</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td>O727</td>
<td>1.20</td>
<td>2.57</td>
<td>1.02</td>
<td>0.32</td>
<td>Distal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td>O728</td>
<td>0.59</td>
<td>2.10</td>
<td>0.88</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td></td>
<td>0.18</td>
<td>1.29</td>
<td>0.81</td>
<td>0.15</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td></td>
<td>0.39</td>
<td>2.58</td>
<td>0.64</td>
<td>0.22</td>
<td>Distal blade</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-4A-1-3</td>
<td>O726</td>
<td>2.87</td>
<td>6.11</td>
<td>1.28</td>
<td>0.32</td>
<td>Proximal blade</td>
</tr>
</tbody>
</table>
## Table A5.2: Obsidian

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Catalog Number</th>
<th>Mass (g)</th>
<th>Length (cm)</th>
<th>Width (cm)</th>
<th>Thickness (cm)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>O619</td>
<td>0.79</td>
<td>2.19</td>
<td>1.26</td>
<td>0.24</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>O635</td>
<td>1.00</td>
<td>2.30</td>
<td>0.99</td>
<td>0.42</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>O636</td>
<td>0.18</td>
<td>1.37</td>
<td>0.75</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>O714</td>
<td>0.62</td>
<td>1.88</td>
<td>1.06</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td></td>
<td>0.30</td>
<td>2.21</td>
<td>0.54</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td></td>
<td>0.36</td>
<td>1.62</td>
<td>0.71</td>
<td>0.28</td>
<td>Flake</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td></td>
<td>0.03</td>
<td>0.61</td>
<td>0.51</td>
<td>0.08</td>
<td>Flake</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td></td>
<td>0.15</td>
<td>1.35</td>
<td>0.64</td>
<td>0.21</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td></td>
<td>0.22</td>
<td>1.93</td>
<td>0.56</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>O715</td>
<td>0.53</td>
<td>1.24</td>
<td>1.46</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td></td>
<td>0.18</td>
<td>1.42</td>
<td>0.71</td>
<td>0.24</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td></td>
<td>0.20</td>
<td>1.29</td>
<td>0.74</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td></td>
<td>0.43</td>
<td>1.19</td>
<td>0.92</td>
<td>0.31</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>O646</td>
<td>0.82</td>
<td>2.26</td>
<td>1.10</td>
<td>0.30</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>O647</td>
<td>0.52</td>
<td>2.06</td>
<td>0.92</td>
<td>0.30</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>O648</td>
<td>1.00</td>
<td>2.68</td>
<td>1.06</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>O649</td>
<td>0.58</td>
<td>1.61</td>
<td>1.19</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td></td>
<td>0.31</td>
<td>1.26</td>
<td>0.80</td>
<td>0.30</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td></td>
<td>0.30</td>
<td>1.52</td>
<td>0.73</td>
<td>0.24</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td></td>
<td>0.28</td>
<td>1.40</td>
<td>0.92</td>
<td>0.23</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>O709</td>
<td>1.07</td>
<td>2.42</td>
<td>1.30</td>
<td>0.32</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>O710</td>
<td>0.87</td>
<td>3.27</td>
<td>0.98</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td></td>
<td>0.26</td>
<td>1.44</td>
<td>0.78</td>
<td>0.25</td>
<td>Flake</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td></td>
<td>0.21</td>
<td>0.90</td>
<td>0.76</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>O711</td>
<td>2.55</td>
<td>2.30</td>
<td>1.87</td>
<td>0.66</td>
<td>Retouched flake/uniface</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td></td>
<td>0.22</td>
<td>1.05</td>
<td>1.01</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>O616</td>
<td>1.29</td>
<td>2.62</td>
<td>1.35</td>
<td>0.32</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-5</td>
<td></td>
<td>0.21</td>
<td>1.15</td>
<td>0.98</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>O703</td>
<td>1.12</td>
<td>2.60</td>
<td>1.15</td>
<td>0.27</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>O704</td>
<td>0.69</td>
<td>2.13</td>
<td>1.15</td>
<td>0.22</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>O705</td>
<td>0.80</td>
<td>2.85</td>
<td>0.89</td>
<td>0.26</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>O706</td>
<td>0.75</td>
<td>1.50</td>
<td>1.15</td>
<td>0.37</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td></td>
<td>0.32</td>
<td>1.26</td>
<td>1.37</td>
<td>0.25</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td></td>
<td>0.15</td>
<td>1.22</td>
<td>0.91</td>
<td>0.17</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O685</td>
<td>1.17</td>
<td>3.28</td>
<td>1.02</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O686</td>
<td>0.77</td>
<td>2.42</td>
<td>1.15</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O687</td>
<td>0.74</td>
<td>3.48</td>
<td>0.93</td>
<td>0.22</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O688</td>
<td>1.33</td>
<td>2.24</td>
<td>2.15</td>
<td>0.27</td>
<td>Flake</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O689</td>
<td>0.51</td>
<td>1.66</td>
<td>0.92</td>
<td>0.25</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>O690</td>
<td>0.56</td>
<td>1.37</td>
<td>1.06</td>
<td>0.35</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td></td>
<td>0.47</td>
<td>1.30</td>
<td>1.08</td>
<td>0.36</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td></td>
<td>0.28</td>
<td>1.29</td>
<td>0.91</td>
<td>0.24</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td></td>
<td>0.10</td>
<td>1.16</td>
<td>0.47</td>
<td>0.16</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td></td>
<td>0.22</td>
<td>1.29</td>
<td>0.78</td>
<td>0.18</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td></td>
<td>0.23</td>
<td>1.35</td>
<td>0.69</td>
<td>0.20</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O691</td>
<td>1.18</td>
<td>3.98</td>
<td>0.93</td>
<td>0.26</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O692</td>
<td>0.53</td>
<td>3.61</td>
<td>0.81</td>
<td>0.25</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O693</td>
<td>0.66</td>
<td>2.68</td>
<td>0.72</td>
<td>0.23</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O694</td>
<td>0.44</td>
<td>2.21</td>
<td>1.03</td>
<td>0.22</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O695</td>
<td>1.11</td>
<td>1.30</td>
<td>1.66</td>
<td>0.46</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O696</td>
<td>0.45</td>
<td>1.90</td>
<td>0.87</td>
<td>0.25</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O697</td>
<td>0.56</td>
<td>1.63</td>
<td>1.01</td>
<td>0.28</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O698</td>
<td>0.31</td>
<td>1.42</td>
<td>1.10</td>
<td>0.15</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O699</td>
<td>0.29</td>
<td>1.00</td>
<td>1.28</td>
<td>0.20</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O719</td>
<td>0.41</td>
<td>2.07</td>
<td>0.98</td>
<td>0.16</td>
<td>Distal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>O720</td>
<td>0.36</td>
<td>1.39</td>
<td>0.99</td>
<td>0.22</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>O721</td>
<td>0.78</td>
<td>2.69</td>
<td>0.98</td>
<td>0.31</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>O722</td>
<td>0.82</td>
<td>2.42</td>
<td>1.17</td>
<td>0.27</td>
<td>Proximal blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>O723</td>
<td>0.57</td>
<td>1.73</td>
<td>1.31</td>
<td>0.33</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>O724</td>
<td>0.13</td>
<td>0.90</td>
<td>0.63</td>
<td>0.18</td>
<td>Medial blade</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Infiernito</td>
<td>Infiernito No context</td>
<td></td>
<td>1</td>
<td>12.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>Infiernito upper terrace near cave</td>
<td>G330</td>
<td>1</td>
<td>679.58</td>
<td>11.6</td>
<td>7.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>Infiernito upper terrace near cave</td>
<td>G331</td>
<td>1</td>
<td>222.79</td>
<td>4.2</td>
<td>7.5</td>
<td>6.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-1</td>
<td>G337</td>
<td>1</td>
<td>56.56</td>
<td>7.0</td>
<td>5.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-1</td>
<td>G338</td>
<td>1</td>
<td>10.18</td>
<td>3.9</td>
<td>3.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-1</td>
<td>G341</td>
<td>1</td>
<td>95.68</td>
<td>7.7</td>
<td>5.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-2</td>
<td>G342</td>
<td>1</td>
<td>182.83</td>
<td>5.5</td>
<td>8.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-2</td>
<td>G360</td>
<td>1</td>
<td>344.30</td>
<td>7.5</td>
<td>5.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-2</td>
<td>G361</td>
<td>1</td>
<td>85.74</td>
<td>4.0</td>
<td>5.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-3</td>
<td></td>
<td>1</td>
<td>1730.00</td>
<td>19.0</td>
<td>15.8</td>
<td>13.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B Surface</td>
<td>G356</td>
<td>1</td>
<td>809.00</td>
<td>7.1</td>
<td>9.2</td>
<td>7.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B Surface</td>
<td>G357</td>
<td>1</td>
<td>1203.00</td>
<td>14.2</td>
<td>9.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B Surface</td>
<td></td>
<td>1</td>
<td>195.53</td>
<td>8.0</td>
<td>5.6</td>
<td>3.1</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-1-1</td>
<td></td>
<td>1</td>
<td>2.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G312</td>
<td>1</td>
<td>379.89</td>
<td>8.6</td>
<td>13.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G313</td>
<td>1</td>
<td>103.33</td>
<td>5.5</td>
<td>4.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G314</td>
<td>1</td>
<td>71.85</td>
<td>3.3</td>
<td>4.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G315</td>
<td>1</td>
<td>17.08</td>
<td>3.2</td>
<td>3.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G316</td>
<td>1</td>
<td>114.32</td>
<td>4.2</td>
<td>6.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>G317</td>
<td>1</td>
<td>205.13</td>
<td>5.6</td>
<td>6.2</td>
<td>4.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td></td>
<td>2</td>
<td>28.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td></td>
<td>6</td>
<td>117.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-2</td>
<td>G328</td>
<td>3</td>
<td>17.46</td>
<td>4.5</td>
<td>3.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-2</td>
<td></td>
<td>5</td>
<td>67.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-2-1</td>
<td>G321</td>
<td>1</td>
<td>317.83</td>
<td>5.9</td>
<td>8.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-2-1</td>
<td>G322</td>
<td>1</td>
<td>65.26</td>
<td>4.3</td>
<td>3.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-2-2</td>
<td></td>
<td>1</td>
<td>61.57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-2-2</td>
<td>G324</td>
<td>1</td>
<td>545.00</td>
<td>9.9</td>
<td>7.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-3-1</td>
<td></td>
<td>1</td>
<td>9.99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-3-2</td>
<td>G318</td>
<td>1</td>
<td>125.10</td>
<td>6.0</td>
<td>3.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-3-4</td>
<td>G326</td>
<td>1</td>
<td>193.97</td>
<td>5.2</td>
<td>5.2</td>
<td>4.7</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-6-1</td>
<td>G307</td>
<td>1</td>
<td>191.84</td>
<td>15.3</td>
<td>5.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-7-1</td>
<td>G323</td>
<td>1</td>
<td>675.00</td>
<td>11.5</td>
<td>15.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1D-1-1</td>
<td></td>
<td>4</td>
<td>67.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-1-1</td>
<td>G345</td>
<td>1</td>
<td>246.39</td>
<td>6.0</td>
<td>7.2</td>
<td>5.9</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-1-2</td>
<td>G343</td>
<td>1</td>
<td>82.56</td>
<td>6.3</td>
<td>4.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-1-4</td>
<td>G347</td>
<td>1</td>
<td>65.36</td>
<td>5.2</td>
<td>3.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-1-4</td>
<td></td>
<td>1</td>
<td>11.19</td>
<td>3.23</td>
<td>2.43</td>
<td>0.90</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-8-1</td>
<td></td>
<td>1</td>
<td>138.90</td>
<td>5.6</td>
<td>5.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2B Looter's Trench</td>
<td>G344</td>
<td>1</td>
<td>314.34</td>
<td>7.3</td>
<td>6.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-3A-1-2</td>
<td>G329</td>
<td>1</td>
<td>188.69</td>
<td>9.0</td>
<td>7.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-1-1</td>
<td>G332</td>
<td>1</td>
<td>815.00</td>
<td>9.5</td>
<td>8.2</td>
<td>7.1</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-1-2</td>
<td>G327</td>
<td>1</td>
<td>520.00</td>
<td>9.7</td>
<td>10.8</td>
<td>4.1</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-2-1</td>
<td>G336</td>
<td>1</td>
<td>4.93</td>
<td>2.8</td>
<td>2.0</td>
<td>1.1</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-3</td>
<td></td>
<td>1</td>
<td>8.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-4</td>
<td>G353</td>
<td>1</td>
<td>282.81</td>
<td>6.7</td>
<td>5.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-1-5</td>
<td>G350</td>
<td>1</td>
<td>309.54</td>
<td>5.5</td>
<td>6.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-1-5</td>
<td>G351</td>
<td>1</td>
<td>195.77</td>
<td>6.5</td>
<td>5.1</td>
<td>3.8</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-2-1</td>
<td></td>
<td>1</td>
<td>55.00</td>
<td>7.10</td>
<td>3.96</td>
<td>2.12</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-2-2</td>
<td></td>
<td>2</td>
<td>51.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-3-2</td>
<td>G348</td>
<td>1</td>
<td>530.00</td>
<td>8.1</td>
<td>7.2</td>
<td>6.6</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td>G348</td>
<td>1</td>
<td>158.50</td>
<td>8.3</td>
<td>4.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td>G350</td>
<td>1</td>
<td>252.11</td>
<td>12.5</td>
<td>8.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td></td>
<td>1</td>
<td>81.63</td>
<td>5.0</td>
<td>4.6</td>
<td>4.0</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td></td>
<td>1</td>
<td>78.83</td>
<td>5.3</td>
<td>5.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td></td>
<td>1</td>
<td>64.30</td>
<td>4.7</td>
<td>3.8</td>
<td>5.1</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td></td>
<td>1</td>
<td>13.27</td>
<td>3.5</td>
<td>3.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-1</td>
<td></td>
<td>1</td>
<td>49.58</td>
<td>3.7</td>
<td>2.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>79.17</td>
<td>7.0</td>
<td>6.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>170.33</td>
<td>8.1</td>
<td>6.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>17.05</td>
<td>4.7</td>
<td>3.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>63.91</td>
<td>3.5</td>
<td>6.1</td>
<td>3.6</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>33.51</td>
<td>3.7</td>
<td>3.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>4.97</td>
<td>2.5</td>
<td>2.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>24.07</td>
<td>4.1</td>
<td>3.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-2</td>
<td></td>
<td>1</td>
<td>23.90</td>
<td>3.7</td>
<td>1.7</td>
<td>3.5</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-3</td>
<td></td>
<td>1</td>
<td>48.69</td>
<td>7.90</td>
<td>4.12</td>
<td>2.65</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-3</td>
<td></td>
<td>1</td>
<td>758.00</td>
<td>9.6</td>
<td>7.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-4</td>
<td></td>
<td>1</td>
<td>1.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-9</td>
<td>G352</td>
<td>1</td>
<td>787.00</td>
<td>10.0</td>
<td>8.2</td>
<td>8.1</td>
</tr>
<tr>
<td>Infiermito</td>
<td>IN-5A-6-10</td>
<td>G354</td>
<td>1</td>
<td>403.14</td>
<td>10.1</td>
<td>6.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-6-10</td>
<td>G355</td>
<td>1</td>
<td>345.18</td>
<td>8.0</td>
<td>6.7</td>
<td>4.6</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-7-1</td>
<td></td>
<td>1</td>
<td>85.67</td>
<td>4.80</td>
<td>4.78</td>
<td>3.26</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-7-2</td>
<td></td>
<td>1</td>
<td>86.70</td>
<td>7.9</td>
<td>3.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-1</td>
<td>G300</td>
<td>1</td>
<td>51.50</td>
<td>6.7</td>
<td>4.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-1</td>
<td>G304</td>
<td>1</td>
<td>123.11</td>
<td>5.5</td>
<td>5.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-1</td>
<td>G305</td>
<td>1</td>
<td>102.48</td>
<td>6.4</td>
<td>4.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-1</td>
<td>G306</td>
<td>1</td>
<td>63.56</td>
<td>4.9</td>
<td>3.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-1</td>
<td>G348A</td>
<td>1</td>
<td>3928.00</td>
<td>27.5</td>
<td>12.0</td>
<td>12.0</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-1</td>
<td>G335</td>
<td>1</td>
<td>112.91</td>
<td>5.9</td>
<td>5.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-2</td>
<td></td>
<td>3</td>
<td>43.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-2</td>
<td>G302</td>
<td>1</td>
<td>369.12</td>
<td>7.9</td>
<td>8.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-2</td>
<td>G320</td>
<td>1</td>
<td>100.24</td>
<td>6.7</td>
<td>6.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-3</td>
<td>G333</td>
<td>1</td>
<td>163.27</td>
<td>6.9</td>
<td>5.7</td>
<td>5.5</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-3</td>
<td>G334</td>
<td>1</td>
<td>101.34</td>
<td>5.0</td>
<td>4.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-12A-1-4</td>
<td>G301</td>
<td>1</td>
<td>1603.00</td>
<td>17.9</td>
<td>8.9</td>
<td>5.9</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-1</td>
<td>G340</td>
<td>1</td>
<td>488.20</td>
<td>10.7</td>
<td>7.2</td>
<td>4.6</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-3</td>
<td>G339</td>
<td>1</td>
<td>541.00</td>
<td>11.6</td>
<td>5.5</td>
<td>3.8</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-3</td>
<td>G346</td>
<td>1</td>
<td>278.36</td>
<td>6.6</td>
<td>6.3</td>
<td>6.1</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>G325</td>
<td>1</td>
<td>623.00</td>
<td>8.5</td>
<td>7.1</td>
<td>5.8</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>G308</td>
<td>1</td>
<td>1461.00</td>
<td>12.1</td>
<td>15.7</td>
<td>17.6</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>G309</td>
<td>1</td>
<td>156.13</td>
<td>6.0</td>
<td>5.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>G310</td>
<td>1</td>
<td>150.20</td>
<td>6.5</td>
<td>5.0</td>
<td>4.9</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Length (cm)</td>
<td>Width (cm)</td>
<td>Thickness (cm)</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>G311</td>
<td>1</td>
<td>27.35</td>
<td>3.6</td>
<td>2.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>G319</td>
<td>1</td>
<td>124.88</td>
<td>7.0</td>
<td>5.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td></td>
<td>1</td>
<td>14.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>12</td>
<td>33.46</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>4</td>
<td>4.05</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>2</td>
<td>0.38</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-4</td>
<td>1</td>
<td>0.08</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>1</td>
<td>2.81</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-1</td>
<td>18</td>
<td>9.17</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>7</td>
<td>4.92</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>9</td>
<td>10.17</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>12</td>
<td>5.98</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>80</td>
<td>40.87</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>4</td>
<td>4.35</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-3</td>
<td>1</td>
<td>1.19</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-3</td>
<td>1</td>
<td>2.01</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4</td>
<td>10</td>
<td>10.93</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>5</td>
<td>6.14</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>22</td>
<td>14.23</td>
<td>Tooth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>5</td>
<td>1.33</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-3</td>
<td>1</td>
<td>0.90</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-4</td>
<td>1</td>
<td>1.19</td>
<td>Tooth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-6</td>
<td>1</td>
<td>1.56</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>14</td>
<td>3.53</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>22</td>
<td>20.74</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-6-2</td>
<td>5</td>
<td>2.97</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>21</td>
<td>10.38</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-2</td>
<td>2</td>
<td>7.43</td>
<td>Polished bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>2</td>
<td>0.96</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-9-1</td>
<td>2</td>
<td>3.02</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-1</td>
<td>2</td>
<td>0.59</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>1</td>
<td>0.36</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>9</td>
<td>9.39</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td>42</td>
<td>66.49</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-2</td>
<td>2</td>
<td>1.74</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-3</td>
<td>2</td>
<td>0.64</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-1</td>
<td>1</td>
<td>1.37</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>6</td>
<td>18.55</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>1</td>
<td>4.58</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>3</td>
<td>1.99</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>2</td>
<td>2.25</td>
<td>Bone needle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>2</td>
<td>4.10</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-4</td>
<td>1</td>
<td>1.94</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-7C-1-2</td>
<td>2</td>
<td>5.30</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>1</td>
<td>1.08</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-2</td>
<td>1</td>
<td>2.56</td>
<td>Porous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>3</td>
<td>10.66</td>
<td>2 turtle shells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-1</td>
<td>10</td>
<td>6.69</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-2</td>
<td>27</td>
<td>13.32</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-2</td>
<td>26</td>
<td>23.47</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-3</td>
<td>21</td>
<td>6.37</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>15</td>
<td>25.32</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-5</td>
<td>6</td>
<td>4.32</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>--------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-1</td>
<td>2</td>
<td>0.71</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-2</td>
<td>4</td>
<td>0.37</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-3</td>
<td>4</td>
<td>2.48</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-6</td>
<td>1</td>
<td>1.23</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-2-1</td>
<td>2</td>
<td>0.49</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-14A-1-1</td>
<td>1</td>
<td>0.67</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-2</td>
<td>1</td>
<td>0.52</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-2-2</td>
<td>2</td>
<td>10.21</td>
<td>1 vertebra, 1 turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-2</td>
<td>4</td>
<td>0.24</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>18</td>
<td>13.95</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-4</td>
<td>2</td>
<td>1.09</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-2-1</td>
<td>1</td>
<td>1.53</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-2-1</td>
<td>1</td>
<td>17.33</td>
<td>Deer antler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-1</td>
<td>3</td>
<td>2.56</td>
<td>2 turtle shells, 1 frag. long bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-2</td>
<td>22</td>
<td>24.15</td>
<td>13 turtle shells, 1 frag. long bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>10</td>
<td>9.11</td>
<td>8 turtle shells, 1 frag. long bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3B-1-3</td>
<td>1</td>
<td>0.05</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-4A-1-3</td>
<td>1</td>
<td>0.72</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-4</td>
<td>4</td>
<td>2.65</td>
<td>1 turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-5</td>
<td>12</td>
<td>7.39</td>
<td>6 turtle shells</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-1-6</td>
<td>1</td>
<td>0.45</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-2-1</td>
<td>1</td>
<td>0.21</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-2</td>
<td>1</td>
<td>0.75</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-3</td>
<td>18</td>
<td>8.55</td>
<td>2 canines, 1 turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>3</td>
<td>2.93</td>
<td>Bone needle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>----------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>14</td>
<td>17.27</td>
<td>1 turtle shell, 1 vertebra, 3 long bones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-4</td>
<td>1</td>
<td>0.27</td>
<td>Tooth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-5</td>
<td>1</td>
<td>0.62</td>
<td>Polished bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-5</td>
<td>1</td>
<td>7.71</td>
<td>Polished long bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-5</td>
<td>1</td>
<td>0.31</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-6</td>
<td>2</td>
<td>4.51</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-8</td>
<td>2</td>
<td>0.88</td>
<td>Turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-9</td>
<td>1</td>
<td>0.21</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-9</td>
<td>1</td>
<td>0.24</td>
<td>Small canine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-9</td>
<td>1</td>
<td>1.17</td>
<td>Canine bead</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td>1</td>
<td>0.67</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-10</td>
<td>1</td>
<td>0.35</td>
<td>Peccary tusk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>6</td>
<td>2.73</td>
<td>1 turtle shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>1</td>
<td>0.41</td>
<td>Canine bead</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>1</td>
<td>0.50</td>
<td>Canine bead</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-12</td>
<td>2</td>
<td>1.89</td>
<td>1 frag. long bone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>2</td>
<td>0.81</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>Infiernito cave southwest of Str. E1-3</td>
<td>1</td>
<td>0.25</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-1</td>
<td>2</td>
<td>2.31</td>
<td>Possibly human</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-2</td>
<td>3</td>
<td>6.04</td>
<td>Possibly human, 1 rib</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td>2</td>
<td>3.15</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>1</td>
<td>0.11</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>27</td>
<td>12.36</td>
<td>Unidentified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Species</td>
<td>Comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>---------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1A-1-1</td>
<td>20</td>
<td>5.58</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-1</td>
<td>3</td>
<td>9.46</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>3</td>
<td>5.50</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1B-2-2</td>
<td>1</td>
<td>0.28</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-1-2</td>
<td>4</td>
<td>6.00</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-1</td>
<td>1</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-2</td>
<td>1</td>
<td>1.26</td>
<td>Unknown seashell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-2-4 Entierro 4</td>
<td>1</td>
<td>0.09</td>
<td>Unknown fragment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-1</td>
<td>1</td>
<td>4.24</td>
<td>Worked shell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-2</td>
<td>1</td>
<td>4.83</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-3</td>
<td>2</td>
<td>0.26</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-3</td>
<td>2</td>
<td>0.30</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-3 Entierro 3</td>
<td>1</td>
<td>3.76</td>
<td>Coral del mar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-3-3 Entierro 3</td>
<td>13</td>
<td>3.43</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-4-2</td>
<td>2</td>
<td>8.16</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-5-2</td>
<td>6</td>
<td>18.56</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-7-3</td>
<td>7</td>
<td>12.02</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-1</td>
<td>1</td>
<td>0.13</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-8-2</td>
<td>3</td>
<td>3.73</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1C-9-2</td>
<td>2</td>
<td>5.99</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-1D-1-2</td>
<td>3</td>
<td>13.29</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td>16</td>
<td>5.26</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-1-4</td>
<td>3</td>
<td>0.29</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-2A-8-3</td>
<td>1</td>
<td>1.83</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-3A-1-3</td>
<td>3</td>
<td>11.77</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Species</td>
<td>Comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------------------------------</td>
<td>------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-3B-1-1</td>
<td></td>
<td>1</td>
<td>4.07</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-3B-1-2</td>
<td></td>
<td>2</td>
<td>4.90</td>
<td>Unknown, possibly Euglandia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-3B-1-2</td>
<td></td>
<td>1</td>
<td>1.90</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-3B-1-3</td>
<td></td>
<td>2</td>
<td>4.41</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-4A-2-2</td>
<td></td>
<td>3</td>
<td>0.77</td>
<td>Mussels (freshwater or ocean?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-3</td>
<td></td>
<td>27</td>
<td>51.02</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-3</td>
<td></td>
<td>16</td>
<td>17.23</td>
<td>Mussels (freshwater or ocean?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-4</td>
<td></td>
<td>8</td>
<td>23.60</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-5</td>
<td></td>
<td>11</td>
<td>28.96</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-6</td>
<td></td>
<td>4</td>
<td>20.57</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-6</td>
<td></td>
<td>1</td>
<td>0.06</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-6</td>
<td></td>
<td>2</td>
<td>1.16</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-2-2</td>
<td></td>
<td>1</td>
<td>0.24</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-4-2</td>
<td></td>
<td>1</td>
<td>3.01</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-4</td>
<td></td>
<td>15</td>
<td>5.95</td>
<td>Mussels (freshwater or ocean?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-4</td>
<td></td>
<td>1</td>
<td>0.27</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-4</td>
<td></td>
<td>12</td>
<td>18.27</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-6</td>
<td></td>
<td>4</td>
<td>2.58</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-6</td>
<td></td>
<td>1</td>
<td>3.35</td>
<td>Mussels (freshwater or ocean?)</td>
<td>Possibly worked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-6</td>
<td></td>
<td>2</td>
<td>0.25</td>
<td>Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-6</td>
<td></td>
<td>7</td>
<td>25.53</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-7</td>
<td></td>
<td>2</td>
<td>3.75</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-8</td>
<td></td>
<td>1</td>
<td>0.84</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-10</td>
<td></td>
<td>3</td>
<td>17.56</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-10</td>
<td></td>
<td>2</td>
<td>12.51</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Species</td>
<td>Comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------</td>
<td>----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-11</td>
<td>8</td>
<td>17.55</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-12</td>
<td>2</td>
<td>8.27</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-13</td>
<td>1</td>
<td>7.48</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-6-14</td>
<td>1</td>
<td>0.20</td>
<td>Unknown fragment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-12-3</td>
<td>1</td>
<td>0.22</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-13-3</td>
<td>6</td>
<td>2.03</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5A-13-3</td>
<td>6</td>
<td>9.84</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>1</td>
<td>0.44</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-1</td>
<td>6</td>
<td>19.75</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-2</td>
<td>3</td>
<td>10.59</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>1</td>
<td>2.71</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-3</td>
<td>9</td>
<td>18.29</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-5D-1-4</td>
<td>24</td>
<td>61.70</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-7A-1-1</td>
<td>3</td>
<td>1.50</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-7C-1-1</td>
<td>20</td>
<td>9.77</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-7C-1-2</td>
<td>16</td>
<td>10.72</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-8B-1-2</td>
<td>3</td>
<td>0.05</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-2</td>
<td>1</td>
<td>0.38</td>
<td>Unknown seashell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-11A-1-4</td>
<td>3</td>
<td>0.77</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-12A-1-4</td>
<td>11</td>
<td>34.72</td>
<td>Mussels (freshwater or ocean?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-1</td>
<td>2</td>
<td>2.66</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-1</td>
<td>1</td>
<td>0.05</td>
<td>Unknown fragment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-1</td>
<td>2</td>
<td>0.24</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-1</td>
<td>1</td>
<td>4.93</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-2</td>
<td>1</td>
<td>2.39</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Species</td>
<td>Comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------</td>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16A-1-2</td>
<td>1</td>
<td>5.56</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-16B-1-1</td>
<td>1</td>
<td>2.04</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-17A-1-4</td>
<td>1</td>
<td>1.97</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-18A-1-2</td>
<td>1</td>
<td>0.17</td>
<td>Orthalicus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-18A-1-2</td>
<td>1</td>
<td>0.60</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-18A-1-2</td>
<td>6</td>
<td>0.43</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>IN-19B-1-2</td>
<td>1</td>
<td>0.25</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>Infiernito cave southwest of Str. E1-3</td>
<td>1</td>
<td>2.50</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>Infiernito cave southwest of Str. E1-3</td>
<td>1</td>
<td>0.13</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito</td>
<td>Infiernito cave southwest of Str. E1-3</td>
<td>4</td>
<td>0.20</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-1</td>
<td>18</td>
<td>11.85</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-2</td>
<td>8</td>
<td>3.87</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-2</td>
<td>1</td>
<td>0.37</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-1-2</td>
<td>1</td>
<td>0.03</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-1</td>
<td>8</td>
<td>8.08</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-2</td>
<td>9</td>
<td>5.86</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-2</td>
<td>1</td>
<td>3.35</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-2</td>
<td>4</td>
<td>0.35</td>
<td>Chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-2</td>
<td>2</td>
<td>0.5</td>
<td>Long chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>16</td>
<td>8.61</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-1</td>
<td>60</td>
<td>21.95</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-1</td>
<td>1</td>
<td>0.19</td>
<td>Long chondropoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-5</td>
<td>1</td>
<td>2.87</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-4A-1-1</td>
<td>20</td>
<td>7.47</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>1</td>
<td>6.36</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Species</td>
<td>Comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>3</td>
<td>4.13</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>1</td>
<td>1.10</td>
<td>Euglandina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>1</td>
<td>1.56</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>5</td>
<td>24.78</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>2</td>
<td>1.60</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>1</td>
<td>0.43</td>
<td>Unknown seashell</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-3</td>
<td>2</td>
<td>2.13</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-3</td>
<td>1</td>
<td>11.12</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>1</td>
<td>0.96</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>8</td>
<td>34.93</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>3</td>
<td>3.99</td>
<td>Apple snail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>2</td>
<td>1.50</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>4</td>
<td>11.74</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>5</td>
<td>16.73</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-5</td>
<td>2</td>
<td>7.09</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-2</td>
<td>10</td>
<td>57.70</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>11</td>
<td>87.19</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-4</td>
<td>7</td>
<td>4.08</td>
<td>Unknown fragments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-5</td>
<td>2</td>
<td>7.73</td>
<td>Xute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Context</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud silica Hilltop structures</td>
<td>3</td>
<td>105.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1A-1-2</td>
<td>4</td>
<td>42.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-2-3</td>
<td>6</td>
<td>26.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-3-2</td>
<td>3</td>
<td>11.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-3-3</td>
<td>3</td>
<td>4.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-3-4</td>
<td>22</td>
<td>249.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-3-5</td>
<td>1</td>
<td>70.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-3-6</td>
<td>5</td>
<td>186.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-4-1</td>
<td>7</td>
<td>5.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-4-2</td>
<td>9</td>
<td>37.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1C-6-1</td>
<td>5</td>
<td>21.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-1D-1-2</td>
<td>1</td>
<td>17.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-2A-1-4</td>
<td>6</td>
<td>17.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-2A-8-2</td>
<td>3</td>
<td>67.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-4A-1-2</td>
<td>1.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-4A-1-3</td>
<td>25.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-4A-1-4</td>
<td>41.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-2</td>
<td>2.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-3</td>
<td>4.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-4</td>
<td>16.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-1-5</td>
<td>26.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-3-2</td>
<td>1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-5-2</td>
<td>9.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-6</td>
<td>118.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Infiernito IN-5A-6-7</td>
<td>509.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table A5.6: Stucco

<table>
<thead>
<tr>
<th>Site</th>
<th>Context</th>
<th>Quantity</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Infierno</td>
<td>IN-5A-6-13</td>
<td></td>
<td>65.81</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-12-4</td>
<td></td>
<td>97.61</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5A-13-3</td>
<td></td>
<td>4.41</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5D-1-2</td>
<td>6</td>
<td>155.80</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-5D-1-3</td>
<td>28</td>
<td>133.75</td>
</tr>
<tr>
<td>El Infierno</td>
<td>IN-18A-1</td>
<td>4</td>
<td>75.46</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-1</td>
<td>1</td>
<td>2.18</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-2</td>
<td>3</td>
<td>195.6</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>1</td>
<td>1.58</td>
</tr>
<tr>
<td>El Infierno</td>
<td>SM-1A-1-1</td>
<td>1</td>
<td>16.86</td>
</tr>
<tr>
<td>El Infierno</td>
<td>SM-1A-1-2</td>
<td>1</td>
<td>100.88</td>
</tr>
<tr>
<td>El Infierno</td>
<td>SM-1A-1-3</td>
<td>6</td>
<td>80.58</td>
</tr>
<tr>
<td>El Infierno</td>
<td>SM-1A-1-4</td>
<td>1</td>
<td>14.21</td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Quantity</td>
<td>Mass (g)</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-2</td>
<td>1</td>
<td>8.03</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-2</td>
<td>1</td>
<td>8.88</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-1-2</td>
<td>1</td>
<td>12.00</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-3-4</td>
<td>2</td>
<td>82.42</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-3A-1-1</td>
<td>1</td>
<td>72.51</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-3B-1-1</td>
<td>1</td>
<td>28.37</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4A-2-1</td>
<td>1</td>
<td>4.34</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-1-1</td>
<td>1</td>
<td>6.66</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-2-2</td>
<td>1</td>
<td>1.43</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-3</td>
<td>10</td>
<td>61.99</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-3</td>
<td>7</td>
<td>11.53</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-4</td>
<td>2</td>
<td>5.19</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-5</td>
<td>20</td>
<td>93.68</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-6</td>
<td>3</td>
<td>27.21</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-8-1</td>
<td>1</td>
<td>17.45</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-12-3</td>
<td>1</td>
<td>68.83</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-2</td>
<td>1</td>
<td>0.30</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-3</td>
<td>1</td>
<td>11.50</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-12A-2-1</td>
<td>1</td>
<td>4.69</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-15A-1-2</td>
<td>1</td>
<td>4.97</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-2A-2-1</td>
<td>1</td>
<td>0.60</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-1</td>
<td>1</td>
<td>23.82</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3A-1-2</td>
<td>2</td>
<td>24.30</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-2</td>
<td>2</td>
<td>75.47</td>
</tr>
<tr>
<td>La Selva</td>
<td>LS-3B-1-4</td>
<td>2</td>
<td>7.18</td>
</tr>
</tbody>
</table>
Table A5.7: Quartz

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-1</td>
<td>2</td>
<td>4.10</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>12</td>
<td>7.48</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>5</td>
<td>4.74</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>1</td>
<td>1.06</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>8</td>
<td>4.53</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-2A-1-2</td>
<td>4</td>
<td>63.29</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-3</td>
<td>1</td>
<td>19.18</td>
<td></td>
</tr>
</tbody>
</table>
Table A5.8: Greenstone and Hematite

<table>
<thead>
<tr>
<th>Site</th>
<th>Provenience</th>
<th>Material</th>
<th>Quantity</th>
<th>Mass (g)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiernito</td>
<td>IN-1A-1-2</td>
<td>Hematite</td>
<td>1</td>
<td>2.41</td>
<td>Mirror fragment</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-1-1</td>
<td>Bead</td>
<td>1</td>
<td>2.48</td>
<td>Tubular greenstone bead</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>Bead</td>
<td>1</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>Bead</td>
<td>1</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-1</td>
<td>Hematite</td>
<td>1</td>
<td>0.63</td>
<td>Mirror</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-2</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>491.12</td>
<td>Adze</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-4</td>
<td>Bead</td>
<td>1</td>
<td>2.06</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1B-2-4</td>
<td>Bead</td>
<td>1</td>
<td>1.61</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-2-2</td>
<td>Bead</td>
<td>1</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-3-1</td>
<td>Bead</td>
<td>1</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-6-1</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>22.35</td>
<td>Adze</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1C-7-2</td>
<td>Greenstone</td>
<td>1</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-1D-1-2</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>19.18</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-8-2</td>
<td>Bead</td>
<td>1</td>
<td>1.25</td>
<td>Possibly jade/greenstone</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-2A-8-2</td>
<td>Hematite</td>
<td>1</td>
<td>2.46</td>
<td>Mirror</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-3B-1-3</td>
<td>Bead</td>
<td>1</td>
<td>1.23</td>
<td>Greenstone, two holes on one face</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-3B-1-3</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>46.50</td>
<td>Adze</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4A-1-1</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>45.29</td>
<td>Adze</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-4B-2-2</td>
<td>Bead</td>
<td>1</td>
<td>2.53</td>
<td>Serpentine</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-3</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>1.22</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-1-3</td>
<td>Greenstone</td>
<td>1</td>
<td>1.15</td>
<td>Unworked</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-3-2</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5A-6-11</td>
<td>Bead</td>
<td>1</td>
<td>0.40</td>
<td>Greenstone</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-2</td>
<td>Bead</td>
<td>1</td>
<td>3.17</td>
<td>Serpentine</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-5D-1-2</td>
<td>Bead</td>
<td>1</td>
<td>1.34</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Provenience</td>
<td>Material</td>
<td>Quantity</td>
<td>Mass (g)</td>
<td>Comments</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-11A-1-4</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>8.32</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-19A-2-3</td>
<td>Serpentine/Greenstone</td>
<td>11</td>
<td>29.23</td>
<td></td>
</tr>
<tr>
<td>Infiernito</td>
<td>IN-19B-1-2</td>
<td>Serpentine/Greenstone</td>
<td>3</td>
<td>3.78</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Bead</td>
<td>1</td>
<td>0.58</td>
<td>Serpentine</td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-2</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>17.12</td>
<td></td>
</tr>
<tr>
<td>Rancho Nuevo</td>
<td>RN-1B-1-3</td>
<td>Serpentine/Greenstone</td>
<td>4</td>
<td>28.44</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-1</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-2</td>
<td>Hematite</td>
<td>1</td>
<td>1.60</td>
<td>Mirror</td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1A-1-4</td>
<td>Serpentine/Greenstone</td>
<td>1</td>
<td>2.64</td>
<td></td>
</tr>
<tr>
<td>Santa Marta</td>
<td>SM-1B-1-3</td>
<td>Hematite</td>
<td>2</td>
<td>16.50</td>
<td>Mirror</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>IN-1A-1-1</td>
<td>L194</td>
<td>Chert</td>
<td>Coarse</td>
<td>15.12</td>
<td>54.5</td>
</tr>
<tr>
<td>IN-1A-1-1</td>
<td>L195</td>
<td>Chert</td>
<td>Medium</td>
<td>4.84</td>
<td>46.2</td>
</tr>
<tr>
<td>IN-1A-1-2</td>
<td>L188</td>
<td>Chert</td>
<td>Coarse</td>
<td>27.84</td>
<td>51.4</td>
</tr>
<tr>
<td>IN-1A-1-2</td>
<td>L189</td>
<td>Chert</td>
<td>Coarse</td>
<td>17.69</td>
<td>58.4</td>
</tr>
<tr>
<td>IN-1A-1-2</td>
<td>L190</td>
<td>Chert</td>
<td>Medium</td>
<td>32.31</td>
<td>59.7</td>
</tr>
<tr>
<td>IN-1A-1-2</td>
<td>L197</td>
<td>Chert</td>
<td></td>
<td>1.53</td>
<td>23.1</td>
</tr>
<tr>
<td>IN-1A-1-2</td>
<td>L198</td>
<td>Chert</td>
<td>Medium</td>
<td>2.02</td>
<td>11.0</td>
</tr>
<tr>
<td>IN-1B-1-2</td>
<td>L196</td>
<td>Chert</td>
<td>Medium</td>
<td>4.76</td>
<td>55.0</td>
</tr>
<tr>
<td>IN-1B-1-2</td>
<td>L180</td>
<td>Chert</td>
<td>Coarse</td>
<td>1.05</td>
<td>16.0</td>
</tr>
<tr>
<td>IN-1B-1-2</td>
<td>L113</td>
<td>Chert</td>
<td>Fine</td>
<td>0.33</td>
<td>10.0</td>
</tr>
<tr>
<td>IN-1B-1-2</td>
<td>L113</td>
<td>Chert</td>
<td>Fine</td>
<td>3.86</td>
<td>17.9</td>
</tr>
<tr>
<td>IN-1B-2-1</td>
<td>L187</td>
<td>Chert</td>
<td>Medium</td>
<td>1.09</td>
<td>23.6</td>
</tr>
<tr>
<td>IN-1B-2-2</td>
<td>L150</td>
<td>Serpentine</td>
<td></td>
<td>491.12</td>
<td>122.0</td>
</tr>
<tr>
<td>IN-1B-2-2</td>
<td>L179</td>
<td>Chert</td>
<td>Medium</td>
<td>1.31</td>
<td>20.0</td>
</tr>
<tr>
<td>IN-1B-2-2</td>
<td>L182</td>
<td>Chert</td>
<td>Medium</td>
<td>0.43</td>
<td>15.7</td>
</tr>
<tr>
<td>IN-1B-2-3</td>
<td>L107</td>
<td>Chert</td>
<td>Medium</td>
<td>48.03</td>
<td>86.8</td>
</tr>
<tr>
<td>IN-1B-2-4</td>
<td>L128</td>
<td>Chert</td>
<td>Coarse</td>
<td>20.58</td>
<td>28.2</td>
</tr>
<tr>
<td>IN-1C-1-1</td>
<td>Chert</td>
<td>Medium</td>
<td></td>
<td>12.52</td>
<td></td>
</tr>
<tr>
<td>IN-1C-1-2</td>
<td>L147</td>
<td>Chert</td>
<td>Medium</td>
<td>56.85</td>
<td>38.2</td>
</tr>
<tr>
<td>IN-1C-2-1</td>
<td>L109</td>
<td>Chert</td>
<td>Coarse</td>
<td>97.61</td>
<td>68.2</td>
</tr>
<tr>
<td>IN-1C-2-1</td>
<td>L161</td>
<td>Chert</td>
<td>Fine</td>
<td>3.14</td>
<td>44.1</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>--------------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>IN-1C-2-1</td>
<td>L169</td>
<td>Chert</td>
<td>Medium</td>
<td>18.47</td>
<td>43.0</td>
</tr>
<tr>
<td>IN-1C-2-1</td>
<td>L170</td>
<td>Chert</td>
<td>Medium</td>
<td>29.10</td>
<td>41.1</td>
</tr>
<tr>
<td>IN-1C-2-2</td>
<td>L115</td>
<td>Chert</td>
<td>Fine</td>
<td>17.68</td>
<td>47.0</td>
</tr>
<tr>
<td>IN-1C-2-2</td>
<td>L185</td>
<td>Chert</td>
<td>Medium</td>
<td>0.82</td>
<td>20.6</td>
</tr>
<tr>
<td>IN-1C-2-2</td>
<td>L186</td>
<td>Chert</td>
<td>Medium</td>
<td>0.45</td>
<td>11.0</td>
</tr>
<tr>
<td>IN-1C-2-4</td>
<td>L146</td>
<td>Chert</td>
<td>Medium</td>
<td>2.23</td>
<td>28.4</td>
</tr>
<tr>
<td>IN-1C-3-1</td>
<td>L151</td>
<td>Chert</td>
<td>Fine</td>
<td>10.51</td>
<td>58.0</td>
</tr>
<tr>
<td>IN-1C-3-2</td>
<td>L124</td>
<td>Limestone</td>
<td></td>
<td>16.58</td>
<td>49.4</td>
</tr>
<tr>
<td>IN-1C-3-2</td>
<td>L168</td>
<td>Chert</td>
<td>Medium</td>
<td>4.01</td>
<td>21.0</td>
</tr>
<tr>
<td>IN-1C-3-3</td>
<td>L122</td>
<td>Unknown stone</td>
<td></td>
<td>14.94</td>
<td>48.6</td>
</tr>
<tr>
<td>IN-1C-3-3</td>
<td>L127</td>
<td>Chert/quartzite</td>
<td>Coarse</td>
<td>238.64</td>
<td>58.3</td>
</tr>
<tr>
<td>IN-1C-3-3</td>
<td>L173</td>
<td>Chert</td>
<td>Medium</td>
<td>3.60</td>
<td>53.2</td>
</tr>
<tr>
<td>IN-1C-4-1</td>
<td>L104</td>
<td>Quartz</td>
<td></td>
<td>234.70</td>
<td>91.2</td>
</tr>
<tr>
<td>IN-1C-4-1</td>
<td>L131</td>
<td>Chert</td>
<td>Coarse</td>
<td>98.24</td>
<td>57.9</td>
</tr>
<tr>
<td>IN-1C-4-2</td>
<td>L134</td>
<td>Chert</td>
<td>Medium</td>
<td>7.01</td>
<td>47.9</td>
</tr>
<tr>
<td>IN-1C-4-2</td>
<td>L135</td>
<td>Chert</td>
<td>Medium</td>
<td>28.26</td>
<td>46.5</td>
</tr>
<tr>
<td>IN-1C-5-2</td>
<td>L130</td>
<td>Chert</td>
<td>Coarse</td>
<td>41.81</td>
<td>40.2</td>
</tr>
<tr>
<td>IN-1C-5-2</td>
<td>L174</td>
<td>Chert</td>
<td>Fine</td>
<td>1.48</td>
<td>24.1</td>
</tr>
<tr>
<td>IN-1C-6-1</td>
<td>L140</td>
<td>Basalt/schist</td>
<td></td>
<td>101.33</td>
<td>48.6</td>
</tr>
<tr>
<td>IN-1C-6-1</td>
<td>L143</td>
<td>Chert</td>
<td>Fine</td>
<td>3.17</td>
<td>14.8</td>
</tr>
<tr>
<td>IN-1C-6-1</td>
<td>L156</td>
<td>Serpentine</td>
<td></td>
<td>22.35</td>
<td>32.2</td>
</tr>
</tbody>
</table>
Table A5.9: Special Lithics

<table>
<thead>
<tr>
<th>Provenience</th>
<th>Catalog Number</th>
<th>Material</th>
<th>Texture</th>
<th>Mass (g)</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Thickness (mm)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN-1C-6-1</td>
<td>L177</td>
<td>Chert</td>
<td></td>
<td>1.86</td>
<td>21.1</td>
<td>15.5</td>
<td>5.6</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-1C-6-2</td>
<td>L157</td>
<td>Chert</td>
<td>Fine</td>
<td>31.62</td>
<td>35.7</td>
<td>28.4</td>
<td>26.8</td>
<td>Core</td>
</tr>
<tr>
<td>IN-1C-6-2</td>
<td>L162</td>
<td>Chert</td>
<td>Medium</td>
<td>13.37</td>
<td>48.2</td>
<td>30.5</td>
<td>9.1</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-1C-7-2</td>
<td>L176</td>
<td>Chert</td>
<td>Coarse</td>
<td>2.20</td>
<td>36.3</td>
<td>20.6</td>
<td>5.1</td>
<td>Projectile point (distal fragment), late stage</td>
</tr>
<tr>
<td>IN-1C-8-2</td>
<td>L106</td>
<td>Limestone</td>
<td>Coarse</td>
<td>29.46</td>
<td>75.3</td>
<td>39.1</td>
<td>9.1</td>
<td>Possible metate fragment or scraper</td>
</tr>
<tr>
<td>IN-2A-1-4</td>
<td>L191</td>
<td>Chert</td>
<td>Coarse</td>
<td>76.30</td>
<td>50.2</td>
<td>63.0</td>
<td>24.3</td>
<td>Axe, medial biface fragment, early stage</td>
</tr>
<tr>
<td>IN-2A-3-1</td>
<td>L125</td>
<td>Limestone</td>
<td>Coarse</td>
<td>123.71</td>
<td>47.0</td>
<td>45.1</td>
<td>42.8</td>
<td>Stone ball</td>
</tr>
<tr>
<td>IN-2A-8-3</td>
<td>L136</td>
<td>Chert</td>
<td>Coarse</td>
<td>67.28</td>
<td>38.3</td>
<td>60.1</td>
<td>21.8</td>
<td>Proximal biface (handaxe), late stage</td>
</tr>
<tr>
<td>IN-3B-1-1</td>
<td>L217</td>
<td>Chert</td>
<td>Coarse</td>
<td>4.49</td>
<td>24.1</td>
<td>24.0</td>
<td>10.1</td>
<td>Projectile point, distal fragment, middle stage</td>
</tr>
<tr>
<td>IN-3B-1-2</td>
<td>L222</td>
<td>Chert</td>
<td>Coarse</td>
<td>202.70</td>
<td>86.2</td>
<td>70.1</td>
<td>28.1</td>
<td>Proximal bifacial axe fragment, late stage</td>
</tr>
<tr>
<td>IN-3B-1-3</td>
<td>L210</td>
<td>Serpentine</td>
<td>Coarse</td>
<td>46.56</td>
<td>31.5</td>
<td>35.7</td>
<td>25.1</td>
<td>Adze, distal fragment</td>
</tr>
<tr>
<td>IN-4A-1-1</td>
<td>L211</td>
<td>Serpentine</td>
<td></td>
<td>45.38</td>
<td>55.4</td>
<td>31.6</td>
<td>14.3</td>
<td>Adze, complete</td>
</tr>
<tr>
<td>IN-4A-1-2</td>
<td>L221</td>
<td>Chert</td>
<td>Medium</td>
<td>26.73</td>
<td>26.2</td>
<td>42.1</td>
<td>25.6</td>
<td>Distal biface fragment, early stage</td>
</tr>
<tr>
<td>IN-4A-1-4</td>
<td>L216</td>
<td>Chert</td>
<td>Medium</td>
<td>54.10</td>
<td>36.6</td>
<td>42.3</td>
<td>25.1</td>
<td>Core or tested cobble</td>
</tr>
<tr>
<td>IN-4A-2-2</td>
<td>L223</td>
<td>Chert</td>
<td></td>
<td>23.94</td>
<td>49.1</td>
<td>34.0</td>
<td>13.2</td>
<td>Distal biface fragment, middle stage</td>
</tr>
<tr>
<td>IN-4B-1-2</td>
<td>L132</td>
<td>Limestone</td>
<td></td>
<td>28.19</td>
<td>64.1</td>
<td>34.1</td>
<td>8.8</td>
<td>Worked limestone</td>
</tr>
<tr>
<td>IN-4B-1-2</td>
<td>L145</td>
<td>Chert</td>
<td>Medium</td>
<td>3.76</td>
<td>33.8</td>
<td>25.1</td>
<td>6.0</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>IN-4B-2-2</td>
<td>L100</td>
<td>Chert</td>
<td>Fine</td>
<td>11.27</td>
<td>54.7</td>
<td>36.6</td>
<td>7.4</td>
<td>Distal projectile point, late stage</td>
</tr>
<tr>
<td>IN-4B-2-3</td>
<td>L178</td>
<td>Chert</td>
<td>Fine</td>
<td>0.74</td>
<td>16.7</td>
<td>8.1</td>
<td>7.1</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
<td>Width (mm)</td>
<td>Thickness (mm)</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IN-5A-1-3</td>
<td>L204</td>
<td>Chert</td>
<td>Medium</td>
<td>3.24</td>
<td>42.3</td>
<td>21.6</td>
<td>4.6</td>
<td>Projectile point, complete, corner notched, late stage</td>
</tr>
<tr>
<td>IN-5A-1-3</td>
<td>L203</td>
<td>Chert</td>
<td>Medium</td>
<td>3.53</td>
<td>39.0</td>
<td>26.9</td>
<td>5.6</td>
<td>Projectile point, proximal fragment, late stage, stemmed</td>
</tr>
<tr>
<td>IN-5A-1-3</td>
<td></td>
<td>Chert</td>
<td>Coarse</td>
<td>29.97</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-5A-2-2</td>
<td>L205</td>
<td>Chert</td>
<td>Medium</td>
<td>1.24</td>
<td>12.4</td>
<td>24.5</td>
<td>6.4</td>
<td>Projectile point, medial fragment, late stage</td>
</tr>
<tr>
<td>IN-5A-4-2</td>
<td>L214</td>
<td>Chert</td>
<td>Coarse</td>
<td>5.89</td>
<td>32.5</td>
<td>23.3</td>
<td>7.2</td>
<td>Projectile point, complete, late stage, side notched</td>
</tr>
<tr>
<td>IN-5A-6-4</td>
<td>L220</td>
<td>Chert</td>
<td>Medium</td>
<td>9.40</td>
<td>61.5</td>
<td>24.0</td>
<td>20.1</td>
<td>Projectile point, proximal fragment, late stage, distal fragment</td>
</tr>
<tr>
<td>IN-5A-6-4</td>
<td>L207</td>
<td>Chert</td>
<td>Medium</td>
<td>9.38</td>
<td>59.4</td>
<td>30.1</td>
<td>6.6</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>IN-5A-6-4</td>
<td>L208</td>
<td>Chert</td>
<td>Coarse</td>
<td>88.82</td>
<td>45.0</td>
<td>55.6</td>
<td>25.5</td>
<td>Medial bifacial axe fragment, middle stage</td>
</tr>
<tr>
<td>IN-5A-6-4</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>20.09</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-5A-6-4</td>
<td></td>
<td>Chert</td>
<td>Fine</td>
<td>14.56</td>
<td></td>
<td></td>
<td>8.2</td>
<td>Projectile point, complete, stemmed, late stage</td>
</tr>
<tr>
<td>IN-5A-6-9</td>
<td>L209</td>
<td>Chert</td>
<td>Coarse</td>
<td>9.58</td>
<td>71.1</td>
<td>27.0</td>
<td>6.7</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>IN-5A-6-10</td>
<td>L215</td>
<td>Chert</td>
<td>Medium</td>
<td>12.98</td>
<td>48.4</td>
<td>38.5</td>
<td>26.4</td>
<td>Unifacial axe, medial fragment</td>
</tr>
<tr>
<td>IN-5A-6-10</td>
<td>L206</td>
<td>Chert</td>
<td>Medium</td>
<td>83.67</td>
<td>59.0</td>
<td>56.7</td>
<td>11.9</td>
<td>Crescent-shaped biface, complete</td>
</tr>
<tr>
<td>IN-5A-6-10</td>
<td>L218</td>
<td>Chert</td>
<td>Medium</td>
<td>33.34</td>
<td>79.1</td>
<td>33.2</td>
<td>6.2</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>IN-5A-6-10</td>
<td>L219</td>
<td>Chert</td>
<td>Medium</td>
<td>10.15</td>
<td>40.3</td>
<td>34.0</td>
<td>10.6</td>
<td>Retouched flake</td>
</tr>
<tr>
<td>IN-5A-6-11</td>
<td>L224</td>
<td>Chert</td>
<td>Medium</td>
<td>12.32</td>
<td>56.8</td>
<td>24.2</td>
<td>6.0</td>
<td>Projectile point, distal fragment, middle stage</td>
</tr>
<tr>
<td>IN-5A-12-3</td>
<td>L165</td>
<td>Chert</td>
<td>Coarse</td>
<td>14.19</td>
<td>46.5</td>
<td>35.3</td>
<td>12.2</td>
<td>Crescent shaped biface fragment</td>
</tr>
<tr>
<td>IN-5C-1-1</td>
<td>L213</td>
<td>Chert</td>
<td>Coarse</td>
<td>269.60</td>
<td>150.3</td>
<td>62.2</td>
<td>30.5</td>
<td>Bifacial axe, proximal fragment, near complete, late stage</td>
</tr>
<tr>
<td>IN-5D-1-1</td>
<td>L181</td>
<td>Chert</td>
<td>Medium</td>
<td>1.65</td>
<td>28.1</td>
<td>19.7</td>
<td>4.4</td>
<td>Projectile point, complete, middle stage, corner notched</td>
</tr>
<tr>
<td>IN-5D-1-1</td>
<td>L160</td>
<td>Chert</td>
<td>Medium</td>
<td>7.24</td>
<td>59.6</td>
<td>23.1</td>
<td>8.5</td>
<td>Projectile point, corner notched, late stage</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
<td>Width (mm)</td>
<td>Thickness (mm)</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>IN-5D-1-2</td>
<td>L175</td>
<td>Chert</td>
<td>Fine</td>
<td>0.89</td>
<td>22.3</td>
<td>13.8</td>
<td>3.6</td>
<td>Biface (projectile point), medial fragment</td>
</tr>
<tr>
<td>IN-5D-1-3</td>
<td>L171</td>
<td>Chert</td>
<td>Coarse</td>
<td>39.79</td>
<td>64.0</td>
<td>29.2</td>
<td>27.4</td>
<td>Core or secondary flake</td>
</tr>
<tr>
<td>IN-5D-1-3</td>
<td>L172</td>
<td>Chert</td>
<td>Fine</td>
<td>3.21</td>
<td>33.6</td>
<td>18.8</td>
<td>5.7</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-5D-1-3</td>
<td></td>
<td>Chert</td>
<td></td>
<td>4.56</td>
<td></td>
<td></td>
<td></td>
<td>Core</td>
</tr>
<tr>
<td>IN-5D-1-3</td>
<td></td>
<td>Chert</td>
<td></td>
<td>2.62</td>
<td></td>
<td></td>
<td></td>
<td>Core</td>
</tr>
<tr>
<td>IN-5D-1-3</td>
<td></td>
<td>Chert</td>
<td></td>
<td>6.22</td>
<td></td>
<td></td>
<td></td>
<td>Tool</td>
</tr>
<tr>
<td>IN-8A-2-3</td>
<td></td>
<td>Chert</td>
<td>Fine</td>
<td>1.18</td>
<td>12.8</td>
<td>17.6</td>
<td>6.1</td>
<td>Projectile point, proximal fragment, late stage, stemmed</td>
</tr>
<tr>
<td>IN-9A-1-3</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>2.02</td>
<td>10.1</td>
<td>15.6</td>
<td>10.3</td>
<td>Polished stone fragment</td>
</tr>
<tr>
<td>IN-11A-1</td>
<td>L155</td>
<td>Chert</td>
<td>Medium</td>
<td>45.30</td>
<td>89.3</td>
<td>36.3</td>
<td>13.4</td>
<td>Crescent shaped biface, complete, late stage</td>
</tr>
<tr>
<td>IN-11A-1-1</td>
<td>L111</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>133.00</td>
<td>60.1</td>
<td>44.8</td>
<td>52.0</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-1</td>
<td>L138</td>
<td>Chert</td>
<td>Medium</td>
<td>19.17</td>
<td>59.3</td>
<td>39.5</td>
<td>11.1</td>
<td>Scraper, complete</td>
</tr>
<tr>
<td>IN-11A-1-1</td>
<td>L183</td>
<td>Chert</td>
<td>Medium</td>
<td>0.52</td>
<td>15.3</td>
<td>11.6</td>
<td>4.1</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>IN-11A-1-1</td>
<td>L184</td>
<td>Chert</td>
<td>Medium</td>
<td>1.13</td>
<td>23.4</td>
<td>11.3</td>
<td>4.5</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-11A-1-1</td>
<td>L202</td>
<td>Chert</td>
<td>Coarse</td>
<td>19.22</td>
<td>34.2</td>
<td>27.8</td>
<td>18.6</td>
<td>Unknown biface fragment, late stage</td>
</tr>
<tr>
<td>IN-11A-1-2</td>
<td>L108</td>
<td>Chert</td>
<td>Medium</td>
<td>103.95</td>
<td>60.0</td>
<td>52.0</td>
<td>38.8</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-2</td>
<td>L112</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>119.88</td>
<td>51.6</td>
<td>55.0</td>
<td>41.4</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-2</td>
<td>L123</td>
<td>Chert</td>
<td>Medium</td>
<td>4.56</td>
<td>30.9</td>
<td>24.2</td>
<td>8.3</td>
<td>Projectile point distal end, late stage</td>
</tr>
<tr>
<td>IN-11A-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>28.95</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L116</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>116.07</td>
<td>68.6</td>
<td>45.2</td>
<td>36.9</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L117</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>63.28</td>
<td>58.3</td>
<td>32.0</td>
<td>28.8</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L118</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>22.27</td>
<td>38.6</td>
<td>36.6</td>
<td>20.4</td>
<td>Core</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
<td>Width (mm)</td>
<td>Thickness (mm)</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>----------</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L119</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>25.70</td>
<td>37.7</td>
<td>32.3</td>
<td>21.0</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L148</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>38.37</td>
<td>44.0</td>
<td>36.7</td>
<td>27.0</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L149</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>17.64</td>
<td>33.0</td>
<td>23.2</td>
<td>22.1</td>
<td>Core</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td>L152</td>
<td>Chert</td>
<td>Fine</td>
<td>9.95</td>
<td>48.5</td>
<td>29.7</td>
<td>8.0</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-11A-1-3</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>7.05</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-11A-1-5</td>
<td>L164</td>
<td>Chert</td>
<td>Coarse</td>
<td>4.85</td>
<td>21.2</td>
<td>21.5</td>
<td>14.2</td>
<td>Polished Stone</td>
</tr>
<tr>
<td>IN-12A-1-1</td>
<td>L102</td>
<td>Chert</td>
<td>Coarse</td>
<td>200.76</td>
<td>76.3</td>
<td>74.3</td>
<td>30.4</td>
<td>Chopper, unifacial, distal fragment, early stage</td>
</tr>
<tr>
<td>IN-12A-1-1</td>
<td></td>
<td>Chert</td>
<td>Fine</td>
<td>1.48</td>
<td></td>
<td></td>
<td></td>
<td>Distal blade</td>
</tr>
<tr>
<td>IN-12A-1-2</td>
<td>L103</td>
<td>Chert</td>
<td>Coarse</td>
<td>48.00</td>
<td>71.2</td>
<td>40.5</td>
<td>15.4</td>
<td>Crescent-shaped biface fragment, late stage</td>
</tr>
<tr>
<td>IN-12A-3-1</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>0.40</td>
<td></td>
<td></td>
<td></td>
<td>Distal blade</td>
</tr>
<tr>
<td>IN-13A-1-1</td>
<td>L167</td>
<td>Chert</td>
<td>Medium</td>
<td>9.76</td>
<td>46.1</td>
<td>26.0</td>
<td>10.1</td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-17A-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>5.26</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-17A-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>8.17</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>IN-17A-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>47.33</td>
<td></td>
<td></td>
<td></td>
<td>Core</td>
</tr>
<tr>
<td>IN-19B-1-2</td>
<td>L120</td>
<td>Chert</td>
<td>Fine</td>
<td>4.16</td>
<td>46.4</td>
<td>23.7</td>
<td>5.1</td>
<td>Projectile point (near complete, tip and stem slightly broken), corner notched</td>
</tr>
<tr>
<td>IN-19B-1-2</td>
<td>L141</td>
<td>Chert</td>
<td>Medium</td>
<td>19.44</td>
<td>57.9</td>
<td>41.5</td>
<td>7.0</td>
<td>Bifacial knife</td>
</tr>
<tr>
<td>IN-19B-1-2</td>
<td>L142</td>
<td>Chert</td>
<td>Medium</td>
<td>33.01</td>
<td>50.7</td>
<td>37.2</td>
<td>18.1</td>
<td>Unifacial scraper</td>
</tr>
<tr>
<td>LS-2A-1-2</td>
<td></td>
<td>Chert</td>
<td>Coarse</td>
<td>9.94</td>
<td></td>
<td></td>
<td></td>
<td>Blades</td>
</tr>
<tr>
<td>LS-2A-2-3</td>
<td>L199</td>
<td>Chert</td>
<td>Medium</td>
<td>6.99</td>
<td>40.4</td>
<td>25.0</td>
<td>8.3</td>
<td>Projectile point, distal fragment, late stage</td>
</tr>
<tr>
<td>LS-3A-1-2</td>
<td>L192</td>
<td>Chert</td>
<td>Coarse</td>
<td>13.67</td>
<td>52.6</td>
<td>36.9</td>
<td>8.2</td>
<td>Unifacial scraper</td>
</tr>
<tr>
<td>LS-3A-1-2</td>
<td>L193</td>
<td>Chert</td>
<td>Coarse</td>
<td>31.09</td>
<td>33.7</td>
<td>27.7</td>
<td>25.1</td>
<td>Bifacial core</td>
</tr>
<tr>
<td>LS-3A-1-2</td>
<td>L200</td>
<td>Chert</td>
<td>Coarse</td>
<td>77.40</td>
<td>53.5</td>
<td>53.1</td>
<td>25.0</td>
<td>Axe, biface, distal fragment, late stage</td>
</tr>
<tr>
<td>Provenience</td>
<td>Catalog Number</td>
<td>Material</td>
<td>Texture</td>
<td>Mass (g)</td>
<td>Length (mm)</td>
<td>Width (mm)</td>
<td>Thickness (mm)</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>----------</td>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
<td>------------</td>
<td>----------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LS-3A-1-2</td>
<td>L201</td>
<td>Chert</td>
<td>Medium</td>
<td>4.77</td>
<td>58.7</td>
<td>27.7</td>
<td>4.2</td>
<td>Projectile point, complete, late stage, stemmed</td>
</tr>
<tr>
<td>LS-3A-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>11.17</td>
<td></td>
<td></td>
<td></td>
<td>3 Blades</td>
</tr>
<tr>
<td>RN-1B-1-2</td>
<td>L129</td>
<td>Chert</td>
<td>Medium</td>
<td>6.59</td>
<td>31.9</td>
<td>21.5</td>
<td>9.1</td>
<td>Biface, unknown fragment</td>
</tr>
<tr>
<td>RN-1B-1-2</td>
<td>L144</td>
<td>Chert/limestone</td>
<td>Coarse</td>
<td>192.20</td>
<td>58.7</td>
<td>55.0</td>
<td>52.0</td>
<td>Core or hammerstone</td>
</tr>
<tr>
<td>RN-1B-1-3</td>
<td>L137</td>
<td>Chert</td>
<td>Medium</td>
<td>87.10</td>
<td>49.6</td>
<td>53.3</td>
<td>26.8</td>
<td>Medial biface (handaxe), late stage</td>
</tr>
<tr>
<td>RN-2A-1-2</td>
<td>L139</td>
<td>Chert</td>
<td>Medium</td>
<td>22.83</td>
<td>80.1</td>
<td>31.6</td>
<td>7.6</td>
<td>Scraper, secondary cortex</td>
</tr>
<tr>
<td>SM-1A-1-1</td>
<td>L133</td>
<td>Chert</td>
<td>Coarse</td>
<td>32.12</td>
<td>54.4</td>
<td>31.2</td>
<td>20.8</td>
<td>Scraper</td>
</tr>
<tr>
<td>SM-1B-1-2</td>
<td>L101</td>
<td>Chert</td>
<td>Coarse</td>
<td>206.12</td>
<td>81.7</td>
<td>69.1</td>
<td>27.0</td>
<td>Proximal biface (handaxe), late stage</td>
</tr>
<tr>
<td>SM-1B-1-2</td>
<td>L114</td>
<td>Chert</td>
<td>Medium</td>
<td>199.20</td>
<td>81.9</td>
<td>67.2</td>
<td>31.0</td>
<td>Round axe, complete</td>
</tr>
<tr>
<td>SM-1B-1-2</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>62.34</td>
<td></td>
<td></td>
<td></td>
<td>Scraper</td>
</tr>
<tr>
<td>SM-1B-1-3</td>
<td>L126</td>
<td>Chert</td>
<td>Coarse</td>
<td>97.40</td>
<td>87.3</td>
<td>54.8</td>
<td>19.2</td>
<td>Bifacial axe (complete), middle stage</td>
</tr>
<tr>
<td>SM-1B-1-3</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>79.57</td>
<td></td>
<td></td>
<td></td>
<td>Early stage biface</td>
</tr>
<tr>
<td>SM-1B-1-3</td>
<td></td>
<td>Chert</td>
<td></td>
<td>116.59</td>
<td></td>
<td></td>
<td></td>
<td>Tool</td>
</tr>
<tr>
<td>SM-1B-1-4</td>
<td>L110</td>
<td>Chert</td>
<td>Medium</td>
<td>15.49</td>
<td>36.1</td>
<td>32.1</td>
<td>10.2</td>
<td>Biface, medial fragment, late stage</td>
</tr>
<tr>
<td>SM-1B-1-4</td>
<td>L153</td>
<td>Chert</td>
<td>Medium</td>
<td>15.78</td>
<td>65.1</td>
<td>35.1</td>
<td>8.3</td>
<td>Biface, complete, lanceolate, late stage</td>
</tr>
<tr>
<td>SM-1B-1-4</td>
<td>L154</td>
<td>Chert</td>
<td>Medium</td>
<td>7.01</td>
<td>51.5</td>
<td>22.1</td>
<td>6.7</td>
<td>Biface, near complete, lanceolate, late stage</td>
</tr>
<tr>
<td>SM-1B-1-4</td>
<td></td>
<td>Chert</td>
<td>Medium</td>
<td>63.30</td>
<td></td>
<td></td>
<td></td>
<td>Scraper/chopper</td>
</tr>
<tr>
<td>SM-1B-1-5</td>
<td>L105</td>
<td>Chert</td>
<td>Coarse</td>
<td>304.51</td>
<td>118.5</td>
<td>72.0</td>
<td>31.2</td>
<td>Complete bifacial axe, middle stage</td>
</tr>
<tr>
<td>SM-1B-1-5</td>
<td>L121</td>
<td>Chert</td>
<td>Medium</td>
<td>3.83</td>
<td>20.2</td>
<td>24.2</td>
<td>8.1</td>
<td>Projectile point, medial fragment, middle stage</td>
</tr>
</tbody>
</table>
Bibliography

Abercrombie, Nicholas and Bryan S. Turner

Abrams, Elliot M. and David J. Rue

Acemoglu, D. and J. Robinson

Adams, Richard E.W.

Adams, Richard E.W. and T. Patrick Culbert

Adams, Robert McC.

Adams, R.E.W. and W.D. Smith

Aguirre Beltrán, G.

Aimers, James J.
2014 “Follow the Leader: Fine Orange Pottery Systems in the Maya Lowlands.” In *The Maya and their Central American Neighbors: Settlement Patterns, Architecture,


2006 Strategic Location and Territorial Integrity: The Role of Subsidiary Sites in the Classic Maya Kingdoms of the Upper Usumacinta Region. Internet Archaeology 19.


Andres, Christopher

Andrews, George F.

Andrews V, E. Wyllys

Anselmetti, Flavio S., David A. Hodell, Daniel Ariztegui, Mark Brenner, and Michael F. Rosenmeier

Ardelean, Ciprian F.

Ardren, Traci, Rafael Burgos Villanueva, T. Kam Manahan, Sara Dzul Gongora, and José Estrada Faisal

Arkush, Elizabeth

Arnauld, Marie Charlotte

Ascher, Robert

Ashmore, Wendy
1981  *Lowland Maya Settlement Patterns.* School of American Research, Albuquerque, NM.

1984  Quiriguá Archaeology and History Revisited. *Journal of Field Archaeology*


Ashmore, Wendy and Pamela Geller

Ashmore, W., J. Yaeger, and C. Robin

Ashmore, Wendy and Richard Wilk

Atalay, Sonya

Bachand, Bruce R.

Ball, Joseph W.
1980 The Archaeological Ceramics of Chinkultic, Chiapas, Mexico. Papers of the New World Archaeological Foundation, Provo, UT.

Barrientos Q., Tomás, Héctor L. Escobedo, and Stephen D. Houston

Bascom, William R.
Barthel, Thomas S.  

Beach, T., N. Dunning, S. Luzzader-Beach, D.E. Cook, and J. Lohse  

Becker, Marshall  


Becquelin, Pierre and Claude F. Baudez  

Beliaev, Dmitri  

Beliaev, Dmitri and Alexander Safronov  

Bell, Ellen  

Berglund, Joel  
Berlin, Heinrich  
1956 *Late Pottery Horizons of Tabasco, Mexico.* Carnegie Institution of Washington, Washington, DC.  

Bey, George J., III, and Rossana May Ciau  

Bey, George F., III, Craig A. Hanson, and William M. Ringle  

Binford, Lewis R.  

Bíró, Péter  
2005 *Sak Tz’i’ in the Classic Period Hieroglyphic Inscriptions.* Mesoweb.  

Bishop, Ronald L.  

Bishop, Ronald L. and Robert L. Rands  

Bishop, Ronald L., Garman Harbottle, and Edward V. Sayre  

Black, S.L.

Blackmore, Chelsea  

Blaikie, Piers and Brookfield, Harold C.  

Blanton, Richard and Lane Fargher  

Blau, Peter M.  

Bolles, David  
1997  Combined Dictionary Concordance of the Yucatecan Mayan Language,  

Boot, Erik  

Bourdieu, Pierre  

Bradtmöller, Marcel, Sonja Grimm, Julien Riel-Salvatore  

Brady, James and Wendy Ashmore  

Brady, James and Pierre-Robert Colas  
Brady, James E., Joseph W. Ball, Ronald L. Bishop, Duncan C. Pring, Norman Hammond, and Rupert A. Housely

Brainerd, George

Braswell, Geoffrey E.

Bricker, Victoria R.

Bricker, Harvey M., and Victoria R. Bricker

Broda, Johanna

Bronson, Bennet

Brookfield, Harold

Brown, Michael F.

Brumfiel, Elizabeth M.

Bury, J.B.

Butler, Mary

Butzer, Karl W. and Georgina H. Endfield

Cabadas-Baéz, Héctor Víctor, Berenice Solís Castillo, Elizabeth Solleiro Rebolledo, Sergey Sedov, Daniel Leonard, Keiko Teranishi Castillo, Rodrigo Liendo Stuardo, Oleg Korneychik

Cahill, David

Cancian, Frank

Canuto, Marcello

Canuto, Marcello and William L. Fash

Canuto, Marcello and Jason Yaeger


Cap, Bernadette

Carballo, David M., editor

Carter, Nicholas

Carmack, R.M.

Catton, W.R.

Chadwick, John

Chandler, David

Chase, Adrian S.Z.

Chase, Arlen F. and Diane Z. Chase


Chase, Diane Z. and Arlen F. Chase


Chase, Arlen F., Diane Z. Chase, Jaime J. Awe, John F. Weishampel, Gyles Iannone, Holley Moyes, Jason Yaeger, and M. Kathryn Brown
2014 The Use of LiDAR in Understanding the Ancient Maya Landscape: Caracol and Western Belize. Advances in Archaeological Practice: A Journal of the Society for American Archaeology, August 2014.

Child, Mark B.

Child, Mark B. and Charles Golden
Chinchilla, Oswaldo M. and Stephen D. Houston

Ciudad Ruiz, Andrés

Clastres, Pierre

Coaffee, Jon

Coe, Michael D.

Coe, Michael and Justin Kerr

Coe, William

Coe, W.R. and William Haviland

Cole, Lydia E.S., Shonil A. Bhagwat, and Katherine J. Willis

Conlee, Christina A.
Connell, Samuel V.


Cook, O.F.


Cooke, C. Wythe

Cooper, Lisa

Cortés, Hernán
1986  *Letters from Mexico.* Yale University Press, New Haven, CT.

Coulborn, R.

Cowgill, George L.


Cowgill, Ursula M. and G.E. Hutchinson

Crosby, Alfred W.

Culbert, T. Patrick

Culbert, T. Patrick and Robert L. Rands

Dacus, Chelsea

Dahlin, Bruce H.

Dan-Cohen, Talia

Dardón, Karla and Greg Borgstede
Deevey, E.S., Mark Brenner, M.S. Flannery, and G.H. Yezdani

Delvendahl, Kai

Demarest, Arthur A.

Demarest, Arthur A. and Hector L. Escobedo

Demarest, Arthur A., Matt O’Mansky, Claudia Wolley, Dirk Van Tuerenhout, Takeshi Inomata, Joel Palka, and Héctor Escobedo

Demarest, Arthur A., Matt O’Mansky, Nicholas Dunning, and Timothy Beach

Demarest, Arthur A., Claudia Quintanilla, and José Samuel Suasnavar

De Montmollin, Olivier

Dennehy, Timothy J., Benjamin W. Stanley, and Michael E. Smith

De Terte, Ian and Christine Stephens
2014 Psychological Resilience of Workers in High-Risk Occupations. Stress and Health 30(5).

Diamond, Jared

Dietler, M. and B. Hayden

Dobereiner, Jeffrey

Dobereiner, Jeffrey and Socorro del Pilar Jiménez Álvarez

Dobres, Marcia-Anne and John E. Robb

Domínguez Carrasco, Maria del Rosario

Dornan, Jennifer

Douglas, Peter M.J., Mark Pagani, Marcello A. Canuto, Mark Brenner, David A. Hodell, Timothy I. Eglinton, and Jason H. Curtis

Douglas, Peter M.J., Arthur A. Demarest, Mark Brenner, and Marcello A. Canuto

Doyle, James A., Thomas G. Garrison, and Stephen D. Houston

Drennan, Robert D.

Drews, Robert

Drucker, Philip, Robert F. Heizer, and Robert J. Squier

Dunnell, Robert C.
1971  Sabloff and Smith’s “The Importance of Both Analytic and Taxonomic Classification in the Type-Variety System.” American Antiquity 36:115–118.

Dunning, Nicholas P.

Dunning, Nicholas P., Timothy P. Beach, and Luzzadder-Beach, Sheryl

Eisenstadt, Shmuel N.

Ekholm-Miller, Susanna
1973  The Olmec rock carving at Xoc, Chiapas, Mexico. New World Archaeological Foundation, Brigham Young University, Provo, Utah.

Eliade, Mircea

Emery, Kitty F.

Eppich, Keith and David Freidel

Erickson, Clark

Erickson, Clark L. and John H. Walker

Estrada-Belli, Francisco

Estrada-Belli, Francisco, Alexandre Tokovinine, Jennifer M. Foley, Heather Hurst, Gene A. Ware, David Stuart, and Nikolai Grube

Evans, Nicholas P., Thomas K. Bauska, Fernando Gázquez-Sánchez, Mark Brenner, Jason H. Curtis, David A. Hodell

Fagan, Brian

Fash, William

Fash, William L. and Barbara W. Fash

Fash, William L., E. Wyllys Andrews, and T. Kam Manahan

Fash, William and Robert Sharer

Faulseit, Ronald K.

Feinman, Gary M. and Linda M. Nicholas

Ferguson, James
1994  *The Anti-Politics Machine: Development, Depoliticization, and Bureaucratic*

Fitzsimmons, J. L.

Flannery, Kent V.

Flores Esquivel, Atasta

Foias, Antonia E.

Foias, Antonia E. and Ronald L. Bishop

Forsyth, Donald W.

Fox, John W.

Fox, John W., Garrett W. Cook, Arlen F. Chase, and Diane Z. Chase

Frazer, James G.
1993 *The Golden Bough*. Wordworth Reference, Ware, Hertfordshire. [1922]

Freidel, David


Freidel, David A., and Jeremy A. Sabloff

Freidel, David A. and Linda Schele

Fritz, J.M.

Garber, James F. (Editor)

García Moll, R.


Garmezy, N.

Garmezy, N. and Sandra Streitman

618

Garrison, Thomas G. and Stephen Houston

Garrison, Thomas G., Stephen D. Houston, Andrew K. Scherer, David del Cid, José Luis Garrido López, Ewa Czapiewska-Halliday, and Edwin Román

Geertz, Clifford

Geller, Pamela

Gibbon, Edward
2003  *The Decline and Fall of the Roman Empire*. Modern Library, New York. [1788]

Giddens, Anthony

Gill, Richardson

Gill, Richardson B., Paul A. Mayewski, Johan Nyberg, Gerald H. Haug, and Larry C. Peterson

Gillespie, Susan D.
Golden, Charles

Golden, Charles and Bryce Davenport

Golden, Charles W. and Stephen D. Houston

Golden, Charles and Andrew K. Scherer

Golden, Charles, Pedro Guzmán López, and Whittaker Schroder
2013 “Na Wits.” In Proyecto Arqueológico Busiljá-Chocoljá, Informe de la Cuarta Temporada, pp. 89–104. Presented to the Consejo de Arqueología, INAH.


Golden, C., A.K. Scherer, A.R. Muñoz, and Zachary Hruby


González-Ruibal, Alfredo

Goodman, J.T.  

Graeber, David  

Graham, Ian  
1967  *Archaeological Explorations in El Petén, Guatemala.* Publication 33, Middle American Research Institute, Tulane University, New Orleans, LA.

Graham, John A.  

Grube, Nikolai  

Grube, Nikolai and Simon Martin  
2000  *Tikal and its Neighbors, Notebook for the XXXIXth Maya Hieroglyphic Forum at Texas, 2000.* Department of Art History, University of Texas, Austin.  
2001  *The Coming of Kings: Writing and Dynastic Kingship in the Maya Area Between the Late Preclassic and the Early Classic, Notebook for the XXX Maya Hieroglyphic Forum at Texas, 2001.* Department of Art History, University of Texas, Austin.

Grube, Nikolai and Werner Nahm  

Grube, Nikolai, Simon Martin and Marc Zender  
2002  *Palenque and Its Neighbors. Notebook for the XXXI Maya Hieroglyphic Forum at Texas, 2002.* Department of Art History, University of Texas, Austin.

Guenther, Stanley P.  

Gunderson, Lance H.

Gunderson, Lance H. and C.S. Holling

Gunn, Joel D., William J. Folan, and Hubert R. Robichaux

Hage, Ghassan

Halperin, Christina T.

Hamblin, Robert L. and Brian L. Pitcher

Hammond, Norman


Hansen, Richard D.


Harrison-Buck, Eleanor

Harrison-Buck, Eleanor and Patricia A. McAnany

Hassan, F.A.

Haug, Gerald H., Detlef Günther, Larry C. Peterson, Daniel M. Sigman, Konrad A. Hughen, and Beat Aeschlimann

Hayden, Brian

Hendon, Julia A.

Hernández Ayala, Martha

Hirth, K.
Hodell, David A., Jason H. Curtis, and Mark Brenner

Hodell, David A., Mark Brenner, and Jason H. Curtis
2005 Terminal Classic Drought in the Northern Maya Lowlands Inferred from Multiple Sediment Cores in Lake Chichancanab (Mexico). *Quaternary Science Reviews* 24:1413–1427.

Hoffman, Susanna M.

Hoggarth, J.A. and J.J. Awe

Hoggarth, Julie A., Matthew Restall, James W. Wood, and Douglas J. Kennett

Holley, G.R.

Holling, C.S.

Holling, C.S. and Lance H. Gunderson

Holling, C.S., Lance H. Gunderson, and Garry D. Peterson

Hoopes, John
Hopf, S.M.

Hosler, Dorothy, Jeremy A. Sabloff, and Dale Runge

Houston, Stephen D.
1993 Hieroglyphs and History at Dos Pilas. University of Texas Press, Austin.

Houston, Stephen and Takeshi Inomata

Houston, Stephen and David Stuart

Houston, Stephen, John Baines, and Jerrold Cooper

Houston, Stephen D., David Stuart, and Karl Taube
2006 The Memory of Bones: Body, Being, and Experience among the Classic Maya. University of Texas Press, Austin.

Houston, Stephen D., John Robertson, and David Stuart
2001 Quality and quantity in Glyphic Nouns and Adjectives. Research Reports on Ancient Maya Writing 47. Center for Maya Research, Washington, D.C.

Houston, Stephen, Héctor Escobedo, Donald Forsyth, Perry Hardin, David Webster, and Lori Wright
Houston, Stephen, Héctor Escobedo, Perry Hardin, Richard Terry, David Webster, Mark Child, Charles Golden, Kitty Emery, and David Stuart

Houston, S.D., H. Escobedo, M. Child, C. Golden, and R. Muñoz

Houston, Stephen D., Héctor Escobedo, Andrew K. Scherer, James L. Fitzsimmons, and Mark Child


Houston, Stephen, Héctor Escobedo, Mark Child, Charles Golden, Richard Terry, and David Webster

Hruby, Zachary

Hull, Kerry

Hunt, Terry L. and Carl P. Lipo

Huntington, Ellsworth

2016 “A Historical Processual Approach to Continuity and Change in Classic and Postclassic Yucatán.” In Beyond Collapse: Archaeological Perspectives on

Iannone, Gyles

Iannone, Gyles, Brett A. Houk, and Sonja A. Schwake

Iannone, G., K. Prufer, and D.Z. Chase

Iannone, Gyles, Jason Yaeger, and David Hodell

INAH

Inomata, Takeshi

Inomata, Takeshi and Stephen Houston
2001 Royal Courts of the Ancient Maya. 2 volumes. Westview Press, Boulder, CO.

Inomata, Takeshi, Jessica MacLellan, and Melissa Burham

Inomata, T. and R.W. Webb (editors)  
2003  The Archaeology of Settlement Abandonment in Middle America. University of Utah Press, Salt Lake City.

Inomata, T., D. Triadan, E. Ponciano, E. Pinto, R.E. Terry, and M. Eberl  

Inomata, Takeshi, Jessica MacLellan, and Melissa Burham  

Inomata, Takeshi, Daniela Triadan, Jessica MacLellan, Melissa Burham, Kazuo Aoyama, Juan Manuel Palomo, Hitoshi Yonenobu, Flory Pinzón, and Hiroo Nasu  

Jackson, Sarah E.  


Jackson, Sarah E. and David Stuart  

Jacobsen, Thorkild and Robert McC. Adams  

Jansen, Stef  

Jennings, Justin, Kathleen L. Antrobus, Sam J. Atencio, Erin Glavich, Rebecca Johnson, German Loffler, and Christine Luu  

Jiménez Álvarez, Socorro del Pilar


Jiménez Álvarez, Socorro del Pilar, Iliana Ancona Aragón y Cecilia Soldevila Illingworth


Jiménez Álvarez, Socorro del Pilar, Robert L. Rands, and Ronald L. Bishop


Jiménez Álvarez, Socorro del Pilar, Alan Enrique Mendez Cab, Charles Golden, and Andrew K. Scherer

2014 “La Cerámica del Periodo Clasico Tardio Procedente de la Region entre los Rios Chocoljá y Busiljá, en el Río Usumacinta Medio de Chiapas, Mexico.” Encuentro Internacional los Investigadores de la Cultura Maya 22(2). Campeche, Mexico.

Jiménez Álvarez, Socorro del Pilar, Santiago Alberto Sobrino Fernández, Sony Moisés Ojeda Gonzales, and Jorge Luis Borges Barrientos

2018 “Tipología de las Cerámicas de los Sitios Arqueológicos Lacanjá Tzeltal, Rancho Poniente y Sacrificios, Chiapas.” In *Proyecto Arqueológico Busiljá-Chocoljá, Informe de la Novena Temporada*. Presented to the Consejo de Arqueología, INAH.

Johnson, Scott


Johnston, Kevin J.


Jones, Christopher


Jones, G.

Joyce, Arthur A., Laura Arnaud Bustamante, and Marc N. Levine  

Joyce, A.A. and E.T. Weller  

Kaneko, Akira  

Kassabaum, Megan C.  

Keck, Markus and Patrick Sakdapolrak  

Kelley, David H.  
1976 *Deciphering the Maya Script*. University of Texas Press, Austin.


King, Eleanor and Leslie C. Shaw  

Kingsley, Melanie  

Kingsley, Melanie, Charles Golden, Andrew Scherer, and Luz Midilia Marroquín Franco

Kiser, Edgar and Yong Cai

Knapp, A. Bernard and Sturt W. Manning

Knorosov, Yuri V.

Kohler, Timothy A. and Rebecca Higgins

Kohler, Timothy A. and Michael E. Smith, editors


Koselleck, Reinhart (translated by Michaela W. Richter)

Kowalski, Jeff Karl

Kowalski, J. and N. Dunning

Kremer, Jürgen

Kurjack, Edward B. and Silvia Garza

Kurnick, Sarah

Lacadena, Alfonso
2009 “Apuntes para un Estudio sobre Literatura Maya Antigua.” In Texto y Contexto: La Literatura Maya Yucateca en Perspectiva Diacrónica, edited by Antje Gunsengheimer, Tsubasha Okoshi Harada, and John F. Chuchiak, pp. 31-52. BAS 47 (Estudios Americanistas de la Universidad de Bonn), Bonn.

Lacadena, Alfonso and Andrés Ciudad Ruiz
1998 “Reflexiones sobre Estructura Política Maya Clásica.” In Anatomía de una Civilización, edited by Andrés Ciudad Ruiz, pp. 31-64. Aproximaciones Interdisciplinarias a la Cultura Maya, Sociedad Española de Estudios Mayas, Madrid.

Lamoureux-St-Hilaire, Maxime

Lau, George F.

Leach, Edmund R.

LeCount, Lisa J.


2001 Like Water for Chocolate: Feasting and Political Ritual Among the Late Classic

633

LeCount, Lisa and Jason Yaeger (Editors)  

Lee, Thomas A. and Brian Hayden  
1988 San Pablo Cave and El Cayo on the Usumacinta River, Chiapas, Mexico. New World Archaeological Foundation, Brigham Young University, Provo, UT.

Lekson, Stephen H.  

Lesure, Richard G.  

Leventhal, Richard M.  

Leventhal, Richard M. and Kevin Baxter  

Liebmann, Matthew  

Liebmann, Matthew and Melissa S. Murphy, editors  

Liebmann, Matthew and Robert Preucel  

Li, Liu  
2000 Ancestor Worship: An Archaeological Investigation of Ritual Activities in

Liendo Stuardo, R.


2007a “The Problem of Political Integration in the Kingdom of B’aa: A Regional Perspective for the Settlement Patterns in the Palenque Region.” In *Palenque: Recent Investigations at the Classic Maya Center*, edited by Damien Marken. Altamira Press, Walnut Creek, CA.


Liendo Stuardo, Rodrigo, Javier López Mejía, and Arianni Campiani


Liendo Stuardo, Rodrigo, Elizabeth Solleiro-Rebolledo, Berenice Solis-Castillo, Sergei Sedov, and Arturo Ortiz-Pérez


Lockard, Joe


López Bravo, Roberto


López Varela, Sandra


635
Lothrop, Samuel K.

Lowe, Gareth W.

Lucero, Lisa

Maca, Allan L.

MacKie, Euan

Magnoni, Aline, Travis W. Stanton, and Scott R. Hutson

Maestri, Nicoletta
2018 From Movement to Mobility: The Archaeology of Boca Chinikihá (Mexico), a Riverine Settlement in the Usumacinta Region. Unpublished PhD dissertation, University of California, Riverside, CA.

Maisels, Charles Keith
Maler, Teobert


Malthus, Thomas R.

Manahan, T. Kam


Manahan, T. Kam and Marcello A. Canuto

Mann, Charles C.

Marcus, Joyce


Marcus, Joyce and Kent Flannery

Martin, Simon

Martin, Simon and Nikolai Grube
2008  *Chronicle of the Maya Kings and Queens*. Thames and Hudson, New York.

Martindale, Andrew and Kisha Supernant

Martos López, Luis Alberto

Marx, Karl

Marx, Werner, Robin Haunschild, and Lutz Bornmann

Mason, J.A.

Matheny, R.T.
1983  *Excavations of Ancient Canals at Edzna, Campeche, Mexico*. Brigham Young University, Provo.

Mathews, Peter


Mathews, P. and M. M. Aliphat

Mathews, Peter and John Justeson

Mathews, Peter and Gordon R. Willey

McAnany, Patricia


McAnany, Patricia and Norman Yoffee

McCafferty, Sharisse D. and Geoffrey G. McCafferty

McGee, J.

McGuire, Randall H.

McMeekin, Dorothy

McNeil, Cameron L., David A. Burney, and Lida Pigott Burney

Means, P.A.

Méndez Cab, Alan Enrique

Middleton, Guy D.

Miller, Mary Ellen and Claudia Brittenham
2013 The Spectacle of the Late Maya Court: Reflections on the Murals of Bonampak. University of Texas Press, Austin.

Miller, M. and K. Taube

Mixter, David W.

Mock, S.B.

Moholy-Nagy, Hattula

Monaghan, John

Morales, Paulino
2000a  *Registro de Estela 1, de El Kinel, La Libertad, Petén.* Informe Presentado al Instituto de Antropología e Historia, Guatemala City.


Morell-Hart, Shanti, Sarah Watson, Harper Dine, and Meghan Mcleod
2018  “Análisis Paleoetnobotánico de Budsilha, El Porvenir, El Infiernito, y Lacanjá Tzeltal.” In *Proyecto Arqueológico Busiljá-Chocoljá, Informe de la Novena Temporada*. Presented to the Consejo de Arqueología, INAH.

Morley, Sylvanus G.


1935  *Guidebook to the Ruins of Quiriguá.* Carnegie Institution of Washington, D.C.


Morley, Sylvanus G. and George W. Brainerd

Morris, Ellen
Morrison, Kathleen D.

Motesharrei, Safa, Jorge Rivas, and Eugenia Kalnay

Muñoz, A.R.
2002  Ceramics at Piedras Negras, Guatemala. FAMSI

Munoz, Samuel E., Kristine E. Gruley, Ashtin Massie, David A. Fike, Sissel Schroeder, and John W. Williams

Narotzky, Susana and Niko Besnier

Neiman, Frederick D.

Nelson, Zachary

Nelson, B.A., A.S.Z. Chase, and M. Hegmon

Newman, Sarah

Nicholson, Henry

Noble, Sandra

Nordholt, H.S.

Núñez Ocampo, Rubén


O’Mansky, M. and N.P. Dunning

O’Neill, Megan

Palka, Joel W.


2014 *Maya Pilgrimage to Ritual Landscapes: Insights from Archaeology, Ethnohistory,*
Pauketat, Timothy R.
2007 *Chiefdoms and Other Archaeological Delusions.* AltaMira Press, Lanham.

Pendergast, David

Peterson, Larry C. and Gerald H. Haug

Pickett, S.T.A., M.L. Cadenasso, and J.M. Grove

Pirenne, Henri

Pohl, M.

Pop, Iggy

Powis, Terry G.
2002 *An Integrative Approach to the Analysis of the Late Preclassic Ceramics at Lamanai, Belize.* Unpublished PhD dissertation. University of Texas, Austin.

Proskouriakoff, Tatiana


Puleston, D. and D.W. Callender, Jr.


Railey, Jim A. and Richard Martin Reycraft


Rands, Robert L.


Rands, Robert L. and Ronald L. Bishop


Rands, Robert L. and Barbara C. Rands

Rands, Robert L., Ronald L. Bishop, and Jeremy A. Sabloff

Rathje, William L.

Redfield, Robert

Redfield, Robert, and Milton Singer

Redman, Charles and Ann P. Kinzig

Reese-Taylor, Kathryn and Debra S. Walker

Renfrew, Colin

Renfrew, Colin and John Cherry (Editors)

Reycraft, Richard Martin  

Rice, Donald  

Rice, Prudence M.  
2004  *Maya Political Science: Time, Astronomy, and the Cosmos.* University of Texas Press, Austin.

Rice, Don S. and T. Patrick Culbert  

Rice, P.M. and D. Forsyth  

Rice, Don S. and Prudence M. Rice  

Rice, Prudence M., Don S. Rice, Timothy Pugh, and Romulo Sanchez Polo  
2009  “Defensive Architecture and the Context of Warfare at Zacpetén.” In *The Kowoj: Identity, Migration, and Geopolitics in Late Postclassic*
Richards-Rissetto, Heather and Kristin Landau

Richardson III, James B. and Daniel H. Sandweiss

Rick, John W.

Ringle, W.M., Tomas G. Negrón, and G.J. Bey, III

Robles, Griselda Pérez

Robin, Cynthia

Robin, C., J. Yaeger, and W. Ashmore

Roitman, Janet
Romero, Luis

Rotberg, Robert I.

Rue, David

Sabloff, Jeremy A.

Sabloff, Jeremy A. and Gordon R. Willey

Sahlins, Marshall

San Román Martín, Maria Elena

Santley, Robert S., Thomas W. Killion, and Mark T. Lycett

Santley, Robert S., Michael J. Berman, and Rani T. Alexander
1991 “The Politicization of the Mesoamerican Ballgame and Its Implications for the Interpretation of the Distribution of Ballcourts in Central Mexico.” In The

Sarmiento de Gamboa, Pedro

Satterthwaite, Linton

Saul, Frank P.

Scarborough, Vernon L.

Scheidel, Walter

Schele, Linda

Schele, Linda and David Freidel

Schele, Linda and Peter Mathews

Schepers-Hughes, Nancy

Scherer, Andrew K.

Scherer, Andrew K. and Charles Golden

Scherer, Andrew K., Charles Golden, Ana Lucía Arroyave, and Griselda Pérez Robles


Scherer, Andrew K., Charles Golden, and Pedro Guzmán López

Scherer, Andrew K., Charles Golden, Pedro Guzmán López, and Cyndi Medina Pimentel

Scherer, Andrew K., Charles Golden, Stephen Houston, and James Doyle

Scherer, Andrew K., Charles Golden, Mónica Úrquizu, and Griselda Pérez Robles

Schneider, D.M.

Schnell, Joshua T. and Andrew K. Scherer

Schroder, Whittaker, Charles Golden, Andrew K. Scherer, Socorro del Pilar Jiménez Álvarez, Jeffrey Dobereiner, and Alan Mendez Cab

Schwake, Sonja A. and Gyles Iannone

Schwarz, Kevin R.

Schwartz, Glenn M.

Scott, James C.

Sedig, J.W.
Seibert, Jeff

Sen, Amartya K.

Service, Elman

Shankman, P.

Sharer, Robert J.

Sharer, Robert J. and Charles Golden

Sharer, R.J., D.W. Sedat, L.P. Traxler, J.C. Miller, and E.E. Bell

Shook, Edwin

Shook, Edwin and Michael Coe

Silva de la Mora, Flavio

Smith, A. Ledyard

Smith, Adam T.

Smith, Michael E.


Smith, Michael E., and Frances F. Berdan

Smith, Michael E. and Cynthia M. Heath-Smith

Smith, Michael E. and Frederic Hicks

Smith, Michael E, Timothy Dennehy, April Kamp-Whittaker, Emily Colon, and Rebecca Harkness
Smith, Monica L.  

Smith, Robert Eliot  

Southall, Aidan W.  


Spinden, Herbert J.  


Storey, Rebecca and Glenn R. Storey  


Stross, Brian  

Stuart, David  


2005 The Inscriptions from Temple XIX at Palenque: A Commentary. The Pre-Columbian Art Research Institute, San Francisco.


2007b Place Names and Polities in the Usumacinta Region. Paper presented at the XXXI Annual Maya Meetings at the University of Texas, Austin.


Stuart, David and Stephen Houston

Stuart, David and George Stuart

Tainter, Joseph A.


Taladoire, Eric

Tambiah, S.J.

Tate, Carolyn E.
1992 *Yaxchilán: The Design of a Maya Ceremonial City*. University of Texas Press, Austin.

Taube, Karl A.


Taylor, Walter W.

Terry, Richard E., Daniel A. Bair, and Eric G. Coronel

Thompson, J. Eric S.


Tokovinine, Alexandre
2013 *Place and Identity in Classic Maya Narratives*. Dumbarton Oaks Research Library and Collection, Washington, DC.

Tokovinine, Alexandre and Vilma Fialko


Tourtellot, Gair

Trigger, Bruce G.

Van Tuerenhout, D.

Velásquez García, Erik

658
2004  “Los Escalones Jeroglíficos de Dzibanché.” In Los Cautivos de Dzibanché, edited by Enrique Nalda, pp. 73–103. CONACULTA, INAH, Mexico.

Vigh, Henrik

Villamil, Laura P.

Vizenor, Gerald

Vogt, Evon Z.

Vogt, Evon Z. and David Stuart

Volta, Beniamino and Geoffrey E. Braswell

Walker, Debra S.

Walker, Brian, C.S. Holling, Stephen R. Carpenter, and Ann Kinzig

Weber, Max

Webster, David
1974  *Fortifications of Becan, Campeche, Mexico*. Middle American Research Institute, publication 31. Tulane University, New Orleans.
1979  Cuca, Chacchob, Dzonot Ake: Three Walled Sites of the Northern Maya Lowlands. Occasional Papers in Anthropology 11, Department of Anthropology, The Pennsylvania State University, University Park.
2002  *The Fall of the Ancient Maya: Solving the Mystery of the Maya Collapse*. Thames and Hudson, London.

Webster, D., A. Freter, and G. Nancy

Webster, James W., George A. Brook, L. Bruce Railsback, Hai Cheng, R. Lawrence Edwards, Clark Alexander, and Philip P. Reeder

Weeks, John M., Jane A. Hill, and Charles Golden

Weiss, Harvey and Raymond S. Bradley

Welsh, Marc

West, Louis C.  

Wheatley, D. and M. Gillings  

Whyte, Susan R.  

Widgren, Mats  

Wilcox, Michael  

Wilk, Richard  

Wilk, Richard R. and Wendy Ashmore  

Willey, Gordon R.  


Willey, Gordon R., William R. Bullard, Jr., John B. Glass, and James C. Gifford  

Wood, James W., George R. Milner, Henry C. Harpending, and Kenneth M. Weiss  
1992  The Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal

Woodfill, Brent

Wyatt, Andrew R.

Yadeun Angulo, Juan

Yaeger, Jason


Yaeger, Jason and David Hodell

Yaeger, Jason and Cynthia Robin

Yoffee, Norman

Zartman, I. William

Zender, Marc  


Źrałka, Jarosław and Bernard Hermes  

Źrałka, Jarosław, Wiesław Koszkul, Katarzyna Radnicka, Laura Elena Sotelo Santos, and Bernard Hermes  

Źrałka, Jarosław, Bernard Hermes, and Wiesław Koszkul  

Źrałka, Jarosław, Christophe Helmke, Simon Martin, Wiesław Koszkul, Juan Luis Velásquez  