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# Integrating Plant and Animal: Data Delving Deeper Into Subsistence: Introduction to the Special Section

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## **Disciplines**

Biological and Physical Anthropology

## **Comments**

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# Reports

## Integrating Plant and Animal Data

### Delving Deeper into Subsistence

#### Introduction to the Special Section

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Plants, animals, and their by-products provide foods, fuels, materials for clothing and personal ornamentation, medicine, traction and transport, shelter, and storage vessels and serve important social and ritual functions. Although all societies use both plants and animals, and a number of attempts have been made to integrate plant and animal data (e.g., Halstead 2006; Hodder 2005; Miller 1997; Moore et al. 2007; Reitz, Newsom, and Scudder 1996; Sobolik 1992, 2003; Wright, Miller, and Redding 1981), archaeobotany and zooarchaeology still tend to be treated as complementary yet distinct areas of inquiry.

The term “archaeobiology,” which assumes an integrated approach to plant and animal remains, was used first in the early 1990s and reflects a shift in the 1970s and 1980s to a more interdisciplinary approach to the study of ecofacts. The Smithsonian Center for Archaeobiology was created in 1992 to foster research about the history of human interaction with *both* plants and animals (Bulletin 2002). Since the 1990s, “archaeobiology” has been employed fairly infrequently within the discipline, perhaps because collaboration between most practitioners is episodic at best. The continued separation of the fields results from the amount of time it takes to train as a specialist and differences in field, laboratory, and analytical methods as well as an academic tradition of self-imposed isolation. This institutionalized dissociation prevents a deeper understanding of the ways in which people incorporated plants and animals into their lives in antiquity. In order to address this issue, we organized this group of papers, originally presented in a symposium at the 2007 Society for American Archaeology meeting in Austin, Texas; each one represents the collaboration between an archaeobotanist and a zooarchaeologist. The papers highlight a variety of approaches

to integrating data and problems encountered and they touch on several recurring issues: that ancient agropastoral economies integrated stock and crop production, even if researchers do not; that even “domesticated” landscapes yield wild plant and animal resources; that ancient subsistence systems had a dynamic relationship with climate, environmental setting, and their social and economic systems; and that organization of domestic space, labor, and ritual are all potentially reflected in archaeobiological remains.

We present results from four studies of west Asian archaeological sites. The analysts for Neolithic Çatalhöyük (Twiss et al., in this issue) and Halaf period Domuztepe (Kansa et al., in this issue) take different approaches to sites that have some intriguing similarities. Smith and Munro (in this issue) survey Bronze and Iron Age sites over a broad area, and Miller and Zeder (in this issue) study a single site occupied over most of that time span; by the time of the early civilizations, domesticated plants and animals were well established, and agropastoral systems had begun to alter the land itself.

The elaboration of ritual has dominated much of the discussion of the early Neolithic in Anatolia, and both Çatalhöyük (in the south) and the somewhat later Domuztepe (in the southeast) yielded relevant evidence. Both settlements were agricultural communities whose arable land was relatively distant; both are situated near marshland, and the mosaic of habitats afforded both sites access to wild resources to supplement the domestic. The analyses of the sites focus on different aspects, due to taphonomy.

At Çatalhöyük, a burned structure provided the relatively rare opportunity for a comparison of in situ plant and animal remains. The study of a mid-seventh-millennium multi-roomed structure allows Twiss et al. to consider domestic storage and use of plant and animal products in a framework of habits and practices that were exercised over time but preserved in an instant. They show that the ritual use of cattle bones was restricted to the main, most accessible room. Consumables, on the other hand, were stored in a variety of built-in, perishable, and hanging containers within a fairly inaccessible room; this suggests there was a clear division between public and private spaces. Our modern, western oppositional categories of “wild” and “domestic” or “plant” and “animal” seem to have been less relevant to the Neolithic inhabitants of this dwelling than the spatial distribution of organisms according to their value as food.

Kansa et al. discuss plant and animal use at Domuztepe, a Halaf period site in southeastern Anatolia dating to the first half of the sixth millennium BC. They argue that wild resources available near the site would have helped minimize the risk associated with early farming. Age curves suggest that goats primarily provided meat and that sheep were kept for meat, milk, and wool. Cloverlike legumes (*Trigonella* and *Medicago*) found in dung may have been fed to animals to enhance the quality and taste of the milk, and the dung itself (applied directly or as a by-product of stubble grazing) could

have fertilized the fields, since wood was plentiful. As at Çatalhöyük, a comparison of the remains of food plants and animals in a ritual deposit with those in nonritual contexts suggests that the symbolic value of these taxa is not a direct reflection of their dietary importance.

In contrast to the subsistence and ritual practices emphasized in the previous papers, Smith and Munro consider the influence of environment on subsistence practices through large-scale trends in plant and animal use across Syria and Jordan. They use correspondence analysis to integrate published faunal and floral data from 10 sites in Syria and Jordan dating between the Bronze and Iron Ages (ca. 3100–500 BC). Detrended correspondence analysis highlights distinct geographical patterns in agricultural production and supplemental hunting and gathering that may be obscured when attention is directed at individual sites. Precipitation appears to be the dominant factor driving this trend. Smith and Munro stress that the number of Bronze and Iron Age sites yielding both zooarchaeological and archaeobotanical data from contemporary strata is surprisingly small, particularly given the pivotal role that food surplus is given in theories explaining the emergence and stability of early state-level societies.

Miller and Zeder combine a wealth of archaeobiological data in their discussion of Gordion in central Anatolia, with remains dating from the Late Bronze Age to the Hellenistic period. The archaeobotanical remains primarily reflect environment and land use. The faunal remains directly reflect patterns of meat consumption. Taken together, however, the integrated data sets reveal shifting patterns of agropastoral production along a continuum that reflects the developing physical and social landscape. Both before and after the Middle Phrygian period (ca. 800 BC), plant and animal remains show that pastoral production was oriented toward steppe grazing, but agricultural intensification accompanied the growth of the settlement into the capital of the Phrygian state for a relatively brief period. While the environment clearly influenced subsistence choices for much of Gordion's occupation, the anomaly evident during the Middle Phrygian period shows that changing sociopolitical institutions can affect how people interact with the land.

We hope the papers that follow demonstrate how an archaeobiological approach gives insights that more truly reflect human use of plants and animals than more traditionally organized archaeobotanical and zooarchaeological studies. Of course, the specific laboratory analyses will be conducted separately, but communication and collaboration between all team members, including the excavation specialists, will lead to much greater understanding of the social and environmental variables that shaped ancient people's decisions about how to produce, acquire, consume, and think about food.

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