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Nescopeck State Park Inventory of PNDI-Listed Plants and Plant Communities

Ann F. Rhoads
University of Pennsylvania

Timothy A. Block
University of Pennsylvania

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Abstract

Nescopeck State Park is a 3,117-acre expanse of forests, former farm fields, and wetlands stretching for about 4 miles in the upper Nescopeck Valley. The park is currently undergoing development of day use areas; an environmental education facility and campground are also planned. Nescopeck does not have any designated natural areas, but several wetlands have been included in special management areas. The park is located in the Ridge and Valley Physiographic Province near the boundary of the Wisconsinan terminal moraine. It contains areas of glacial till and other areas that were not glaciated (Braun 1999a and b; Crowl and Sevon 1980). Bedrock of the entire park is Mauch Chunk Formation (DCNR 1980).

Beaver have been a major factor in shaping the wetland communities of the Nescopeck Creek floodplain. A series of present and former beaver ponds is present along the main stem of the Nescopeck and several tributaries. McMaster and McMaster (2001) described a series of successional beaver-determined wetlands in western Massachusetts that show patterns of development very similar to those seen in the Nescopeck valley. While these must be considered temporary or successional in nature, they provide habitat for several rare plants and other species.

Disciplines

Botany

Final Report

Nescopeck State Park
Inventory of PNDI-listed Plants and Plant Communities

Ann F. Rhoads, Ph.D. and Timothy A. Block, Ph.D.
Morris Arboretum of the University of Pennsylvania
100 Northwestern Ave., Philadelphia, PA 19118
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Nescopeck State Park is a 3,117-acre expanse of forests, former farm fields, and wetlands stretching for about 4 miles in the upper Nescopeck Valley. The park is currently undergoing development of day use areas; an environmental education facility and campground are also planned. Nescopeck does not have any designated natural areas, but several wetlands have been included in special management areas. The park is located in the Ridge and Valley Physiographic Province near the boundary of the Wisconsinan terminal moraine. It contains areas of glacial till and other areas that were not glaciated (Braun 1999a and b; Crowl and Sevon 1980). Bedrock of the entire park is Mauch Chunk Formation (DCNR 1980).

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PNDI Records - Five plant species and one insect listed by the Pennsylvania Natural Diversity Inventory (PNDI), had been found at the park prior to our survey (Table 1). We reconfirmed the presence of all 5 plants and documented that Nescopeck State Park contains a large, perhaps the largest known (Horvath 2002), population of variable sedge, a globally rare plant. Climbing fern was also found to be more abundant than was previously known.

Table 1. Historically known PNDI-listed species from Nescopeck State Park

variable sedge	*Carex polymorpha*	1986	G3, S2, PE/PT*
hairy honeysuckle	*Lonicera hirsuta*	1992	G4G5, S1, TU/PE
blue lupine	*Lupinus perennis*	1991	G5, S3, PR
climbing or Hartford fern	*Lygodium palmatum*	1986	G4, S3, PR
flypoison borer moth	*Papaipema sp.1*	1987	G2, S2
Virginia rose	*Rosa virginiana*		G5, S2, TU

We found 5 additional listed plants during the survey; 2 small subpopulations of rough-leaved aster, veiny-leaved aster, a pond full of water naiad and a bladderwort, and a stand of water bulrush in Nescopeck Creek.

Table 2. Currently known PNDI-listed species from Nescopeck State Park

veiny-leaved aster	*Aster praealtus*	1999	G5, S3, N/TU*
rough-leaved aster	*Aster radula*	2000	G5, S2, N/PT
variable sedge	*Carex polymorpha*	2000	G3, S2, PE/PT
hairy honeysuckle	*Lonicera hirsuta*	2001	G4G5, S1, TU/PE
blue lupine	*Lupinus perennis*	2000	G5, S3, PR
climbing or Hartford fern	*Lygodium palmatum*	2000	G4, S3, PR
bushy naiad	*Najas gracillima*	2001	G5?, S2, PT
Virginia rose	*Rosa virginiana*	2000	G5, S2, TU
water bulrush	*Schoenoplectus subterminalis*	2001	G4G5, S3, N/PT
a bladderwort	*Utricularia geminiscapa*	2001	G4G5, S3, N/TU

Overall we recorded 650 species of vascular plants in the park and adjacent State Game Lands (Table 3). This number is significantly higher that the number of plants identified in the June 1999 bioblitz at State Game Lands 211 in the Ridge and Valley Province 55 miles southwest of Nescopeck. In addition the percentage of non-native plants is less than half that for the state as a whole (Rhoads and Klein 1993).

Table 3. Plant Species Diversity at Nescopeck State Park

	total species	% non-native
Nescopeck State Park	650	16
State Game Lands 211	426	22.5
Pennsylvania	3318	37

Vegetation mapping completed for the entire park revealed the presence of 22 different vegetation community types, none of which are rare at the state level (Fike 1999). The most common forest types at Nescopeck State Park are dry oak - heath forest, which dominates the south-facing slopes of Nescopeck Mountain, and northern hardwood forest that is characteristic of the north-facing slopes of Mount Yeager. Hemlock palustrine forest is prominent along the Nescopeck Creek and tributary streams. The overall diversity in vegetation types and species reflects the variety in topography, aspect, geology, land use, and beaver activity in the upper Nescopeck Valley.

Variable sedge habitat study - A study of the habitat of variable sedge at the park conducted by Morris Arboretum intern, Jamie Horvath (Horvath 2002), found that variable rare sedge is found associated most often with white oak, red maple, and shadbush in areas with 64–90% canopy closure.

Invasive, non-native species - Forested areas and wetlands have had minimal impact from non-native, invasive species; however, former farm fields and other disturbed areas along Honey Hole Road and on top of Mt. Yeager (adjacent to but not in the park) contain populations of several potentially serious invaders. We recommend that control efforts target the following species and locations:

- autumn olive in the former farm fields and the Lake Francis day use area
- garlic mustard on top of Mount Yeager

- a small colony of stiltgrass on the old farm lane from the silo to Nescopeck Creek
- non-native bush honeysuckles along trails in the vicinity of Bonomo Bridge
- a few scattered plants of glossy buckthorn along the Little Nescopeck Creek
- Norway maples near the silo.

Deer - Despite a large number of deer hunters, deer overabundance is having an impact in the park and adjoining lands. Floodplain forests along Nescopeck Creek, lower slopes of Mount Yeager, and the top of Mount Yeager are losing shrub layers and herbaceous diversity. Highly preferred browse species such as fly honeysuckle and round-leaved orchid have been reduced to a few plants that manage to persist on rock outcrops or other inaccessible sites. On the floodplain, vast areas of the forest floor are dominated by hay-scented and New York fern as is typical of severely browsed forests throughout Pennsylvania. Deer appear to be retarding the development of successional woody vegetation in former farm fields in the park.

Recommendations

1. Reduce size of deer population.
2. Initiate targeted invasive species control as described above.
3. Establish permanent plots for ongoing monitoring of variable sedge population.
4. Review trail locations, reroute as necessary to avoid going through variable sedge, climbing fern and other rare species populations. Reroute or stabilize trails along Nescopeck Creek to avoid causing stream bank erosion.
5. Designate the south side of Nescopeck Creek and eastern end of the park as special management areas.

**** global ranks:*** *G1=critically imperiled globally, G2=imperiled globally, G3=rare or local throughout its range, G4=apparently secure globally, G5=demonstrably secure globally.*
state ranks: *S1=critically imperiled in PA, S2=imperiled in PA, S3=rare or uncommon in PA, S4=apparently secure in PA, S5=demonstrably secure in PA.*
Pennsylvania status: *PE=PA endangered, PT=PA threatened, PR=PA rare, PV=PA vulnerable, PX=PA extirpated, TU=tentatively undetermined.*

References

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McMaster, Robert T. and Nancy D. McMaster. 2001. Composition, structure, and dynamics of vegetation in fifteen beaver-impacted wetlands in western Massachusetts. Rhodora 103: 293-320.

Appendices

GPS points for PNDI-listed species (ArcView shape file)
PNDI species fact sheets

veiny-leaved aster	*Aster praealtus*
rough-leaved aster	*Aster radula*
variable sedge	*Carex polymorpha*
hairy honeysuckle	*Lonicera hirsuta*
blue lupine	*Lupinus perennis*
climbing fern	*Lygodium palmatum*
slender naiad	*Najas gracillima*
Virginia rose	*Rosa virginiana*
water bulrush	*Schoenoplectus subterminalis*
bladderwort	*Utricularia geminiscapa*

Vascular Plants of Nescopeck State Park (Excel spread sheet)
Plant community polygons (ArcView shape file)
Invasive species fact sheets

Norway maple	*Acer platanoides*
Garlic mustard	*Alliaria petiolata*
autumn/Russian olive	*Elaeagnus umbellata/angustifolia*
bush honeysuckles	*Lonicera morrowii/maackii*
Japanese stilt grass	*Microstegium vimineum*
glossy buckthorn	*Rhamnus frangula*
multiflora rose	*Rosa multiflora*

Jamie Horvath's intern report