

SLOPERVILLE FEN

Sloperville Fen is a large bog/fen complex consisting of several quaking bog areas separated by narrow, sandy ridges or eskers. The property is owned by Cotton and Hanlon, Inc of Cayuga, New York and we were granted access to the entire wetland complex.

Collectively, Sloperville Fen may be one of the largest and most intact wetland complexes in Oswego County and there are very minimal impacts or encroachments on the wetland. The wetland does not fit the pattern of most other bogs we have observed in Oswego County. There is a pond in the northwest lobe of the wetland surrounded by a very narrow quaking mat, which in turn is surrounded by a mix of ericaceous shrubs (leatherleaf - *Chamaedaphne calyculata*, bog rosemary - *Andromeda polifolia*, bog laurel - *Kalmia polifolia*), larch (*Larix laricina*), and black spruce (*Picea mariana*). While this banded pattern is typical of many of the bogs of Oswego County, surrounding this is a beautiful expanse of bog mat which is not as shrubby as the part immediately adjacent to the pond, but consists of a diverse mix of poor and medium fen species including, leatherleaf, bog rosemary, Small cranberry (*Vaccinium oxycoccus*), white beak-rush (*Rhynchospora alba*), Canada rush (*Juncus Canadensis*), rose pogonia (*Pogonia ophioglossoides*), grass-pink (*Calopogon tuberosa*), white-fringed orchid (*Platanthera blephariglottis*), pitcher plant (*Sarracenia purpurea*), sundew (*Drosera rotundifolia*), tawny cotton-grass (*Eriophorum virginicum*), many-fruited sedge (*Carex lasiocarpa*) and many more. Water flows through the peat southeast through a couple of abandoned beaver dams. Most of the water through the dam comes from a very productive spring-fed area directly under a passing power line right-of-way.

The main swamp to the south of this large poor fen complex is mostly shrubby, open and host to several active beaver dams in strategic spots along the Beaverdam Brook. Shrubs within the swamp complex include silky willow (*Salix sericea*), speckled alder (*Alnus incana*), red-willow dogwood (*Cornus amomum*), buttonbush (*Cephalanthus occidentalis*), meadow-sweet (*Spiraea alba*), and highbush blueberry (*Vaccinium corymbosum*). Drainage is west through Beaverdam Brook which flows into the Salmon River within the village of Altmar.

A few private residences exist along Sloperville Road, but other than this, Sloperville fen is surrounded by forest. The Salmon River Lower Reservoir lies about 1500 meters to the north of the wetland and several conifer plantations and light industrial development are embedded in the forest just south of the reservoir. Some agricultural fields line the main county roads to the east and west of the wetland at distances of about 1600 meters, so the wetland is well buffered from any undesirable runoff associated with cropland management. The underlying bedrock for the entire swamp is Oswego Sandstone, a coarse-grained, mud-free, sandstone interspersed with thin shale layers (Isachsen *et al.* 2000). The surficial geology consists of ice contact kame deposits.

Maintaining the forested buffer between the wetland and the adjacent crop fields and roads should help minimize the possible introduction of pesticides, fertilizers, and other by-products of crop management. Of particular concern is the potential for undesirable runoff from Sloperville Road which comes to within 100 meters of the wetland on the west side, closest to the inland poor fen. Road runoff may be contaminated with oil, gas or salt, which could alter water chemistry, and or could cause increased sedimentation of the wetland. Routine monitoring of surface and



groundwater for contamination and alterations to the water chemistry should be conducted, as well as monitoring the water levels to insure the natural hydrology is maintained.

Natural Communities

The Sloperville fen wetland complex is comprised of nine natural community types (Table 7). Aside from the beaver ponds, the dominant natural communities in the wetland are the shrub swamp patches that line the beaver channels to the northeast and south of the poor fen. At 30 acres in size, the inland poor fen in the northwest corner of the wetland is a central feature of area. The fen has two very small embedded patches of pine-northern hardwood forest on its east side and a small embedded bog lake surrounded by a black spruce tamarack bog on the west side (Figure 9).

The inland poor fen in Sloperville fen is considered significant from a statewide perspective (Figure 10). It is a very high quality example of this community type and, although of average size compared to others that have been documented in the Adirondacks, this inland poor fen is part of what is most certainly one of the highest quality wetlands in Oswego County. The fen community complex consists of an open poor fen with patches of larch, black spruce, and a central bog pond surrounded by a band of black spruce-tamarack bog and a thin floating mat of mud sedge (*Carex limosa*). The dominant, more open areas have an essentially continuous carpet of Sphagnum mosses and a sparse dwarf shrub layer of bog rosemary, bog laurel and leatherleaf only a few inches high. Virginia chain fern (*Woodwardia virginiana*) is common in patches throughout the fen. White beak-rush and cotton-grass (*Eriophorum*) species overtop the shrub layer in late summer through autumn. The inland poor fen contains numerous small patches of medium fen dominated by many-fruited sedge, which are difficult to distinguish on aerial photography. We have treated these small patches of medium fen as inclusions in the larger inland poor fen complex.

Table 7. Ecological communities in Sloperville fen. Significant natural communities are bolded and in italics.

System	Subsystem	Community Type	Acres
Palustrine	Open Mineral Soil Wetlands	Shallow emergent marsh	5
		Shrub swamp	45
	<i>Open Peatlands</i>	<i>Inland poor fen</i>	30
		Shrub swamp//Medium fen	2
Terrestrial	Forested Peatlands	Black spruce-tamarack bog	2
	Forested Uplands	Beech-maple mesic forest	19
		Pine-northern hardwood forest	<1
Lacustrine	Natural Lakes and Ponds	Bog Lake	<1
		Beaver Pond (Eutrophic Pond)	55
Total Acres			159



Rare Plants

Sloperville is an amazing site containing some of the largest populations of pitcher plant we have observed. This site is also home to an array of orchids, dwarf mistletoe, bog buckbean, and many sedge species. Lesser bladderwort (*Utricularia minor*) was discovered in the medium fen areas of Sloperville. At the time of discovery, the Heritage Program actively tracked lesser bladderwort as an S2/state threatened species. This discovery, coupled with new reports from Lewis County, led the Heritage Program to move this species to the watch list and change the state rank to S3. While it is still technically listed as state threatened, its state protection status will change to either rare or unprotected when this list is next revised. There is the potential for dragon's-mouth orchid (*Arethusa bulbosa*), but this was not observed. A survey during the first week of June may be able to better target this plant and determine if it is or is not present. No rare plants presently known from this site is inconsequential, this is still one of the best sites in Oswego County to botanize. This site has been used as an educational laboratory for SUNY-Oswego, so it has received additional survey work beyond the focus provided by NY Natural Heritage staff.

Rare Animals

Sloperville Fen had been previously searched for bog turtles (*Clemmys mublenbergii* – state Endangered) by Dr. Peter Rosenbaum, SUNY Oswego (Rosenbaum 2005). It had also been previously searched for the state endangered bog buckmoth (*Hemileuca* sp 1) by NYNHP staff and staff of The Nature Conservancy because of the extensive growth of the larval food plant bog buckbean (*Menyanthes trifoliata*) and presence of other sites for this endangered moth in Oswego County. Dr. Rosenbaum was contracted to conduct additional surveys of the site for bog turtle in 2004. While several areas of the wetland were visited in 2004, the surveys focused on a portion of the wetland described as the Southeast Fen and this area was visited on four occasions. No bog turtles were observed during these surveys, but observer availability precluded in depth surveys utilizing live-trapping methodology.

Consequently, additional surveys were undertaken in 2005 and these surveys utilized a standardized live-trapping survey protocol that is being developed for bog turtle habitat assessment in the Great Lakes Plains portion of this species range. Three sections of the wetland complex were trapped. These sections were described in 2004 as the Northeast Fen, Southwest fen, and Southeast Fen. Fifty traps were set in the Southeast fen with 25 traps set in both the Northeast and Southwest Fens. Traps were set on May 23, 2005, checked daily, and were pulled from the site on June 24, 2005 yielding a total of 3,100 trap nights. No bog turtles were caught in live traps or observed in the fens during the course of setting, checking, and removing the traps.

During the trapping period a total of 100 separate individual spotted turtles (*Clemmys guttata* – state Special Concern) were captured, marked, and released. The majority of these individuals were caught in the traps, while some were hand captured when encountered during the course of setting, checking, and pulling the traps. The number of spotted turtles captured at this site is higher than the number captured at several other sites in Oswego County where similar month long trapping efforts have been conducted. Clearly, the Sloperville Fens area supports a large, healthy, and significant population of this declining reptile.



Although Sloperville fen had been searched in previous years for bog buckmoth, these surveys had never before included the use of a female pheromone lure. Use of a pheromone lure is considered the most reliable survey method for detecting previously unknown populations of this state endangered species. A pheromone lure survey of the site was conducted during the adult flight season in September 2004, but no adult bog buckmoths were observed. The failure of this survey to detect buckmoths, combined with previously unsuccessful surveys for larvae and flying adults (but not utilizing pheromone lure) provide strong evidence to support the conclusion that bog buckmoths are not present at the Sloperville fens site, despite apparently suitable habitat.

A great blue heron (*Ardea herodias*) rookery was observed at the wooded edge to the Northeast Fen during the initial 2004 bog turtle survey. While not a rare species in New York State, NY Natural Heritage enters records for large (50 or more nests) great blue heron rookeries, into the programs Element Occurrence Database as these nesting colonies represent significant concentrations for this species that should be protected from unnecessary disturbance. A minimal total of 55 nests were counted at this rookery during the May 11, 2004 survey of which the majority appeared to be active. Coincidentally, but of particular note, Audubon New York criteria for potential designation of Important Bird Areas for sites for bird congregation areas includes a sub criteria for wading birds of at least 100 birds during some part of the year.

Peter Rosenbaum and three students also collected dragonflies and damselflies during the course of turtle surveys and on other occasions during 2005, but no rare species were collected as part of the surveys.

Table 8. Animal species of conservation concern in Sloperville Fen.

Current Significant Animal Assemblages	Historical Significant Animal Assemblages
<i>Great blue heron rookery</i>	



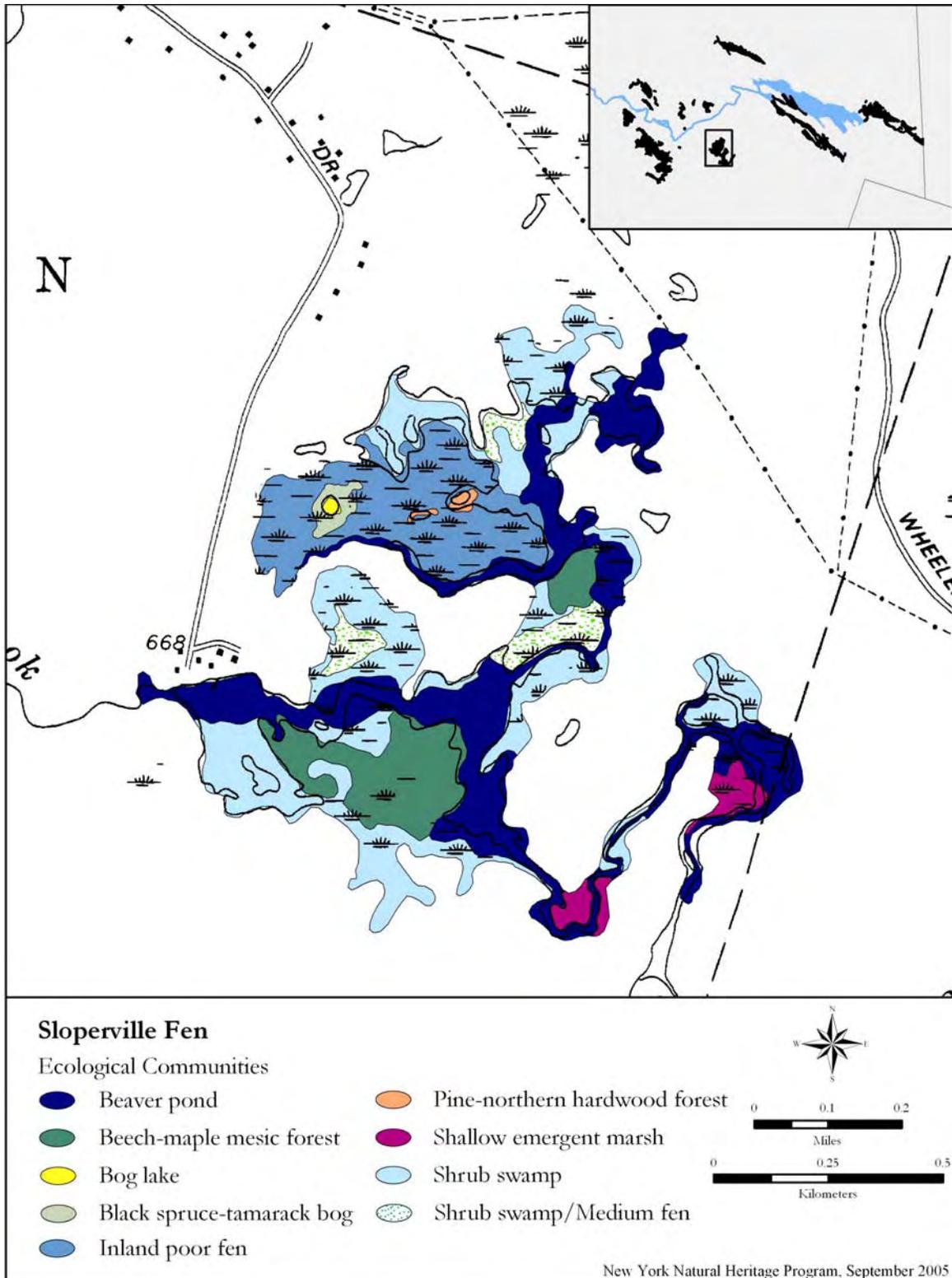


Figure 9. Ecological communities in Sloperville Fen



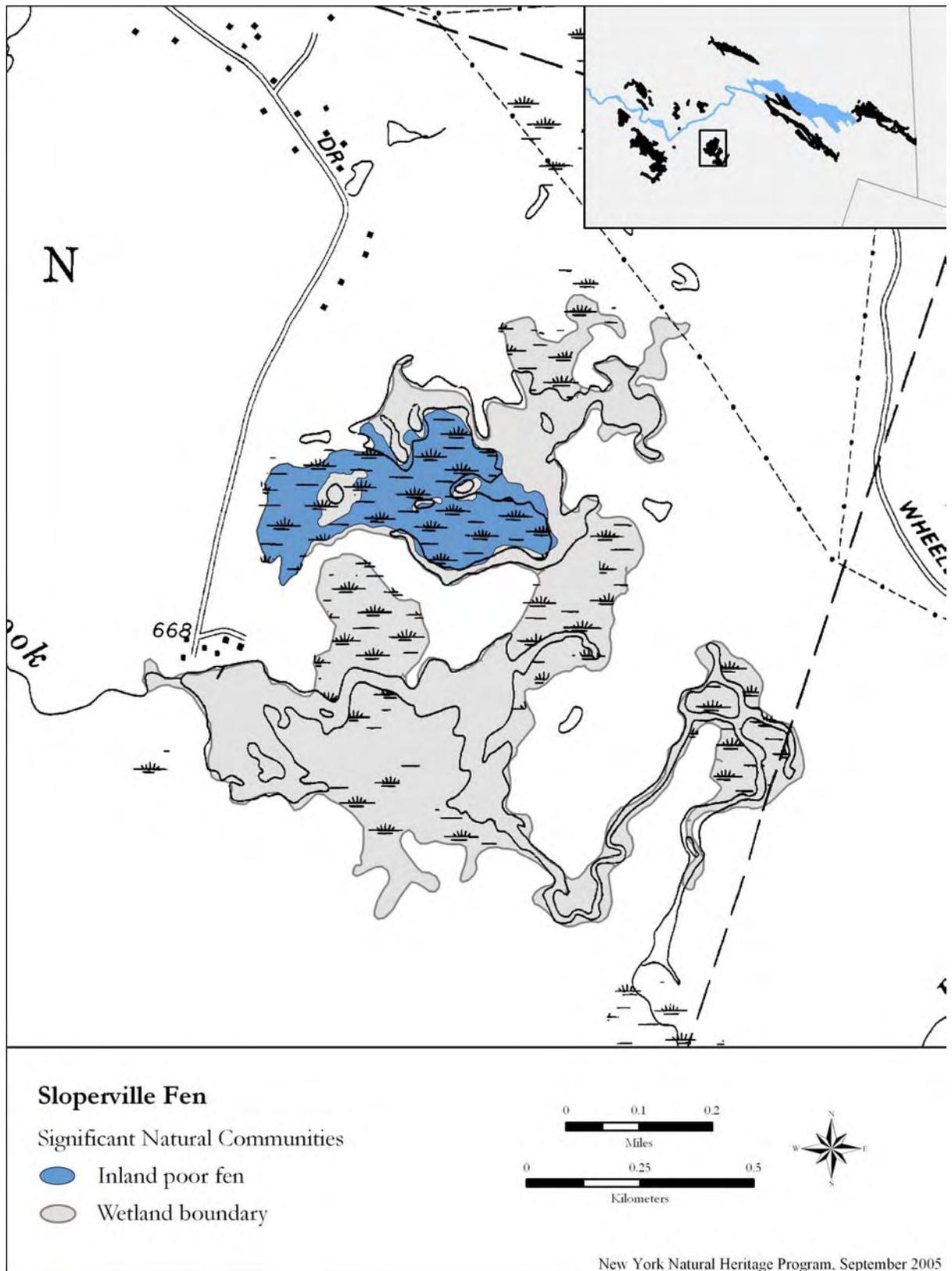


Figure 10. Significant natural communities in Sloperville Fen



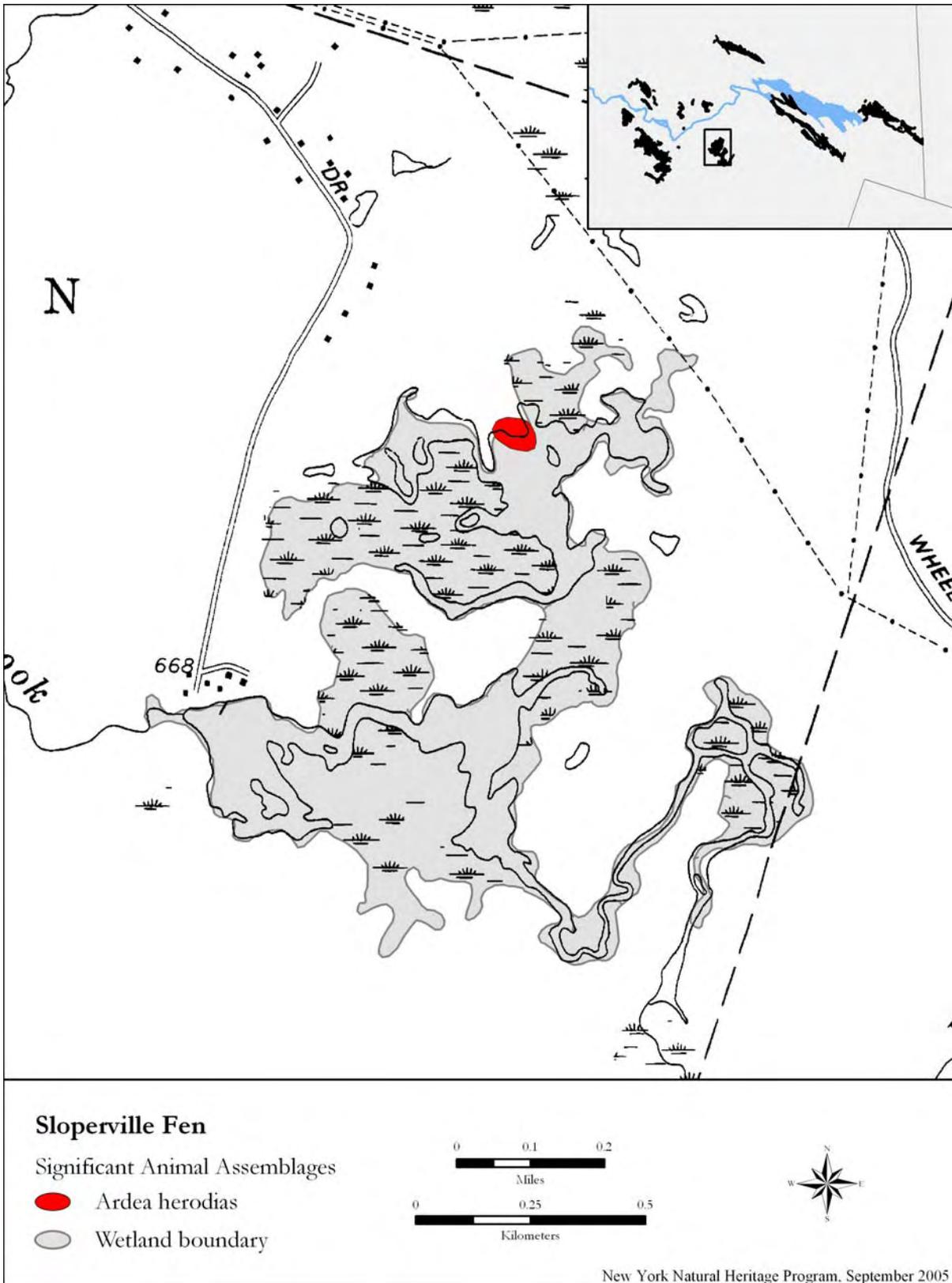


Figure 11. Significant animal assemblages in Sloperville fen



ESKER REGION

Beginning just east of the Lower Reservoir and proceeding downstream, the landscape on either side of the Salmon River is dominated by glacial features including kettlehole bogs and a series of eskers. Eskers are ice-contact features represented by serpentine ridges of sand and gravel which were deposited as glaciers retreated from the region. Eskers mark the channels in a melting glacier, through which streams washed out much of the finer material and left coarser gravels and sand between ice walls. Various types of wetlands have formed among the eskers on either side of the Salmon River, many of which are part of this study. Included among these are a number of vernal pools located within shallow depressions on the sand ridges.

Since no landowner permission specific to vernal pools was obtained, vernal pools visited and documented in the study area were all located on lands managed by public utility companies (Niagara Mohawk Power Corp and Erie Boulevard Hydropower LP) and on public land managed by the NYS Department of Environmental Conservation. Potential vernal pools on these properties between Tar Hill Road and the Salmon River Reservoir were identified on aerial photos and digitized using 1:12,000 digital orthophotography before any field work was conducted. In 2005, two separate surveys for vernal pools were conducted; the first took place on April 25 to record aquatic invertebrates and amphibians, and the second was on July 20 to record dominant vegetation.

Maintaining a closed forest canopy around the vernal pools will ensure that they continue to provide quality breeding habitat for the variety of invertebrate and vertebrate species they currently support. Both vernal pool complexes identified in this study lie close to roads and other maintained corridors, including an aqueduct and power line. Proximity to such corridors increases the chances of erosion and sedimentation into the wetlands during routine maintenance, spring run-off, and major storm events. The forest surrounding the pools serves as a natural wetland buffer and should help to reduce storm-water, pollution, and nutrient run-off, while simultaneously capturing sediments before they reach the wetlands.

Natural Communities

A total of 12 vernal pools were documented during the study and were entered into the NY Natural Heritage database as two separate occurrences. The first occurrence, or vernal pool complex, totals 4.6 acres and consists of 7 small vernal pools (<1 to 1.5 acres in size). This complex is located on either side of Hogsback Road, just northwest of the Lower Reservoir (Figure 12). The second complex totals 3.9 acres, is comprised of 5 vernal pools (<1 to 1.8 acres in size), and is located upstream from the first, between the Salmon River Dam and the Salmon River. This complex lies on either side of an aqueduct that connects Salmon River Reservoir with the Lower Reservoir (Figure 13).

Both vernal pool complexes were first visited in April 2005 and animal species recorded within the pools were common to both complexes. We recorded a number of aquatic invertebrates in the pools, including damselfly larvae (Order: Odonata, Suborder: Zygoptera), mayfly larvae (Order: Ephemeroptera), Whirligig beetles (Order: Coleoptera, Family: Gyrinidae), water boatman (Order: Hemiptera, Family: Corixidae), scuds (Order: Amphipoda) and fingernail clams (Order: Pelecypoda). Evidence of breeding amphibians in the form of egg masses and tadpoles was also recorded and common to all pools documented except one. Amphibians observed to be breeding in the vernal



pools were wood frogs (*Rana sylvatica*), green frogs (*Rana clamitans*), peepers (*Pseudacris crucifer*), and spotted salamanders (*Ambystoma maculatum*). We also observed red-spotted newts (*Notophthalmus viridescens*) within the pools and adult spotted salamanders under rocks and logs surrounding the pools.

A number of the vernal pools still had some standing water upon our return visit in July 2005. The Hogsback Road complex is located within swales along a sandy ridge. All but one of these pools still contained some standing water in the mid-summer, though surface areas were comparatively much smaller. The forest surrounding this complex is a logged beech-maple mesic with a very diverse understory and herbaceous component. Spring ephemerals including trilliums (*Trillium cernuum*, *Trillium grandiflorum*), trout lilies (*Erythronium americanum*), and leeks (*Allium tricoccum*) carpet forest floor, and are especially abundant in the swales at the bases of the steep slopes which surround the pools. Sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) dominate the overstory and understory, but a variety of species common to rich forests were also recorded, including American basswood (*Tilia Americana*), alternate-leaved dogwood (*Cornus alternifolia*), elderberry (*Sambucus racemosa*), maidenhair fern (*Adiantum pedatum*), lady fern (*Athyrium filix-femina*), waterleaf (*Hydrophyllum canadense*, *Hydrophyllum virginianum*), white baneberry (*Actaea pachypoda*), pale touch-me-not (*Impatiens pallida*), Clayton's sweetroot (*Osmorhiza claytonii*), jack-in-the-pulpit (*Arisaema triphyllum*), blue cohosh (*Caulophyllum thalictroides*), and wild ginger (*Asarum canadense*). The forest contains some low-use roads and ATV trails, but access to the area is controlled through gates and signage by Niagara Mohawk Corporation. One of the pools within the Hogsback complex lies within an approximately 35-meter wide power line corridor. While this pool was observed to support a variety of invertebrates, including those listed above, among the 12 pools observed in this study this was the only pool that had no amphibian egg masses.

The aqueduct vernal pool complex is surrounded by hemlock-northern hardwood forest and hemlock-hardwood swamp. In July, with one exception, the pools common to this region had no standing water and supported vegetation characteristic of a shallow emergent marsh. Vegetation recorded in the vernal pool areas during the brief summer survey included red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), steeplebush (*Spiraea tomentosa*), winterberry (*Ilex verticillata*), false nettle (*Boehmeria cylindrica*), Joe-pye weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), touch-me-not (*Impatiens capensis*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), marsh fern (*Thelypteris palustris*), American bur-reed (*Sparganium americanum*), cut-grass (*Leersia oryzoides*), and various sedges (*Carex lurida*, *Carex scoparia*, *Scirpus atrovirens*). The overstory surrounding the aqueduct vernal pool complex is dominated by Eastern hemlock (*Tsuga Canadensis*), red maple, and yellow birch.



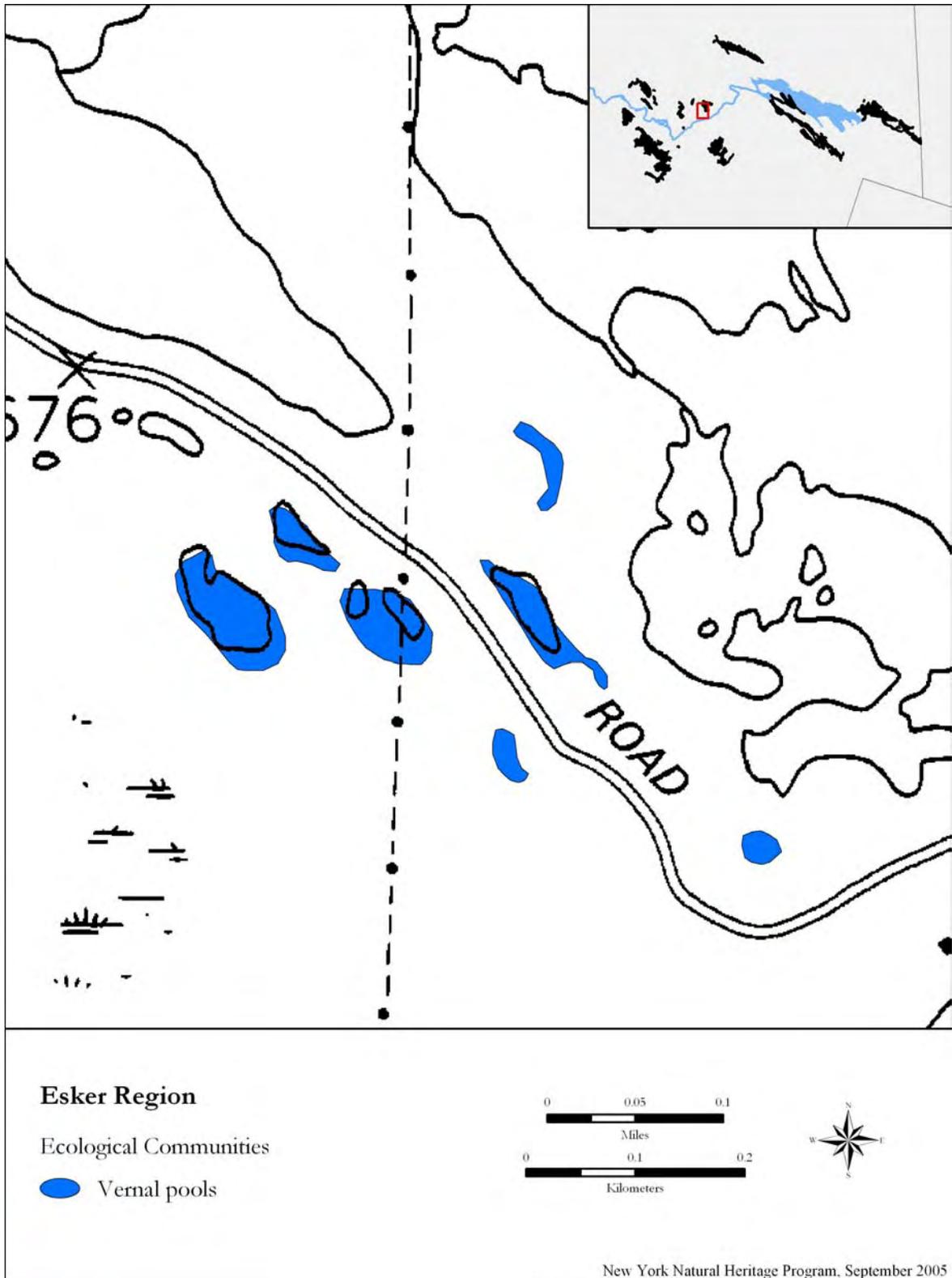


Figure 12. Significant natural communities in Esker Region



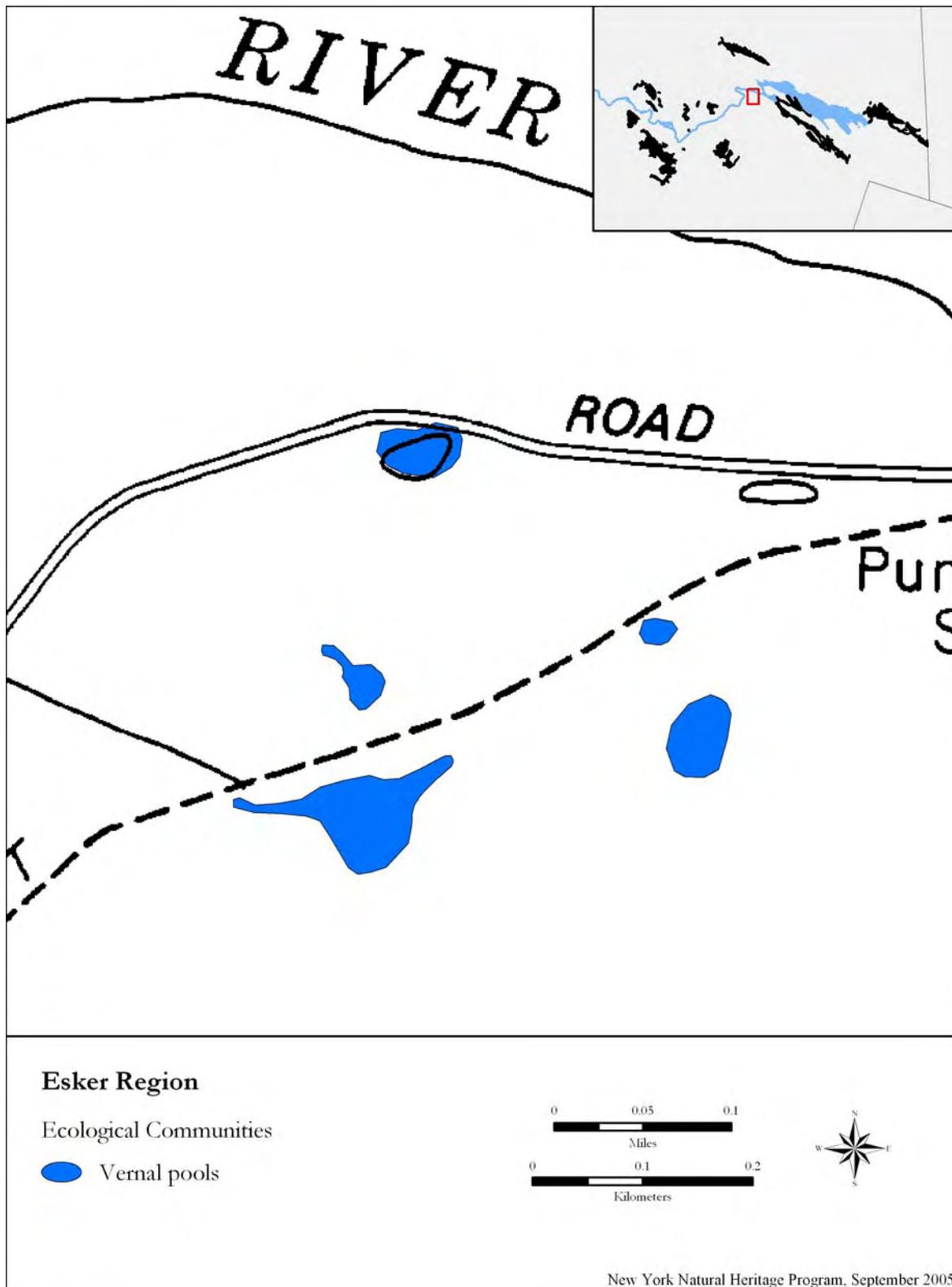


Figure 13. Significant natural communities in Esker Region



FOX BROOK WETLANDS

A large portion of Fox Brook Wetlands is managed for timber production by the state (NYS DEC - Hall Island State Forest) and by Harden Furniture Company. Consequently, we were granted access to 65% of the wetland, which included the northwest one-third of the wetland, where it flows out of the Salmon River Reservoir, and a majority of a centrally located red-maple hardwood swamp. The remainder of the area was mapped by extrapolating from observations done within the sections where permission was granted in conjunction with aerial photo interpretation and existing knowledge of the site.

Fox Brook Wetlands encompasses the headwaters of Fox Brook, southwest of the Salmon River Reservoir. It stretches from Route 17 northwest to roughly the middle of Hall Island. Fox Brook flows through the wetland, which is comprised of a large red maple-dominated hardwood swamp forest in an extensive basin swamp complex. This red maple-hardwood swamp occupies most of the wetland. Embedded beaver-influenced marshes and shrub swamps also exist along the corridor of Fox Brook, as well as a patch of hemlock-hardwood swamp, which can be observed where the brook and its adjacent wetlands are crossed by Route 17. The landscape around the wetland is essentially intact natural area that is unbisected by roads, and the immediate uplands around Fox Brook Wetlands are primarily historically logged beech-maple mesic forest. Underlying bedrock for the entire swamp is Oswego Sandstone, a coarse-grained, mud-free, sandstone interspersed with thin shale layers (Isachsen *et al.* 2000). The surficial sediments in the area are tills deposited beneath glacial ice and ablation moraine.

In order to maintain the structural and biological integrity of Fox Brook Wetlands, management goals should continue to allow full connectivity of the wetland and the natural flow of water throughout the wetland should be maintained (and barriers minimized). Embedded in a forested landscape that is managed primarily for timber production, the wetland is well protected from agricultural run-off common to other parts of the Salmon River Watershed. Using best management practices (BMPs) for stream and wetland health on timberlands within the watershed can be very effective at maintaining the biological integrity of these wetlands. Maintaining the landscape integrity around Fox Brook Wetlands using BMPs will ensure that it remains a high quality wetland complex that provides habitat for a variety of wildlife into the future.

Natural Communities

Fox Brook Wetlands is comprised of six natural community types (Table 9). At approximately 265 acres in size, red maple-hardwood swamp is the dominant community type in the wetland as well as a central feature of area. Red maple (*Acer rubrum*) is co-dominant with yellow birch (*Betula alleghaniensis*) throughout much of the swamp. Small patches of shrub swamp and shallow emergent marshes, typically associated with beaver activity, can also be observed in the wetland complex along the Fox Brook corridor (Figure 14).

The large red maple-hardwood swamp in Fox Brook Wetlands is considered significant from a statewide perspective and is currently tracked by NY Natural Heritage as an A-ranked community, meaning that it is in excellent condition (Figure 15). This occurrence is a large, mature, diverse example, with no recent disturbance. A 43cm yellow birch and an average sized red maple were



cored during a survey of the swamp and were determined to be 64 and 65 years, respectively. Larger trees than those cored were observed within the area, so the swamp has probably seen no recent (last 75-100 years) logging. It is dominated by red maple and yellow birch in the overstory, with some black ash (*Fraxinus nigra*). Other species commonly observed in the swamp include northern arrowwood (*Viburnum recognitum*), withered viburnum (*Viburnum cassinoides*), alders (*Alnus rugosa*, *Alnus serrulata*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), sensitive fern (*Onoclea sensibilis*) and tall meadow rue (*Thalictrum pubescens*). Sphagnum mosses, primarily *Sphagnum centrale*, are found throughout the swamp, and coniferous trees (*Tsuga canadensis*, *Picea rubens*) occur at low abundance within the swamp. Soils in the swamp are very wet shallow peat over deep muck. The community is apparently mature with an abundance of downed woody debris, good canopy regeneration, and scattered large overstory trees.

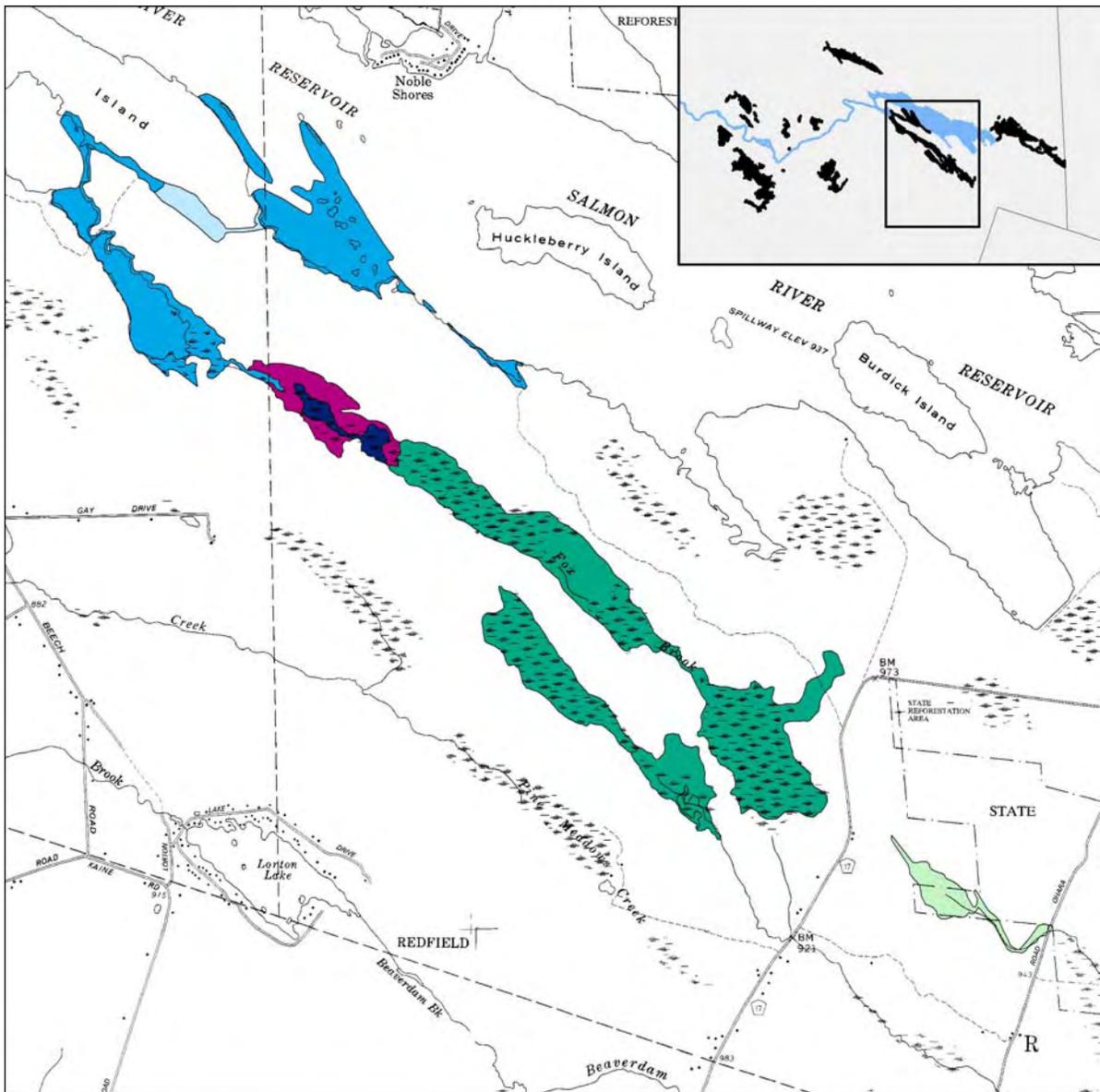
Table 9. Ecological communities in Fox Brook Wetlands. Significant natural communities are bolded and in italics.

System	Subsystem	Community Type	Acres
Palustrine	Open Mineral Soil Wetlands	Shallow emergent marsh	63
		Shrub swamp	16
	Forested Mineral Soil Wetlands	Hemlock-hardwood swamp	23
Lacustrine	Natural Lakes and Ponds Lacustrine Cultural	<i>Red maple-hardwood swamp</i>	<i>265</i>
		Beaver pond	18
		Reservoir/artificial impoundment	190
Total Acres			575

Rare Plants

A variety of wetlands were explored in the northern portion of Fox Brook Wetland, particularly those associated with Hall Island State Forest. No rare plants were encountered nor were any habitats indicative of rare plants typically encountered in Oswego County. Most of the community types noted (shallow emergent marsh, shrub swamp, beaver pond, and reservoir/artificial impoundment) are not known to harbor many rare species, particularly in this area of the state. The hemlock-hardwood swamp community is host to a few rare species, but the small size of this example may limit this likelihood. Any future rare plant surveys to this area may wish to focus on the large red maple-hardwood swamp as this seemed to hold the greatest promise for rare plant species. None of our current computer models predicated rare plant species within this area (to date 40 species have been modeled), but we suggest that future surveys focus on large twayblade orchid (*Liparis lilifolia*), southern twayblade orchid (*Listera australis*), pod grass (*Scheuchzeria palustris*), and northern bog aster (*Symphyotrichum boreale*).

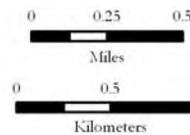




Fox Brook Wetland

Ecological Communities

-  Beaver pond
-  Hemlock-hardwood swamp
-  Red maple-hardwood swamp
-  Reservoir/Artificial Impoundment
-  Shallow emergent marsh
-  Shrub swamp



New York Natural Heritage Program, September 2005

Figure 14. Ecological communities in Fox Brook Wetlands



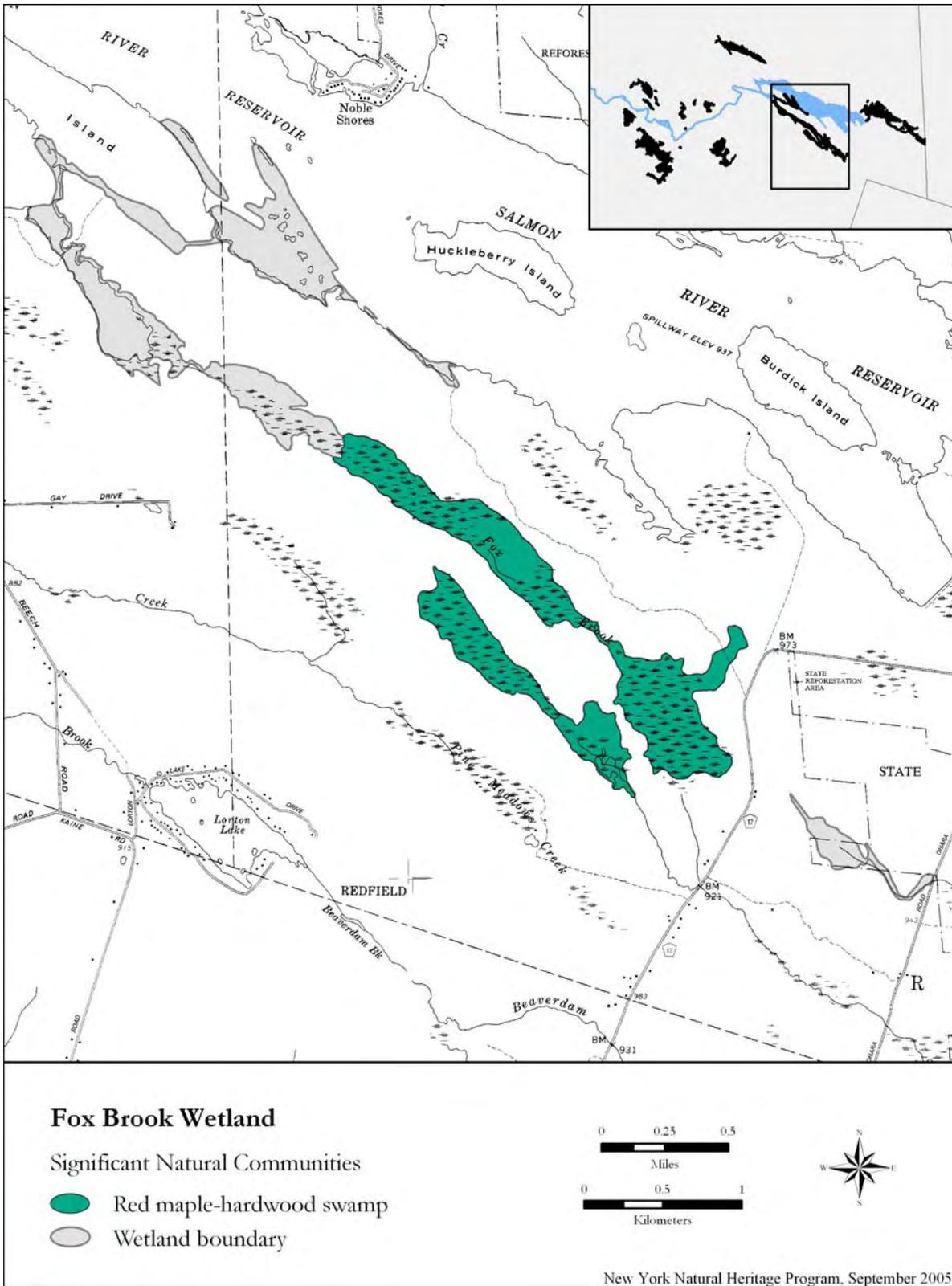


Figure 15. Significant Natural Communities in Fox Brook Wetlands

