REDFIELD WETLAND

Over half of Redfield Wetland is open water of the Salmon River Reservoir (under jurisdiction of NYS DEC) and we were granted access to about 25% (74 acres) of the remaining, privately owned land. The more than 200 acres where we did not have permission was mapped by extrapolating from observations done within the section where permission was granted in conjunction with aerial photo interpretation and existing knowledge of the site.

Redfield Wetland encompasses a short segment of the midreach portion of the East Branch Salmon River lying immediately east and southeast of the Salmon River Reservoir. The wetland includes the eastern end of the Salmon River Reservoir and stretches upstream along the East Branch to the Oswego County line. Large patches of shrub swamp and red maple-hardwood swamp are dominant along the East Branch corridor, and small patches of shallow emergent marsh are found where beaver have historically dammed the river or its numerous small feeder streams. The landscape around the wetland is essentially intact natural area that is unbisected by roads, but several roads run immediately adjacent to and cross the wetland within the East Branch Salmon River valley. 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 outwash sand and gravel and kame deposits.

In order to maintain the structural and biological integrity of Redfield Wetland, 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 and wildlife management, the wetland is well protected from agricultural run-off common to other parts of the Salmon River Watershed. However, the wetland and the East Branch are crossed or are located adjacnt to several roads, and residences are scattered along these roads albeit at low densities. Maintaining the forested buffer between the wetland and the adjacent residences and roads should help minimize the possible introduction contaminated sediments into the wetland. Road runoff may be contaminated with oil and gas, 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 ensure the natural hydrology is maintained. Additionally, using best management practices (BMPs) for stream and wetland health on timberlands within the watershed, particularly upstream of the wetland, can be very effective at maintaining the biological integrity the wetland. Conservation easements on Hancock land (hydrological easement along stream corridor and timber easement in buffer and beyond) and downstream of Osceola are recommended for maintaining the landscape integrity around Redfield Wetland. 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

Redfield Wetland is comprised of five natural community types (Table 10). At approximately 587 acres in size, the wetland is the dominanted by open water of the Salmon River Reservoir and the confined river (East Branch Salmon River) that flows into the reservoir. Shrub swamps are the most common community type along the East Branch within Redfield Wetland, followed by red

maple-hardwood swamp. Small patches of shallow emergent marsh, typically associated with beaver activity, can also be observed in the wetland complex along the river corridor and on adjacent feeder streams (Figure 16).

A long segment of the East Branch Salmon River is considered significant from a statewide perspective and is currently tracked by NY Natural Heritage as an A-ranked confined river, meaning that it is in excellent condition (Figure 17). This occurrence consists of the midreach portion of East Branch Salmon River starting approximately 0.25 river miles upstream of the Route 46 bridge crossing and ending 1.03 river miles upstream from the Waterbury Road bridge crossing. The reach is accessible from a number of road crossings including the Route 46 bridge, the Route 45 bridge, and Ryan Road. The East Branch Salmon River is moderate sized with good diversity and lies within a large natural landscape with limited disturbances. It consists of a gently sloping, riffle/run dominated stream with low sinuosity on the lower slopes of the Tug Hill Plateau. Is is reportedly a good trout stream with high integrity and has high water quality. Vegetation consists primarily of submerged non-vascular aquatic plants, which range from 3% cover in pools to 30% cover in riffles. Dominant flora includes epilithic green algae, the moss *Fissidens fontanus*, and Pennslvania bittercress (*Cardamine pensylvanica*). Fauna is diverse and includes several species of fish, caddisflies (Order: Trichoptera), mayflies (Order: Ephemeroptera), stoneflies (Order: Plecoptera), true flies (Order: Diptera), and beetles (Order: Hemiptera).

The river is fed by a complex of headwater streams (rocky and marsh types) and feeds into a short main channel stream before flowing into the Salmon River Reservoir (a barrier to upstream movement). Riverside communities upstream of Redfield Wetlands include scattered small patches of riverside sand/gravel bar, cobble shore, eroding slope, with narrow strips of bordering wetlands (shrub swamp and floodplain forest), and occasional swales and backwater sloughs. Banks average about 130 cm tall and the channel averages 11 m wide (3 to 22 m range) with narrow, shaded upper reaches to wide open lower reaches. Physical habitats in the river include abundant cobble riffles and cobble runs; scattered cobble, gravel and sand pools; and sparse gravelly to sandy runs. Riffles include mid-channel riffles, several riffle braids, and one 1m tall waterfall. Uplands buffering the stream include primarily beech-maple mesic forest and hemlock-northern hardwood forest on terraces and hill slopes, with local areas of successional southern hardwoods.

Table 10. Ecological communities in Redfield Wetland. Significant natural communities are bolded and in italics.

System	Subsystem	Community Type	Acres
Palustrine	Open Mineral Soil Wetlands	Shrub swamp	150
		Shallow emergent marsh	32
	Forested Mineral Soil Wetlands	Red maple-hardwood swamp	104
Riverine	Natural Stream	***Confined river***	***9***
Lacustrine	Lacustrine Cultural	Reservoir/artificial impoundment	292
Total Acres			587

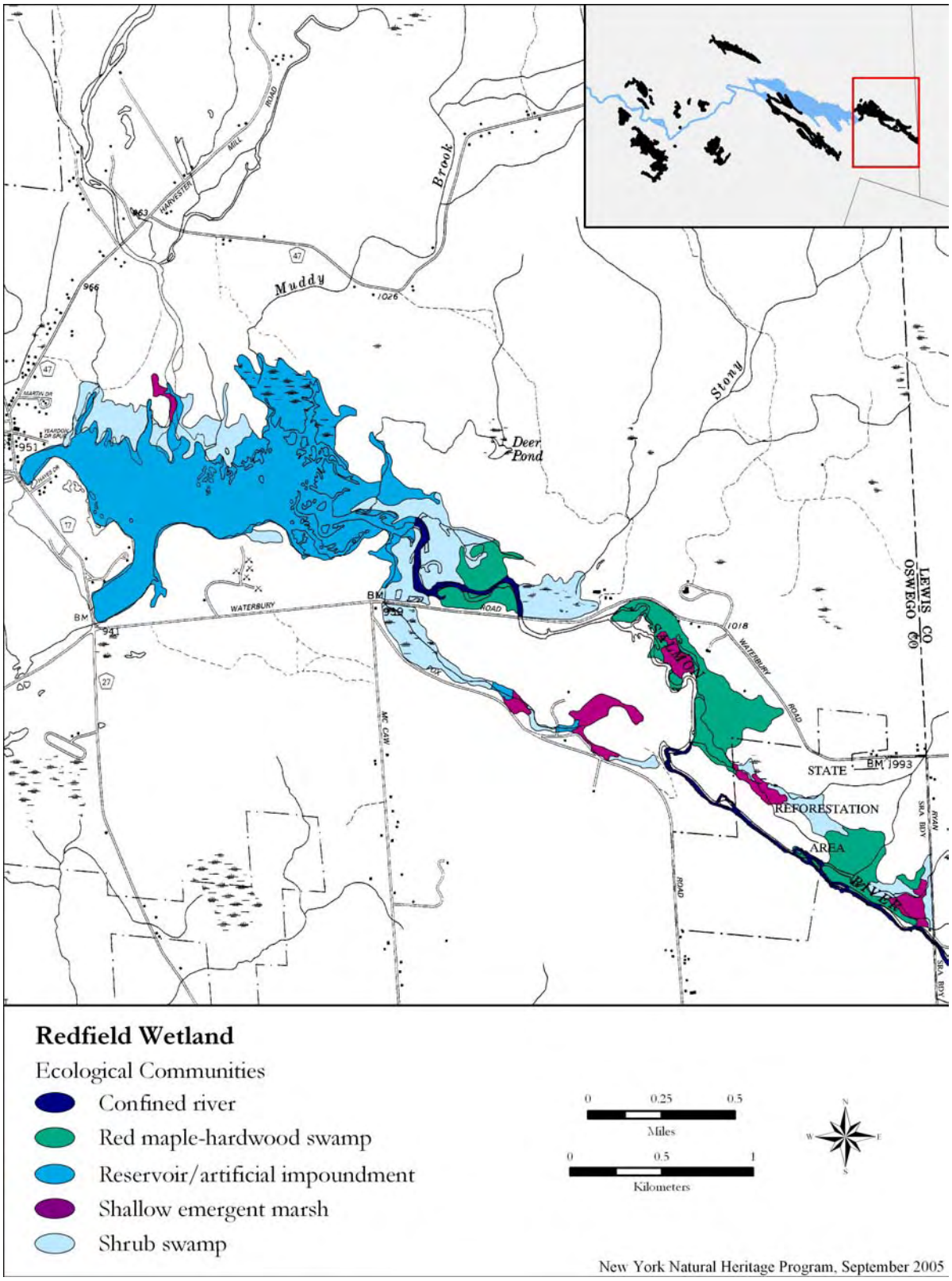

Figure 16. Ecological communities in Redfield Wetland

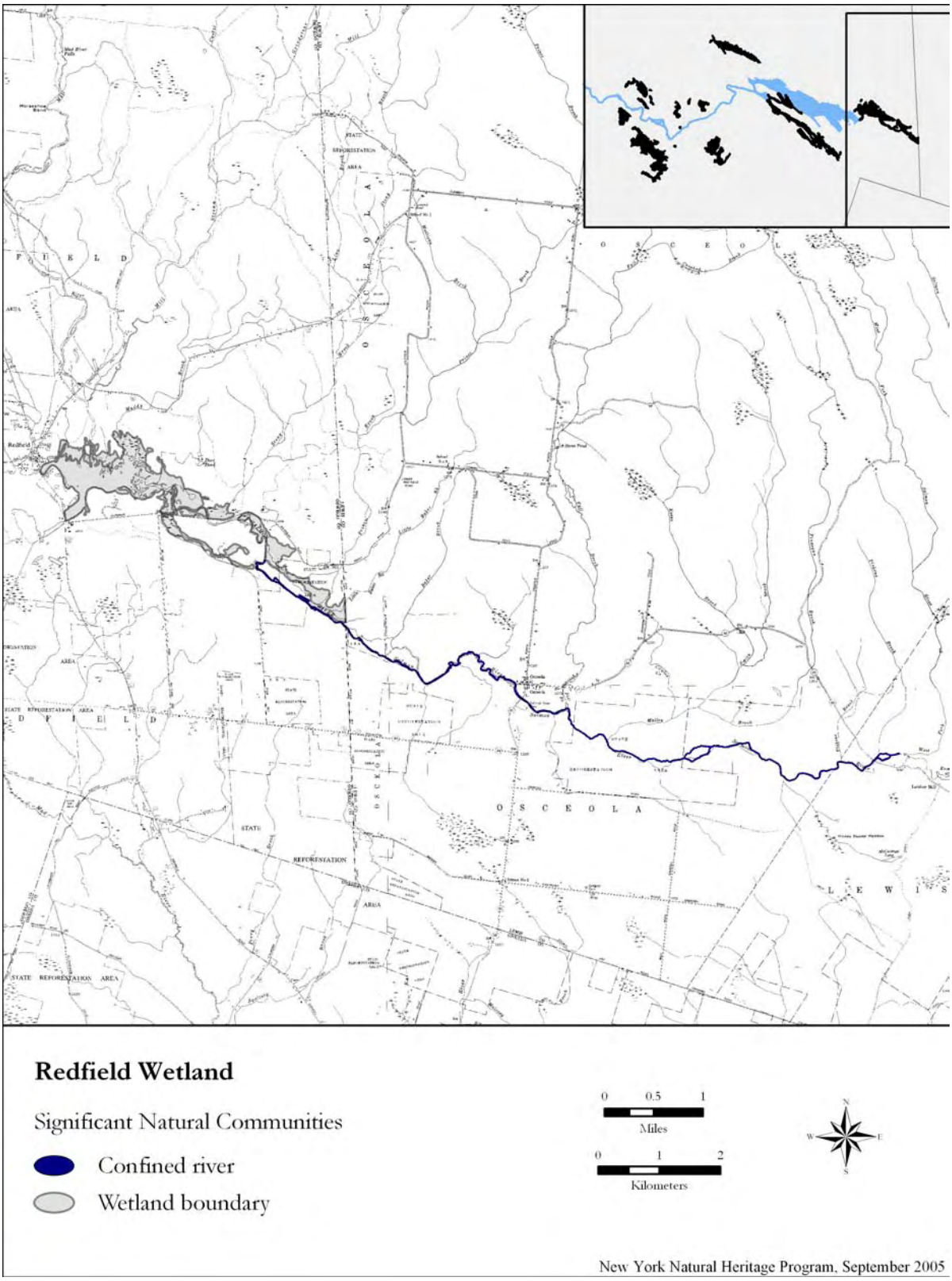

Figure 17. Significant natural communities in Redfield Wetland

ALTMAR BOG/BLUFF BOG

Altmar and Bluff Bogs are two very small, kettlehole wetlands. Bluff Bog lies about 160 meters north of the Salmon River, about one-half mile northeast of the village of Altmar, and Altmar Bog is located on the north side of Route 13 about 100 meters east of Altmar village limit. We were granted full access to Altmar Bog which is on Salmon River Fish Hatchery property and were not given permission to access Bluff Bog. Therefore, Bluff Bog was mapped by aerial photo interpretation and existing knowledge of the site.

The two wetlands are separated by nearly a mile, but the landscape around the wetlands is essentially the same, consisting of a large forested natural area to the east, and agricultural land and residential development immediately west. Roads bisect the landscape in every direction and Route 13 runs adjacent to Altmar Bog. Underlying bedrock for both wetlands 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 kame deposits.

Natural Communities

Altmar Bog (Figure 18): This is a beautiful yet treacherous, drainless kettlehole bog nearly surrounded by white pines. The bog mat is surrounded by a moat of about 5' - 10' which is full of wild calla (*Calla palustris*). The mat is generally shrubby, with patches of dwarf leatherleaf and herbs, and is fairly unconsolidated and unstable. Dominant plants in the bog include white pine (*Pinus strobus*), red maple (*Acer rubrum*), highbush blueberry (*Vaccinium corymbosum*), leatherleaf (*Chamaedaphne calyculata*), and cinnamon fern (*Osmunda cinnamomea*). Other plants typical of bogs in the region were also observed, including pitcher plant (*Sarracenia purpurea*), swamp loosestrife (*Decodon verticillatus*), Virginia chain fern (*Woodwardia virginiana*) and three-way sedge (*Dulichium arundinaceum*).

Bluff Bog (Figure 18): This is a very small bog mat within a tiny kettlehole depression. The mat is unusual in that it is located high above the Salmon River floodplain. Low eskers nearly surround the bog area. A natural cut through the esker allows drainage to the Salmon River. The mat is dominated by highbush blueberry, black chokeberry (*Aronia melanocarpa*), and a dense stand of Virginia chain fern.

We did not document any significant natural communities within Altmar Bog or Bluff Bog (Table 11). At their present size, none of the natural communities within the site are of high enough quality to be considered significant from a statewide perspective. Despite this, both sites have value as natural areas that contribute to the long-term biodiversity of the region.

Table11. Ecological communities in Altmar Bog and Bluff Bog.

System	Subsystem	Community Type	Acres
Altmar Bog			
Palustrine	Open Peatlands	Dwarf Shrub bog	1
Bluff Bog			
Palustrine	Open Peatlands	Highbush blueberry bog thicket	<1
Total Acres			1

Rare Plants

This is a small boggy area that contains some of the characteristic bog species of the larger sites, but nothing atypical for this habitat (see community description). With larger and better examples, this is a lower priority wetland for the conservation of bog plants when compared to the other sites.

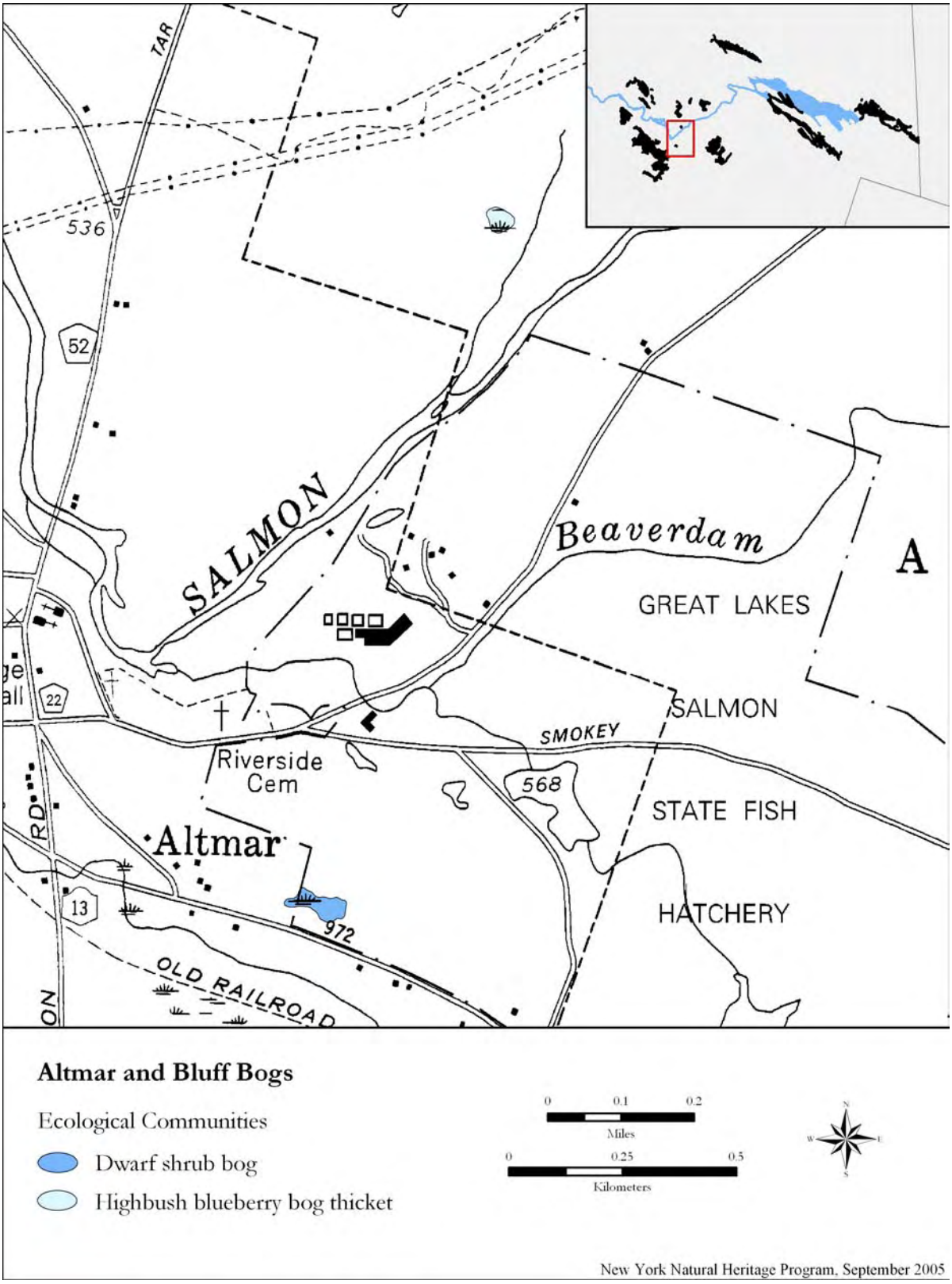

Figure 18. Ecological communities in Altmar Bog and Bluff Bog

CENTERVILLE BOG

Centerville Bog is a 22-acre wetland located between Centerville Road and Sheepskin Road about 300 meters north of the Salmon River and one-half mile northeast of the settlement of Pineville. We were granted access to only a few acres of the bog, representing about 10% of the wetland. The remainder of the wetland was mapped using aerial photos and existing knowledge of the site.

The landscape immediately surrounding Centerville Bog is agricultural. Roads also surround the wetland; the south half of it is within meters of Sheepskin Road and the east side within 50 meters of Centerville Road. An old railroad grade cuts through the agricultural fields about 150 meters west of the wetland. Underlying bedrock for the area is Pulaski Formation that is characterized by sandstone, siltstone, and shale (Isachsen *et al.* 2000). Surficial desposits are reportedly lacustrine in origin, consisting of well sorted, coarse to fine gravel and sand deposited along an old lake shoreline.

Natural Communities

Centerville Bog is comprised of three natural community types (Table 12). It is approximately 22 acres in size and, at 10 acres, a shrub swamp lying south of a eutrophic pond (9 acres) is the dominant community type in the wetland. This shrub swamp transitions into a very small patch (3 acres) of red maple-hardwood swamp to the south, along Sheepskin Road (Figure 19).

Due to the small size of the Centerville bog, the influence of roads, and its agricultural context, none of the natural communities at this site are of statewide significance.

Table 12. Ecological communities in Centerville Bog.

System	Subsystem	Community Type	Acres
Palustrine	Open Mineral Soil Wetlands	Shrub swamp	10
	Forested Mineral Soil Wetlands	Red maple-hardwood swamp (successional)	3
Lacustrine	Natural Lakes and Ponds	Eutrophic pond	9
Total Acres			22

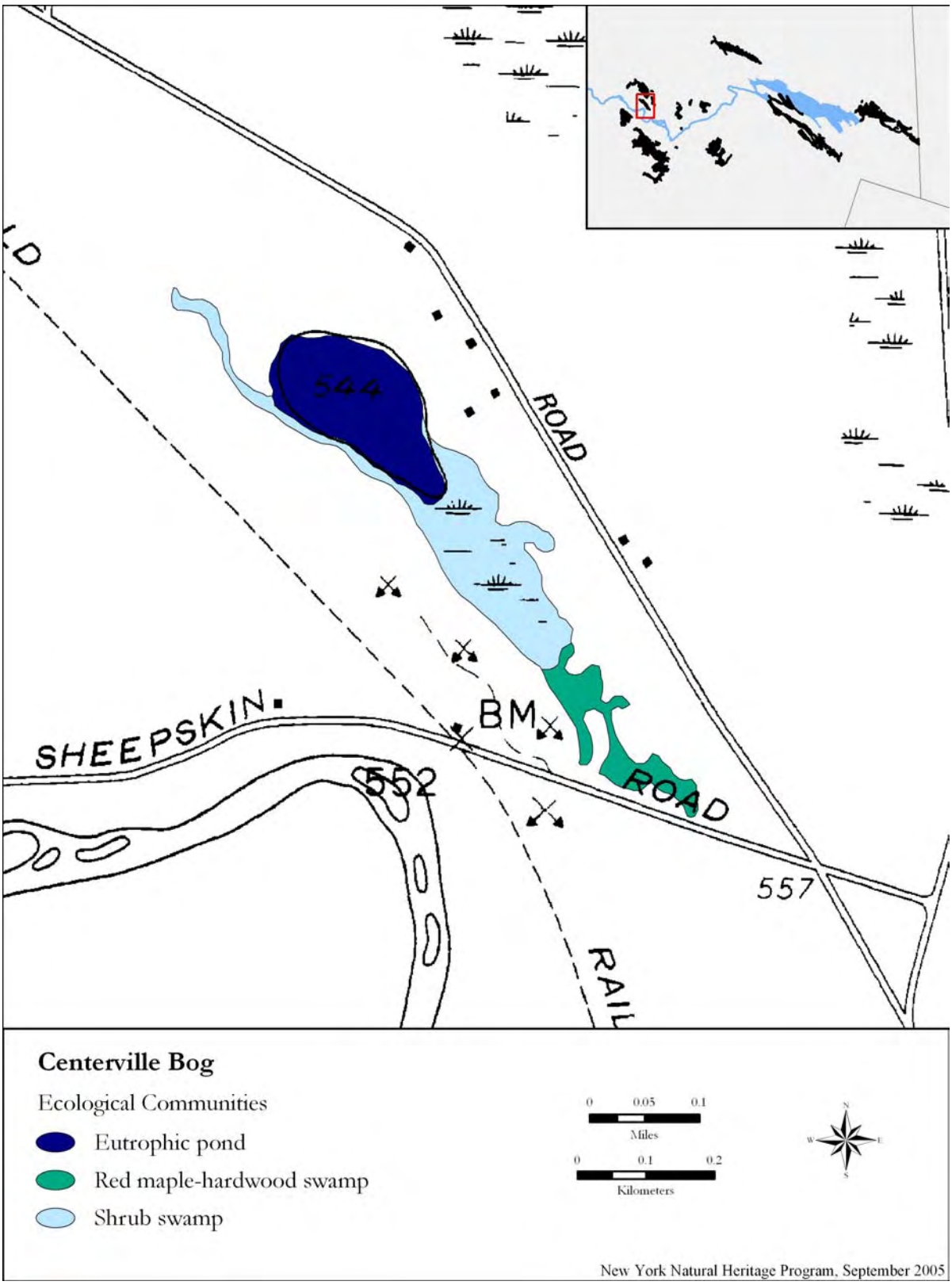

Figure 19. Ecological communities in Centerville Bog.

CRANBURRY BOG/RI – 21/RI – 22/RI - 23

Landowner permission to access the largest wetland in this complex, Cranburry Bog, was very limited. We were granted permission for only 15 acres on the east side of the wetland, representing about 10% of the total area. Most of the wetland was mapped by extrapolating from observations done within the section where permission was granted in conjunction with aerial photo interpretation and existing information on the site. We had full access to wetlands R – 21, R – 22, and R – 23.

The Cranburry Bog Wetland complex is almost entirely surrounded by active agricultural fields and completely bounded by roads. Mattison Road lies directly adjacent to the north boundary of Cranburry Bog and, to the east, Route 13 passes within 20 meters of R – 23 and within 100 meters of R – 21 and R – 22. Centerville Road passes the wetlands on the west side, coming to within about 150 meters of Cranburry bog at its closest point. The three small bogs (R – 21, 22, 23) are kettlehole wetlands and lie east and southeast of Cranburry Bog. Cranburry Bog has a hydrological connection to Trout Brook which flows south for roughly 900 meters and then empties into the Salmon River. Underlying bedrock for the area is Pulaski Formation that is characterized by sandstone, siltstone, and shale (Isachsen *et al.* 2000). Surficial desposits are reportedly lacutrine in origin, consisting of well sorted, coarse to fine gravel and sand deposited along an old lake shoreline.

Maintaining and, in some cases, restoring a forested buffer between the wetlands and the adjacent crop fields and roads could help to minimize the possible introduction of pesticides, fertilizers, and other by-products of crop management. Because the entire wetland complex is bounded by roads, of particular concern is the potential for undesirable runoff from these roads which each come to within a few meters of the wetland complex. Road runoff may be contaminated with oil and gas, 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 Cranburry Bog wetland complex is comprised of five natural community types (Table 13) and totals 155 acres. The largest, most diverse wetland in the complex is Cranburry Bog at 143 acres. The three smaller wetlands are dwarf shrub bogs formed in kettlehole depressions with no apparent outlets (Figure 20).

Aside from the large eutrophic pond in the east lobe of the wetland, the dominant community type of Cranburry Bog has characteric plants of an inland poor fen or possibly a medium fen, including sweet gale (*Myrica gale*), leatherleaf (*Chamaedaphne calyculata*), bog rosemary (*Andromeda glaucophylla*), many-fruited sedge (*Carex lasiocarpa*), mud sedge (*Carex limosa*), smooth sawgrass (*Cladium mariscoides*), cranberries (*Vaccinium oxycoccus, Vaccinium macrocarpon*), rose pogonia (*Pogonia ophioglossoides*), pitcher plant (*Sarracenia purpurea*), sundews (Drosera rotundifolia), and many others (Dru Associates 2001). Since access was so poor, we were not able to collect enough data to adequately document this community and assess it for inclusion in the NY Natural Heritage database. The potential inland poor fen is of moderate size as currently mapped (from aerial photos) and, in spite of its position in an agricultural landscape, is very likely a high quality example of this

community within its core. More data is needed in order to correctly classify and fully evaluate the quality of Cranburry Bog.

Table 4. Ecological communities in Cranburry Bog/RI -21/RI – 22/RI – 23.

System	Subsystem	Community Type	Acres
Cranburry Bog			
Palustrine	Open Peatlands	Inland poor fen	47
	Forested Mineral Soil Wetlands	Red maple-hardwood swamp	36
Terrestrial	Forested Uplands	Pine-northern hardwood forest	2
Lacustrine	Natural Lakes and Ponds	Eutrophic pond	58
Total Acres			143
R - 21	Open Peatlands	Dwarf shrub bog	1
R - 22	Open Peatlands	Dwarf shrub bog	6
R - 23	Open Peatlands	Dwarf shrub bog	5
Grand Total Acres			155

Rare Animals

Landowner permission to access this wetland was very limited with permission obtained for only a portion of the eastern side of the wetland. A very nice, small bog is located at the northern end of the wetland. Peter Rosenbaum has previously identified this bog area as suitable for bog turtles, however the bog is not on the portion of the wetland where access permission was obtained. The eastern shore of the wetland was walked in late May and tape playback was used for conducting a partial survey for the state threatened least bittern (*Ixobrychus exilis*) and pied-billed grebe (*Podilymbus podiceps*). Neither species responded to tape playback or was observed during the survey. The open water portion of this wetland has some patches of cattail and other emergents, flooded ferns, and standing dead trees with a water depth of several feet. This habitat appears to be at least somewhat suitable for pied-billed grebe though less so for least bittern and additional surveys for pied-billed grebe and bog turtle are warranted if better access permission can be obtained.

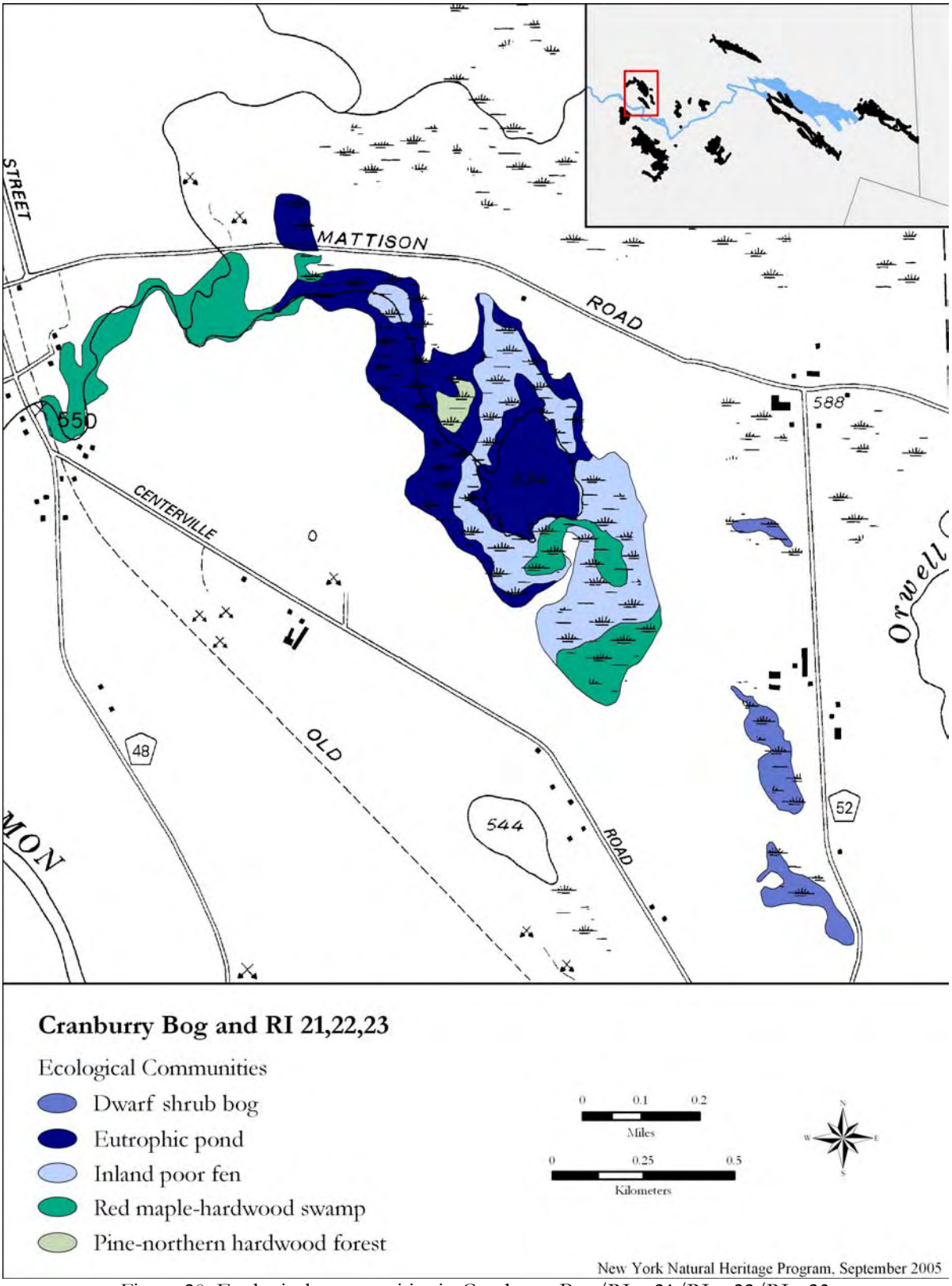

Figure 20. Ecological communities in Cranburry Bog/RI – 21/RI – 22/RI - 23

LOWER RESERVOIR WETLAND/LOWER RESERVOIR WETLAND OR - 16

Lower Reservoir Wetland is a 56-acre wetland located about 50 meters north of the Lower Salmon River Reservoir. We were granted access to the southern one-third of the wetland, covering an area of about 11 acres, or about 20% of the wetland. The remainder of this wetland is open water with one small, embedded upland island. We were allowed access to only about 1 acre of Lower Reservoir Wetland OR -16, which represents less than 1% of this 12-acre wetland.

The landscape immediately surrounding the two Lower Reservoir wetlands is primarily forested with scattered patches of crop fields and light residential development along Route 22 (Lacona-Orwell Road). Hogsback Road comes to within 125 meters to the west of Lower Reservoir Wetland and is 350 meters south of OR – 16. The wetlands occupy valleys within Esker Region, where serpentine ridges of sand and gravel dominate the landscape. Underlying bedrock for the area is Pulaski Formation that is characterized by sandstone, siltstone, and shale (Isachsen *et al.* 2000).

Natural Communities

The Lower Reservoir Wetlands are comprised of six different community types (Table 14) and together total 68 acres. The two wetlands are completely different in natural community and species composition. Lower Reservoir Wetland is a lake and marsh system that connects directly to the Salmon River via the Lower Salmon River Reservoir. Impoundments on the Lower Salmon River Reservoir help to maintain water levels in this wetland. In addition to the 45 acres of open water, the 10-acre shallow emergent marsh on the south end of the wetland is a central feature of Lower Reservoir Wetland (Figure 21).

Lower Reservoir OR -16 is a bog complex that lies just north of Pekin Brook and south of Gowdy Pond, a large wetland of Pekins Brook, but with no apparent connection to either. This wetland occupies a valley between two eskers. There may be some drainage to the west towards Pekins Brook that is not visible on the aerial photography or the USGS quadrangle maps, but we were not given access to this side of the wetland.

The dominant community type of OR -16 appears to be red maple-tamarack peat swamp, which covers most of the west half of the wetland. This may transition to red maple-hardwood swamp to the north or in other sections of the wetland. A small lake (currently classified as bog lake) occupies the east side of the wetland and is partially rimmed by what appears to be an inland poor fen that is just over 1 acre in size. Since access was so poor, we were not able to collect enough data to adequately document this wetland. The red maple-tamarack swamp is small compared to other examples in the state and the potential inland poor fen is very small as currently mapped (from aerial photos). It is unlikely that either of these communities would be considered significant from a statewide perspective even if better access to the wetland became available. However, there is the possibility that these communities, as small as they are, could harbor rare plants. More data is needed in order to correctly classify and fully evaluate the quality of Lower Reservoir Wetland OR – 16 and its potential habitat for rare plants.

Table 14. Ecological communities in Lower Reservoir Wetland/Lower Reservoir Wetland OR – 16.

System	Subsystem	Community Type	Acres
Lower Reservoir Wetland			
Palustrine	Open Mineral Soil Wetlands	Shallow emergent marsh	10
Terrestial	Forested Uplands	Beech-maple mesic forest	1
Lacustrine	Lacustrine Cultural	Reservoir/artificial impoundment	45
Total Acres			56
Lower Reservoir Wetland OR – 16			
Palustrine	Open Peatlands	Inland poor fen	1
	Forested Peatlands	Red maple-tamarack peat swamp	9
Lacustrine	Natural Lakes and Ponds	Bog Lake	2
Total Acres			12
Grand Total Acres			68

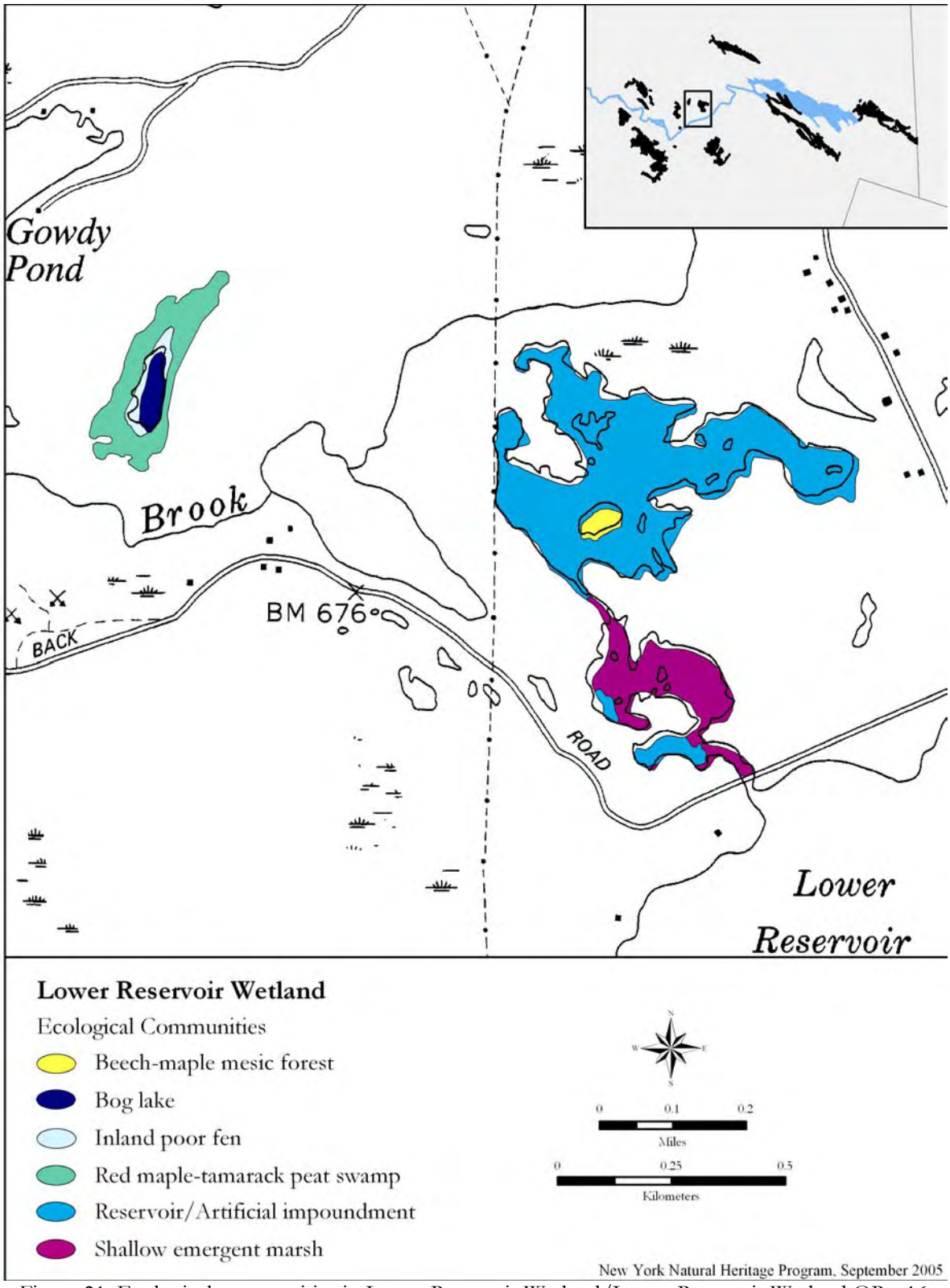

Figure 21. Ecological communities in Lower Reservoir Wetland/Lower Reservoir Wetland OR - 16

Rare Animals

Due to the presence of a few NYS Breeding Bird Atlas records for pied-billed grebe, the Lower Reservoir Wetland was visited on a single occasion during mid-May 2004. The southwestern and western shores of the wetland were walked and a tape playback survey was conducted. No pied-billed grebes responded or were observed during the course of the survey. In contrast to the Pennock Brook Wetland, digital aerial photo imagery indicated that this wetland might be a shallow sedge marsh habitat. However, water levels were quite high during the 2004 survey indicating likely recent occupation or re-occupation by beaver. Water levels appeared suitable for pied-billed grebe and some areas of emergent vegetation or flooded shrub vegetation appeared to be at least somewhat suitable for this state threatened species. A single osprey (*Pandion haliaetus* - state Special Concern) was observed during the course of the survey. A number of osprey are nesting in this general area as evidenced by records for the NYS Breeding Bird Atlas as well as nests noted on power poles while driving to survey sites within the study area.

As with other wetlands in the study, landowner permission to access Lower Reservoir OR - 16 was limited, with permission obtained only for the northern portion of the wetland. Peter Rosenbaum has previously identified this wetland area as suitable for bog turtles. The northern portion of the wetland was visited in early July 2004. This very small portion of the wetland would best be described as red maple swamp with a closed canopy or red maple, ash, and elm and undergrowth of blueberry and ferns. The water was 1-2 feet deep and there were chewed trees and other signs of beaver occupation suggesting that water levels may have been elevated. While bog turtles will often hibernate in red maple swamps adjacent to open fen areas no open fen area was observed in the portion of the wetland where access permission was available. Aerial photos indicate that fen habitat is likely located further south in the wetland. It is also possible that elevated water levels have altered this wetland and an area of open fen that was present previously no longer exists. Without an adjacent, open fen habitat the red maple swamp observed during the 2004 surveys would not be considered suitable bog turtle habitat as the open habitat is required for basking and egg laying. Should further access permission be obtained additional surveys of this wetland for potential bog turtle habitat are warranted.