ROUTE 22 WETLAND

With the exception of a very small section in the northwest corner of the site which is managed by the state (NYS DEC - Altmar State Forest), Route 22 Wetland is almost entirely privately owned. Consequently, access permission was limited to approximately 36% of the wetland and consisted of scattered parcels that were not always accessible due to being landlocked by other private property. Due to access issues, much of the area was mapped by extrapolating from observations done within the accessible sections where permission was granted in conjunction with aerial photo interpretation and existing knowledge of the site.

Route 22 Wetland is a very large wetland that actually drains in two directions: west into Little Grindstone Creek and north for a distance of about 825 meters into the Salmon River. It stretches from the creek crossing at Barber Road just east of Albion Center north to within one-half mile to the south of the settlement of Pineville. Two roads and two power lines bisect the wetland. The landscape around Route 22 Wetland is primarily managed forests (early to mid-successional) and residential development along roads, much of it associated with numerous small settlements (Pineville, Altmar, Albion, Barber Corners). The wetland is dominated by red maple-hardwood swamp and hemlock-hardwood swamp. Some area of these swamps are currently being harvested or have recently (in the last 50 years) seen timbering activity. 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 predominantly swamp deposits consisting of muck and organic silts or sand and lacustine sand.

Route 22 Wetland is a large complex that serves two watersheds, the Lower Salmon River Watershed and Grindstone Creek Watershed. In order to maintain the structural and biological integrity of Route 22 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 has been historically managed primarily for timber production, the wetland is fairly 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 Route 22 Wetland using BMPs will ensure that it remains a quality wetland complex that provides habitat for a variety of wildlife into the future.

Natural Communities

Route 22 Wetland is comprised of five natural community types (Table 15). At approximately 625 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 white pine (*Pinus strobus*) yellow birch (*Betula alleghaniensis*) throughout much of the swamp. A relatively large hemlock-hardwood swamp occupies a majority of the lower half of the wetland. Small patches of shrub swamp and shallow emergent marsh are found in beaver-influenced areas within the wetland, especially along Grindstone Creek (Figure 22).

The large red maple-hardwood swamp was determined not to be significant based on recent timbering activity observed in the wetland, road and powerline crossings in the area, and the condition of the surrounding landscape. This is best classified as a successional red maple-hardwood swamp and it is bisected by two roads and two power lines. However, this swamp has good recovery potential and could be re-evaluated in the future for potential membership in the NY Natural Heritage database. Access to the hemlock-hardwood swamp was sporadic and in most cases required crossing other privately owned parcels that were not among the properties we were allowed to access. Therefore, this relatively common community was not evaluated for statewide significance due the condition of the surrounding landscape (primarily successional forests and residential), poor access, and lack of data. Despite the fact that we documented no significant natural communities in Route 22 Wetland, the site has value as a natural area that contributes to the long-term biodiversity of the region.

Table 15. Ecological communities in Route 22 Wetland.

System	**Subsystem**	**Community Type**	**Acres**
Palustrine	Open Mineral Soil Wetlands	Shallow emergent marsh	11
		Shrub swamp	56
	Forested Mineral Soil Wetlands	Red maple-hardwood swamp	322
		Hemlock-hardwood swamp	224
Riverine	Natural Streams	Beaver pond/Eutrophic pond	12
Total Acres			625

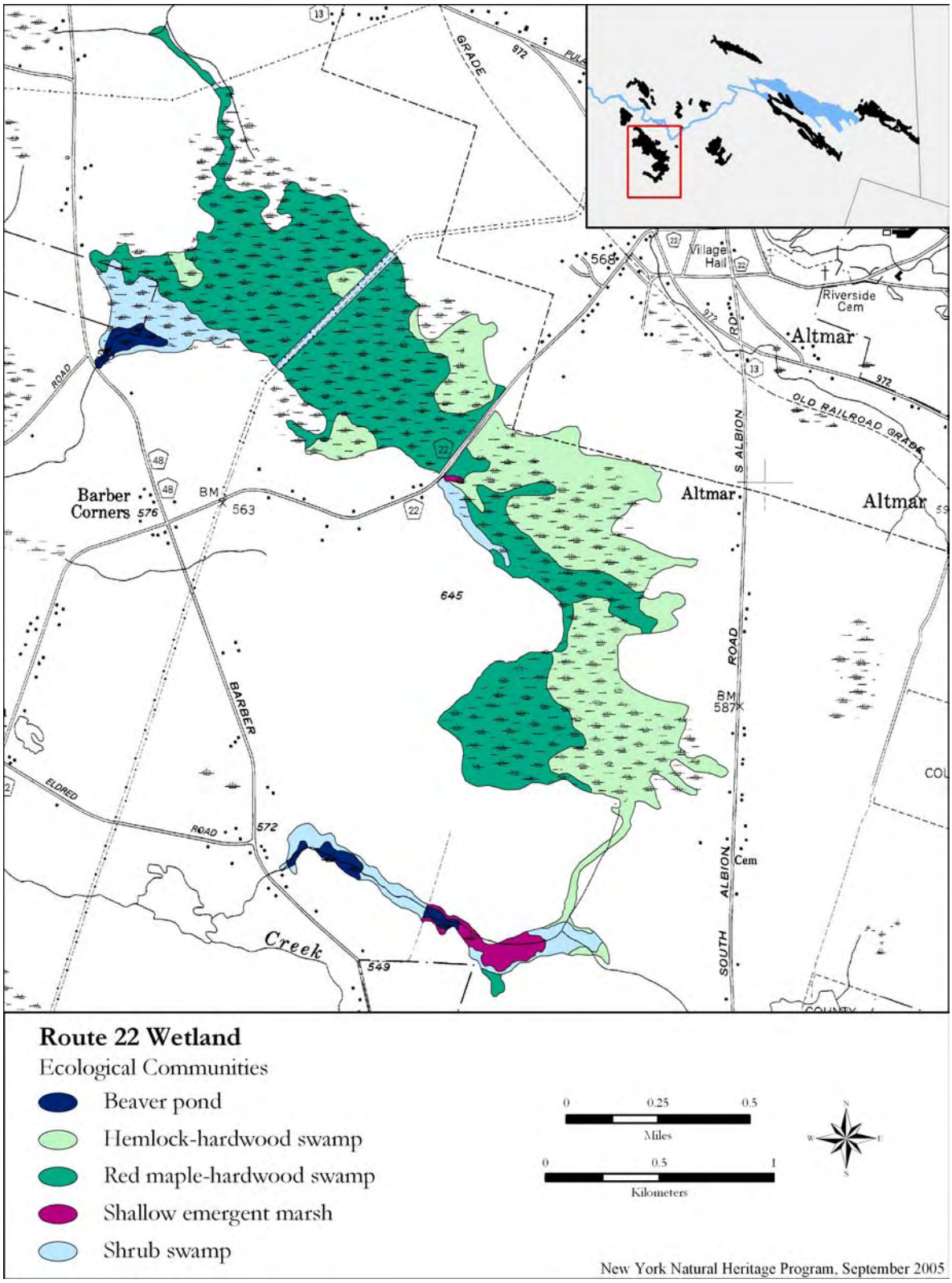

Figure 22. Ecological communities in Route 22 Wetland

GENERAL THREATS AND MANAGEMENT CONSIDERATIONS

A variety of factors could affect the long-term viability of the natural communities and rare species in the fifteen wetland study areas and the two vernal pool complexes. We consider four of the most significant below: conversion of natural areas into developed or agricultural uses; alterations to the wetlands' hydrology; invasive species; and human disturbance. The management considerations that we present regarding these threats are directed towards maintaining or increasing the ecological integrity of the wetlands and reducing human related disturbances to rare species populations; they do not take into account resource management issues and efforts that may already be in place.

Wetlands are not isolated from activities in surrounding uplands. Research has shown that the biological integrity of wetlands is correlated to the land-use practices throughout the watershed (Saunders *et al.* 1991, Hecnar and M'Closkey 1998, Crosbie and Chow-Fraser 1999) and to fragmentation caused by the construction of roads (Forman and Alexander 1998, Findlay and Bourdages 2000). For example, agricultural runoff may cause increased sedimentation and nutrient loads within wetlands, leading to the loss of species diversity (Drexler and Bedford 2002, Werner and Zedler 2002). Also, species richness in wetlands has been shown to be negatively correlated with the density of paved roads within 2 kilometers (1.2 miles) (Findlay and Houlahan 1997). Beyond 1 kilometer, however, it appears the effect of road density is greatly diminished (Forman and Alexander 1998). A 1 kilometer buffer around the 16 study wetlands is clearly unrealistic and it is recognized that prescribing natural area buffers around wetlands is an extremely difficult challenge. The width of a buffer depends to a large degree on the physical features of each site, natural features and processes of the surrounding landscape, and human activities that might affect the wetland. A landscape-level assessment focused on the condition of the watershed, changes that are occurring within the watershed and how these changes might impact wetland in the region could be conducted to determine the appropriate level of protection for each wetland. To ensure the long term viability and protect the biological diversity that the wetlands harbor, the integrity of the watershed which supports them must be maintained.

Ditching, filling, and road crossings are several of the activities that can alter the hydrology of wetlands, both by draining or flooding them. The levels of various streams directly influence the hydrology of many of the wetlands we inventoried, and research has shown that stabilizing water levels can lead to the loss of diversity (Hauer and lambert 1996, Wilcox and Meeker 1991, Harris and Marshall 1963). Designing activities around wetlands and their tributaries so they do not alter the movement of water into or out of the wetlands will help maintain the hydrology that supports the current plant and animal populations, and natural community structure.

The impact of the invasive species varies from site to site and the amount of impact each species has had varies considerably. Invasive species may out compete and alter the natural composition of each wetland's vegetation. Examples of particularly invasive species are phragmites (*Phragmites australis*), and purple loosestrife (*Lythrum salicaria*). At a minimum, monitoring and control measures to reduce the impacts of invasive species should occur within the highest quality wetlands (i.e., Sloperville Fen, Pineville Bog, Hogsback Bog, Pennock Bog, Fox Brook Wetlands). Efforts in these areas should have the greatest effect for they have the significant natural communities and rare species within the study area.

Some of the marsh communities in the wetland (Redfield Wetland, Route 22 Wetland, Lower Reservoir Wetland, Pennock Bog), do have clonal stands of the grass phragmites (*Phragmites australis*). The clonal stands often out-compete all other vegetative species, thereby creating monotypic stands of the invading grass. Once established, this plant is very difficult to eradicate. Relative to other invasive species, phragmites is one of the greatest threats to species diversity and wetland quality.

Surprisingly, purple loosestrife (*Lythrum salicaria*) does not appear as a widespread dominant in the Salmon River Corridor like it does in other regions of the northeast. The best control for purple loosestrife includes the minimization of disturbance and the removal of plants where it does occur. Small infestations can be controlled by removing all roots and underground stems. It is difficult to remove all of the roots in a single digging, so removal areas should be monitored for several growing seasons to ensure that it has not regrown from roots or seed. In the high quality fen communities, purple loosestrife should be pulled when it is first observed to ensure it does not gain a detrimental foothold within these communities. Larger infestations of loosestrife are best managed using existing, well-tested biological controls. Should the biological controls already released within New York reach Oswego County, purple loosestrife will likely remain a minor member of the marsh community and cause minimal negative impacts.

Other species that are susceptible to human disturbance include the bog turtle, which is threatened by illegal collection for the wildlife trade. If permission is granted to survey Cranburry Bog in the future, or if bog turtles are discovered at new sites in the region, restricting access to legitimate researchers only and not advertising the fact that this species is present will help to protect the populations from this threat.

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A team of scientists, the Bio-inventory Committee, worked together on identifying the 15 survey wetlands and the vernal pool focus area: Sandy Bonanno, Elizabeth Bough, Shane Gebauer, Andy Nelson, and Paul Novak. This inventory was conducted and compiled by the New York Natural Heritage Program staff; those recognized for their direct involvement in the project are listed below.

Field Inventory and Documentation

D.J. Evans (Ecologist)
Project coordinator, community inventory, community mapping, report writing/editing

Greg Einger (Program Ecologist)
Community inventory

Jennifer Garrett (Assistant Ecologist)
Assisted with community inventory

Jesse Jaycox (Zoologist)
Assisted with vernal pool inventory

Paul Novak (Program Zoologist)
Rare animal inventory and report writing/editing

David VanLuven (Director)
Report editing

Troy Weldy (Botanist)
Rare plant inventory and report writing/editing

GIS and Information Management

Betty Ketcham (Information Management Specialist)
Map creation for the all the communities and rare species contained in the report

Rachel Novak (Database Manager)
Database entry oversight, quality control, and database maintenance

Hollie Shaw (Assistant Biologist)
Rare animal mapping and updates

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APPENDIX A. Explanation of ranks and codes used in NY Natural Heritage database reports.

Each element has a global and state rank as determined by NY Natural Heritage. These ranks carry no legal weight but are believed to accurately reflect the relative rarity given of the species. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world. The Taxon or T-ranks (T1 - T5) are defined like the Global ranks (G1 - G5), but the T-rank refers *only* to the rarity of the subspecific taxon of the species.). Intermediate ranks, such as G2G3 or S1S2, are also possible.

GLOBAL RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.
G3 = Either rare or local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g., a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH = Historically known, with the expectation that it might be rediscovered.
GX = Species believed to be extinct.
GU = Status unknown.

STATE RANK

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 to 20 years.
SX = Apparently extirpated from New York State.
SE = Exotic, not native to New York State.
SR = State report only, no verified specimens known from New York State.
SU = Status unknown.

TAXON RANK

T1-T5 = indicates a rank assigned to a infraspecific taxon following the Global Rank definitions above.
Q = indicates a question exists whether or not the taxon is a good taxonomic entity.
? = indicates a question exists about the rank.

APPENDIX B: LEGAL PROTECTION FOR RARE PLANT AND ANIMAL SPECIES IN NEW YORK STATE

Federal Status (plants and animals): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 188, pp. 39526 - 39527.

(blank)=No Federal Endangered Species Act status.
LE = The taxon is formally listed as endangered.
LT = The taxon is formally listed as threatened.
LELT= The taxon is formally listed as endangered in part of its range and threatened in other parts.
PE = The taxon is proposed as endangered.
PT = The taxon is proposed as threatened.
C = Candidate for listing - There is sufficient information to list the taxon as endangered or threatened.
* = Petition recycled

Additional codes:
(C2NL) = Heritage code indicating that the taxon is a candidate in some areas, not listed in other areas.
(E/SA) = Heritage code indicating that the taxon is endangered because of similarity of appearance to other endangered species or subspecies.

New York State Legal Status - Animals: Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in New York.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

New York State Legal Status - Plants: The following categories are defined in regulation 6NYCRR part 193.3 and apply to New York State Environmental Conservation Law section 9-1503.

(blank)= no state status

E = Endangered Species: listed species are those with:

1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 1/2 minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T = Threatened: listed species are those with:

1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and 1/2 minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

R = Rare: listed species have:

1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.

V = Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked. (The attached list does not contain a complete listed of the species in this category.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

APPENDIX C: LIST OF RARE SPECIES AND SIGNIFICANT NATURAL COMMUNITIES IN EACH WETLAND.

Scientific Name	Common Name	Global Rank	State Rank	Element Occurrence Rank*
Pennock Bog				
Shallow emergent marsh	Shallow emergent marsh	G5	S5	B
Spruce-fir swamp	Spruce-fir swamp	G3G4	S3	B
Pineville Bog				
Dwarf shrub bog	Dwarf shrub bog	G4	S3	B
Red maple-tamarack peat swamp	Red maple-tamarack peat swamp	G3G4	S2S3	B
Hogsback Bog				
Inland poor fen	Inland poor fen	G4	S3	A
Scheuchzeria palustris	Pod grass	G5	S3	A
Sloperville Fen				
Inland poor fen	Inland poor fen	G4	S3	B
Great blue heron rookery	Great blue heron rookery	G5	S5	B
Esker Region				
Vernal pool	Vernal pool	G4	S3S4	A
Vernal pool	Vernal pool	G4	S3S4	A
Fox Brook Wetland				
Red maple-hardwood swamp	Red maple-hardwood swamp	G5	S4S5	A
Redfield Wetland				
Confined river	Confined river	G4	S3S4	A

APPENDIX D

CONSERVATION GUIDES* FOR SIGNIFICANT NATURAL COMMUNITIES FOUND IN THE SALMON RIVER CORRIDOR WETLANDS

* NY Natural Heritage Program Conservation Guides are served on the Web and are updated periodically with new information. See our Website, http://acris.nynhp.org/, for the most recent Guides.

APPENDIX E

CONSERVATION GUIDES FOR RARE PLANTS FOUND IN THE SALMON RIVER CORRIDOR WETLANDS

* NY Natural Heritage Program Conservation Guides are served on the Web and are updated periodically with new information. See our Website, http://acris.nynhp.org/, for the most recent Guides.

APPENDIX F

CONSERVATION GUIDES FOR RARE ANIMALS FOUND IN THE SALMON RIVER CORRIDOR WETLANDS

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The New York Natural Heritage Program

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The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant ecosystems. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

NY Natural Heritage was established in 1985 and based in NYS DEC's Division of Fish, Wildlife, & Marine Resources. The program is staffed by more than 20 scientists and specialists with expertise in ecology, zoology, botany, information management, and computer mapping.

NY Natural Heritage maintains New York's most comprehensive database on the status and location of rare species and natural communities. We presently monitor the status of more than 165 natural community types, 750 rare plant species, and 415 rare animal species across New York, keeping track of more than 11,000 locations where these species and communities are found. The database also includes detailed information on the relative rareness of each species and community, the quality of their occurrences, and descriptions of sites. The information is used by public agencies, the environmental conservation community, developers, and others to aid in land-use decisions. Our data are essential for prioritizing those species and communities in need of protection and for guiding land-use and land-management decisions where these species and communities exist.

In 1990, NY Natural Heritage published *Ecological Communities of New York State*, an all inclusive classification of natural and human-influenced communities. From 40,000-acre beech-maple mesic forests to 40-acre maritime beech forests, sea-level salt marshes to alpine meadows, our classification quickly became the primary source for natural community classification in New York and a fundamental reference for natural community classifications in the northeastern United States and southeastern Canada. This classification, which has been continually updated as we gather new field data, has also been incorporated into the International Vegetation Classification that is being developed and refined by NatureServe, The Nature Conservancy, and Natural Heritage Programs throughout the United States (including New York).

NY Natural Heritage is an active participant in NatureServe – the international network of biodiversity data centers. There are currently Natural Heritage Programs in all 50 states and 21 Conservation Data Centers (the international equivalent of Natural Heritage Programs) in Canada, Latin America, and the Caribbean. These programs work with NatureServe to develop biodiversity data, maintain compatible standards for data management, and provide information about rare species and natural communities that is consistent across many geographic scales – from ¼-acre wetland sites to the North American continent.