

Introduction

This report on the biological diversity of the southern Honeoye Valley contains contributions from several individuals and organizations as well as new research conducted by Finger Lakes Community College professors and students. The inventory of natural communities and their representative organisms has only begun, so this report should be considered a starting point for understanding and conserving this region's biodiversity. Updates on new discoveries will occur in future editions.

What is biological diversity? Simply put, it is the variety of life on our planet. And why should it be conserved? Biological diversity underpins the functional integrity of all natural ecosystems. Every species plays a role. When species are lost, the ecosystem is simplified and becomes more susceptible to collapse from natural disasters and human disturbances. Biological diversity also represents one of our greatest untapped resources. Great human benefits have been obtained from a single species. Twenty plant species provide 90% of the world's food supply! Other species may be a potential source of human medicines. It is clear that humans benefit from healthy ecosystems which provide our air, our water, our food, and support our economic activities. It is just as important to conserve what remains of our natural world for the other species. We have an ethical responsibility to recognize that all species possess intrinsic value simply because they exist. We should strive to be good stewards of all planetary resources.

Over 1200 species have been described so far living in the southern Honeoye Valley. The next two pages of color plates provide a sampling of some of those species. Many more will be discovered as the educational programs at the Muller Conservation Field Station intensify. What is included in this initial biodiversity inventory? Sixty four mushrooms and 75 non-flowering plants, including lichens, mosses and ferns, have been cataloged. The region is home to eleven conifers. By far the largest group of organisms identified has been the flowering plants with a total of 557 different species. With time, the number of insects will surpass the flowering plant total but for now our insect biodiversity is about 200 species. There have been 20 species of amphibians noted and 15 species of reptiles including three species that are regionally significant, the spiny soft-shell turtle, the timber rattlesnake and the coal skink. Twenty seven different types of fish are known from Honeoye Lake and its tributary streams. Most of the larger mammals have been inventoried, but smaller species are still being assessed. So far, 32 species of mammals are known to inhabit the region. Birds that migrate through or nest within the southern Honeoye Valley total 159 species!

The checklists are relatively complete for amphibians, reptiles, birds, fish, mammals and vascular plants. The checklists for phytoplankton, zooplankton, molluscs, insects, other invertebrates and nonvascular plants are preliminary. All organismal groups are deserving of more fieldwork and future additions are expected to each checklist.

Each species is a member of one to several natural or cultural communities, and a great variety of community types are found in the southern Honeoye Valley. This community richness is due, in part, to the region's glacial history and the subsequent establishment of drainage basins. The southern Honeoye Valley includes the southern end of Honeoye Lake and two sub-basin watershed areas draining to it, Briggs Gully to the east and the Honeoye Inlet to the south. It includes the large inlet wetland complex that is next to the Muller Conservation Field Station of Finger Lakes Community College. The southern Honeoye Valley is situated within Livingston and Ontario Counties and includes portions of the Towns of Springwater, Canadice, Richmond, Bristol, South Bristol and Naples. It is approximately 22 square miles in size and significant parcels of land within the southern Honeoye Valley are already under conservation ownership. Significant natural areas within the southern Honeoye Valley are:

Cummings Nature Center, Rochester Museum and Science Center

Davis Mountain Campus, formerly owned by Roberts Wesleyan College

Harriet Hollister Spencer State Recreation Area, New York State Office of Parks, Recreation and Historic Preservation

Honeoye Lake, New York State

Honeoye Inlet Wildlife Management Area, cooperative project of The Nature Conservancy and the New York State Department of Environmental Conservation

Muller Conservation Field Station, Finger Lakes Community College

Muller Boy Scout Reservation, formerly owned by the Finger Lakes Council of the Boy Scouts of America

Wesley Hill Preserve, Finger Lakes Land Trust

A few of these parcels have been studied for biodiversity within some taxonomic groups.

Over 30 natural communities have been identified in the southern Honeoye Valley. These include linear assemblages like rocky headwater streams, expansive cover types like Appalachian oak-hickory forest, and small imbedded communities like vernal pools. Four communities are ranked as significant occurrences by the NYS Natural Heritage Program: the winter-stratified monomictic lake, the floodplain forest, the large silver maple-ash swamp along the Honeoye Inlet stream and the shale talus slope woodland along the steep banks of Briggs Gully. All these natural communities contain a mosaic of habitats for organisms.

Methods

Mapping Natural Communities: Orthogonal aerial images of the southern Honeoye Valley, available from Pictometry International, were used to delineate apparent natural community boundaries. Subsequent ground-truthing confirmed the aerial interpretation work or revealed locations where boundaries had to be modified. Final community boundaries were digitized as polygons and stored within Ontario County's geographic information system (GIS) database.

Each polygon was attributed and assigned to a particular cover type using the classification scheme and cover type categories found in the New York State Natural Heritage Program publication, "Ecological Communities of New York State" (Edinger *et al.* 2002). This publication is the primary reference source for community classification in the state. Its success and acceptance by a wide range of users was driven by its lofty goal to be an all-inclusive classification; it contains small to large natural communities and even those communities created by humans. Each community belongs to one of seven major systems. The systems are divided into two to five subsystems. Within each subsystem there are many community types. Their characteristic species are described and their rarity and vulnerability are presented at a global and state scale. In this organized approach, significant natural communities can be designated as priorities for conservation thereby assuring that future generations can enjoy the full array of biological diversity found within New York State.

The Natural Heritage Ranking System reflects an element's rarity and vulnerability. An element may mean a plant or animal species, or a natural community. The ranks carry no legal weight but are believed to accurately reflect their rarity. In our case, the global rank suggests the rarity of the community throughout the world while the state rank suggests the rarity within New York State. As new data become available, the ranks are revised to reflect the most current information. The following explanations of ranks are provided by the New York Natural Heritage Program:

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 and local throughout its range (21-100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range, 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, miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = typically 6-20 occurrences, few remaining individuals, acres, miles of stream, or factors demonstrably making it very vulnerable in New York State

S3 = typically 21-100 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 last 15 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.

Inventory of Plants: Previous fieldwork (Banaszewski *et al.* 1976, Cooper *personal correspondence* 2002, Gilman 1983, Gilman 1998, Gilman 2000, and Gilman and Martin 1998) was used to create a preliminary checklist of plants for the southern Honeoye Valley. New exploration at multiple locations and seasons, and extensive collection of plant material was conducted in 2001, 2002 and 2003. Voucher specimens were pressed, identified and placed in the Finger Lakes Herbarium at the College.

Insect Methods: Several techniques were used to collect insects throughout the summer of 2002. Four pitfall traps, consisting of two 16 ounce disposable plastic cups filled with ethylene glycol, were placed in four different locations: a field, a lowland hardwood forest, an upland hardwood forest, and a conifer plantation. These traps were checked periodically throughout the summer. A homemade black light trap was used to collect nocturnal flying insects. This trap ran for seven two-day periods throughout the summer. A malaise trap was also used in an attempt to capture insects using flyways. This trap was placed in two locations and checked periodically. Beat netting and aerial netting were conducted for twelve days and the captured insects were then stored in a freezer. Eventually, insects were sorted and those insects suitable for pinning were pinned using standard protocols. Spiders and soft-bodied insects were preserved in 70% ethyl alcohol.

Using dichotomous keys, specimens were identified to order and family, and when possible to genus and species. The voucher collection contains hundreds of unidentified specimens particularly in the Orders Coleoptera, Diptera and Hymenoptera.

Molluscs and Other Invertebrates: These checklists were developed based on information in the scientific literature (Jokinen 1992), personal collections made by and correspondence with William Rapp, study of the Limnology teaching collections at the College, and new fieldwork during the summers of 2002 and 2003.

Sampling Fish Populations: For more than two decades, the Department of Environmental Conservation and Horticulture at Finger Lakes Community College has surveyed fish populations in Honeoye Lake and its surrounding tributaries. Techniques used include trap netting, seine netting, gill netting, electro-shocking and angling. Most recently, radio-telemetry has been used to study the movements and reproductive success of walleye. These activities are frequent and on-going. Coupled with the fish census work (e.g., gill netting, electro-shocking, angler diaries) of the Region 8 Office of the New York State Department of Environmental Conservation (DEC) and their periodic reports (Chiotti 1980), an accurate assessment of fish biodiversity in the southern Honeoye Valley is possible.

Methods for Amphibians and Reptiles: The recently completed New York State Herp Atlas was locally supported by species occurrence records submitted by faculty within the College's Conservation program. Additional sightings, roadkill surveys and recognition of vocalizations produced a comprehensive herpetological checklist.

Bird and Mammal Census: These wildlife populations were surveyed along transect lines, from roadsides and on protected conservation lands several times during the year. Direct observations, wildlife sign and wildlife sound were used to precisely identify all species. Records at the NYS DEC Region 8 Office and personal correspondences with Bob Cooper were also reviewed. Nocturnal species and small secretive species are the least understood organisms and should be the subject of future field research.

Micro-Organisms in Honeoye Lake: The planktonic community of Honeoye Lake was documented from the work of Schaffner and Oglesby (1978), Crego (1994) and the examination of fall semester plankton tows collected by the Limnology class at Finger Lakes Community College. Some plankton collections have been preserved in 10 % sugar formalin and are stored at the College. The NYS DEC also has preserved plankton samples as part of their Finger Lakes Synoptic Survey, however, no species identifications have been attempted due to budgetary constraints. To date, benthic organisms have been largely overlooked.

Results

Our air photo interpretation and ground-truthing detected 32 natural communities within the southern Honeoye Valley. Two communities (spring and vernal pool) are considered point features. These communities are imbedded in other cover types and are not displayed on the map because they are smaller than the mapping scale. However, their ecological importance should not be underestimated. Small, moist areas function as critical breeding sites for amphibians and are often home to unusual plants. Five communities (rocky headwater stream, confined river, intermittent stream, canal and ditch/artificial stream) are considered linear features. Again, because they are smaller than the map scale, they are not displayed. Their value is their functioning as habitat for riverine organisms. The remaining 25 natural communities are large in extent and, with the exception of the lake, are presented as color-coded polygons on the map.

Six community cover types (18.8%) belonged to the **Riverine System**, three (9.4%) to the **Lacustrine System**, seven (21.8%) to the **Palustrine System** while 16 community cover types (50.0%) belonged to the **Terrestrial System**.

In terms of acreage, 92.6% of the community cover types belong to the **Terrestrial System**, 7% to the **Palustrine System** and 0.4% to the **Lacustrine System**. The **Riverine System** consists of linear and point features that were not mapped for areal extent.

Natural community cover types accounted for 90.0% of the total acreage while cultural cover types totaled 10.0% of the total acreage.

The classification, frequency of detection (i.e., number of polygons) and acreage for community cover types are summarized in Table 1. Descriptions of each cover type, taken directly from Edinger *et al.* (2002), follow the table. Some, but not necessarily all, of the details in each community description are specifically relevant to the southern Honeoye Valley.

<u>System</u>	<u>Subsystem</u>	<u>Community Cover Type</u>	<u>Polygons</u>	<u>Acres</u>
Riverine	Natural streams	Rocky headwater stream	NA	(linear feature)
	Natural streams	Confined river	NA	(linear feature)
	Natural streams	Intermittent stream	NA	(linear feature)
	Natural streams	Spring	NA	(point feature)
	Riverine cultural	Canal	NA	(linear feature)
	Riverine cultural	Ditch/artificial stream	NA	(linear feature)
Lacustrine	Natural lakes and ponds	Winter-stratified monomictic lake	NA	(not mapped)
	Natural lakes and ponds	Eutrophic pond	1	11
	Lacustrine Cultural	Farm pond/artificial pond	100	45
Palustrine	Open mineral soil wetlands	Deep emergent marsh	1	1
	Open mineral soil wetlands	Shallow emergent marsh	5	51
	Open mineral soil wetlands	Shrub swamp	4	32
	Forest mineral soil wetlands	Floodplain forest	2	58
	Forest mineral soil wetlands	Silver maple-ash swamp	1	760
	Forest mineral soil wetlands	Vernal pool	NA	(point feature)
	Forest mineral soil wetlands	Hemlock-hardwood swamp	3	51
	Terrestrial	Open uplands	Successional old field	57
Open uplands		Successional old field/ successional shrubland	15	119
Barrens and Woodlands		Shale talus slope woodland	1	10
Forested uplands		Appalachian oak-hickory forest	10	2,933
Forested uplands		Hemlock-northern hardwood forest	27	809
Forested uplands		Successional northern hardwood forest	19	6,553

TABLE 1 – Community cover types of the southern Honeoye Valley.

<u>System</u>	<u>Subsystem</u>	<u>Community Cover Type</u>	<u>Polygons</u>	<u>Acres</u>
Terrestrial	Terrestrial	Cropland	17	336
	Cultural			
	Terrestrial	Pastureland	6	45
	Cultural			
	Terrestrial	Vineyard	2	4
	Cultural			
	Terrestrial	Pine/spruce plantation	85	459
	Cultural			
	Terrestrial	Mowed land/residential	119	358
	Cultural			
	Terrestrial	Pathway	1	2
	Cultural			
	Terrestrial	Gravel mine	3	9
	Cultural			
	Terrestrial	Outdoor recreation	1	110
	Cultural			
	Terrestrial	Rural structure exterior	7	12
	Cultural			
TOTALS	4 systems	32 community cover types	522	13,813

TABLE 1 (continued) – Community cover types of the southern Honeoye Valley.

Cover Type Descriptions

Rocky headwater stream: the aquatic community of a small- to moderate-sized perennial rocky stream typically with a moderate to steep gradient, and cold water that flows over eroded bedrock, boulders or cobbles in the area where a stream system originates. These streams are typically shallow, narrow, have a relatively small low flow discharge and usually represent a network of 1st to 2nd order stream segments. These streams typically include alternating riffle and pool sections. Most of the erosion is headward, and deposition is minimal. Waterfalls, chutes, flumes and cascades are typically present; these are here treated as features of the more broadly defined community. The predominant source of energy to the stream is terrestrial leaf litter or organic matter (these are allochthonous streams); trees shading the stream reduce primary productivity. These streams have high water clarity and are well oxygenated. They are typically surrounded by upland forests and situated in a confined valley.

Species assemblages characteristic of riffles and rocky substrate predominate the community. Characteristic fishes are coldwater species including eastern blacknose dace (*Rhinichthys atratulus*), creek chub (*Semotilus atromaculatus*), slimy sculpin (*Cottus cognatus*)

or mottled sculpin (*C. bairdi*), and brook trout (*Salvelinus fontinalis*). Additional characteristic fishes may include longnose dace (*Rhinichthys cataractae*), redbside dace (*Clinostoma elongatus*), and, in pools, white sucker (*Catostomus commersoni*). Common introductions are rainbow trout (*Salmo gairdneri*) and brown trout (*S. trutta*). Characteristic amphibians may include northern two-lined salamander (*Eurycea bislineata*) and green frog (*Rana clamitans*).

Characteristic macroinvertebrates are riffle and rocky bottom specialists as well as leaf and algae shredders such as stoneflies (Plecoptera including Chloroperlidae, Leuctridae, Acroneuria sp.), mayflies (Ephemeroptera including Heptageniidae, Isonychia sp.), caddisflies (Trichoptera, including Rhyacophila sp. and especially Hydropsychidae), midges (Chironomidae), crayfish (Cambaridae including *Cambarus robustus*, *C. bartonii*), water penny beetle (*Psephenus* sp.), craneflies (Tipulidae including *Hexatoma* sp.) and blackflies (Simuliidae). Freshwater sponges may be abundant and coating rocks in some examples.

Characteristic pool macroinvertebrates may include true bugs (Gerridae, Vellidae and Mesovellidae). Mollusks are typically lacking for very sparse and of low diversity. These streams typically have bryophytes and periphytic/epilithic algae present, but few larger rooted plants. Characteristic bryophytes include: *Brachythecium rivulare*, *B. plumosum*, *Eurhynchium riparioides*, *Hygroamblystegium tenax*, *Hygrohypnum ochraceum*, *Rhizomnium punctatum*, *Mnium hornum*, *Fontinalis* spp., and *Scapania* sp.

Four to six ecoregional variants (including Northern Appalachian, Lower New England, Alleghany Plateau and Great Lakes types) are suspected to differ in dominant and characteristic vascular plants, fishes, bryophytes, and insects as well as water chemistry, water temperature, underlying substrate type, and surrounding forest type. Major watershed may be a secondary factor in distinguishing streams lower in a drainage basin.

Additional species characteristic of streams in the Northern Appalachians may include fishes such as pearl dace (*Margariscus margarita*), and northern redbelly dace (*Phoxinus eos*); and macroinvertebrates such as caddisflies (*Parapsyche* sp., *Palegapetus* sp., *Symphitopsyche* sp.), stoneflies (Capniidae, *Taenionema* sp., *Peltoperla* sp.), mayfly (*Eurylophella* sp.), midges (*Eukiefferella* sp.), and fishfly (Corydalidae).

Additional species characteristic of streams in the Saint Lawrence River and Lake Champlain Valleys may include fishes such as common shiner (*Luxilus cornutus*), bluntnose minnow (*Pimephales notatus*), fathead minnow (*P. promelas*) and slimy sculpin (*Cottus cognatus*); and macroinvertebrates such as stonefly (*Neoperla* sp.), caddisfly (*Chimara* sp., *Dolophilodes* sp.), beetles (*Promeresia* sp., *Stenelmis* sp., *Dubiraphia* sp., *Oulimnius* sp.), odonate (*Ophiogomphus compressa*), and midge (*Polypedilum* sp.).

Additional species characteristic of streams in the Alleghany Plateau may include fishes such as tonguetied minnow (*Exoglossum laurae*), variegated darter (*Etheostoma variegatum*), greenside darter (*E. blenniodes*), rainbow darter (*E. caeruleum*), mimic shiner (*Notropis volucellus*), bigmouth shiner (*N. dorsalis*), striped shiner (*Luxilus chrysocephalus*), golden redhorse (*Moxostoma erythrurum*) and log perch (*Percina caprodes*); the amphibian longtail salamander (*Eurycea longicauda*); and the macroinvertebrates mayflies (*Sweltsa* sp., *Leuctra* sp., *Stenacron* spp., *Paraleptophlebia* spp.), caddisflies (*Lepidostoma* sp., *Polycentropus* sp., *Diplectronea modesta*, *Goera sylvata*), stoneflies (*Yugus* sp.), alderfly (*Sialis* sp.), water penny beetle (*Ectopria* sp.), odonates (*Lanthus parvulus*, *Calopteryx amata*, *C. angustipennis*), and caddisflies (*Neophylax* sp., *Hydropsyche* spp., *Pycnopsyche psilotreta*, *Glossoma nigrior*).

Distribution: throughout upstate New York north of the Coastal Lowlands ecozone, especially at high elevations.

Rank: G4 S4

Confined river: the aquatic community of relatively large, fast flowing sections of streams with a moderate to gentle gradient. The name of this community has been changed from “midreach stream” to better reflect the concept. These streams have well-defined pattern of alternating pools, riffles, and runs. Confined rivers usually have poorly defined meanders (i.e., low sinuosity), occur in confined valleys and are most typical of the midreaches of stream systems. These streams are typically of moderate depth, width and low flow discharge and usually represent a network of 3rd to 4th order stream segments. Most of the erosion is lateral, creating braids, channel islands, and bars, and deposition is moderate with a mix of coarse rocky to sandy substrate. Waterfalls are typically present; these are here treated as features of the more broadly defined community. The predominant source of energy is generated in the stream (these are autochthonous streams). These streams have high water clarity and are well oxygenated. They are typically surrounded by open upland riverside communities including riverside sand/gravel bar, cobble shore or one of the shoreline outcrop communities.

Species assemblages characteristic of riffles and rocky bottoms dominate the community. Fish diversity is typically high to moderate. Characteristic fishes include creek chub (*Semotilus atromaculatus*), pumpkinseed (*Lepomis gibbosus*), common shiner (*Luxilus cornutus*), and trout-perch (*Percopsis omiscomaycus*) in pools; rosyface shiner (*Notropis rubellus*) at the head of pools; tessellated darter (*Etheostoma olmstedi*), longnose dace (*Rhinichthys cataractae*), slimy sculpin (*Cottus cognatus*) or mottled sculpin (*C. bairdi*), and stonecat (*Noturus flavus*) in riffles; and bluntnose minnow (*Pimephales notatus*) and northern hogsucker (*Hypentelium nigricans*) in runs. Other characteristic fishes may include blacknose dace (*Rhinichthys atratulus*) and fantail darter (*Etheostoma flabellare*). Common introductions are rainbow trout (*Salmo gairdneri*), brown trout (*S. trutta*), and (in streams where it is not native) smallmouth bass (*Micropterus dolomieu*). Characteristic mollusks include eastern elliptio (*Elliptio complanta*), eastern floater (*Pyganodon cataracta*), fingernail clams (*Sphaerium* spp.). Other macroinvertebrates are diverse; characteristic macroinvertebrates include riffle and rocky bottom specialists as well as algae shredders such as crayfish (Cambaridae), mayflies (Ephemeroptera including Ephemeridae, Heptageniidae, *Isonychia* sp.), stoneflies (Plecoptera including Chloroperlidae, *Acroneuria* sp., *Neoperla* sp.), caddisflies (Trichoptera including Hydropsychidae, *Helicopsyche* sp., *Dolophilodes* sp., *Rhyacophila* sp.), crane fly (*Hexatoma* sp.), beetles (*Oulimnius* sp., *Psephenus* sp.), dobsonflies (Corydalidae), midge (*Polypedilum* sp.), crane flies (Tipulidae), and blackflies (Simuliidae). Odonate (Odonata including Calopterygidae) larvae may be characteristic of runs. True bugs (Gerridae, Vellidae, Mesovellidae) are characteristic of pools).

Epilithic algae are the predominate plant. Aquatic macrophytes are usually sparse; typical aquatic macrophytes include waterweed (*Elodea canadensis*) and linear-leaved pondweeds such as sago pondweed (*Potamogeton pectinatus*). An additional characteristic vascular plant may be *Podostemum ceratophyllum*. Bryophytes are often confined to shallows and the intermittently exposed channel perimeter.

Four to six variants associated with a combination of ecoregions (including Northern Appalachian, Great Lakes, Lower New England and Alleghany Plateau ecoregions) or major watersheds (including Great Lakes, Hudson River, Alleghany River, Susquehanna/Delaware Rivers) are suspected to differ substantially in dominant and characteristic vascular plants, fishes, mollusks, insects, and algae as well as water chemistry (especially alkalinity and color), water temperature, underlying substrate type, and surrounding forest type. In addition, biota is suspected to differ among streams of moderate size (roughly 3rd to 4th order streams) and large size (roughly 5th to 6th order streams). Aquatic connectivity factors are thought to strongly influence the fish and mollusk composition. Species characteristic of Northern Appalachian streams may include the fishes brook trout (*Salvelinus fontinalis*), cutlips minnow (*Exoglossum maxillingua*), longnose sucker (*Catostomus catostomus*), and white sucker (*C. commersoni*); and the macroinvertebrates eastern pearlshell (*Margaritifera margaritifera*), and odonates (*Gomphus* spp., *Progomphus obscurus*).

Species characteristic of streams in the Saint Lawrence River and Lake Champlain Valley may include a diverse assemblage of mollusks such as heelsplitters (*Potamilus* sp. and *Lasmigona* sp.), lampmussels (*Lampsilus* spp. including *L. cariosa*), *Leptodea* sp., triangle floater (*Alasmidonta undulata*), creekmussel (*Strophitus* sp.), pondmussel (*Ligumia* sp.), *Anodontoides* sp., and pea clams (*Pisidium* spp.). Other macroinvertebrates characteristic of streams in this region may include beetles (*Promeresia* sp., *Stenelmis* sp., *Dubiraphia* sp.), caddisflies (*Chimara* sp., *Phylocentropus* sp.), mayfly (*Hexagenia* sp.), amphipod (*Gammarus* sp.), and true flies (*Sphaeromias* sp., *Culicoides* sp.).

Species characteristic of Alleghany Plateau and Great Lakes streams may include the fishes greenside darter (*E. blennioides*) and rainbow darter (*Etheostoma caeruleum*), central stoneroller (*Campostoma anomalum*), silverjaw minnow (*Ericymba buccata*), spotted darter (*Etheostoma maculatum*), golden redhorse (*Moxostoma erythrurum*) and shorthead redhorse (*M. macrolepidotum*); the mollusks mucket (*Actinonaias ligmentina*), Ohio pigtoe (*Pleurobema cordatum*), kidneyshell (*Ptychobranhus fasciolaris*), fluted-shell (*Lasmigona costata*), lampmussels (*Lampsilis fasciola*, *L. ventricosa*), and spike (*Elliptio dihtata*); and the other macroinvertebrates mayfly (*Stenonema* spp.), and caddisfly (*Cheumatopsyche* sp.).

More data on regional variants are needed.

Distribution: throughout New York State.

Rank: G4 S4

Intermittent stream: the community of small, intermittent or ephemeral streambed in the uppermost segments of stream systems where water flows only during the spring or after a heavy rain and often remains longer, ponded in isolated pools. These streams typically have a moderate to steep gradient and hydric soils.

The streambed may be covered with diverse emergent and submergent bryophytes; characteristic bryophytes may include *Bryhnia novae-angliae*, *Bryum pseudotriquetrum*, *Chiloscyphus polyanthus*, *Hygrohypnum ochraceum*, *H. eugyrium*, *Hygroamblystegium tenax*, *Fontinalis* spp., *Brachythecium rivulare*, *B. plumosum*, *Eurhynchium ripariodes*, *Mnium affine*, *Scapania nemorosa* and *S. undulata*. Characteristic vascular plants are hydrophytic and may

include water-carpet (*Chrysosplenium americanum*) and pennywort (*Hydrocotyle americana*). Fauna is diverse and limited to species that do not require a permanent supply of running water, that inhabit the streambed only during the rainy season, or that are pool specialists. Characteristic fauna include amphibians such as green frog (*Rana clamitans*) and northern two-lined salamander (*Eurycea bislineata*), and macroinvertebrates such as water striders (*Gerris* sp.), water boatman (Corixidae), caddisflies (Trichoptera), mayflies (Ephemeroptera), stoneflies (Plecoptera), midges (Chironomidae), blackflies (Simuliidae) and crayfish (*Cambarus bartoni*).

Four to seven ecoregional variants are suspected to differ in dominant and characteristic bryophytes and insects as well as water chemistry, water temperature, underlying substrate type, and surrounding forest type. In addition, there may be a unique alpine/subalpine variant and different variants associated with acidic versus calcareous substrates. Examples surveyed on the Alleghany Plateau are dominated by stoneflies in the family Perlodidae, and several mayflies (Heptageniidae, *Sweltsa* sp., *Clioperla* sp. and *Ameletus* sp.). Biota characteristic of this region may include northern pygmy clubtail (*Lanthus parvulus*), craneflies (*Hexatoma* sp.), caddisflies (*Pycnopsyche* sp., and *Neophylax* sp.) and stoneflies (*Peltoperla* sp.).

More data on regional variants are needed.

Distribution: throughout New York State.

Rank: G4 S4

Spring: the aquatic community of very small, cold stream sources where the flow is perennial. Springs are characterized by water with constant cold temperature and rich in dissolved oxygen. These streams are typically very shallow and have a short length and relatively constant and very low discharge. Stream gradient, substrate and the proportion of flow microhabitats can vary greatly between examples. These streams may adjoin to any other aquatic community, but are typically found in association with headwater streams.

Species diversity may be high, and assemblages characteristic of riffles may dominate the community. They are known in the literature as “medicolous habitat” or “spring creeks.” Fishes are absent. Characteristic amphibians may include dusky salamander (*Desmognathus fuscus fuscus*). Characteristic and dominant macroinvertebrates may include Tricladida, several caddisflies (Limnephilidae, *Lepidostoma* sp., *Rhyacophila* sp., *Dolophilodes distinctus*, *Pycnopsyche gentilis*), several stoneflies (Perlodidae, Chloroperlidae, *Peltoperla* sp, *Sweltsa* sp.), craneflies (Tipulidae), springtails (*Orchesella* sp.), mayflies (Ephemeroptera), clubtails (*Lanthus parvulus*, *L. vernalis*), and beetles (Coleoptera). Some low diversity examples studied by Sutton (1998) with cold alkaline water on the Great Lakes Plain are dominated by the amphipod *Gammarus pseudolimnaeus*, the mayfly *Ephemerella* spp., and midges (Chironomidae). Characteristic vascular plants may include water-carpet (*Chrysosplenium americanum*), wood nettle (*Laportea canadensis*), clearweed (*Pilea pumila*), sedge (*Carex scabrata*), and Pennsylvania bittercress (*Cardamine pensylvanica*). Characteristic bryophytes may include *Brachythecium* spp. and *Fissidens* spp.

Four to seven ecoregional variants (including Northern Appalachian, Lower New England, Great Lakes and Alleghany Plateau types) are suspected to differ in dominant and characteristic vascular plants, fishes, mollusks, and insects as well as water chemistry, water temperature,

underlying substrate type, and surrounding forest type. More data on this community are needed.

Distribution: throughout New York State.

Rank: G4G5? S3S4?

Canal: the aquatic community of an artificial waterway or modified stream channel constructed for inland navigation or irrigation. Most canals have a low gradient between locks; however some feeder canals (built to supply water to another canal) have a steep gradient and are not navigable.

Characteristic fishes include brook stickleback (*Culaea inconstans*), central mudminnow (*Umbra limi*), brook silverside (*Labidesthes sicculus*), and pikes (Esocidae).

Distribution: throughout New York State.

Rank: G5 S5

Ditch/artificial intermittent stream: the aquatic community of an artificial waterway constructed for drainage or irrigation of adjacent lands. Water levels either fluctuate in response to variations in precipitation and groundwater levels, or water levels are artificially controlled. The sides of ditches are often vegetated, with grasses and sedges usually dominant. Exotic or weedy species are common. Purple loosestrife (*Lythrum salicaria*), reedgrass (*Phragmites australis*), and reed canary grass (*Phalaris arundinacea*) often become established and may form dense, monospecific stands. Reed canary grass is often planted along ditches for erosion control. Other plants that are characteristic include sedges (*Carex* spp.) and cattails (*Typha* spp.). Algae indicative of eutrophic conditions may be abundant.

Distribution: throughout New York State.

Rank: G5 S5

Winter-stratified monomictic lake: the aquatic community of a large, shallow lake that has only one period of mixing each year because it is very shallow in relation to its size (e.g., Oneida Lake, with a mean depth less than 6 m (20 ft), and surface area of approx. 200 km² (80 square miles), and is completely exposed to winds. These lakes continue to circulate throughout the summer; stratification becomes disrupted at some point during an average summer. These lakes typically never become thermally stratified in the summer, and are only stratified in the winter when they freeze over, and become inversely stratified (coldest water at the surface). They are eutrophic to mesotrophic.

Littoral, and epilimnion species assemblages predominate. Pelagic species assemblages are well developed. Characteristic fishes are walleye (*Stizostedion vitreum*), largemouth bass (*Micropterus salmoides*), yellow perch (*Perca flavescens*), bullhead (*Ictalurus* sp.), white sucker (*Catostomus commersoni*), muskellunge (*Esox masquinongy*), and trout perch (*Percopsis omiscomaycus*).

Characteristic macroinvertebrates may include isopods (Isopoda), amphipods (Amphipoda), and ramshorn snails (Planorbidae). Characteristic phytoplankton may include *Dinobryon* sp., and *Ceratium* sp. Vascular plants are typically diverse. Characteristic aquatic macrophytes include water stargrass (*Heteranthera dubia*), coontail (*Ceratophyllum demersum*), waterweed (*Elodea* spp.), naiad (*Najas flexilis*), tapegrass (*Vallisneria americana*), and pondweeds (*Potamogeton perfoliatus*, *P. pectinatus*, *P. pusillus*, *P. richardsonii*, *P. nodosus*, *P. zosteriformis*). The macroalgae *Chara* may be abundant.

Only two to three ecoregional variants are suspected (Great Lakes, Northern Appalachian, and possibly Lower New England types), potentially differing in dominant, and characteristic vascular plants, fishes, mollusks, and insects.

Distribution: uncommon in upstate New York, north of the Coastal Lowlands ecozone, and probably restricted to the Great Lakes Plains ecozone, and the St. Lawrence River valley of the Adirondacks ecozone.

Rank: G3G4 S2

Eutrophic pond: the aquatic community of a small, shallow, nutrient-rich pond. The water is usually green with algae, and the bottom is mucky. Eutrophic ponds are too shallow to remain stratified throughout the summer; they are winter-stratified, monomictic ponds. Additional characteristic features of a eutrophic pond include the following: water that is murky, with low transparency (Secchi disk depths typically less than 4 m); water rich in plant nutrients (especially high in phosphorus, nitrogen, and calcium), high primary productivity (inorganic carbon fixed = 75 to 250 g/m²/yr), and a weedy shoreline. Alkalinity is typically high (greater than 12.5 mg/l calcium carbonate). A name change, and slight conceptual change to alkaline pond is being evaluated.

Species diversity is typically high. Aquatic vegetation is abundant. Littoral, and epilimnion species assemblages usually predominate. Characteristic plants include coontail (*Ceratophyllum demersum*), duckweeds (*Lemna minor*, *L. trisulca*), waterweed (*Elodea canadensis*), pondweeds (*Potamogeton* spp.), water starwort (*Heteranthera dubia*), bladderworts (*Utricularia* spp.) naiad (*Najas flexilis*), tapegrass (*Vallisneria americana*), algae (*Cladophora* spp.), yellow pond-lily (*Nuphar luteum*), and white water-lily (*Nymphaea odorata*). Characteristic fishes are usually warmwater fishes. Characteristic macroinvertebrates may include several types of odonates (*Aeshna* spp., *Ischnura* spp., *Gomphus* spp., and *Basiaeschna* spp.), and leeches (Hirundinae). Characteristic and dominant plankton may include the phytoplankton *Chryso-sphaerella longispina*, and *Ceratium* spp., and the zooplankton nauplii, rotifers such as *Keratella*, cyclopoids, and cladocerans.

Three to seven ecoregional variants (including Northern Appalachian, Great Lakes, Lower New England types) are suspected to differ in dominant, and characteristic vascular plants, fishes, mollusks, and insects. Flow-through or fluvial pond might be a distinct variant worthy of recognition as a separate community type, but needs further evaluation. Flow-through ponds are closely associated with riverine complexes (e.g., large natural widenings of rivers or large beaver impoundments of river channels), and have a high flushing rate. Characteristic animals of flow-through ponds may include beaver (*Castor canadensis*). More community data are needed.

Distribution: throughout New York State, and is more common at low elevations, especially in the Great Lakes Plain ecozone, and St. Lawrence River Valley.

Rank: G4 S4

Farm pond/artificial pond: the aquatic community of a small pond constructed on agricultural or residential property. These ponds are often eutrophic, and may be stocked with panfish such as bluegill (*Lepomis macrochirus*) and yellow perch (*Perca flavescens*). The biota are variable (within limits), reflecting the species that were naturally or artificially seeded, planted, or stocked in the pond.

Distribution: throughout New York State.

Rank: G5 S5

Deep emergent marsh: a marsh community that occurs on mineral soils or fine-grained organic soils (muck or well-decomposed peat); the substrate is flooded by waters that are not subjective to violent wave action. Water depths can range from 6 in to 6.6 ft (15 cm to 2 m); water levels may fluctuate seasonally, but the substrate is rarely dry, and there is usually standing water in the fall.

The most abundant emergent aquatic plants are cattails (*Typha angustifolia*, *T. latifolia*), wild rice (*Zizania aquatica*), bur-weeds (*Sparganium eurycarpum*, *S. androcladum*), pickerel weed (*Pontederia cordata*), bulrushes (*Scirpus tabernaemontani*, *S. fluviatilis*, *S. heterochaetus*, *S. acutus*, *S. pungens*, *S. americanus*), arrowhead (*Sagittaria latifolia*), arrowleaf (*Peltandra virginica*), rice cutgrass (*Leersia oryzoides*), bayonet rush (*Juncus militaris*), water horsetail (*Equisetum fluviatile*) and bluejoint grass (*Calamagrostis canadensis*).

The most abundant floating-leaved aquatic plants are fragrant water lily (*Nymphaea odorata*), duckweeds (*Lemna minor*, *L. trisulca*), pondweeds (*Potamogeton natans*, *P. epihydrus*, *P. friesii*, *P. oakesianus*, *P. crispus*, *P. pusillus*, *P. zosteriformis*, *P. strictifolius*), spatterdock (*Nuphar variegata*), frog's-bit (*Hydrocharis morus-ranae*), watermeal (*Wolffia* spp.), water-shield (*Brasenia schreberi*), and water-chestnut (*Trapa natans*).

The most abundant submerged aquatic plants are pondweeds (*Potamogeton richardsonii*, *P. amplifolius*, *P. spirillus*, *P. crispus*, *P. zosteriformis*), coontail (*Ceratophyllum demersum*), chara (*Chara globularis*), water milfoils (*Myriophyllum spicatum*, *M. sibericum*), pipewort (*Eriocaulon aquaticum*), tapegrass (*Vallisneria americana*), liverwort (*Riccia fluitans*), naiad (*Najas flexilis*), water lobelia (*Lobelia dortmanna*), waterweed (*Elodea canadensis*), water stargrass (*Heteranthera dubia*), and bladderworts (*Utricularia vulgaris*, *U. intermedia*).

Animals that may be found in deep emergent marshes include red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), bullfrog (*Rana catesbeiana*), and painted turtle (*Chrysemys picta*). Rare species in some deep emergent marshes include American bittern (*Botaurus lentiginosus*), Virginia rail (*Rallus limicola*), and pied-billed grebe (*Podilymbus podiceps*).

Marshes that have been disturbed are frequently dominated by aggressive weedy species such as purple loosestrife (*Lythrum salicaria*) and reedgrass (*Phragmites australis*). Deep emergent marshes also occur in excavations that contain standing water (e.g., roadside ditches, gravel pits).

Distribution: throughout New York State.

Rank: G5 S5

Shallow emergent marsh: a marsh meadow community that occurs on mineral soil or deep muck soils (rather than true peat), that are permanently saturated and seasonally flooded. This marsh is better drained than a deep emergent marsh; water depths may range from 6 in to 3.3 ft (15 cm to 1 m) during flood stages, but the water level usually drops by mid to late summer and the substrate is exposed during an average year.

Most abundant herbaceous plants include bluejoint grass (*Calamagrostis canadensis*), cattails (*Typha latifolia*, *T. angustifolia*, *T. x glauca*), sedges (*Carex* spp.), marsh fern (*Thelypteris palustris*), manna grasses (*Glyceria pallida*, *G. canadensis*), spikerushes (*Eleocharis smalliana*, *E. obtusa*), bulrushes (*Scirpus cyperinus*, *S. tabernaemontani*, *S. atrovirens*), three-way sedge (*Dulichium arundinaceum*), sweetflag (*Acorus americanus*), tall meadow-rue (*Thalictrum pubescens*), marsh St. John's-wort (*Triadenum virginicum*), arrowhead (*Sagittaria latifolia*), goldenrods (*Solidago rugosa*, *S. gigantea*), eupatoriums (*Eupatorium maculatum*, *E. perfoliatum*), smartweeds (*Polygonum coccineum*, *P. amphibium*, *P. hydropiperoides*), marsh bedstraw (*Galium palustre*), jewelweed (*Impatiens capensis*), loosestrifes (*Lysimachia thyrsiflora*, *L. terrestris*, *L. ciliata*). Frequently in degraded examples reed canary grass (*Phalaris arundinacea*) and/or purple loosestrife (*Lythrum salicaria*) may become abundant.

Sedges (*Carex* spp.) may be abundant in shallow emergent marshes, but are not usually dominant. Marshes must have less than 50% cover of peat and tussock-forming sedges such as tussock sedges (*Carex stricta*), otherwise it may be classified as a sedge meadow. Characteristic shallow emergent marsh sedges include *Carex stricta*, *C. lacustris*, *C. lurida*, *C. hystricina*, *C. alata*, *C. vulpinoidea*, *C. comosa*, *C. utriculata*, *C. scoparia*, *C. gynandra*, *C. stipata*, and *C. crinita*.

Other plants characteristic of shallow emergent marshes (most frequent listed first) include blue flag iris (*Iris versicolor*), sensitive fern (*Onoclea sensibilis*), common skullcap (*Scutellaria galericulata*), beggarticks (*Bidens* spp.), water-horehounds (*Lycopus uniflorus*, *L. americanus*), bur-weeds (*Sparganium americanum*, *S. eurycarpum*), swamp milkweed (*Asclepias incarnata*), water-hemlock (*Cicuta bulbifera*), asters (*Aster umbellatus*, *A. puniceus*), marsh bellflower (*Campanula aparinoides*), water purslane (*Ludwigia palustris*), royal and cinnamon ferns (*Osmunda regalis*, *O. cinnamomea*), marsh cinquefoil (*Potentilla palustris*), rushes (*Juncus effusus*, *J. canadensis*), arrowleaf (*Peltandra virginica*), purple-stem angelica (*Angelica atropurpurea*), water docks (*Rumex orbiculatus*, *R. verticillatus*), turtlehead (*Chelone glabra*), waterparsnip (*Sium suave*), and cardinal flower (*Lobelia cardinalis*).

Shallow emergent marshes may have scattered shrubs including rough alder (*Alnus incana* ssp. *rugosa*), waterwillow (*Decodon verticillatus*), shrubby dogwoods (*Cornus amomum*, *C. sericea*), willows (*Salix* spp.), meadow sweet (*Spiraea alba* var. *latifolia*), and buttonbush

(*Cephalanthus occidentalis*). Areas with greater than 50% shrub cover are classified as shrub swamps.

Amphibians that may be found in shallow emergent marshes include frogs such as eastern American toad (*Bufo a. americanus*), northern spring peeper (*Pseudoacris c. crucifer*), green frog (*Rana clamitans melanota*), and wood frog (*Rana sylvatica*); and salamanders such as northern redback salamander (*Plethodon c. cinereus*) (Hunsinger 1999). Birds that may be found include red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and common yellowthroat (*Geothlypis trichas*) (Levine 1998).

Shallow emergent marshes typically occur in lake basins and along streams often intergrading with deep emergent marshes, shrub swamps and sedge meadows, and they may occur together in a complex mosaic in a large wetland.

Distribution: throughout New York State.

Rank: G5 S5

Shrub swamp: an inland wetland dominated by tall shrubs that occurs along the shore of a lake or river, in a wet depression or valley not associated with lakes, or as a transition zone between a marsh, fen, or bog and a swamp or upland community. The substrate is usually mineral soil or muck. This is a very broadly defined type that includes several distinct communities and many intermediates. Shrub swamps are very common and quite variable. They may be co-dominated by a mixture of species, or have a single dominant shrub species.

In northern New York many shrub swamps are dominated by alder (*Alnus incana* ssp. *rugosa*); these swamps are sometimes called *alder thickets*. A swamp dominated by red osier dogwood (*Cornus sericea*), silky dogwood (*C. amomum*) and willows (*Salix* spp.) may be called a shrub carr. Along the shores of some lakes and ponds there is a distinct zone dominated by water-willows (*Decodon verticillatus*) and/or buttonbush (*Cephalanthus occidentalis*) which can sometimes fill a shallow basin.

Characteristic shrubs that are common in these and other types of shrub swamps include meadow-sweet (*Spiraea alba* var. *latifolia*), steeple-bush (*Spiraea tomentosa*), gray dogwood (*Cornus foemina* ssp. *racemosa*), swamp azalea (*Rhododendron viscosum*), highbush blueberry (*Vaccinium corymbosum*), male-berry (*Lyonia ligustrina*), smooth alder (*Alnus serrulata*), spicebush (*Lindera benzoin*), willows (*Salix bebbiana*, *S. discolor*, *S. lucida*, *S. petiolaris*), wild raisin (*Viburnum cassinoides*), and arrowwood (*Viburnum recognitum*). More documentation and research is needed to distinguish the different types of shrub swamps in New York.

Birds that may be found in shrub swamps include common species such as common yellowthroat (*Geothlypis trichas*), and rare species such as American bittern (*Botarus lentiginosus*), alder flycatcher (*Empidonax alnorum*), willow flycatcher (*E. trallii*), and Lincoln=s sparrow (*Passerella lincolni*) (Levine 1998).

Distribution: throughout New York State.

Rank: G5 S5

Floodplain forest: a hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. These sites are characterized by their flood regime; low areas are annually flooded in spring, and high areas are flooded irregularly. Some sites may be quite dry by late summer, whereas other sites may be flooded again in late summer or early autumn (these floods are caused by heavy precipitation associated with tropical storms). This is a broadly defined community; floodplain forests are quite variable and may be very diverse.

The most abundant trees include silver maple (*Acer saccharinum*), ashes (*Fraxinus pensylvanica*, *F. nigra*, *F. americana*), cottonwood (*Populus deltoides*), red maple (*Acer rubrum*), box elder (*Acer negundo*), elms (*Ulmus americana*, *U. rubra*), hickories (*Carya cordiformis*, *C. ovata*, *C. laciniosa*), butternut and black walnut (*Juglans cinerea*, *J. nigra*), sycamore (*Platanus occidentalis*), oaks (*Quercus bicolor*, *Q. palustris*), and river birch (*Betula nigra*). Other less frequently occurring trees include hackberry (*Celtis occidentalis*), tulip tree (*Liriodendron tulipifera*), basswood (*Tilia americana*), and sugar maple (*Acer saccharum*). Introduced trees, such as white willow (*Salix alba*) and black locust (*Robinia pseudo-acacia*), have become established in some floodplain forests.

The most abundant shrubs include spicebush (*Lindera benzoin*), ironwood (*Carpinus carolinianus*), bladdernut (*Staphylea trifoliata*), speckled alder (*Alnus incana* spp. *rugosa*), dogwoods (*Cornus sericea*, *C. foemina* spp. *racemosa*, *C. amomum*), viburnums (*Viburnum cassinoides*, *V. prunifolium*, *V. dentatum*, *V. lentago*), and sapling canopy trees. Invasive exotic shrubs that may be locally abundant include shrub honeysuckles (*Lonicera tatarica*, *L. morrowii*), and multiflora rose (*Rosa multiflora*). Other less frequently occurring shrubs include meadowsweet (*Spiraea alba* var. *latifolia*) and winterberry (*Ilex verticillata*).

The most abundant vines include poison ivy (*Toxicodendron radicans*), wild grapes (*Vitis riparia*, *Vitis* spp.), Virginia creeper (*Parthenocissus quinquefolia*), virgin's bower (*Clematis virginiana*), and less frequently, moonseed (*Menispermum canadense*). Vines may form a dense liana in tree canopy and/or dominate the groundcover.

The most abundant herbs include sensitive fern (*Onoclea sensibilis*), jewelweeds (*Impatiens capensis*, *I. pallida*), ostrich fern (*Matteuccia struthiopteris*), white snakeroot (*Eupatorium rugosum*), wood nettle (*Laportea canadensis*), false nettle (*Boehmeria cylindrica*), goldenrods (*Solidago gigantea*, *S. canadensis*, *Solidago* spp.), lizard's tail (*Saururus cernuus*), and jumpseed (*Polygonum virginianum*). Invasive exotic herbs that may be locally abundant include moneywort (*Lysimachia nummularia*), garlic mustard (*Alliaria petiolata*), dame's rockets (*Hesperis matronalis*), and stilt grass (*Microstegium vimineum*). Other less frequently occurring herbs include skunk cabbage (*Symplocarpus foetidus*), enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*), bluejoint grass (*Calamagrostis canadensis*), white avens (*Geum canadense*), clearweed (*Pilea pumila*), jack-in-the-pulpit (*Arisaema triphyllum*), rice cutgrass (*Leersia oryzoides*), sedges (*Carex lacustris*, *C. intumescens*, *C. lupulina*), and many others.

Characteristic birds include yellow-throated vireo (*Vireo flavifrons*), tufted titmouse (*Parus bicolor*), red-bellied woodpecker (*Melanerpes carolinus*), and pileated woodpecker (*Dryocopus pileatus*).

The composition of the forest apparently changes in relation to flood frequency and elevation of floodplain terraces along larger rivers. Neighboring states recognize several floodplain forest variants based on dominant plants, flood regime, and topographic position (Fike 1999, Kearsley 1999, Sorenson et al. 1998). The composition of floodplain forests in New York

State has not been studied in sufficient detail to characterize compositional variations and how they correlate with flood regime and terrace elevation.

Distribution: throughout upstate New York, north of the Coastal Lowlands ecozone.

Rank: G3G4 S2S3

Silver maple-ash swamp: a hardwood basin swamp that typically occurs in poorly-drained depressions or along the borders of large lakes, and less frequently in poorly drained soils along rivers. These sites are characterized by uniformly wet conditions with minimal seasonal fluctuations in water levels.

The dominant trees are usually silver maple (*Acer saccharinum*) and green ash (*Fraxinus pennsylvanica*). American elm (*Ulmus americana*) is often present and probably was a codominant prior to the onset of Dutch elm disease and elm yellows. Other trees include black ash (*F. nigra*), white ash (*F. americana*), swamp white oak (*Quercus bicolor*), red maple (*Acer rubrum*), and occasionally the silver maple-red maple hybrid “Freeman’s maple” (*Acer x freemanii*). Many of the canopy trees occur in the subcanopy along with ironwood (*Carpinus carolinianus*).

Characteristic shrubs include winterberry (*Ilex verticillata*), spicebush (*Lindera benzoin*), various shrubby dogwoods (*Cornus foemina* ssp. *racemosa*, *C. amomum*, and *C. sericea*), various viburnums (*Viburnum recognitum*, *V. lentago*, and *V. cassinoides*), speckled alder (*Alnus incana* ssp. *rugosa*), gooseberries (*Ribes* spp.), and sapling canopy trees. Characteristic vines include Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*).

Characteristic herbs include sensitive fern (*Onoclea sensibilis*), skunk cabbage (*Symplocarpus foetidus*), false nettle (*Boehmeria cylindrica*), wood-nettle (*Laportea canadensis*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*O. regalis*), marsh fern (*Thelypteris palustris*), jewelweed (*Impatiens capensis*), manna grasses (*Glyceris striata*, *G. grandis*), and various sedges (*Carex lupulina*, *C. crinita*, *C. bromoides*, and *C. lacustris*). Other herbs in wetter examples include arrow arum (*Peltandra virginica*), arrowheads (*Sagittaria* spp.), wild calla (*Calla palustris*), cattail (*Typha latifolia*), and duckweeds (*Lemna* spp.). A few examples are dominated by reed canary grass (*Phalaris arundinacea*) and/or lizard’s tail (*Saururus cernuus*).

Silver maple-ash swamps are often underlain by calcareous bedrock and may contain a few calciphilic species, such as northern white cedar (*Thuja occidentalis*) and alder-leaf buckthorn (*Rhamnus alnifolia*). Ash-elm dominated swamps with little or no maple are tentatively included here until more data are collected on this variant.

Data on characteristic animals are needed.

Distribution: in central and western New York in the Appalachian Plateau ecozone, and in the Champlain Valley sub-zone of the Lake Champlain ecozone.

Rank: G3G4 S2S3

Vernal pool: an aquatic community of one or more associated intermittently to ephemerally ponded, small, shallow depressions typically within an *upland* forest, but also within various palustrine and other terrestrial communities. Vernal pools are typically flooded in spring or after a heavy rainfall, but are usually dry during summer. Many vernal pools are filled again in autumn. Substrate is typically dense leaf litter over hydric soils. Substrate type is known to vary from deep sands to loam to sandstone pavement. Vernal pools typically occupy a confined basin (i.e., a standing waterbody without a flowing outlet), but have an intermittent stream flowing out of it during high water. Several hydrologic types of vernal pools have been identified including natural isolated basins, floodplain basins, in-stream basins, swamp pools, and marsh pools (Barbour 1999).

This community includes a diverse group of invertebrates and amphibians that depend upon temporary pools as breeding habitat. Since vernal pools cannot support fish populations, there is no threat of fish predation on amphibian eggs or invertebrate larvae. Characteristic animals of vernal pools include species of amphibians, reptiles, crustaceans, mollusks, annelids, and insects. Vernal pool species can be categorized as either obligate (species that depend upon vernal pool habitat for their survival), or facultative (species that are often found in vernal pools, but are not dependent on them and can successfully reproduce elsewhere) (Colburn 1997).

Obligate vernal pool amphibians include spotted salamander (*Ambystoma maculatum*), blue-spotted salamander (*A. laterale*), Jefferson's salamander (*A. jeffersonianum*), marbled salamander (*A. opacum*) and wood frog (*Rana sylvatica*). Fairy shrimp (*Anostraca*) are obligate vernal pool crustaceans, with *Eubbranchipus* spp. being the most common.

Facultative vernal pool amphibians include four-toed salamander (*Hemidactylum scutatum*), red-spotted newt (*Notophthalmus viridescens*), spring peeper (*Pseudacris crucifer*), gray tree frog (*Hyla versicolor*), green frog (*Rana clamitans*), American toad (*Bufo americanus*), and Fowler's toad (*B. woodhousei fowleri*). Facultative vernal pool reptiles include painted turtle (*Chrysemys picta*), spotted turtle (*Clemmys guttata*), and snapping turtle (*Chelydra serpentina*). Facultative vernal pool mollusks include freshwater fingernail clams (*Sphaerium* sp., *Musculium* sp., and *Pisidium* sp.) and aquatic amphibious snails (*Physa* sp., *Lymnaea* sp., and *Helisoma* sp.). Facultative vernal pool insects include water scorpions, (), predacious diving beetles (*Dytiscidae*), whirligig beetles (*Gyrinidae*), dobsonflies (*Corydalidae*), caddisflies (*Trichoptera*), dragonflies (*Anisoptera*), damselflies (*Zygoptera*), mosquitoes (*Cuculidae*), springtails (*Collembola*) and water striders (*Gerris* sp.). Leeches (*Hirudinea*) are a facultative vernal pool annelid.

Plants are predominantly hydrophytic, typically with a combination of obligate and facultative wetland species. Floating and submergent plants may be common, but emergent plants should be sparse or lacking. Characteristic vascular plants may include mannagrass (*Glyceria* sp.), spikerush (*Eleocharis acicularis*), water purslane (*Ludwigia palustris*), naiad (*Najas* sp.), duckweed (*Lemna minor*), and water-hemlock (*Cicuta maculata*). Characteristic bryophytes may include *Brachythecium rivulare*, *Calliargon* sp. and *Sphagnum* spp. A characteristic rare plant of examples on the coastal plain may be featherfoil (*Hottonia inflata*).

Five to seven ecoregional variants (including Northern Appalachian, Great Lakes, Lower New England, Alleghany Plateau and North Atlantic Coast types) are suspected to differ in characteristic and dominant vascular plants, amphibians and invertebrates, as well as water

chemistry, water temperature, substrate type, and surrounding forest type. More data on regional variants are needed.

Distribution: throughout New York State.

Rank: G4 S3S4

Hemlock-hardwood swamp: a mixed swamp that occurs on mineral soils and deep muck in depressions which receive groundwater discharge, typically in areas where the aquifer is a basic or acidic substrate. These swamps usually have a fairly closed canopy (70 to 90% cover), sparse shrublayer, and low species diversity.

The tree canopy is typically dominated by hemlock (*Tsuga canadensis*), and co-dominated by yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Other less frequently occurring trees include white pine (*Pinus strobus*), black gum (*Nyssa sylvatica*), and green ash (*Fraxinus pennsylvanica*).

Characteristic shrubs include saplings of canopy trees plus highbush blueberry (*Vaccinium corymbosum*) often dominant, with great rhododendron (*Rhododendron maximum*) and sweet pepperbush (*Clethra alnifolia*) becoming more common in Lower Hudson Valley examples. Other less frequently occurring shrubs include various viburnums (*Viburnum cassinoides*, *V. lentago*, and *V. lanatanoides*), winterberry (*Ilex verticillata*), and mountain holly (*Nemopanthus mucronatus*).

Characteristic herbs are cinnamon fern (*Osmunda cinnamomea*) and sensitive fern (*Onoclea sensibilis*). Groundcover may also be fairly sparse. Other less frequently occurring herbs include sedges (*Carex trisperma*, *C. folliculata*, and *C. bromoides*), goldthread (*Coptis trifolia*), Canada mayflower (*Maianthemum canadense*), mountain sorrel (*Oxalis montana*), foamflower (*Tiarella cordifolia*), and sarsparilla (*Aralia nudicaulis*).

This is a common and widespread swamp community. Some occurrences are very small (1 to 2 acres). Water levels in these swamps typically fluctuate seasonally; they may be flooded in spring and relatively dry by late summer.

Distribution: throughout upstate New York, north of the Coastal Lowlands ecozone.

Rank: G4G5 S4

Successional old field: a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned.

Characteristic herbs include goldenrods (*Solidago altissima*, *S. nemoralis*, *S. rugosa*, *S. juncea*, *S. canadensis*, and *Euthamia graminifolia*), bluegrasses (*Poa pratensis*, *P. compressa*), timothy (*Phleum pratense*), quackgrass (*Agropyron repens*), smooth brome (*Bromus inermis*), sweet vernal grass (*Anthoxanthum odoratum*), orchard grass (*Dactylis glomerata*), common chickweed (*Cerastium arvense*), common evening primrose (*Oenothera biennis*), old-field cinquefoil (*Potentilla simplex*), calico aster (*Aster lateriflorus*), New England aster (*Aster novae-angliae*), wild strawberry (*Fragaria virginiana*), Queen-Anne=s-lace (*Daucus corota*), ragweed

(*Ambrosia artemisiifolia*), hawkweeds (*Hieracium* spp.), dandelion (*Taraxacum officinale*), and ox-tongue (*Picris hieracioides*).

Shrubs may be present, but collectively they have less than 50% cover in the community. Characteristic shrubs include gray dogwood (*Cornus foemina* ssp. *racemosa*), silky dogwood (*Cornus amomum*), arrowwood (*Viburnum recognitum*), raspberries (*Rubus* spp.), sumac (*Rhus typhina*, *R. glabra*), and eastern red cedar (*Juniperus virginiana*).

A characteristic bird is the field sparrow (*Spizella pusilla*). This is a relatively short-lived community that succeeds to a shrubland, woodland, or forest community.

Distribution: throughout New York State.

Rank: G4 S4

Successional shrubland: a shrubland that occurs on sites that have been cleared (for farming, logging, development, etc.) or otherwise disturbed. This community has at least 50% cover of shrubs.

Characteristic shrubs include gray dogwood (*Cornus foemina* ssp. *racemosa*), eastern red cedar (*Juniperus virginiana*), raspberries (*Rubus* spp.), hawthorn (*Crataegus* spp.), serviceberries (*Amelanchier* spp.), choke-cherry (*Prunus virginiana*), wild plum (*Prunus americana*), sumac (*Rhus glabra*, *R. typhina*), nanny-berry (*Viburnum lentago*), arrowwood (*Viburnum recognitum*), and multiflora rose (*Rosa multiflora*).

Birds that may be found in successional shrublands brown thrasher, blue-winged warbler, golden-winged warbler, chestnut-sided warbler, yellow-breasted chat, eastern towhee, field sparrow, song sparrow, and indigo bunting (Levine 1998).

Distribution: throughout New York State.

Rank: G4 S4

Shale talus slope woodland: an open to closed canopy woodland that occurs on talus slopes composed of shale. These slopes are rather unstable, and they are usually very well-drained, so the soils are shallow and dry. The canopy cover is usually less than 50%, due to the instability of the substrate.

Characteristic trees include chestnut oak (*Quercus montana*), pignut hickory (*Carya glabra*), red oak (*Quercus rubra*), white oak (*Q. alba*), white pine (*Pinus strobus*), white ash (*Fraxinus americana*), and eastern red cedar (*Juniperus virginiana*).

Characteristic shrubs and herbs include smooth sumac (*Rhus glabra*), scrub oak (*Quercus prinoides*), poison ivy (*Toxicodendron radicans*), penstemon (*Penstemon hirsutus*), everlasting (*Antennaria plantaginifolia*), and Pennsylvania sedge (*Carex pennsylvanica*). More data on this community are needed.

Distribution: scattered throughout upstate New York, north of the Coastal Lowlands ecozone.

Rank: G3G4 S3

Appalachian oak-hickory forest: a hardwood forest that occurs on well-drained sites, usually on ridgetops, upper slopes, or south- and west-facing slopes. The soils are usually loams or sandy loams. This is a broadly defined forest community with several regional and edaphic variants.

The dominant trees include one or more of the following oaks: red oak (*Quercus rubra*), white oak (*Q. alba*), and black oak (*Q. velutina*). Mixed with the oaks, usually at lower densities, are one or more of the following hickories: pignut (*Carya glabra*), shagbark (*C. ovata*), and sweet pignut (*C. ovalis*). Common associates are white ash (*Fraxinus americana*), red maple (*Acer rubrum*), and Eastern hop hornbeam (*Ostrya virginiana*).

There is typically a subcanopy stratum of small trees and tall shrubs including flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*), shadbush (*Amelanchier arborea*), and choke cherry (*Prunus virginiana*). Common low shrubs include maple-leaf viburnum (*Viburnum acerifolium*), blueberries (*Vaccinium angustifolium*, *V. pallidum*), red raspberry (*Rubus idaeus*), gray dogwood (*Cornus foemina* ssp. *racemosa*), and beaked hazelnut (*Corylus cornuta*). The shrublayer and groundlayer flora may be diverse.

Characteristic groundlayer herbs are wild sarsaparilla (*Aralia nudicaulis*), false Solomon's seal (*Smilacina racemosa*), Pennsylvania sedge (*Carex pensylvanica*), tick-trefoil (*Desmodium glutinosum*, *D. paniculatum*), black cohosh (*Cimicifuga racemosa*), rattlesnake root (*Prenanthes alba*), white goldenrod (*Solidago bicolor*), and hepatica (*Hepatica americana*).

Characteristic animals include red-bellied woodpecker (*Melanerpes carolinus*), whip-poor-will (*Caprimulgus vociferus*), and wild turkey (*Meleagris gallopavo*).

Distribution: throughout upstate New York north of the Coastal Lowlands ecozone; most common south of the Adirondacks ecozone.

Rank: G4G5 S4

Hemlock-northern hardwood forest: a mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps.

In any one stand, hemlock (*Tsuga canadensis*) is codominant with any one to three of the following: beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), red maple (*A. rubrum*), black cherry (*Prunus serotina*), white pine (*Pinus strobus*), yellow birch (*Betula alleghaniensis*), black birch (*B. lenta*), red oak (*Quercus rubra*), and basswood (*Tilia americana*). The relative cover of hemlock is quite variable, ranging from nearly pure stands in some steep ravines to as little as 20% of the canopy cover. Striped maple (*Acer pensylvanicum*) is often prominent as a mid-story tree.

The shrublayer may be sparse; characteristic shrubs are hobblebush (*Viburnum lantanoides*), maple-leaf viburnum (*Viburnum acerifolium*), and raspberries (*Rubus* spp.). In some ravines, especially in the southern part of the state, rosebay (*Rhododendron maximum*) forms a dense subcanopy or tall shrublayer. Canopy cover can be quite dense, resulting in low light intensities on the forest floor and hence a relatively sparse groundlayer.

Characteristic groundlayer plants are Indian cucumber-root (*Medeola virginiana*), Canada mayflower (*Maianthemum canadense*), shining clubmoss (*Lycopodium lucidulum*), common wood fern (*Dryopteris intermedia*), mountain wood fern (*Dryopteris campyloptera*), christmas

fern (*Polystichum acrostichoides*), star flower (*Trientalis borealis*), bellwort (*Uvularia sessilifolia*), common wood-sorrel (*Oxalis acetosella*), partridge berry (*Mitchella repens*), foamflower (*Tiarella cordifolia*), round-leaf violet (*Viola rotundifolia*), twisted stalk (*Streptopus roseus*), purple trillium (*Trillium erectum*), and the moss *Leucobryum glaucum*. In forests that have beech as a co-dominant, beech-drops (*Epifagus virginiana*) is a common herb.

Characteristic birds include wild turkey (*Meleagris gallopavo*), pileated woodpecker (*Dryocopus pileatus*), golden-crowned kinglet (*Regulus satrapa*), black-throated green warbler (*Dendroica virens*), and Acadian flycatcher (*Empidonax virescens*).

This is a broadly defined and very widespread community, with many regional and edaphic variants. For example, in the Hudson Valley, hemlock is sometimes codominant with red oak; in the Adirondacks, yellow birch and sugar maple are sometimes codominant, with a relatively small number of hemlocks as well as a few red spruce (*Picea rubens*). More data on the shrublayer and groundlayer composition are needed before these regional variants can be distinguished as separate types.

Distribution: throughout New York State.

Rank: G4G5 S4

Successional northern hardwoods: a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed.

Characteristic trees and shrubs include any of the following: quaking aspen (*Populus tremuloides*), big-tooth aspen (*P. grandidentata*), balsam poplar (*P. balsamifera*), paper birch (*Betula papyrifera*), or gray birch (*B. populifolia*), pin cherry (*Prunus pensylvanica*), black cherry (*P. serotina*), red maple (*Acer rubrum*), white pine (*Pinus strobus*), with lesser amounts of white ash (*Fraxinus americana*), green ash (*F. pensylvanica*), and American elm (*Ulmus americana*). Northern indicators include aspens, birches, and pin cherry. This is a broadly defined community and several seral and regional variants are known.

Characteristic birds include chestnut-sided warbler (*Dendroica pensylvanica*), Nashville warbler (*Vermivora ruficapilla*) in young forests with aspen and birch seedlings, and yellow-bellied sapsucker (*Sphyrapicus varius*) in mature aspen forests.

Distribution: throughout upstate New York north of the Coastal Lowlands ecozone.

Rank: G5 S5

Cropland/row crops: an agricultural field planted in row crops such as corn, potatoes, and soybeans. This community includes vegetable gardens in residential areas.

Distribution: throughout New York State.

Rank: G5 S5

Cropland/field crops: an agricultural field planted in field crops such as alfalfa, wheat, timothy, and oats. This community includes hayfields that are rotated to pasture. Characteristic birds include grasshopper sparrow (*Ammodramus savannarum*), vesper sparrow (*Pooecetes gramineus*), bobolink (*Dolichonyx oryzivorus*), mourning dove (*Zenaida macroura*), and upland sandpiper (*Bartramia longicauda*).

Distribution: throughout New York State.

Rank: G5 S5

Pastureland: agricultural land permanently maintained (or recently abandoned) as a pasture area for livestock. Characteristic birds include grasshopper sparrow (*Ammodramus savannarum*), vesper sparrow (*Pooecetes gramineus*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferus*), and upland sandpiper (*Bartramia longicauda*).

Distribution: throughout New York State.

Rank: G5 S5

Vineyard: a stand of cultivated vines (such as grapes, or raspberries), often with grasses as a groundcover.

Distribution: throughout New York State at low elevations.

Rank: G5 S5

Conifer plantation: a stand of softwoods planted for the cultivation and harvest of timber products, or to provide wildlife habitat, soil erosion control, windbreaks, or landscaping. This is a broadly defined community that excludes stands in which pine, spruce, or fir are dominant, although they may be present at low densities. These plantings may be monocultures, or they may be mixed stands with two or more codominant species.

Softwoods that are typically planted in these plantations include European larch (*Larix decidua*), Japanese larch (*Larix kaempferi*), and northern white cedar (*Thuja occidentalis*). Groundlayer vegetation is usually sparse, apparently because of the dense accumulation of leaf litter. Speedwell (*Veronica officinalis*) is a characteristic groundlayer plant. More data on this community are needed.

(NOTE: in the southern Honeoye Valley we mapped all softwood plantations, including those dominated by spruce, fir, pine, larch and cedar as conifer plantations)

Distribution: throughout New York State.

Rank: G5 S5

Mowed lawn/residential: residential, recreational, or commercial land, or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less than 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing.

Characteristic birds include American robin (*Turdus migratorius*), upland sandpiper (*Bartramia longicauda*), and killdeer (*Charadrius vociferus*).

(NOTE: in our study, this cover type includes mowed lawn and mowed lawn with trees)

Distribution: throughout New York State.

Rank: G5 S5

Pathway: a narrow strip of mowed vegetation along the side of a road, or a mowed pathway through taller vegetation (e.g., meadows, old fields, woodlands, forests), or along utility right-of-way corridors (e.g., power lines, telephone lines, gas pipelines). The vegetation in these mowed strips and paths may be dominated by grasses, sedges, and rushes; or it may be dominated by forbs, vines, and shrubs that can tolerate infrequent mowing.

Distribution: throughout New York State.

Rank: G5 S5

Gravel mine: an excavation in a gravel deposit from which gravel has been removed. Often these are dug into glacial deposits such as eskers or kames. Vegetation may be sparse if the mine is active; there may be substantial vegetative cover if the mine has been inactive for several years. Near-vertical slopes are used by bank swallows (*Riparia riparia*) for nesting sites.

Distribution: throughout New York State.

Rank: G5 S5

Rural structure exterior: the exterior surfaces of metal, wood, or concrete structures (such as commercial buildings, barns, houses, bridges) or any structural surface composed of inorganic materials (glass, plastics, etc.) in a rural or sparsely populated suburban area. These sites may be sparsely vegetated with lichens, mosses, and terrestrial algae; occasionally vascular plants may grow in cracks. Nooks and crannies may provide nesting habitat for birds and insects, and roosting sites for bats.

Characteristic birds include American robin (*Turdus migratorius*), on porches or under shelter, barn swallow (*Hirundo rustica*) under shelter, and exotic birds such as rock dove (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*).

Distribution: throughout New York State.

Rank: G5 S5

**Organisms of Forested Watersheds, Fields,
Streams and Wetlands of the southern Honeoye Valley**

FUNGI

MUSHROOMS

<i>Agaricus silvaticus</i>	Flat-topped agaric
<i>Amanita citrine</i>	Citrine amanita
<i>Amanita muscaria</i>	Fly agaric
<i>Amanita rubescens</i>	The blusher
<i>Amanita vaginata</i>	Grisette
<i>Amanita virosa</i>	Destroying angel
<i>Armillariella mellea</i>	Honey mushroom
<i>Boletus bicolor</i>	Two-colored bolete
<i>Cantharellus cibarius</i>	Chanterelle
<i>Cantharellus xanthopus</i>	Yellow-footed chanterelle
<i>Clavicornia pyxidata</i>	Crown-tipped coral
<i>Clavulina amethystina</i>	Violet-branched coral
<i>Clavulinopsis fusiformis</i>	Spindle-shaped yellow coral
<i>Collybia dryophila</i>	Oak-loving collybia
<i>Coprinus comatus</i>	Shaggy mane
<i>Cordyceps capitata</i>	Headlike cordyceps
<i>Crepidotus applanatus</i>	Flat crep
<i>Daedalea quercina</i>	Large maze polypore
<i>Dictyophora duplicata</i>	Netted stinkhorn
<i>Fomes fomentarius</i>	Tinder fungus
<i>Galerina autumnalis</i>	Deadly galerina
<i>Ganoderma applanatum</i>	Artist's conk
<i>Ganoderma tsugae</i>	Hemlock varnish shelf
<i>Geastrum saccatum</i>	Rounded earthstar
<i>Grifola frondosa</i>	Hen of the woods
<i>Hericium coralloides</i>	Bear's head tooth
<i>Hericium ramosum</i>	Comb tooth
<i>Hydnum repandum</i>	Sweet tooth
<i>Hygrophorus coccineus</i>	Scarlet waxy cap
<i>Hypholoma sublateritium</i>	Bricktops
<i>Laccaria laccata</i>	Common lacaria
<i>Laccaria ochropurpurea</i>	Purple-gilled lacaria
<i>Lactarius deceptivus</i>	Deceptive milky
<i>Lactarius piperatus</i>	Peppery milky
<i>Laetiporus sulphureus</i>	Sulfur shelf
<i>Lentinus ursinus</i>	Bear lintinus
<i>Leotia viscosa</i>	Green-headed jelly club
<i>Lepiota procera</i>	Parasol mushroom

<i>Lepiota rhacodes</i>	Shaggy parasol
<i>Lycoperdum perlatum</i>	Gem-studded puffball
<i>Lycoperdum pyriforme</i>	Pear-shaped puffball
<i>Marasmius rotula</i>	Pinwheel mushroom
<i>Morchella esculenta</i>	Yellow morel
<i>Mutinus caninus</i>	Elegant stinkhorn
<i>Mycena haematopus</i>	Bleeding mycena
<i>Mycena leaiana</i>	Orange mycena
<i>Omphalotus illudens</i>	Jack o'lantern
<i>Peziza badio-cionfusa</i>	Common brown cup
<i>Pholiata squarrosa</i>	Scaly pholiata
<i>Piptoporus betulinus</i>	Birch polypore
<i>Pleurocybella porrigens</i>	Angel wings
<i>Pleurotus ostreatus</i>	Oyster mushroom
<i>Polyporus squamosus</i>	Dryad's saddle
<i>Ramaria formosa</i>	Yellow-tipped coral
<i>Russula emtica</i>	Emetic russula
<i>Sarcosypha coccinea</i>	Scarlet cup
<i>Scleroderma aurantium</i>	Pigskin poison puffball
<i>Scutellinia scutellata</i>	Eyelash cup
<i>Stemonitis splendens</i>	Chocolate tube slime
<i>Strobilomyces floccopus</i>	Old man of the woods
<i>Trametes versicolor</i>	Turkey tail
<i>Tremela mesenterica</i>	Witch's butter
<i>Tyromyces chioneus</i>	White cheese polypore
<i>Xerula radicata</i>	Rooting collybia

LICHENS Lichen taxonomy based on Irwin M. Brodo, Sylvia Sharnoff and Stephen Sharnoff. 2001. Lichens of North America. Yale University Press in collaboration with the Canadian Museum of Nature. 795 p.

<i>Cladina rangiferina</i>	Gray reindeer lichen
<i>Cladonia chlorophaea</i>	Mealy pixie-cup
<i>Cladonia cristatella</i>	British soldiers
<i>Cladonia fimbriata</i>	Trumpet lichen
<i>Cladonia furcata</i>	Many forked cladonia
<i>Cladonia pyxidata</i>	Pebbled pixie-cup
<i>Cladonia rei</i>	Wand lichen
<i>Graphis scripta</i>	Common script lichen
<i>Lecidella stigmatea</i>	Disk lichen
<i>Peltigera rufescens</i>	Field dog lichen
<i>Physcia aipolia</i>	Hoary rosette lichen

BRYOPHYTES

LIVERWORTS Liverwort taxonomy based on Howard Crum. 1991. Liverworts and hornworts of southern Michigan. University of Michigan Herbarium. Ann Arbor, Michigan. 233 p.

Order Marchantiales (Thalloid liverworts)		
<i>Conocephalum conicum</i> (L.) Lindb.		Liverwort
<i>Riccia fluitans</i> L.		Liverwort
Order Metzgeriales (Thalloid and Leafy liverworts)		
<i>Pellia megaspora</i> Schust.		Liverwort
Order Jungermanniales (Leafy liverworts)		
<i>Bazzania triloba</i> (L.) S.Gray		Liverwort
<i>Calypogeja trichomanis</i> (L.) Corda		Liverwort
<i>Plagiochila porelloides</i> (Torr.) Lindenb.		Liverwort
<i>Scapania nemorea</i> (L.) Grolle		Liverwort

MOSESSES Nomenclature for mosses follows Howard Crum. 1976. Mosses of the Great Lakes Forest. University of Michigan Herbarium. Ann Arbor, Michigan. 404 p.

Sphagnopsida		
<i>Sphagnum</i> sp.		Peat moss
Bryopsida		
<i>Anomodon rostratus</i> (Hedw.) Schimp.		
<i>Atrichum undulatum</i> (Hedw.) P.Beauv.		
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.		
<i>Brachythecium</i> sp.		
<i>Brotherella recurvans</i> (Mx.) Fl.		
<i>Climacium americanum</i> Brid.		American tree moss
<i>Dicranum scoparium</i> Hedw.		Broom moss
<i>Herzogiella turfacea</i> (Lindb.) Iwats.		
<i>Hypnum imponens</i> Hedw.		
<i>Leucobryum glaucum</i> (Hedw.) Schimp.		Pin cushion moss
<i>Mnium</i> sp.		
<i>Polytrichum commune</i> Hedw.		Common hair cap moss
<i>Polytrichum juniperinum</i> Hedw.		Juniper moss
<i>Tetraphis pellucida</i> Hedw.		
<i>Thuidium delicatulum</i> (Hedw.) BSG		Common fern moss

VASCULAR PLANTS Vascular plant taxonomy based on Richard S. Mitchell and Gordon C. Tucker. 1997. Revised Checklist of New York State Plants. Bulletin No. 490, New York State Museum. Albany, New York. 400 p.

PTERIDOPHYTES

Division Lycopodiophyta

Lycopodiaceae (Clubmoss Family)

<i>Huperzia lucidula</i> (Michx.) Trev.	Shining clubmoss
<i>Lycopodium digitatum</i> Dill. Ex A. Br.	Running pine
<i>Lycopodium obscurum</i> L.	Tree clubmoss

Division Equisetophyta

Equisetaceae (Horsetail Family)

<i>Equisetum arvense</i> L.	Field horsetail
<i>Equisetum hyemale</i> L.	Scouring rush
<i>Equisetum sylvaticum</i> L.	Woodland horsetail

Division Polypodiophyta

Ophioglossaceae (Adder=ss Tongue Family)

<i>Botrychium virginianum</i> (L.) Sw.	Rattlesnake fern
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Osmundaceae (Royal Fern Family)

<i>Osmunda cinnamomea</i> L.	Cinnamon fern
<i>Osmunda claytonia</i> L.	Interrupted fern
<i>Osmunda regalis</i> L.	Royal fern

Pteridaceae (Maidenhair Family)

<i>Adiantum pedatum</i> L.	Maidenhair fern
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Dennstaedtiaceae (Bracken Family)

<i>Dennstaedtia punctilobula</i> (Michx.) Moore	Hay-scented fern
<i>Pteridium aquilinum</i> (L.) Kuhn ex Decken	Bracken fern

Thelypteridaceae (Marsh Fern Family)

<i>Phegopteris connectilis</i> (Michx.) Watt	Long beech fern
<i>Phegopteris hexagonoptera</i> (Michx.) Fée	Broad beech fern
<i>Thelypteris noveboracensis</i> (L.) Nieuwl.	New York fern
<i>Thelypteris palustris</i> Schott	Marsh fern

Aspleniaceae (Spleenwort Family)

Asplenium platyneuron (L.) BSP. Ebony spleenwort

Dryopteridaceae (Wood Fern Family)

Athyrium filix-femina (L.) Roth ex Mertens Lady fern
Cystopteris bulbifera (L.) Bernh. Bladder fern
Cystopteris fragilis (L.) Bernh. Fragile fern
Dryopteris campyloptera (Kunze) Clarkson Spreading woodfern
Dryopteris carthusiana (Vill.) Fuchs Spinulose woodfern
Dryopteris intermedia (Muhl. Ex Willd. A. Gray Fancy fern
Dryopteris marginalis (L.) A.Gray Marginal woodfern
Gymnocarpium dryopteris (L.) Newm. Oak fern
Matteuccia struthiopteris (L.) Todaro Ostrich fern
Onoclea sensibilis L. Sensitive fern
Polystichum acrostichoides (Michx.) Schott Christmas fern

Polypodiaceae (Polypody Family)

Polypodium virginianum L. Rock-top fern

GYMNOSPERMS

Division Pinophyta

Taxaceae (Yew Family)

Taxus canadensis Marsh. American yew

Pinaceae (Pine Family)

Abies balsamea (L.) Mill. Balsam fir
Larix decidua Mill. European larch
Picea abies (L.) Karst. Norway spruce
Picea glauca (Moench) Voss White spruce
Pinus resinosa Soland. Red pine
Pinus rigida Mill. Pitch pine
Pinus strobus L. White pine
Pinus sylvestris L. Scotch pine
Tsuga canadensis (L.) Carr. Eastern hemlock

Cupressaceae (Cypress Family)

Juniperus virginiana L. Eastern red cedar

ANGIOSPERMS

Division Magnoliophyta

Class Magnoliopsida (Dicotyledons)

Magnoliaceae (Magnolia Family)	
<i>Liriodendron tulipifera</i> L.	Tulip tree
Lauraceae (Laurel Family)	
<i>Lindera benzoin</i> (L.) Blume	Spicebush
<i>Sassafras albidum</i> (Nut.) Nees	Sassafras
Saururaceae (Lizard=s Tail Family)	
<i>Saururus cernuus</i> L.	Lizard=s tail
Aristolochiaceae (Birthwort Family)	
<i>Asarum canadense</i> L.	Wild ginger
Nymphaeaceae (Water Lily Family)	
<i>Nuphar variegata</i> Engelm. ex Durand in Clinton	Yellow pondlily
<i>Nymphaea odorata</i> Dryand. ex Ait.	White waterlily
Ceratophyllaceae (Coontail Family)	
<i>Ceratophyllum demersum</i> L.	Coontail
Ranunculaceae (Buttercup Family)	
<i>Actaea pachypoda</i> Ell.	White baneberry
<i>Anemone virginiana</i> L. var. <i>alba</i>	Thimbleweed
<i>Aquilegia canadensis</i> L.	Wild columbine
<i>Caltha palustris</i> L.	Marsh marigold
<i>Clematis virginiana</i> L.	Virgin=s-bower
<i>Coptis trifolia</i> (L.) Salisb.	Goldthread
<i>Hepatica nobilis</i> Mill. var. <i>acuta</i>	Sharp-lobed hepatica
<i>Ranunculus abortivus</i> L.	Kidney-leaf buttercup
<i>Ranunculus acris</i> L.	Common buttercup
<i>Ranunculus bulbosus</i> L.	Bulbous buttercup
<i>Ranunculus fascicularis</i> Muhl. ex Bigel.	Early buttercup
<i>Ranunculus recurvatus</i> Poir. ex Lam.	Hooked buttercup
<i>Ranunculus repens</i> L.	Creeping buttercup
<i>Ranunculus hispidus</i> Michx. var. <i>caricetorum</i>	Swamp buttercup

<i>Thalictrum dioicum</i> L.	Early meadow-rue
<i>Thalictrum pubescens</i> Pursh	Tall meadow-rue
<i>Thalictrum thalictroides</i> (L.) Eames & Boivin	Rue anemone
<i>Trollius laxus</i> Salisb.	Spreading globeflower
Berberidaceae (Barberry Family)	
<i>Berberis vulgaris</i> L.	European barberry
<i>Caulophyllum thalictroides</i> (L.) Michx.	Blue cohosh
<i>Podophyllum peltatum</i> L.	May-apple
Menispermaceae (Moonseed Family)	
<i>Menispermum canadense</i> L.	Moonseed
Papaveraceae (Poppy Family)	
<i>Sanguinaria canadensis</i> L.	Bloodroot
Platanaceae (Sycamore Family)	
<i>Platanus occidentalis</i> L.	Sycamore
Hamamelidaceae (Witch Hazel Family)	
<i>Hamamelis virginiana</i> L.	Witch-hazel
Ulmaceae (Elm Family)	
<i>Ulmus americana</i> L.	American elm
<i>Ulmus rubra</i> Muhl.	Slippery elm
Cannabaceae (Hemp Family)	
<i>Humulus lupulus</i> L.	Common hops
Urticaceae (Nettle Family)	
<i>Boehmeria cylindrica</i> (L.) Sw.	False nettle
<i>Laportea canadensis</i> (L.) Wedd.	Wood-nettle
<i>Pilea pumila</i> (L.) A. Gray	Clear-weed
<i>Urtica dioica</i> L.	Tall nettle
Juglandaceae (Walnut Family)	
<i>Carya cordiformis</i> (Wang.) Koch	Bitternut hickory
<i>Carya glabra</i> (Mill.) Sweet	Pignut hickory
<i>Carya ovata</i> (Mill.) Koch	Shagbark hickory
<i>Carya tomentosa</i> (Poir. Ex Lam.) Nutt.	Mockernut hickory
<i>Juglans cinerea</i> L.	Butternut
<i>Juglans nigra</i> L.	Black walnut

Myricaceae (Bayberry Family)	
<i>Comptonia peregrina</i> (L.) Coult.	Sweet fern
Fagaceae (Beech Family)	
<i>Castanea dentata</i> (Marsh.) Borkh.	American chestnut
<i>Fagus grandifolia</i> Ehrh.	American beech
<i>Quercus alba</i> L.	White oak
<i>Quercus bicolor</i> Willd.	Swamp white oak
<i>Quercus coccinea</i> Muenchh.	Scarlet oak
<i>Quercus montana</i> Willd.	Chestnut oak
<i>Quercus rubra</i> L.	Red oak
<i>Quercus velutina</i> Lam.	Black oak
Betulaceae (Birch Family)	
<i>Alnus incana</i> (L.) Moench ssp. <i>rugosa</i>	Speckled alder
<i>Betula alleghaniensis</i> Britt.	Yellow birch
<i>Betula lenta</i> L.	Black birch
<i>Betula papyrifera</i> Marsh.	Paper birch
<i>Carpinus caroliniana</i> Walt.	Musclewood
<i>Corylus americana</i> Walt.	Hazelnut
<i>Ostrya virginiana</i> (Mill.) Koch	Hop hornbeam
Chenopodiaceae (Goosefoot Family)	
<i>Chenopodium album</i> L.	Lamb=s quarters
Amaranthaceae (Amaranth Family)	
<i>Amaranthus hybridus</i> L.	Pigweed
Portulacaceae (Purslane Family)	
<i>Claytonia caroliniana</i> Michx.	Carolina spring beauty
<i>Claytonia virginica</i> L.	Spring beauty
Caryophyllaceae (Pink Family)	
<i>Cerastium arvense</i> L.	Field chickweed
<i>Cerastium fontanum</i> Baumg.	Mouse-ear chickweed
<i>Dianthus armeria</i> L.	Deptford pink
<i>Dianthus deltoides</i> L.	Maiden pink
<i>Moehringia lateriflora</i> (L.) Fenzl.	Blunt-leaf sandwort
<i>Saponaria officinalis</i> L.	Bouncing bet
<i>Silene latifolia</i> Poir.	White campion
<i>Silene vulgaris</i> (Moench) Garcke	Bladder campion
<i>Stellaria graminea</i> L.	Lesser stitchwort
<i>Stellaria media</i> (L.) Vill.	Common chickweed

Polygonaceae (Buckwheat Family)

<i>Polygonum amphibium</i> L.	Water smartweed
<i>Polygonum arifolium</i> L.	Arrow-leaf tearthumb
<i>Polygonum cuspidatum</i> Sieb. & Zucc.	Japanese bamboo
<i>Polygonum hydropiper</i> L.	Water-pepper
<i>Polygonum persicaria</i> L.	Lady=s-thumb
<i>Polygonum punctatum</i> Ell.	Dotted smartweed
<i>Polygonum robustius</i> (Small) Fern.	Large water smartweed
<i>Polygonum sagittatum</i> L.	Tearthumb
<i>Polygonum virginianum</i> L.	Jumpseed
<i>Rumex acetosella</i> L.	Sheep sorrel
<i>Rumex crispus</i> L.	Curly dock
<i>Rumex obtusifolius</i> L.	Bitter dock
<i>Rumex orbiculatus</i> A. Gray	Great water dock
<i>Rumex verticillatus</i> L.	Swamp dock

Clusiaceae (St. John=s-wort Family)

<i>Hypericum mutilum</i> L.	Dwarf St. John=s-wort
<i>Hypericum perforatum</i> L.	Common St. John=s-wort
<i>Hypericum punctatum</i> Lam.	Spotted St. John=s-wort
<i>Triadenum virginicum</i> (L.) Raf.	Marsh St. John=s-wort

Tiliaceae (Basswood Family)

<i>Tilia americana</i> L.	Basswood
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Malvaceae (Mallow Family)

<i>Abutilon theophrasti</i> Medik.	Velvet-leaf
<i>Malva moschata</i> L.	Musk-mallow
<i>Malva neglecta</i> Wallr.	Cheeses

Violaceae (Violet Family)

<i>Viola canadensis</i> L.	Canada violet
<i>Viola conspersa</i> Reichenb.	American dog-violet
<i>Viola cucullata</i> Ait.	Marsh blue violet
<i>Viola macloskeyi</i> Lloyd ssp. pallens	Pale violet
<i>Viola pubescens</i> Ait.	Yellow violet
<i>Viola renifolia</i> A. Gray	Northern white violet
<i>Viola rostrata</i> Pursh	Long-spurred violet
<i>Viola sororia</i> Willd.	Common blue violet

Cucurbitaceae (Gourd Family)

<i>Echinocystis lobata</i> (Michx.) Torrey & A. Gray	Wild cucumber
<i>Sicyos angulatus</i> L.	Bur cucumber

Salicaceae (Willow Family)

<i>Populus balsamifera</i> L.	Balsam poplar
<i>Populus deltoides</i> Bartr. ex Marsh.	Eastern cottonwood
<i>Populus grandidentata</i> Michx.	Big-tooth aspen
<i>Populus tremuloides</i> Michx.	Quaking aspen
<i>Salix discolor</i> Muhl.	Pussy willow
<i>Salix exigua</i> Nutt.	Sandbar willow
<i>Salix nigra</i> Marsh.	Black willow
<i>Salix</i> sp.	Shrubby willow

Brassicaceae (Mustard Family)

<i>Alliaria petiolata</i> (Bieb.) Cav. & Grande	Garlic mustard
<i>Barbarea vulgaris</i> R.Br. ex Ait.	Yellow rocket
<i>Berteroa incana</i> (L.) DC.	Hoary alyssum
<i>Capsella bursa-pastoris</i> (L.) Medik.	Shepard=s purse
<i>Cardamine bulbosa</i> (Schreb. ex Muhl.) BSP.	Spring cress
<i>Cardamine concatenata</i> (Michx.) Schwein.	Cut-leaf toothwort
<i>Cardamine diphylla</i> (Michx.) Wood	Broad-leaf toothwort
<i>Cardamine douglassii</i> Britt.	Purple cress
<i>Cardamine pennsylvanica</i> Muhl. Ex Willd.	Pennsylvania bittercress
<i>Hesperis matronalis</i> L.	Dame=s rocket
<i>Lepidium campestre</i> (L.) R. Br. ex Ait.	Cow-cress
<i>Rorippa nasturtium-aquaticum</i> (L.) Hayek	Watercress
<i>Sinapis arvensis</i> L.	Charlock

Ericaceae (Heath Family)

<i>Epigaea repens</i> L.	Trailing arbutus
<i>Gaultheria procumbens</i> L.	Wintergreen
<i>Gaylussacia baccata</i> (Wang.) Koch	Black huckleberry
<i>Monotropa hypopithys</i> L.	Pinesap
<i>Monotropa uniflora</i> L.	Indian pipe
<i>Pyrola americana</i> Sweet	Round-leaf pyrola
<i>Pyrola elliptica</i> Nutt.	Shinleaf
<i>Rhododendrum periclymenoides</i> (Michx.) Shinners	Pinkster
<i>Vaccinium angustifolium</i> Ait.	Lowbush blueberry
<i>Vaccinium corymbosum</i> L.	Highbush blueberry

Primulaceae (Primrose Family)	
<i>Lysimachia ciliata</i> L.	Fringed loosestrife
<i>Lysimachia nummularia</i> L.	Moneywort
<i>Lysimachia quadrifolia</i> L.	Whorled loosestrife
<i>Lysimachia thyriflora</i> L.	Tufted loosestrife
<i>Trientalis borealis</i> Raf.	Starflower
Grossulariaceae (Gooseberry Family)	
<i>Ribes americanum</i> Mill.	Wild black currant
<i>Ribes cynosbati</i> L.	Prickly dogberry
Crassulaceae (Sedum Family)	
<i>Sedum telephium</i> L.	Live forever
Saxifragaceae (Saxifrage Family)	
<i>Mitella diphylla</i> L.	Miterwort
<i>Saxifraga pensylvanica</i> L.	Swamp saxifrage
<i>Saxifraga virginiana</i> Michx.	Early saxifrage
<i>Tiarella cordifolia</i> L.	Foamflower
Rosaceae (Rose Family)	
<i>Agrimonia gryposepala</i> Wallr.	Common agrimony
<i>Amelanchier laevis</i> Wieg.	Smooth shadbush
<i>Crataegus</i> spp.	Hawthorn
<i>Dalibarda repens</i> L.	Dewdrop
<i>Fragaria virginiana</i> Dcne.	Field strawberry
<i>Geum canadense</i> Jacq.	White avens
<i>Potentilla recta</i> L.	Common cinquefoil
<i>Potentilla simplex</i> Michx.	Old field cinquefoil
<i>Crataegus crusgalli</i> L.	Cockspur hawthorn
<i>Geum canadense</i> Jacq.	White avens
<i>Geum laciniatum</i> Murr.	Rough avens
<i>Geum rivale</i> L.	Purple avens
<i>Malus pumila</i> Mill.	Common apple
<i>Potentilla argentea</i> L.	Silvery cinquefoil
<i>Potentilla norvegica</i> L.	Three-leaf cinquefoil
<i>Potentilla recta</i> L.	Sulfur cinquefoil
<i>Potentilla simplex</i> Michx.	Common cinquefoil
<i>Prunus americana</i> Marsh.	Wild plum
<i>Prunus avium</i> L.	Sweet cherry
<i>Prunus persica</i> (L.) Batsch.	Peach
<i>Prunus serotina</i> Ehrh.	Wild black cherry
<i>Prunus virginiana</i> L.	Choke cherry

<i>Pyrus communis</i> L.	Common pear
<i>Rosa multiflora</i> Thunb. ex Murr.	Multiflora rose
<i>Rosa palustris</i> Marsh.	Swamp rose
<i>Rubus allegheniensis</i> Porter ex. Bailey	Blackberry
<i>Rubus hispidus</i> L. <i>sensu lato</i>	Dewberry
<i>Rubus idaeus</i> L.	Red raspberry
<i>Rubus occidentalis</i> L.	Black raspberry
<i>Rubus odoratus</i> L.	Purple-flowering raspberry
<i>Spirea alba</i> DuRoi var. <i>latifolia</i>	Meadow-sweet
<i>Waldsteinia fragarioides</i> (Michx.) Tratt.	Barren strawberry
Fabaceae (Bean Family)	
<i>Amphicarpaea bracteata</i> (L.) Rickett & Stafleu	Hog peanut
<i>Apios americana</i> Medik.	Groundnut
<i>Coronilla varia</i> L.	Crown-vetch
<i>Desmodium glutinosum</i> (Muhl. ex Willd) Wood	Sticky tick-trefoil
<i>Lathyrus latifolius</i> L.	Everlasting pea
<i>Lotus corniculatus</i> L.	Bird=s foot trefoil
<i>Medicago lupulina</i> L.	Black Medick
<i>Medicago sativa</i> L.	Alfalfa
<i>Melilotus alba</i> Desr. ex Lam.	White sweet clover
<i>Melilotus officinalis</i> (L.) Pallas	Yellow sweet clover
<i>Robinia pseudo-acacia</i> L.	Black locust
<i>Trifolium aureum</i> Pollich	Yellow hop-clover
<i>Trifolium dubium</i> Sibth.	Least hop-clover
<i>Trifolium hybridum</i> L.	Aslike clover
<i>Trifolium pratense</i> L.	Red clover
<i>Trifolium repens</i> L.	White clover
<i>Vicia cracca</i> L. ssp. <i>cracca</i>	Cow vetch
<i>Vicia sativa</i> L. ssp. <i>nigra</i>	Narrow-leaf vetch
<i>Vicia tetrasperma</i> (L.) Schreb.	Slender vetch
Elaeagnaceae (Oleaster Family)	
<i>Elaeagnus umbellata</i> Thunb.	Autumn olive
Haloragaceae (Water Milfoil Family)	
<i>Myriophyllum sibiricum</i> Komarov	Northern water milfoil
<i>Myriophyllum spicatum</i> L.	Eurasian milfoil
<i>Myriophyllum verticillatum</i> L.	Water milfoil
Lythraceae (Loosestrife Family)	
<i>Decodon verticillatus</i> (L.) Ell.	Water willow

Thymeliaceae (Mezereum Family)	
<i>Dirca palustris</i> L.	Leatherwood
Onagraceae (Evening Primrose Family)	
<i>Circaea alpina</i> L.	Dwarf enchanter=s nightshade
<i>Circaea lutetiana</i> L. ssp. <i>canadensis</i>	Enchanter=s nightshade
<i>Epilobium ciliatum</i> Raf. ssp. <i>glandulosum</i>	Willow-herb
<i>Epilobium coloratum</i> Biehl.	Purple-leaf willow-herb
<i>Epilobium hirsutum</i> L.	Hairy willow-herb
<i>Ludwigia palustris</i> (L.) Ell.	Water purslane
<i>Oenothera biennis</i> L.	Common evening primrose
<i>Oenothera perennis</i> L.	Sundrops
Cornaceae (Dogwood Family)	
<i>Cornus alternifolia</i> L. f.	Pagoda dogwood
<i>Cornus amomum</i> Mill.	Silky dogwood
<i>Cornus canadensis</i> L.	Bunchberry
<i>Cornus florida</i> L.	Flowering dogwood
<i>Cornus foemina</i> Mill. ssp. <i>racemosa</i>	Gray dogwood
<i>Cornus rugosa</i> Lam.	Round-leaf dogwood
<i>Cornus sericea</i> L.	Red osier dogwood
Celastraceae (Staff Tree Family)	
<i>Celastrus scandens</i> L.	American bittersweet
Aquifoliaceae (Holly Family)	
<i>Ilex verticillata</i> (L.) A. Gray	Winterberry
Euphorbiaceae (Spurge Family)	
<i>Acalypha virginica</i> L.	Three-seeded Mercury
<i>Chamaesyce maculata</i> (L.) Small	Wartweed
<i>Euphorbia cyparissias</i> L.	Cypress spurge
Rhamnaceae (Buckthorn Family)	
<i>Rhamnus cathartica</i> L.	European buckthorn
Vitaceae (Vine Family)	
<i>Parthenocissus quinquefolia</i> (L.) Planch ex DC.	Virginia creeper
<i>Vitis aestivalis</i> Michx.	Summer grape
<i>Vitis riparia</i> Michx.	Riverbank grape
Linaceae (Flax Family)	

<i>Linum usitatissimum</i> L.	Flax
Polygalaceae (Milkwort Family)	
<i>Polygala paucifolia</i> Willd.	Fringed milkwort
Aceraceae (Maple Family)	
<i>Acer pensylvanicum</i> L.	Striped maple
<i>Acer rubrum</i> L.	Red maple
<i>Acer rubrum</i> x <i>saccharinum</i> = <i>Acer x freemanii</i> Murr.	Swamp maple
<i>Acer saccharinum</i> L.	Silver maple
<i>Acer saccharum</i> Marsh.	Sugar maple
<i>Acer spicatum</i> Lam.	Mountain maple
Anacardiaceae (Sumac Family)	
<i>Rhus glabra</i> L.	Smooth sumac
<i>Rhus hirta</i> (L.) Sudworth	Staghorn sumac
<i>Toxicodendron radicans</i> (L.) Kuntze	Poison ivy
<i>Toxicodendron vernix</i> (L.) Kuntze	Poison sumac
Simaroubaceae (Quassia Family)	
<i>Ailanthus altissima</i> (Mill.) Swingle	Tree of heaven
Rutaceae (Rue Family)	
<i>Zanthoxylum americanum</i> Mill.	Prickly ash
Oxalidaceae (Wood Sorrel Family)	
<i>Oxalis stricta</i> L.	Yellow wood-sorrel
Geraniaceae (Geranium Family)	
<i>Geranium maculatum</i> L.	Wild geranium
<i>Geranium robertianum</i> L.	Herb-Robert
Limnanthaceae (Meadow-Foam Family)	
<i>Floerkea proserpinacoides</i> Willd.	False mermaid-weed
Balsaminaceae (Touch Me Not Family)	
<i>Impatiens capensis</i> Meerb.	Spotted touch-me-not
Araliaceae (Ginseng Family)	
<i>Aralia nudicaulis</i> L.	Wild sarsaparilla
<i>Panax trifolius</i> L.	Dwarf ginseng

Apiaceae (Carrot Family)

<i>Cicuta bulbifera</i> L.	Bulb-bearing water hemlock
<i>Cicuta maculata</i> L.	Water hemlock
<i>Conium maculatum</i> L.	Poison hemlock
<i>Cryptotaenia canadensis</i> (L.) DC.	Honewort
<i>Daucus carota</i> L.	Queen Anne=s lace
<i>Hydrocotyle americana</i> L.	Water pennywort
<i>Osmorhiza claytonii</i> (Michx.) Clarke	Sweet Cicely
<i>Pastinaca sativa</i> L.	Wild parsnip
<i>Taenidia integerrima</i> (L.) Drude	Yellow pimpernel
<i>Zizia aurea</i> (L.) Koch	Golden Alexanders

Gentianaceae (Gentian Family)

<i>Frasera caroliniensis</i> Walt.	Green gentian
<i>Gentiana andrewsii</i> Griseb.	Closed gentian

Apocynaceae (Dogbane Family)

<i>Apocynum androsaemifolium</i> L.	Spreading dogbane
<i>Vinca minor</i> L.	Common periwinkle

Asclepiadaceae (Milkweed Family)

<i>Asclepias exaltata</i> L.	Poke milkweed
<i>Asclepias incarnata</i> L.	Swamp milkweed
<i>Asclepias syriaca</i> L.	Common milkweed
<i>Asclepias tuberosa</i> L.	Butterfly-weed
<i>Cynanchum rossicum</i> (Kleop.) Borh.	Swallow-wort

Solanaceae (Nightshade Family)

<i>Solanum dulcamara</i> L.	Bittersweet nightshade
<i>Solanum nigrum</i> L.	Black nightshade

Convolvulaceae (Morning Glory Family)

<i>Calystegia sepium</i> (L.) R. Br.	Hedge bindweed
<i>Convolvulus arvensis</i> L.	Field bindweed

Polemoniaceae (Phlox Family)

<i>Phlox divaricata</i> L.	Blue phlox
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Hydrophyllaceae (Waterleaf Family)

<i>Hydrophyllum virginianum</i> L.	Virginia waterleaf
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Boraginaceae (Borage Family)

<i>Hackelia virginiana</i> (L.) Johnst.	Stickseed
<i>Mertensia virginica</i> (L.) Pers. ex Link	Virginia bluebells
<i>Myosotis scorpioides</i> L.	Forget-me-not
<i>Symphytum officinale</i> L.	Comfrey

Verbenaceae (Verbena Family)

<i>Phryma leptostachya</i> L.	Lopseed
<i>Verbena hastata</i> L.	Blue vervain
<i>Verbena urticifolia</i> L.	White vervain

Lamiaceae (Mint Family)

<i>Clinopodium vulgare</i> L.	Wild basil
<i>Collinsonia canadensis</i> L.	Horse mint
<i>Galeopsis tetrahit</i> L.	Hemp-nettle
<i>Glechoma hederacea</i> L.	Gill-over-the-ground
<i>Leonurus cardiaca</i> L.	Motherwort
<i>Lycopus americanus</i> Muhl. ex Bart.	Water horehound
<i>Lycopus virginicus</i> L.	Bugleweed
<i>Melissa officinalis</i> L.	Lemon balm
<i>Mentha arvensis</i> L.	Wild mint
<i>Mentha spicata</i> L.	Spearmint
<i>Monarda didyma</i> L.	Bee-balm
<i>Monarda fistulosa</i> L.	Wild bergamot
<i>Nepeta cataria</i> L.	Catnip
<i>Prunella vulgaris</i> L.	Heal-all
<i>Pycnanthemum virginianum</i> (L.) Durieu & Jacks. ex Fern. & B. Robinson	Mountain mint
<i>Scutellaria lateriflora</i> L.	Mad-dog skullcap
<i>Teucrium canadense</i> L.	Wild germander

Callitrichaceae (Water Starwort Family)

<i>Callitriche heterophylla</i> Pursh	Water-starwort
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Plantaginaceae (Plantain Family)

<i>Plantago lanceolata</i> L.	English plantain
<i>Plantago major</i> L.	Common plantain
<i>Plantago rugelii</i> Dcne.	Pale plantain

Oleaceae (Olive Family)

<i>Fraxinus americana</i> L.	White ash
<i>Fraxinus nigra</i> Marsh.	Black ash
<i>Fraxinus pennsylvanica</i> Marsh.	Red ash, Green ash

<i>Syringa vulgaris</i> L.	Common lilac
Scrophulariaceae (Snapdragon Family)	
<i>Chelone glabra</i> L.	White turtlehead
<i>Digitalis purpurea</i> L.	Purple foxglove
<i>Linaria vulgaris</i> Mill.	Butter-and-eggs
<i>Melampyrum lineare</i> Desr.	Cow-wheat
<i>Mimulus ringens</i> L.	Common monkeyflower
<i>Pedicularis canadensis</i> L.	Wood-betony
<i>Penstemon digitalis</i> Nutt.	Smooth beard-tongue
<i>Scrophularia marilandica</i> L.	Carpenter's square
<i>Verbascum blattaria</i> L.	Moth mullein
<i>Verbascum thapsus</i> L.	Common mullein
<i>Veronica americana</i> (Raf.) Schwein. ex. Benth.	American brooklime
<i>Veronica arvensis</i> L.	Corn speedwell
<i>Veronica chamaedrys</i> L.	Bird=s-eye speedwell
<i>Veronica officinalis</i> L.	Common speedwell
<i>Veronica persica</i> Poir.	Persian speedwell
<i>Veronica serpyllifolia</i> L.	Thyme-leaved speedwell
Orobanchaceae (Broom Rape Family)	
<i>Conopholis americana</i> (L.) Wallr.	Squawroot
<i>Epifagus virginiana</i> (L.) Bartr.	Beech-drops
Acanthaceae (Acanthus Family)	
<i>Justicia americana</i> (L.) Vahl.	Willow-weed
Bignoniaceae (Trumpet Creeper Family)	
<i>Catalpa speciosa</i> (Warder ex Barney) Engelm.	Catalpa
Lentibulariaceae (Bladderwort Family)	
<i>Utricularia macrorhiza</i> LeConte	Common bladderwort
Campanulaceae (Bluebell Family)	
<i>Campanula rapunculoides</i> L.	Creeping bellflower
<i>Lobelia cardinalis</i> L.	Cardinal flower
<i>Lobelia inflata</i> L.	Indian tobacco
Rubiaceae (Madder Family)	
<i>Cephalanthus occidentalis</i> L.	Buttonbush
<i>Galium aparine</i> L.	Cleavers
<i>Galium asprellum</i> Michx.	Rough bedstraw

<i>Galium lanceolatum</i> Torrey	Wild licorice
<i>Galium odoratum</i> (L.) Scop.	Sweet woodruff
<i>Galium palustre</i> L.	Marsh bedstraw
<i>Houstonia caerulea</i> L.	Bluets
<i>Mitchella repens</i> L.	Partridge-berry
Caprifoliaceae (Honeysuckle Family)	
<i>Diervilla lonicera</i> Mill.	Bush honeysuckle
<i>Lonicera canadensis</i> Bartr.	Fly honeysuckle
<i>Lonicera sempervirens</i> L.	Trumpet honeysuckle
<i>Lonicera tatarica</i> L.	Tartarian honeysuckle
<i>Sambucus canadensis</i> L.	Black elderberry
<i>Sambucus racemosa</i> L. ssp. <i>pubens</i> (Michx.) House	Red elderberry
<i>Symphoricarpos albus</i> (L.) Blake	Snowberry
<i>Triosteum aurantiacum</i> Bickn.	Orange-fruited horse gentian
<i>Viburnum acerifolium</i> L.	Maple-leaf viburnum
<i>Viburnum dentatum</i> L.	Southern arrowwood
<i>Viburnum lantanoides</i> Michx.	Hobblebush
<i>Viburnum lentago</i> L.	Nannyberry
<i>Viburnum opulus</i> L. var. <i>americanum</i>	Highbush cranberry
Valerianaceae (Valerian Family)	
<i>Valeriana officinalis</i> L.	Garden valerian
Dipsacaceae (Teasel Family)	
<i>Dipsacus fullonum</i> L.	Common teasel
Asteraceae (Aster Family)	
<i>Achillea millefolium</i> L.	Yarrow
<i>Ambrosia artemisiifolia</i> L.	Ragweed
<i>Anaphalis margaritacea</i> (L.) Benth. & Hooker f. ex Clarke	Pearly everlasting
<i>Antennaria neglecta</i> Greene	Field pussytoes
<i>Anthemis cotula</i> L.	Mayweed
<i>Arctium minus</i> (Hill) Bernh.	Common burdock
<i>Artemisia vulgaris</i> L.	Mugwort
<i>Aster cordifolius</i> L.	Heart-leaf aster
<i>Aster divaricatus</i> L.	White wood aster
<i>Aster lanceolatus</i> Willd. var. <i>simplex</i>	Tall white aster
<i>Aster lateriflorus</i> (L.) Britt.	Calico aster
<i>Aster macrophyllus</i> L.	Large-leaf aster
<i>Aster novae-angliae</i> L.	New England aster
<i>Aster novi-belgii</i> L.	New York aster

<i>Aster pilosus</i> Willd.	Heath aster
<i>Aster praealtus</i> Poir.	Willow aster
<i>Aster prenanthoides</i> Muhl. ex Willd.	Crooked stem aster
<i>Aster puniceus</i> L.	Purple-stemmed aster
<i>Aster racemosus</i> Ell.	Small white aster
<i>Aster umbellatus</i> Mill.	Flat-top white aster
<i>Bidens cernua</i> L.	Bur-marigold
<i>Bidens connata</i> Muhl. ex Willd.	Beggar-ticks
<i>Bidens laevis</i> (L.) BSP.	Smooth bur-marigold
<i>Bidens tripartita</i> L.	Beggar-ticks
<i>Centaurea maculosa</i> Lam.	Spotted knapweed
<i>Cichorium intybus</i> L.	Chicory
<i>Cirsium arvense</i> (L.) Scop.	Canada thistle
<i>Cirsium discolor</i> (Muhl. ex Willd.) Spreng.	Field thistle
<i>Cirsium vulgare</i> (Savi) Tenore	Bull thistle
<i>Coreopsis lanceolata</i> L.	Coreopsis
<i>Erechtites hieracifolia</i> (L.) Raf. Ex DC. var. <i>hieracifolia</i>	Pilewort
<i>Erigeron annuus</i> (L.) Pers.	Daisy Fleabane
<i>Erigeron philadelphicus</i> L.	Fleabane
<i>Eupatorium maculatum</i> L.	Joe Pye weed
<i>Eupatorium perfoliatum</i> L.	Boneset
<i>Eupatorium purpureum</i> L.	Sweet Joe Pye weed
<i>Eupatorium rugosum</i> Houtt.	White snakeroot
<i>Euthamia graminifolia</i> (L.) Nutt. ex Cass.	Grass-leaved goldenrod
<i>Gnaphalium macounii</i> Greene	Cudweed
<i>Hieracium aurantiacum</i> L.	Orange hawkweed
<i>Hieracium caespitosum</i> Dumort.	King-devil
<i>Hieracium pilosella</i> L.	Mouse-ear hawkweed
<i>Hieracium venosum</i> L.	Rattlesnake hawkweed
<i>Inula helenium</i> L.	Elecampane
<i>Krigia biflora</i> (Walt.) Blake	Two-flowered Cynthia
<i>Lactuca canadensis</i> L.	Wild lettuce
<i>Leucanthemum vulgare</i> Lam.	Ox-eye daisy
<i>Matricaria discoidea</i> DC.	Pineapple-weed
<i>Megalodonta beckii</i> (Torrey ex Spreng.) Greene	Water marigold
<i>Picris hieracioides</i> L.	Ox-tongue
<i>Prenanthes alba</i> L.	White lettuce
<i>Prenanthes altissima</i> L.	Rattlesnake-root
<i>Prenanthes serpentaria</i> Pursh	Lion=s-foot
<i>Prenanthes trifoliolata</i> (Cass.) Fern.	Gall-of-the-earth
<i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i>	Black-eyed Susan
<i>Rudbeckia laciniata</i> L.	Cut-leaf coneflower

<i>Senecio aureus</i> L.	Golden ragwort
<i>Solidago bicolor</i> L.	Silver-rod
<i>Solidago caesia</i> L.	Blue-stem goldenrod
<i>Solidago canadensis</i> L. var <i>canadensis</i>	Canada goldenrod
<i>Solidago canadensis</i> L. var <i>scabra</i>	Tall goldenrod
<i>Solidago flexicaulis</i> L.	Zig-zag goldenrod
<i>Solidago gigantea</i> Ait.	Late goldenrod
<i>Solidago juncea</i> Ait.	Early goldenrod
<i>Solidago nemoralis</i> Ait.	Gray goldenrod
<i>Solidago patula</i> Muhl. Ex Willd.	Spreading goldenrod
<i>Solidago rugosa</i> Mill.	Rough goldenrod
<i>Sonchus arvensis</i> L.	Field sow thistle
<i>Tanacetum parthenium</i> (L.) Schultz	Fever-few
<i>Taraxacum officinale</i> Weber ex Wiggers	Common dandelion
<i>Tragopogon pratensis</i> L.	Yellow goat=s-beard
<i>Tussilago farfara</i> L.	Colt=s foot
<i>Xanthium strumarium</i> L.	Common clotbur

Class Liliopsida (Monocotyledons)

Alismataceae (Water-Plantain Family)

<i>Alisma subcordatum</i> Raf.	Water-plantain
<i>Sagittaria latifolia</i> Willd.	Arrowleaf

Hydrocharitaceae (Frog=s Bit Family)

<i>Elodea canadensis</i> L. Rich. ex Michx.	Waterweed
<i>Vallisneria americana</i> Michx.	Wild celery

Potamogetonaceae (Pondweed Family)

<i>Potamogeton crispus</i> L.	Curly pondweed
<i>Potamogeton epihydrus</i> Raf.	Pondweed
<i>Potamogeton foliosus</i> Raf.	Pondweed
<i>Potamogeton natans</i> L.	Brown pondweed
<i>Potamogeton zosteriformis</i> Fern.	Flat-stem pondweed

Najadaceae (Naiad Family)

<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt	Slender naiad
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Araceae (Arum Family)

<i>Acorus americanus</i> (Raf.) Raf.	Sweetflag
<i>Arisaema triphyllum</i> (L.) Schott ex Schott & Endl.	Jack-in-the-pulpit

<i>Peltandra virginica</i> (L.) Schott ex Schott & Endl.	Arrow arum
<i>Symplocarpus foetidus</i> (L.) Salisb. ex Nutt.	Skunk cabbage
Lemnaceae (Duckweed Family)	
<i>Lemna minor</i> L.	Lesser duckweed
<i>Lemna trisulca</i> L.	Star-leaf duckweed
<i>Spirodela polyrhiza</i> (L.) Schleid.	Greater duckweed
<i>Wolffia columbiana</i> Karst.	Watermeal
Juncaceae (Rush Family)	
<i>Juncus canadensis</i> Gay ex LaHarpe	Canada rush
<i>Juncus effusus</i> L.	Common rush
<i>Juncus inflexus</i> L.	Blue rush
<i>Juncus tenuis</i> Willd.	Slender yard rush
<i>Luzula campestris</i> (L.) DC. var. <i>multiflora</i> (Retz.) Lej.	Common wood-rush
Cyperaceae (Sedge Family)	
<i>Carex amphibola</i> Steud.	Sedge
var. <i>turgida</i> Fern.	
<i>Carex annectens</i> (Bickn.) Bickn.	Sedge
var. <i>annectens</i>	
<i>Carex arctata</i> Boott ex Hooker	Sedge
<i>Carex atlantica</i> Bailey ssp. <i>capillacea</i> (Bailey) Reznicek	Sedge
<i>Carex cephalophora</i> Muhl. ex Willd.	Sedge
<i>Carex crinita</i> Lam.	Sedge
<i>Carex cristatella</i> Britt. ex Britt. & Brown	Sedge
<i>Carex debilis</i> Michx. var. <i>rudgei</i> Bailey	Sedge
<i>Carex gracillima</i> Schwein.	Sedge
<i>Carex granularis</i> Muhl. ex Willd.	Sedge
var. <i>granularis</i>	
<i>Carex hirsutella</i> Mackz.	Sedge
<i>Carex hystericina</i> Muhl. ex Willd.	Sedge
<i>Carex lacustris</i> Lam.	Sedge
<i>Carex laxiflora</i> Lam. var. <i>laxiflora</i>	Sedge
<i>Carex leporina</i> L.	Sedge
<i>Carex leptonervia</i> (Fern.) Fern.	Sedge
<i>Carex lurida</i> Wahl.	Sedge
<i>Carex muhlenbergii</i> Schkuhr ex Willd.	Sedge
var. <i>enervis</i> Boott	
<i>Carex muhlenbergii</i> Schkuhr ex Willd.	Sedge
var. <i>muhlenbergii</i>	

<i>Carex normalis</i> Mackz.	Sedge
<i>Carex pennsylvanica</i> Lam.	Sedge
<i>Carex plantaginea</i> Lam.	Plantain sedge
<i>Carex platyphylla</i> Carey	Broad-leaf sedge
<i>Carex prasina</i> Wahl.	Sedge
<i>Carex rosea</i> Schkuhr. ex Willd.	Sedge
<i>Carex siccata</i> Dewey	Sedge
<i>Carex sterilis</i> Willd.	Sedge
<i>Carex stipata</i> Muhl. ex Willd.	Sedge
<i>Carex umbellata</i> Schkuhr ex Willd.	Sedge
<i>Carex vulpinoidea</i> Michx.	Sedge
<i>Eleocharis obtusa</i> (Willd.) Schultes	Spikerush
<i>Eleocharis palustris</i> (L.) R. & S.	Creeping spikerush
<i>Scirpus atrovirens</i> Willd.	Dark brown bulrush
<i>Scirpus polyphyllus</i> Vahl.	Leafy bulrush

Poaceae (Grass Family)

<i>Agrostis hyemalis</i> (Walt.) BSP.	Southern hairgrass
<i>Agrostis perennans</i> (Walt.) Tuckerm.	Upland bentgrass
<i>Anthoxanthum odoratum</i> L.	Sweet vernal grass
<i>Brachyelytrum erectum</i> (Schreb. ex Spreng.) Beauv.	Bearded shorthusk
<i>Bromus inermis</i> Leyss.	Smooth brome
<i>Calamagrostis canadensis</i> (Michx.) Beauv.	Bluejoint grass
<i>Cinna latifolia</i> (Trev. ex Goepp.) Griseb.	Drooping woodreed
<i>Dactylis glomerata</i> L.	Orchard grass
<i>Danthonia compressa</i> Austin	Northern oatgrass
<i>Danthonia spicata</i> (L.) Beauv. ex R. & S.	Poverty grass
<i>Deschampsia flexuosa</i> (L.) Trin.	Common hairgrass
<i>Elymus hystrix</i> L.	Bottlebrush
<i>Elymus virginicus</i> L.	Virginia wild-rye
<i>Elytrigia repens</i> (L.) Nevski	Quack grass
<i>Glyceria striata</i> (Lam.) Hitchc.	Fowl manna-grass
<i>Glyceria x laxa</i> (Scribn.) Scribn.	Manna-grass
<i>Holcus lanatus</i> L.	Velvet grass
<i>Leersia oryzoides</i> (L.) Sw.	Rice-cut grass
<i>Lolium pratense</i> (Hudson) S. Darbyshire	Meadow fescue
<i>Oryzopsis racemosa</i> (Sm.) Ricker ex Hitchc.	Mountain rice grass
<i>Panicum latifolium</i> L.	Panic grass
<i>Phalaris arundinacea</i> L.	Reed canary grass
<i>Phleum pratense</i> L.	Timothy grass
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	Common reedgrass
<i>Poa compressa</i> L.	Canada bluegrass
<i>Poa trivialis</i> L.	Rough bluegrass

<i>Setaria pumila</i> (Poir.) Schultes	Yellow foxtail grass
<i>Sporobolus vaginiflorus</i> (Torrey ex A. Gray) Wood	Sheathed rushgrass
<i>Torreyochloa pallida</i> (Torrey) Church var. <i>pallida</i>	Pale manna-grass
Sparganiaceae (Bur-reed Family)	
<i>Sparganium americanum</i> Nutt.	Bur-reed
<i>Sparganium androcladum</i> (Engelm.) Morong	Bur-reed
<i>Sparganium eurycarpum</i> Engelm. ex A. Gray	Giant bur-reed
Typhaceae (Cattail Family)	
<i>Typha angustifolia</i> L.	Narrow-leaf cattail
<i>Typha angustifolia</i> x <i>latifolia</i> = <i>Typha</i> x <i>glauca</i> Godr.	Intermediate-leaf cattail
<i>Typha latifolia</i> L.	Broad-leaf cattail
Pontederiaceae (Pickerel Weed Family)	
<i>Heteranthera dubia</i> (Jacq.) MacM.	Water stargrass
<i>Pontederia cordata</i> L.	Pickerelweed
Liliaceae (Lily Family)	
<i>Allium tricoccum</i> Ait.	Wild leek
<i>Convallaria majalis</i> L.	Lily of the valley
<i>Erythronium americanum</i> Ker	Trout lily
<i>Hemerocallis fulva</i> (L.) L.	Orange day-lily
<i>Lilium canadense</i> L. ssp. <i>canadense</i>	Canada lily
<i>Lilium philadelphicum</i> L.	Wood lily
<i>Maianthemum canadense</i> Desf.	Canada mayflower
<i>Maianthemum racemosum</i> L.	False Solomon=s-seal
<i>Maianthemum stellatum</i> L.	Starry false Solomon=s-seal
<i>Medeola virginiana</i> L.	Indian cucumber-root
<i>Narcissus pseudo-narcissus</i> L.	Daffodil
<i>Polygonum biflorum</i> (Walt.) Ell.	Small Solomon=s-seal
<i>Polygonatum pubescens</i> (Willd.) Pursh	Hairy Solomon=s-seal
<i>Streptopus roseus</i> Michx.	Rose twisted-stalk
<i>Trillium erectum</i> L.	Red trillium
<i>Trillium grandiflorum</i> (Michx.) Salisb.	White trillium
<i>Trillium undulatum</i> Willd.	Painted trillium

Uvularia perfoliata L.
Uvularia sessilifolia L.

Perfoliate bellwort
 Sessile-leaved bellwort

Iridaceae (Iris Family)

Iris pseudacorus L.
Iris versicolor L.
Sisyrinchium angustifolium Mill.

Yellow iris
 Wild blue iris
 Blue-eyed grass

Smilacaceae (Greenbrier Family)

Smilax herbacea L.

Carrion flower

Orchidaceae (Orchid Family)

Corallorhiza maculata (Raf.) Raf.
Corallorhiza trifida Chat.
Cypripedium acuale Ait.
Cypripedium parviflorum Salisb.
 var. *pubescens*
Epipactis helleborine (L.) Crantz
Platanthera grandiflora (Bigel.) Lindl.
Platanthera hookeri (Torrey ex A. Gray)
 Lindl.
Platanthera hyperborea (L.) Lindl.
Platanthera lacera (Michx.) G. Don
Platanthera orbiculata (Pursh) Lindl.
Platanthera psycodes (L.) Lindl.

Spotted coralroot
 Early coralroot
 Pink ladyslipper
 Large yellow ladyslipper

 Helleborine
 Large purple fringed orchid
 Hooker=s orchid

 Northern green orchid
 Ragged fringed orchid
 Round-leaved orchid
 Small purple fringed orchid

INSECTS Nomenclature for insects follows Borer, D.J., C.A. Triplehorn and N.F. Johnson. 1988. *An Introduction to the Study of Insects*, 6th ed. Saunders College Publishers. New York, New York. 875 p.

Odonata

Dragonflies and damselflies

Aeshnidae (Darner Family)

Aeshna umbrosa

Shadow Darner

Anax junius

Common Green Darner

1 unidentified species

Calopterygidae (Broad-winged Damselfly Family)

Calopteryx maculata

Ebony jewelwing

Coenagrionidae (Narrow-winged Damselfly Family)

3 unidentified species

Cordulegastridae (Spiketail Family)

Cordulegaster diastatops

Delta-spotted dragonfly

Gomphidae (Clubtail Family)

1 unidentified species

Libellulidae (Skimmer Family)

Celithemis elisa

Calico pennant

Ladona julia

Chalk-fronted corporal

Leucorrhinia intacta

Dot-tailed whiteface

Libellula luctuosa

Widow skimmer

Plathemis lydia

Common whitetail

Sympetrum rubicundulum

Ruby meadowhawk

Sympetrum sp.

1 unidentified species

Coleoptera

Beetles

Buprestidae (Metallic Wood Boring Beetle Family)

Agrilus anxius

Bronze birch borer

Agrilus biliniatus

Two-lined chestnut borer

Cantharidae (Soldier Beetle Family)

Chauliognathus pennsylvanicus

Leatherwing

Carabidae (Ground Beetle Family)

10 unidentified species

Cerambycidae (Long-horned Beetle Family)	
<i>Magacyllene robiniae</i>	Locust borer
3 unidentified species	
Chrysomelidae (Leaf Beetle Family)	
<i>Deloyala clavata</i>	Clavate tortoise beetle
<i>Plagioderia versicolor</i>	Imported willow leaf beetle
20 unidentified species	
Cicindelidae (Tiger Beetle Family)	
<i>Cicindela scutellarus lecontei</i>	Smooth tiger beetle
<i>Cicindela sexagutata</i>	Six-spotted tiger beetle
Cleridae (Checkered Beetle Family)	
<i>Thanasimus dubius</i>	Clerid beetle
Coccinellidae (Lady Bird Beetle Family)	
<i>Anisosticta bitriangularis</i>	No common name
<i>Chilocorus stigma</i>	Twice-stabbed lady bird
<i>Coccinella septempunctata</i>	Seven-spotted lady bird beetle
<i>Coleomagilla maculata</i>	The spotted ladybird beetle
<i>Harmonia axyridis</i>	Asian lady bird
<i>Hippodamia tredecimpunctata</i>	Thirteen-spotted ladybird
<i>Hippodamia transversoguttata</i>	Transverse lady beetle
<i>Propylea quateurodecimpunctata</i>	Fourteen-spotted ladybird
<i>Psyllobora vigintimaculata</i>	Twenty-spotted lady beetle
Curculionidae (Snout Beetle Family)	
<i>Curculio</i> sp.	Acorn weevils
<i>Pissodes strobi</i>	White pine weevil
8 unidentified species	
Dryopidae (Water Penny Family)	
2 unidentified species	Water pennies
Elateridae (Click Beetle Family)	
3 unidentified species	
Elmidae (Riffle Beetle Family)	
1 unidentified species	
Erotylidae (Pleasing Fungus Beetle Family)	
1 unidentified species	

Lampyridae (Firefly Family)	
3 <i>Photinus</i> spp.	
2 <i>Photuris</i> spp.	
Lycidae (Net-winged Beetle Family)	
<i>Calopteron reticulatum</i>	No common name
Meloidae (Blister Beetle Family)	
<i>Meloe</i> sp.	Blister beetle
Scaphidiidae (Shining Fungus Beetle Family)	
2 unidentified species	
Scarabaeidae (Scarab Beetle Family)	
<i>Papillio japiconica</i>	Japanese beetle
<i>Macrodactylus subspinosa</i>	Rose chafer
2 unidentified species	
Scolytidae (Bark Beetle Family)	
<i>Denroctonus valens</i>	Red turpentine beetle
<i>Ips pini</i>	Pine engraver
<i>Pityogenes hopkinsi</i>	Chestnut brown bark beetle
<i>Scolytus</i> sp.	White Pine cone weevil
<i>Scotyus multistriatus</i>	European elm bark beetle
Silphidae (Carrion Beetle Family)	
<i>Nicrophorus</i> sp	Burying carrion beetle
<i>Silpha americana</i>	American carrion beetle
1 unidentified species	
Staphylinidae (Rove Beetle Family)	
3 unidentified species	
Lepidoptera	
Butterflies and Skippers	
Danaidae (Milkweed Butterfly Family)	
<i>Danus plexipus</i>	Monarch butterfly
Hesperiidae (Skipper Family)	
<i>Anatryone logan</i>	Delaware skipper
<i>Erynnis baptisiae</i>	Wild indigo duskywing
<i>Erynnis juvenalis</i>	Juvenal=s duskywing
<i>Euphyes vestris</i>	Dun skipper
<i>Hesperia leonardus</i>	Leonard=s skipper

<i>Poanes hobomok</i>	Hobomok skipper
<i>Poanes viator</i>	Broad-winged skipper
<i>Polites mystic</i>	Long dash
<i>Polites peckius</i>	Peck=s skipper
<i>Polites themistocles</i>	Tawny-edged skipper
<i>Pyrgus communis</i>	Common checkered skipper
<i>Thymelicus lineola</i>	European skipper

Lycaenidae (Harvesters, Coppers, Hairstreaks and Blues)

<i>Celastrina argiolus</i>	Spring azure
<i>Everes comyntas</i>	Eastern tailed-blue
<i>Feniseca tarquinius</i>	Harvestor
<i>Lycaena phaleas</i>	American copper

Nymphalidae (Brush-footed Butterfly Family)

<i>Boloria bellona</i>	Meadow fritillary
<i>Chlosyne harrissii</i>	Harris= checkerspot
<i>Coenonympha tullia</i>	Common ringlet
<i>Enodia anhedon</i>	Northern pearly eye
<i>Limenitus archippus</i>	Viceroy
<i>Limenitus arthemis</i>	White admiral
<i>Nymphalis antiopa</i>	Mourning cloak
<i>Phyciodes tharos</i>	Pearl crescent
<i>Polygonia interrogationis</i>	Question mark
<i>Speyeria aphrodite</i>	Aphrodite fritillary
<i>Speyeria cybele</i>	Great spangled fritillary
<i>Vanessa atalanta</i>	Red admiral
<i>Vanessa cardui</i>	Painted lady
<i>Vanessa virginiensis</i>	American lady

Papilionidae (Swallowtail Family)

<i>Papilo glaucus</i>	Eastern tiger swallowtail
<i>Papilo polyxenes</i>	Black swallowtail
<i>Papilo troilus</i>	Spicebush swallowtail

Pieridae (Whites, Sulfurs and Orange-tips)

<i>Colias eurytheme</i>	Orange sulphur
<i>Colias philodice</i>	Clouded sulphur
<i>Pieris rapae</i>	Cabbage white
<i>Thorybes confusis</i>	Northern cloudywing

Satyridae (Satyrs, Wood Nymphs and Arctics)

<i>Ceryonis pegala</i>	Common wood nymph
<i>Megisto cymela</i>	Little wood satyr

Moths

Arctiidae (Tiger, Lichen and Wasp Moth Family)

*Ctenucha virginica**Grammia virgo**Hyphantria cunia**Hypoprepia fucosa*

Ctenuchid moth

Virgin tiger moth

Fall webworm

Painted lichen moth

Geometridae (Inchworm Moth Family)

*Euchlaena serrata**Pero honestaria*

Saw-tooth

Honest pero

Lasiocampidae (Tent Caterpillar Moth Family)

Malacosoma americanum (Fabricius)*Malacosoma disstria* (Hübner)

Eastern tent caterpillar

Forest tent caterpillar

Lymantriidae (Tussock Moth Family)

*Lymantria dispar**Orgyia leucostigma*

Gypsy moth

White-marked tussock moth

Noctuidae (Owlet Moth Family)

Apamea amputatrix

Yellow-headed cutworm moth

Notodontidae (Prominents Moth Family)

Datana sp.

Saturniidae (Giant Silkworm Moth Family)

Actias luna (Linnaeus)*Antheraea polyphemus**Automeris io*

Luna moth

Polyphemus moth

IO moth

Arachnida

Araneae

Araneidae (Orb Weaver Family)

*Mangora placida**Argiope aurantia*

Black and yellow argiope

Clubionidae (Two-clawed Hunting Spiders)

*Clubiona abboti**Clubionoides excepta*

Gnaphosidae (Hunting Spider Family)

Gnaphosa fontinalis

Linyphidae (Sheet-web Spider Family)

Pitiohyphantes costatus

Lycosidae (Wolf Spider Family)

Lycosa sp

Wolf spider

Pisauridae (Nursery-web and Fishing Spiders)

Dolomedes triton

Six-spotted fishing spider

Pisauria mira

Tetragnathidae (Long-jawed Orb Weavers)

*Tetragnatha elongata**Tetragnatha laboriosa*

Theridiidae (Comb-footed spiders)

*Conopistha cancellata**Enoplognatha ovata**Thymoites unimaculatus*

Thomisidae (Crab Spider Family)

Misumena vatia

Goldenrod spider

*Misumenops asperatus**Xysticus elegans*

MOLLUSCS

Gastropoda

Slugs

Agriolimacidae

Deroceras agreste

Megogastropoda

Snails

Hydrobiidae

Amnicola limnosa

Mud amnicola

Viviparidae

Campeloma sp.*Helisoma trivolvis**Lymnae humilus**Physa sayii**Syraulus* sp.*Tarebia* sp.*Viviparus georgianus**Viviparus sincera**Viviparus tricarinata*

Banded mysterysnail

Mollusca

Clams and mussels

*Anodonta grandis**Dreissena polymorpha**Elliptio complanatus*

Zebra mussel

OTHER SOIL INVERTEBRATES

Crustacea

Isopoda

Oniscidae

*Armadillidium vulgare**Trichoniscus pusillus**Oniscus asellus*

Common pillbug

European sowbug

Porcelionidae

Porcellio spinicornus

FISH Fish taxonomy based on Samuel Eddy and James C. Underhill. 1978. How to Know the Freshwater Fishes. William C. Brown Publishers. Dubuque, Iowa.. 215 p.

Salmonidae (Salmon Family)	
<i>Oncorhynchus mykiss</i>	Rainbow trout
<i>Salmo trutta</i>	Brown trout
<i>Salvelinus fontinalis</i>	Brook trout
Esocidae (Pike Family)	
<i>Esox lucius</i>	Northern pike
<i>Esox niger</i>	Chain pickerel
Umbridae (Mudminnow Family)	
<i>Umbra limi</i>	Central mudminnow
Cyprinidae (Minnow Family)	
<i>Cyprinus carpio</i>	European carp
<i>Notemigonus crysoleucas</i>	Golden shiner
<i>Notropis atherinoides</i>	Emerald shiner
<i>Notropis cornutus</i>	Common shiner
<i>Pimephales notatus</i>	Blunt-nose minnow
<i>Pimephales promelas</i>	Fat-head minnow
<i>Rhinichthys cataractae</i>	Longnose dace
<i>Semotilus atromaculatus</i>	Creek chub
Catostomidae (Sucker Family)	
<i>Catostomus commersoni</i>	White sucker
Ictaluridae (Catfish Family)	
<i>Ictalurus nebulosus</i>	Brown bullhead
Cyprinodontidae (Killifish Family)	
<i>Fundulus diaphanus</i>	Banded killifish
Atherinidae (Silverside Family)	
<i>Labidesthes sicculus</i>	Brook silverside
Centrarchidae (Sunfish Family)	
<i>Ambloplites rupestris</i>	Rock bass
<i>Lepomis gibbosus</i>	Pumpkinseed sunfish
<i>Lepomis macrochirus</i>	Bluegill sunfish
<i>Micropterus dolomieu</i>	Small-mouth bass
<i>Micropterus salmoides</i>	Large-mouth bass
<i>Pomoxis nigromaculatus</i>	Black crappie

Percidae (Perch Family)

*Perca flavescens**Percina caprodes**Stizostedion vitreum*

Yellow perch

Logperch

Walleye

AMPHIBIANS Amphibian taxonomy based on Alvin Breisch (editor). 1999. New York State Herp Atlas. New York State Department of Environmental Conservation. Delmar, New York.

Anura

Bufonidae (Toad Family)

Bufo americanus

American toad

Hylidae (Peeper Family)

Hyla versicolor

Northern gray treefrog

Pseudacris crucifer

Northern spring peeper

Pseudacris triseriata

Western chorus frog

Ranidae (Frog Family)

Rana catesbeiana

Bullfrog

Rana clamitans

Green frog

Rana palustris

Pickerel frog

Rana pipens

Northern leopard frog

Rana sylvatica

Wood frog

Urodela

Ambystomidae (Mole Salamander Family)

Ambystoma jeffersonianum

Jefferson salamander

Ambystoma laterale

Blue-spotted salamander

Ambystoma maculatum

Spotted salamander

Plethodontidae (Lungless Salamander Family)

Desmognathus ochrophaeus

Mountain dusky salamander

Desmognathus fuscus

Northern dusky salamander

Eurycea bislineata

Northern two-lined salamander

Gyrinophilus porphyriticus porphyriticus

Northern spring salamander

Hemidactylium scutatum

Four-toed salamander

Plethodon cinereus

Redback salamander

Plethodon glutinosus glutinosus

Northern slimy salamander

Salamandridae (Newt Family)

Nothophthalmus viridescens

Red-spotted newt

REPTILES Reptile taxonomy based on Alvin Breisch (editor). 1999. New York State Herp Atlas. New York State Department of Environmental Conservation. Delmar, New York.

Chelydridae (Snapping Turtle Family)	
<i>Chelydra serpentina</i>	Common snapping turtle
Emydidae (Pond and Box Turtle Family)	
<i>Chrysemys picta marginata</i>	Midland painted turtle
Trionychidae (Softshell Turtle Family)	
<i>Apalone spinifera</i>	Eastern spiny softshell turtle
Scincidae (Skink Family)	
<i>Eumeces anthracinus</i>	Coal Skink
Colubridae (Colubrid Snake Family)	
<i>Coluber constrictor</i>	Northern black racer
<i>Diadophis punctatus edwarsi</i>	Northern ringneck snake
<i>Elaphe obsoleta obsoleta</i>	Black rat snake
<i>Lampropeltis triangulum</i>	Eastern milk snake
<i>Nerodia sipedon</i>	Northern water snake
<i>Opheodrys vernalis</i>	Smooth green snake
<i>Storeria dekayi dekayi</i>	Northern brown snake
<i>Storeria occipitomaculata</i>	Northern redbelly snake
<i>Thamnophis sauritus</i>	Ribbon snake
<i>Thamnophis sirtalis</i>	Common garter snake
Viperidae (Pit Viper Family)	
<i>Crotalus horridus</i>	Timber rattlesnake

BIRDS Avian taxonomy based on Mary B. Dickinson (editor). 1999. Field Guide to the Birds of North America. 3rd Edition. National Geographic Society. Washington, D.C. 480 p.

Gaviidae (Loon Family)	
<i>Gavia immer</i>	Common loon
Podicipedidae (Grebe Family)	
<i>Podilymbus podiceps</i>	Pied-billed grebe
Ardeidae (Heron and Bittern Family)	
<i>Ardea herodias</i>	Great blue heron
<i>Botaurus lentiginosus</i>	American bittern
<i>Butorides virescens</i>	Green heron
Anatidae (Duck, Geese and Swan Family)	
<i>Aix sponsa</i>	Wood duck
<i>Anas americana</i>	American wigeon
<i>Anas crecca</i>	Green-winged teal
<i>Anas discors</i>	Blue-winged teal
<i>Anas platyrhynchos</i>	Mallard
<i>Anas rubripes</i>	Black duck
<i>Aythya americana</i>	Redhead
<i>Aythya collaris</i>	Ring-necked duck
<i>Aythya marila</i>	Greater scaup
<i>Branta canadensis</i>	Canada goose
<i>Bucephala albeola</i>	Bufflehead
<i>Bucephala clangula</i>	Common goldeneye
<i>Cygnus columbianus</i>	Tundra swan
<i>Lophodytes cucullatus</i>	Hooded merganser
<i>Mergus merganser</i>	Common merganser
Cathartidae (New World Vulture Family)	
<i>Cathartes aura</i>	Turkey vulture
Accipitridae (Hawk, Kite and Eagle Family)	
<i>Accipter cooperii</i>	Cooper=s hawk
<i>Accipter gentilis</i>	Northern goshawk
<i>Accipter striatus</i>	Sharp-shinned hawk
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Buteo lineatus</i>	Red-shouldered hawk
<i>Buteo platypterus</i>	Broad-winged hawk
<i>Circus cyaneus</i>	Northern harrier
<i>Haliaeetus leucocephalus</i>	Bald eagle
<i>Pandion haliaetus</i>	Osprey

Falconidae (Falcon Family)	
<i>Falco sparverius</i>	American kestrel
Phasianidae (Partridge, Grouse and Turkey Family)	
<i>Bonasa umbellus</i>	Ruffed grouse
<i>Meleagris gallopavo</i>	Wild turkey
<i>Phasianus colchicus</i>	Ring-necked pheasant
Rallidae (Rail, Gallinule and Coot Family)	
<i>Fulica americana</i>	American coot
Charadriidae (Plover Family)	
<i>Charadrius vociferus</i>	Killdeer
Scolopacidae (Sandpiper Family)	
<i>Actitis macularia</i>	Spotted sandpiper
<i>Scolopax minor</i>	American woodcock
<i>Tringa flavipes</i>	Greater yellowlegs
<i>Tringa solitaria</i>	Solitary sandpiper
Laridae (Gull and Tern Family)	
<i>Larus argentatus</i>	Herring gull
<i>Larus delawarensis</i>	Ring-billed gull
Columbridae (Pigeon and Dove Family)	
<i>Columba livia</i>	Rock dove
<i>Zenaida macroura</i>	Mourning dove
Cuculidae (Cuckoo Family)	
<i>Coccyzus americanus</i>	Yellow-billed cuckoo
<i>Coccyzus erythrophthalmus</i>	Black-billed cuckoo
Strigidae (Owl Family)	
<i>Aegolius acadicus</i>	Northern saw-whet owl
<i>Bubo virginianus</i>	Great horned owl
<i>Otus asio</i>	Eastern screech-owl
<i>Strix varia</i>	Barred owl
<i>Tyto alba</i>	Barn Owl
Caprimulgidae (Nighthawk Family)	
<i>Caprimulgus vociferus</i>	Whip-poor-will

Apodidae (Swift Family)	
<i>Chaetura pelagica</i>	Chimney swift
Trochilidae (Hummingbird Family)	
<i>Archilochus colubris</i>	Ruby-throated hummingbird
Alcedinidae (Kingfisher Family)	
<i>Ceryle alcyon</i>	Belted kingfisher
Picidae (Woodpecker Family)	
<i>Colaptes auratus</i>	Northern flicker
<i>Dryocopus pileatus</i>	Pileated woodpecker
<i>Melanerpes carolinus</i>	Red-bellied woodpecker
<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker
<i>Picoides pubescens</i>	Downy woodpecker
<i>Picoides villosus</i>	Hairy woodpecker
<i>Sphyrapicus varius</i>	Yellow-bellied sapsucker
Tyrannidae (Tyrant Flycatcher Family)	
<i>Contopus virens</i>	Eastern wood-pewee
<i>Empidonax minimus</i>	Least flycatcher
<i>Empidonax traillii</i>	Willow flycatcher
<i>Empidonax virescens</i>	Acadian flycatcher
<i>Myiarchus crinitus</i>	Great-crested flycatcher
<i>Sayornis phoebe</i>	Eastern phoebe
<i>Tyrannus tyrannus</i>	Eastern kingbird
Laniidae (Shrike Family)	
<i>Lanius excubitor</i>	Northern shrike
Vireonidae (Vireo Family)	
<i>Vireo flavifrons</i>	Yellow-throated vireo
<i>Vireo gilvus</i>	Warbling vireo
<i>Vireo griseus</i>	White-eyed vireo
<i>Vireo olivaceus</i>	Red-eyed vireo
<i>Vireo philadelphicus</i>	Philadelphia vireo
<i>Vireo solitarius</i>	Blue-headed vireo
Corvidae (Crow and Jay Family)	
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	Common raven
<i>Cyanocitta cristata</i>	Blue jay

Hirundinidae (Swallow Family)	
<i>Hirundo rustica</i>	Barn swallow
<i>Progne subis</i>	Purple martin
<i>Riparia riparia</i>	Bank swallow
<i>Steigodopteryx serripennis</i>	Northern rough-winged swallow
<i>Tachycineta bicolor</i>	Tree swallow
Paridae (Chickadee and Titmouse Family)	
<i>Baeolophus bicolor</i>	Tufted titmouse
<i>Poecile atricapillus</i>	Black-capped chickadee
Certhiidae (Creeper Family)	
<i>Certhia americana</i>	Brown creeper
Sittidae (Nuthatch Family)	
<i>Sitta canadensis</i>	Red-breasted nuthatch
<i>Sitta carolinensis</i>	White-breasted nuthatch
Troglodytidae (Wren Family)	
<i>Thryothorus ludovicianus</i>	Carolina wren
<i>Troglodytes aedon</i>	House wren
<i>Troglodytes troglodytes</i>	Winter wren
Regulidae (Kinglet Family)	
<i>Regulus calendula</i>	Ruby-crowned kinglet
<i>Regulus satrapa</i>	Golden-crowned kinglet
Sylviidae (Old World Warbler and Gnatcatcher Family)	
<i>Polioptila caerulea</i>	Blue-gray gnatcatcher
Turdidae (Thrush Family)	
<i>Catharus fuscescens</i>	Veery
<i>Catharus guttatus</i>	Hermit thrush
<i>Hylocichla mustelina</i>	Wood thrush
<i>Sialia sialis</i>	Eastern bluebird
<i>Turdus migratorius</i>	American robin
Mimidae (Mockingbird and Thrasher Family)	
<i>Dumetella carolinensis</i>	Gray catbird
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Toxostoma rufum</i>	Brown thrasher
Sturnidae (Starling Family)	
<i>Sturnus vulgaris</i>	European starling

Motacillidae (Wagtail and Pipit Family)	
<i>Anthus rubescens</i>	American pipit
Bombycillidae (Waxwing Family)	
<i>Bombycilla cedrorum</i>	Cedar waxwing
Parulidae (Wood Warbler Family)	
<i>Dendroica caerulescens</i>	Black-throated blue warbler
<i>Dendroica castanea</i>	Bay-breasted warbler
<i>Dendroica coronata</i>	Yellow-rumped warbler
<i>Dendroica fusca</i>	Blackburnian warbler
<i>Dendroica magnolia</i>	Magnolia warbler
<i>Dendroica palmarum</i>	Palm warbler
<i>Dendroica pensylvanica</i>	Chestnut-sided warbler
<i>Dendroica petechia</i>	Yellow warbler
<i>Dendroica pinus</i>	Pine warbler
<i>Dendroica virens</i>	Black-throated green warbler
<i>Geothlypis trichas</i>	Common yellowthroat
<i>Mniotilta varia</i>	Black-and-white warbler
<i>Oporornis philadelphia</i>	Mourning warbler
<i>Parula americana</i>	Northern parula
<i>Seiurus aurocapillus</i>	Ovenbird
<i>Seiurus motacilla</i>	Louisiana waterthrush
<i>Seiurus noveboracensis</i>	Northern waterthrush
<i>Setophaga ruticilla</i>	American redstart
<i>Vermivora chrysoptera</i>	Golden-winged warbler
<i>Vermivora peregrina</i>	Tennessee warbler
<i>Vermivora pinus</i>	Blue-winged warbler
<i>Vermivora ruficapilla</i>	Nashville warbler
<i>Wilsonia citrina</i>	Hooded warbler
Thraupidae (Tanager Family)	
<i>Piranga olivacea</i>	Scarlet tanager
Emberizidae (Towhee, Sparrow and Junco Family)	
<i>Junco hyemalis</i>	Dark-eyed junco
<i>Melospiza georgiana</i>	Swamp sparrow
<i>Melospiza melodia</i>	Song sparrow
<i>Passerella iliaca</i>	Fox sparrow
<i>Pipilo erythrophthalmus</i>	Eastern towhee
<i>Spizella arborea</i>	American tree sparrow
<i>Spizella passerina</i>	Chipping sparrow
<i>Spizella pusilla</i>	Field sparrow

<i>Zonotrichia albicollis</i>	White-throated sparrow
<i>Zonotrichia leucophrys</i>	White-crowned sparrow
Cardinalidae (Cardinal Family)	
<i>Cardinalis cardinalis</i>	Northern cardinal
<i>Passerina cyanea</i>	Indigo bunting
<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak
Icteridae (Blackbird Family)	
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Dolichonyx oryzivorus</i>	Bobolink
<i>Euphagus carolinus</i>	Rusty blackbird
<i>Icterus galbula</i>	Baltimore oriole
<i>Molothrus ater</i>	Brown-headed cowbird
<i>Quiscalus quiscula</i>	Common grackle
<i>Sturnella magna</i>	Eastern meadowlark
Fringillidae (Finch Family)	
<i>Carduelis flammea</i>	Common redpoll
<i>Carduelis pinus</i>	Pine siskin
<i>Carduelis tristis</i>	American goldfinch
<i>Carpodacus mexicanus</i>	House finch
<i>Carpodacus purpureus</i>	Purple finch
<i>Coccothraustes vespertinus</i>	Evening grosbeak
<i>Loxia curvirostra</i>	Red crossbill
<i>Pinicola enucleator</i>	Pine grosbeak
Passeridae (Old World Sparrow Family)	
<i>Passer domesticus</i>	House sparrow

MAMMALS Mammal taxonomy based on Jon (Sandy) Dobbyn. 1994. Atlas of the mammals of Ontario. Federation of Ontario Naturalists. Don Mills, Ontario, Canada. 120 p.

Didelphimorphia

Didelphimorphidae

Didelphis virginiana

Virginia opossum

Insectivora

Soricidae (Shrew Family)

Blarina brevicauda

Northern short-tail shrew

Cryptotis parva

Least shrew

Sorex palustris

Water shrew

Talpidae (Mole Family)

Condylura cristata

Star-nosed mole

Chiroptera

Vespertilionidae (Bat Family)

Eptesicus fuscus

Big brown bat

Myotis lucifuga

Little brown bat

Carnivora

Canidae (Dog Family)

Canis latrans

Coyote

Urocyon cinereoargenteus

Gray fox

Vulpes vulpes

Red fox

Mephitidae (Skunk Family)

Mephitis mephitis

Striped skunk

Mustelidae (Weasel Family)

Lontra canadensis

River otter

Martes pennanti

Fisher

Mustela erminea

Short-tailed weasel

Mustela vison

Mink

Procyonidae (Raccoon Family)

Procyon lotor

Raccoon

Ursidae (Bear Family)

Ursus americanus

Black Bear

Rodentia

Castoridae (Beaver Family)

Castor canadensis

Beaver

Cricetidae (Vole Family)

Ondatra zibethica

Muskrat

Erethizonitidae (Porcupine Family)

Erethizon dorsatum

Porcupine

Muridae (House Mouse Family)

*Microtus pennsylvanicus**Peromyscus leucopus**Peromyscus maniculatus*

Meadow vole

White-footed mouse

Deer mouse

Sciuridae (Squirrel Family)

*Glaucomus volans**Marmota monax**Sciurus carolinensis**Tamias striatus**Tamiasciurus hudsonicus*

Southern flying squirrel

Woodchuck

Gray squirrel

Eastern chipmunk

Red squirrel

Zapodidae (Jumping Mouse Family)

*Napaeozapus insignis**Zapus hudsonius*

Woodland jumping mouse

Meadow jumping mouse

Lagomorpha

Leporidae (Rabbit and Hare Family)

Sylvilagus floridanus

Eastern cottontail

Artiodactyla

Cervidae (Deer Family)

Odocoileus virginianus

White-Tailed Deer

Micro- and Macro-Organisms in Honeoye Lake

PHYTOPLANKTON

Cyanophyta

Cyanobacteria (formerly blue-green algae)

*Anabaena flos-aquae**Aphanizomenon* sp.*Gomphosphaeria lacustris**Lyngbya birgei**Lyngbya limnetica**Merismopedia tenuissima**Microcystis aeruginosa**Oscillatoria prolifica**Stichosiphon regularis*

Chlorophyta

Green algae

*Ankistrodesmus falcatus**Ankistrodesmus spiralis**Carteria cordiformis**Coelastrum microporum**Cosmarium botrytis**Dictyosphaerium pulchellum**Golenkinia paucispina**Micractinium quadrisetum**Oocystis lacustris**Pandorina morum**Quadrigula lacustris**Scenedesmus bijuga**Selenastrum minutum**Sphaerocystis Schroeteri**Staurastrum natator* var. *crassum**Stylosphaeridium stipitatum*

Chrysophyta

Golden-brown algae and diatoms

*Asterionella formosa**Biocoecca socialis**Chromulina ovalis**Cladomonas fruticulosa**Cocconeis placentula**Cyclotella* sp.*Diatoma tenue* var. *elongatum*

Dinobyron bavaricum
Dinobyron sertularia
Dinobyron sociale
Fragilaria crotonensis
Fragilaria virescens
Gomphonema olivaceum
Mallomonas akrokomos
Melosira granulate
Navicula minima
Navicula viridula var. *linearis*
Nitzschia acicularis
Nitzschia sigmoidea
Nitzschia vermicularis
Ochromonas sp.
Pinnularia brebessonii
Rhizosolenia eriensis
Stephanodiscus astrea
Synedra acus
Synedra delicatissima var. *delicatissima*
Synedra radians
Synedra rumpens
Synedra ulna
Synura uvella
Tabellaria fenestrata

Cryptophyta

Cryptomonas erosa
Cryptomonas ovata
Cryptomonas pusilla

Pyrrophyta

Dinoflagellates

Ceratium hirundinella
Glenodinium gymnodinium
Glenodinium pulvisculus
Glenodinium quadridens
Peridiniu cinctum

ZOOPLANKTON AND BENTHOS

Arthropoda

Cladocera

Water fleas

Bosmina longirostris
Ceriodaphnia reticulata
Chydorus sphaericus
Daphnia galeata mendotae
Daphnia longiremis
Daphnia retrocurva
Daphnia schodleri
Diaphanasoma birgei
Leptodora kindtii

Copepoda

Copepods

Cyclops bicuspidatus thomasi
Cyclops vernalis
Eucyclops agilis
Mesocyclops edax

Decapoda

Oronectes rusticus

Rusty crayfish

Protozoa

Diffugia lebes
Diffugia oblonga

Rotifera

Rotifers

Ascomorpha sp.
Asplanchna priodonta
Colltheca sp.
Conochilus unicornis
Euchlanis sp.
Filinia terminalis
Kellicottia bostoniensis
Kellicottia longispina
Keratella cochlearis
Keratella crassa
Keratella earlinae
Keratella hiemalis
Monostyla quadridentata

Notholca acuminata
Notholca laurentiae
Ploesoma sp.
Polyarthra dolichoptera
Polyarthra euryptera
Polyarthra major
Polyarthra remata
Polyarthra vulgaris
Pompholyx sp.
Synchaeta sp.
Trichocerca cylindrical
Trichocerca longiseta
Trichocerca multicrotinus

Porifera

Sponge

Spongilla lacustris

Bryozoa

Moss animal

Pectinectea magnifica

APPENDIX: Primary Literature Sources for the Natural Communities and Organisms Listed in this Report

- Banaszewski, W.A., M. Banaszewski, B.A. Gilman and K. Murphy. 1976. Davis Mountain Campus - Resource Inventory and Land Use Master Plan. Community College of the Finger Lakes. Canandaigua, New York. 312 p.
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Additions:

European Rudd
Alewife (historic)