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Appendix A: Glossary

Active River Area The area along a stream that is dynamically involved with the physical and ecological processes that drive and sustain the stream (Smith et al. 2008).

agroecology The study and application of ecological principles to agricultural systems and practices.

alluvium Material, such as sand, silt, clay, and gravel, deposited on land by moving water.

anadromous Migrating from the ocean to spawn in freshwater.

"ancient forest" Forest areas that may never have been cleared for agriculture and other purposes, even though they may have been grazed or selectively cut for firewood or timber. These are not equivalent to "old growth" forests.

argillite A fine-grained compact rock derived from mudstone or shale.

aquifer A water-bearing formation, e.g., in bedrock fractures or solution cavities, or in unconsolidated surficial material such as sands and gravels.

area-sensitive wildlife Wildlife species that require large contiguous habitat areas to meet their life history needs and maintain local populations. Some of these species have large home ranges; some require a complex of habitats distributed over the landscape; some are especially sensitive to human disturbance or are vulnerable to predators or nest parasites that frequent habitat edges.

asl Above sea level.

base flow (of a stream) The sustained flow of a stream in the absence of direct precipitation or surface runoff. Natural base flow is sustained largely by groundwater discharges (https://water.usgs.gov/edu/dictionary.html).

bedrock The solid rock either exposed or underlying soil, rock fragments, or other unconsolidated materials.

biodiversity All the variety of plants, animals, and other living things. The term encompasses diversity at all scales, including landscapes, ecosystems, ecological communities, species, and their genes. From a conservation standpoint, ecologists are mainly concerned about native biodiversity—the biota that have established and developed in the region over millennia, but not the recent introductions since European settlement.

bog A wetland with permanently saturated soils, and that receives most of its water from precipitation instead of groundwater, and that accumulates a deep layer of peat.

calcareous Calcium-rich; containing high concentrations of calcium salts. The term is generally applied to water, soils, and bedrock. The source of calcium in this region is usually calcium carbonate (e.g., limestone), and thus calcareous environments are generally circumneutral or alkaline.

calcicole A plant species that does best in calcium-rich environments (i.e., calcareous rock, soil, or water).

carbon sequestration Capture and long-term storage of atmospheric carbon dioxide or other forms of carbon. Carbon sequestration, whether occurring artificially or by natural biological, chemical,

and physical processes (such as the growth of a tree, or the accumulation of peat in a wetland), is a means of mitigating or deferring global warming.

catadromous Migrating from freshwater streams to the ocean to spawn.

circumneutral Having a pH at or near 7.0 (approximately 6.6–7.3).

conifer forest A forest dominated by conifer trees; i.e., where conifer tree species constitute ≥75% of the forest canopy. Conifers are cone-bearing trees such as white pine, eastern hemlock, tamarack, and eastern red cedar. The native conifers in this region have needle-like or scale-like leaves and are evergreen—that is, they maintain their leaves year-round. An exception is tamarack, which sheds its leaves in the fall. See "deciduous forest" for comparison.

conservation easement A voluntary legal agreement drawn up by a landowner and a qualified public or private agency (such as a land trust) that ensures permanent protection of the land. The landowner retains ownership with many of its rights and responsibilities (including property taxes), and can live on, use, or sell the land or pass it on to heirs, but the conservation easement remains attached to the land in perpetuity. The easement is designed to serve the conservation goals of the landowner and easement holder (e.g., the land trust), and describes permissible and impermissible land uses and land management.

Critical Environmental Area A geographical area with exceptional character with respect to a benefit or threat to human health; a natural setting; agricultural, social, cultural, historic, archaeological, recreational, or educational values; or inherent ecological, geological or hydrological sensitivity that may be adversely affected by any change in land use. A CEA must be formally delineated, mapped, described, and adopted by the municipal legislative body, and registered with the NYS Department of Environmental Conservation (http://www.dec.ny.gov/permits/45500.html). The purpose of establishing a CEA is to raise awareness of the unusual resource values (or hazards) that deserve special attention during environmental reviews and land use decisions. The municipality must ensure that the important attributes of the CEA are considered in the siting and design of land development projects in those areas.

deciduous forest (Also called a "hardwood forest.") A forest dominated by deciduous trees; i.e., where deciduous tree species constitute ≥75% of the forest canopy. Deciduous trees are those that shed their leaves annually. In this region, deciduous trees include oaks, maples, ashes, cherries, beech, and many others. See "conifer forest" for comparison. (Tamarack is the unusual case of a deciduous conifer.)

distributed wind Small turbines for residential, farm, school, or community that offset some or all grid power usage near the point of end use.

dolomite The mineral calcium magnesium carbonate ($CaMg[CO_3]_2$).

dolostone A durable sedimentary rock composed primarily of dolomite (calcium magnesium carbonate); similar to limestone in appearance, hardness, solubility, and human uses.

dredge spoil Sediment material dredged from a waterbody.

ecosystem services The resources and services provided by the natural environment that benefit the human community, such as purification of water and air, cycling of nutrients, mitigation of floods, dispersal of seeds, pollination of agricultural crops, control of agricultural pests and human disease organisms, production of timber, fish, wild game, and other wild foods.

edge effects The influences of habitat edges on interior habitats and species. These may include the effects of noise, light (natural or artificial), wandering pets, accessibility to predators and nest parasites, and pollution introduced from human activities at the habitat edges. Certain edge effects occur at the edges between natural habitats as well as those between natural habitats and human-disturbed areas.

enduring features The hills, valleys, bedrock, and other parts of the landscape that resist change; these are the foundational features that are substantially unaffected by human land uses, wildfires, droughts, floods, hurricanes, climate change, and other significant events that alter the land surface.

Farmland Soils of Statewide Importance A designation of the Natural Resource Conservation Service for soils that are nearly as productive as "prime farmland soils" and that produce high yields of crops when properly managed.

fen (As used in this NRI) an open, herb- and low shrub-dominated wetland fed by calcareous groundwater seepage. This habitat has a distinctive plant community that, in this region, often includes such species as shrubby cinquefoil (*Dasiphora fruticosa*), grass-of-parnassus (*Parnassia glauca*), bog goldenrod (*Solidago uliginosa*), and woolly-fruit sedge (*Carex lasiocarpa*).

flood attenuation The effects of storing and retaining floodwater and slowly releasing it to the groundwater, a stream, or other water body, thereby reducing the peak downstream flows.

floodplain The area bordering a stream that is subject to frequent or infrequent flooding.

forb A broad-leaved herbaceous (non-woody) plant. (Compare to "graminoid.")

habitat fragmentation Dividing (by roads, driveways, utility corridors, other developed features) large, continuous habitat areas into smaller, more isolated remnants.

gabion A wire-mesh container filled with rocks, broken concrete, or other coarse material used to fortify retaining walls and other structures.

glacial outwash Mineral material (gravel, sand, and silt) deposited by the melting ice of a glacier.

glacial till Mixed mineral material (clay, silt, sand, rocks) transported and deposited by glacial ice, or by streams flowing from a melting glacier.

lacustrine deposits Sand, silt, and clay particles that settled on the bottom of an ancient lake.

gradient (As used in this NRI) slope, or degree of slope (e.g., a steep or gentle gradient).

graminoid A grass-like plant. Graminoids includes grasses (Poaceae), sedges (Cyperaceae), and rushes (Juncaceae).

graywacke An impure gray sandstone.

green infrastructure An approach to water management that incorporates natural systems (and mimicry of natural systems), sometimes in combination with engineered systems to protect, restore,

or maintain water resources and ecosystem functions. Some examples are protection or restoration of floodplains, wetlands, or forests, or use of urban rain gardens, permeable pavement, green roofs, rainwater barrels, graywater retrieval systems, and vegetated swales.

groundwater The water that resides beneath the soil surface in spaces between sediment particles and in rock fissures and seams.

groundwater recharge The process by which water flows or percolates from the ground surface to an aquifer—an underground water-bearing formation in bedrock or loose material such as sand or gravel.

habitat The place or environment where an organism normally spends all or part of its life. A habitat is defined by both the biological (e.g., plants and animals) and the non-biological (soil, bedrock, water, sunlight, temperatures, etc.) components.

habitat assessment As used in this NRI, an appraisal conducted by means of map analysis and field observations to identify and describe the character and condition of habitats and water features on a site, and the implications for land uses and conservation. A habitat assessment should be carried out by biologists familiar with habitats and biota of the region, and the life history needs of species of conservation concern.

habitat edge The boundary between two different kinds of habitats or biological communities or between other different landscape elements.

headwaters The upper reaches of a stream, near the stream's origin.

herbaceous Non-woody. Herbaceous plants include, for example, forbs, graminoids, mosses, and liverworts.

hydric soils Soils formed under conditions of saturation for long enough during the growing season to develop anaerobic (oxygen-free) conditions near the ground surface. The presence of hydric soils is one of the three features necessary (along with wetland hydrology and hydrophytic vegetation) for identifying an area as wetland.

hydroperiod The seasonal pattern of inundation or soil saturation.

impervious surface Surfaces such as roofs, pavement, or compacted soils that impedes or prevents the local infiltration of water to the soils or underlying substrate.

intermittent stream A stream that typically flows for only part of the year.

intermittent woodland pool A vernal pool (see below) in a forested setting.

invertebrate An animal that lacks a spinal column. Invertebrates include insects, mollusks, crustaceans, nematodes, spiders, centipedes, protozoans, and a host of other macroscopic and microscopic organisms.

kame An irregular hill or short ridge composed of mineral material deposited by a glacier.

kettle A depression in the ground surface formed by the melting of a stranded block of glacial ice that was buried or partially buried by outwash drift.

landform A natural feature on the Earth's surface such as a hill, valley, plain, or ravine.

LiDAR Light Detection and Ranging—a method of remote sensing that uses pulsed laser to measure variable distances between the instrument (on an aircraft) and the Earth. Images produced by LiDAR depict details of the ground surface that are obscured by vegetation in aerial photographs.

limestone A fine-grained sedimentary rock composed of calcium carbonate.

liverwort A non-vascular plant, closely related to mosses but differing in leaf characteristics and reproductive structures.

marble A medium-grained metamorphic rock of interlocking calcite crystals derived from limestone.

marl A mud or mudstone rich in calcium carbonate but also containing admixtures of clay and silt. It is chemically similar to limestone, and may occur as rock or in semi-liquid form. Marl forms from decaying plant and animal material in certain kinds of wetlands.

marsh A wetland that typically has standing water for a prolonged period during the growing season, and is dominated by herbaceous (non-woody) vegetation with species such as cattail, bur-reed, pond-lily, and arrowhead.

mesopredator A mid-ranking predator in a food web. Some examples in our habitats are foxes, raccoon, skunk, bobcat, and snakes.

microclimate The climate of a very localized area; for example the hot, dry conditions on a rocky barren in summer, or the cool, moist conditions beneath a rotting log on the forest floor.

microhabitat A very localized habitat with characteristics distinct from those of the larger surrounding habitat; for example, a tree cavity within a deciduous forest, or a woody hummock within a swamp.

native species A plant or animal species that is indigenous to the region; that is, a species that arrived here by natural dispersal processes and not by human agency.

NGO Non-governmental organization.

non-native species A plant or animal introduced to the region by human agency, intentionally or unintentionally. (See “native species” for comparison.)

non-point source pollution Pollution emanating from a diffuse source such as unchannelized runoff from a paved parking lot or an agricultural field. (See point-source pollution.)

NYNHP New York Natural Heritage Program, an agency that serves as a repository and clearinghouse for information on the occurrence, distribution, and status of plants, animals, and natural communities in the state.

NYSDEC New York State Department of Environmental Conservation.

old growth forest A forest ecosystem that has attained great age (e.g., 150+ years) without significant disturbance from human activities such as cutting, soil disturbance, or intentional burning. These systems are variable in appearance, structure, and development history, but are often distinguished by old trees, diverse vertical and horizontal vegetation structure, and accumulations of large standing snags and downwood.

organic duff The accumulation of organic matter on the forest floor, usually in many stages of decay.

parasitoids An insect whose larvae live as parasites and eventually kill their hosts.

peat Partially decomposed organic matter that accumulates under conditions of prolonged water saturation.

perennial stream A stream that typically flows year-round.

phyllite A fine-grained metamorphic rock intermediate in grade between slate and schist (Fisher 2006).

pioneering plant species Plant species that are the first to colonize areas of stripped, disturbed, or damaged soils or other substrate.

point source pollution Pollution emanating from a single point, such as an industrial chimney or discharge pipe from a sewage treatment plant. (See non-point source pollution.)

potamodromous Migrating to and from spawning grounds within freshwater systems; for example, migrating from the freshwater reach of the Hudson into tributary streams to spawn.

Prime Farmland Soils A designation of the Natural Resources Conservation Service for soils that have the best combination of physical and chemical characteristics for producing crops.

quartzite A hard and durable medium-grained metamorphic rock derived from sandstone.

reach (as in "stream reach") A segment of stream or river defined by geographic markers, such as river miles, natural features, or political boundaries.

remote sensing Detecting the physical characteristics of an area from a distance. Typically the term refers to interpretation of satellite or aerial photo imagery and map data to analyze the landscape.

resiliency As used in this document, the capacity to withstand, recover from, and adapt to stresses such as those imposed by floods, climate change, or other catastrophic events.

riparian Within or adjacent to a stream or river.

riprap Layer of rock placed along a streambank or shoreline to prevent erosion.

sandstone A sedimentary rock composed of sand-size grains of cemented mineral and rock particles.

SAV Submergent aquatic vegetation (see below).

schist A medium-grained, layered metamorphic rock derived from shale.

seep Diffuse groundwater discharge to the ground surface. (Compare with "spring.")

SGCN Species of Greatest Conservation Need: a list drawn up by the NYSDEC that includes 1) species on the federal list of endangered or threatened species that occur in New York; 2) species listed as NYS endangered, threatened, or special concern; 3) species with 20 or fewer elemental occurrences in the New York Natural Heritage Program database, and 4) other species deemed by the NYSDEC to be of greatest conservation need due to their status, distribution, and vulnerability.

shale A fine-grained thinly layered sedimentary rock derived from silt and clay.

slate A fine-grained metamorphic rock derived from shale.

snag A standing dead tree.

soil Organic or unconsolidated mineral material that has been acted on by weathering and organic processes.

spring Concentrated groundwater discharge to the ground surface. (Compare with "seep.")

spring ephemeral wildflower A perennial wildflower of forests that blooms in the spring before deciduous trees have developed leaves.

sub-basin The watershed of a tributary to a larger stream.

submergent aquatic vegetation Plants that grow beneath the surface in shallow water areas, but do not emerge above the water surface; "SAV."

surficial deposits Loose material transported and deposited over bedrock. Material may be transported by glaciers (e.g., glacial till, glacial outwash) or by moving water (alluvium).

swamp A wetland dominated by woody vegetation (trees or shrubs).

talus Loose rock debris that accumulates below an exposed bedrock ledge.

thatch Undecomposed, dead plant material that accumulates on the soil surface of a meadow or lawn.

tributary A stream that flows into a larger stream, river, or lake.

unconsolidated aquifer Groundwater stored in saturated sand and gravel deposits.

upland In this document, "upland" is equivalent to "non-wetland." The term implies nothing about elevation; upland areas can be at any elevation, low or high or anywhere in between.

vegetation structure The arrangement of vertical layers and horizontal spacing of vegetation.

vernal pool A wetland—usually small—that is isolated from other wetlands or streams, and that typically holds water in winter and spring, but dries up at some time during the growing season. (See "intermittent woodland pool.")

viewshed The entire area visible from a specified location and, conversely, the entire area from which that location is visible.

watershed The entire land area that drains to a particular place such as a stream, wetland, or pond.

wetland "[An area that is] inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances [does] support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (definition of wetlands regulated under the federal Clean Water Act: at 33 CFR 328.3[c][4]).

wet meadow A wetland that typically has little or no standing water for most of the growing season, and is dominated by herbaceous (non-woody) vegetation.

wind farm A utility site with multiple large wind turbines that connect to the grid via high-voltage transmission lines.

Appendix B: Data sheets for Columbia County Impaired Waterbodies

Kinderhook Creek, Lower, and minor tribs (1310-0021) MinorImpacts

Waterbody Location Information

Revised: 06/03/2008

Water Index No:	H-204- 2	**Drain Basin:**	Lower Hudson River
Hydro Unit Code:	Str Class: C		
Waterbody Type:	River	**Reg/County:**	4/Columbia Co. (11)
Waterbody Size:	41.0 Miles	**Quad Map:**	STOTTVILLE (L-26-4)
Seg Description:	stream and select tribs, from mouth near Valatie		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Suspected
Recreation	Stressed	Suspected
Habitat/Hydrology	Stressed	Possible

Type of Pollutant(s)

Known:	- - -
Suspected:	NUTRIENTS, THERMAL CHANGES
Possible:	Metals (lead)

Source(s) of Pollutant(s)

Known:	- - -
Suspected:	AGRICULTURE, HABITAT MODIFICATION
Possible:	Tox/Contam. Sediment

Resolution/Management Information

Resolution Potential:	Medium
Issue Resolvability:	1 (Needs Verification/Study (see STATUS))
Verification Status:	4 (Source Identified, Strategy Needed)
Lead Agency/Office:	ext/WQCC
TMDL/303d Status:	n/a

Further Details

Overview

Aquatic life support and recreational uses in this portion of Kinderhook Creek are thought to experience minor impacts due to nutrient loadings from agricultural and other nonpoint sources. Aquatic habitat in the stream may also be affected by elevated temperatures and the removal of riparian vegetation.

Water Quality Sampling

NYSDEC Rotating Intensive Basin Studies (RIBS) Intensive Network monitoring of Kinderhook Creek in Rossman, Columbia County, (at Rossman Hill Road) was conducted in 2003. Intensive Network sampling typically includes macroinvertebrate community analysis, water column chemistry, sediment and invertebrate tissues analysis and toxicity evaluation. During this sampling the biological (macroinvertebrate) sampling results indicated slightly impacted water quality conditions. Nutrient enrichment was the most likely factor in this assessment. Water column sampling revealed iron, aluminum and water temperature to be parameters of concern. However, these substances may be considered to be naturally occurring and not a significant source of water quality impacts. Bottom sediment sampling results revealed lead to be exceeding the Threshold Effects level - levels at which adverse impacts occasionally occur. Toxicity testing of the water column showed no significant mortality or reproductive impacts. Based on the consensus of these established assessment methods, overall water quality at this site has minor impacts, but is generally supportive of the water's aquatic life support and recreational use. (DEC/DOW, BWAM/RIBS, January 2005)

A biological (macroinvertebrate) assessment of Kinderhook Creek was also conducted in 2002 during the Biological Screening effort in the basin. Sampling results at that time indicated non-impacted water quality conditions. (DEC/DOW, BWAM/RIBS, January 2005)

These results are consistent with findings of a survey of Kinderhook Creek conducted at multiple sites between Rossman and Garfield in 2000. Sampling results presented in the Kinderhook Creek Biological Stream assessment Report (Bode, et al., May 2001) indicated non-impacted water quality conditions at all but the most upstream and downstream sites; however two of the three sites within this downstream reach (at Rossman and Stuyvesant Falls) were found to be slightly impacted. In spite of these minor impacts nutrient biotic indices indicate aquatic life support is fully supported in the stream. (DEC/DOW, BWAM/SBU, June 2005)

Other Issues/Threats

Aquatic life support in this portion of the Kinderhook Creek may be affected by occasional high temperatures. While somewhat higher water temperatures during the summer months are to be expected, the removal of riparian buffer and canopy vegetation along the creek may be exacerbating the problem. Kinderhook Creek is a popular trout water and has been designated a "priority" watershed by the Columbia County WQCC. The county has raised concerns about potential threats from agricultural activity runoff, streambank erosion, subdivision construction/development and road salting/sanding that may also affect aquatic life including the fishery. The county has received funding to conduct Agricultural Environmental Management (AEM) assessments in the watershed and is pursuing funding to form a watershed advisory committee. (Columbia County WQCC, June 1998)

Fishery Assessment

Below Valatie the stream is designated as and considered a warmwater fishery and is not generally supportive of trout populations. (DEC/DFWMR, Region 4, November 1999)

Segment Description

This segment includes the portion of the stream and selected/smaller tribs from the mouth to Klein Kill (-9) near Valatie. The waters of this portion of the stream are Class C. Tribs to this reach/segment, including Brophy Creek (-8), are Class C,C(T). Valatie Kill (-7), Klein Kill (-9) and Middle/Upper Kinderhook Creek are listed separately.

Valatie Kill, Middle, and tribs (1310-0003) Impaired Seg

Waterbody Location Information

Revised: 05/29/2008

Water Index No: H-204- 2- 7
Drain Basin: Lower Hudson River
Middle Hudson River
Hydro Unit Code: 02020006/120
Str Class: C(T)
Waterbody Type: River
Reg/County: 4/Rensselaer Co. (42)
Waterbody Size: 38.8 Miles
Quad Map: KINDERHOOK (L-26-1)
Seg Description: stream and tribs, from Kinderhook Lake to Rosecrans Pk

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
FISH CONSUMPTION	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)

Known: PRIORITY ORGANICS (PCBs)
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)

Known: LANDFILL/LAND DISP. (Dewey Loeffel)
Suspected: Tox/Contam. Sediment
Possible: - - -

Resolution/Management Information

Resolution Potential: Medium
Issue Resolvability: 3 (Strategy Being Implemented)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/DER
TMDL/303d Status: 2b (Multiple Segment/Categorical Water, Fish Consumption)

Further Details

Overview

Fish consumption and recreational uses in this portion of Valatie Kill are considered to be impaired due to PCB contamination from past hazardous waste land disposal.

Fish Consumption Advisories

Fish consumption in this portion of Valatie Kill is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of American eel, bluegill and redbreasted sunfish because of elevated PCB levels. The source of contamination has been identified as the Dewey Loeffel hazardous

waste disposal site. This advisory applies to the entire segment from Kinderhook Lake to Nassau Lake. The advisory was first issued prior to 1998-99. (2007-08 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2007)

Hazardous Waste Site Impacts

The Dewey Loeffel inactive hazardous waste disposal site (Site No. 4-42-006) has been identified as a source of both surface and groundwater contamination in the Nassau Lake watershed. This industrial waste site was used to dispose of industrial solvents, PCB contaminated oils, paints and other chemicals until it was closed in 1970. Construction of source containment measures were completed in 1984; however PCB contamination in off-site drainage and elevated PCBs in fish from Nassau Lake were subsequently identified. Elevated levels of trichloroethene, methyl chloride and benzene were also reported in the groundwater near the site in 1993. Numerous investigations have been completed to date. These include an engineering evaluation followed by design and construction of a slurry wall and containment cell cap to address contaminant source controls within the landfill; RI/FS documents and Record of Decision (ROD) dated January 2001 addressing groundwater contamination and enhanced source controls; and RI/FS documents and ROD dated January 2002 addressing surface water PCB-contamination that has impacted water, sediment and biota in the Nassau Lake drainage basin. Construction of a replacement Nassau Lake dam and pumping from the off-site groundwater plume began in early 2008. Currently, the design to address the groundwater contamination (OU2) is underway and is expected to be completed in 2008. Locations with elevated PCB-contamination in the drainage basin has been mitigated. Long term site management continues and includes continued pump out and off-site disposal of leachate collected from the containment cell, groundwater monitoring to assess containment cell integrity and tracking of the off-site groundwater plume and surface water drainage basin monitoring. Fish sampling continue to show elevated levels of PCBs, resulting in the NYSDOH advisory. However, levels of PCB in sediment are low and recreational use of the lake is not restricted. (DEC/DER, Environmental Site Remediation Database, 2008)

Section 303(d) Listing

This portion of Valatie Kill is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water. This waterbody was first listed prior to the 2002 Section 303(d) List. (DEC/DOW, BWAM, May 2008)

Segment Description

This segment includes the portion of the stream and all tribs from Kinderhook Lake (P24) to Nassau Lake (P34) in Rosecrans Park. The waters of this portion of the stream are Class C(T). Tribs to this reach/segment are Class C. Lower/Upper Valatie Kill are listed separately.

Kinderhook Lake (1310-0002) Impaired Seg

Waterbody Location Information

Revised: 05/01/2008

Water Index No: H-204- 2- 7-P24
Hydro Unit Code: 02020006/120
Waterbody Type: Lake
Waterbody Size: 344.6 Acres
Seg Description: entire lake

Drain Basin: Lower Hudson River
Middle Hudson River
Str Class: B
Reg/County: 4/Columbia Co. (11)
Quad Map: KINDERHOOK (L-26-1)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
FISH CONSUMPTION	Impaired	Known
Aquatic Life	Stressed	Possible
RECREATION	Impaired	Known
Aesthetics	Stressed	Suspected

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (vegetation), NUTRIENTS (phosphorus), PRIORITY ORGANICS (PCBs)
Suspected: - - -
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: - -
Suspected: ONSITE/SEPTIC SYST, TOX/CONTAM. SEDIMENT, Agriculture, Landfill/Land Disp. (Dewey Loeffel), Urban/Storm Runoff
Possible: - - -

Resolution/Management Information

Resolution Potential: Medium
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: DEC/DER
TMDL/303d Status: 1,2b (Individual Waterbody Impairment Requiring a TMDL, more)

Further Details

Overview

Fish consumption and recreational uses in Kinderhook Lake are considered to be impaired due to PCB contamination and aquatic weed and algal growth and low water transparency. A fish consumption adviso-

ry has been issued for the lake due to impacts from past land disposal. Elevated nutrient (phosphorus) loads attributed to nonpoint sources are considered the primary contributors to the recreational and aesthetic impacts. Previous assessments noted that failing and/or inadequate onsite septic systems serving lake shore homes as well as agricultural nonpoint sources may be contributing to the water quality problems.

Fish Consumption Advisories

Fish consumption in Kinderhook Lake is impaired due to a NYSDOH health advisory that recommends eating no more than one meal per month of American eel because of elevated PCB levels. This advisory was first issued prior to 1998-99. (2006-07 NYSDOH Health Advisories and DEC/DFWMR, Habitat, December 2006)

Hazardous Waste Site Impacts

The Dewey Loeffel Inactive Hazardous Waste Disposal site (Site No. 4-42-006) located along Nassau Lake just upstream has been identified as the source of PCB contamination in Kinderhook Lake. This industrial waste site was used to dispose of industrial solvents, PCB contaminated oils, paints and other chemicals until it was closed in 1970. Construction of source containment measures were completed in 1984; however PCB contamination in off-site drainage and elevated PCBs in fish from Nassau Lake were subsequently identified. Fish sampling continue to show elevated levels of PCBs, resulting in the NYSDOH advisory. However, levels of PCB in sediment are low and recreational use of the lake is not restricted. See also the listing for Nassau Lake. (DEC/DER, Environmental Site Remediation Database, 2008)

Water Quality Sampling

Kinderhook Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) from 1996 through 2001. An Interpretive Summary report of the findings of this sampling was published in 2002. These data indicate that the lake continues to be best characterized as eutrophic, or highly productive, based on low water transparency, and high nutrient (primarily phosphorus) and algae levels. Phosphorus levels in the lake consistently exceed (and often significantly exceed) the state phosphorus guidance value indicating impacted/stressed recreational uses. Corresponding transparency measurements regularly fail to meet what is recommended for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5; occasionally high pH does not appear to impact aquatic life. (DEC/DOW, BWAM/CSLAP, November 2002)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This most recent assessment indicates recreational suitability of the lake to be fairly favorable. The recreational suitability of the lake is described most frequently as “excellent” or “slightly” impacted for most recreational uses, and the assessment is inconsistent with measured water quality conditions and suggesting the reduced water quality is perceived as normal. The lake itself is most often described as having “definite algae greenness.” Assessments have noted that aquatic plants occasionally grow to the lake surface and are not thought to significantly impact recreation. (DEC/DOW, BWAM/CSLAP, November 2002)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach, for general recreation and aquatic life support, but not as public water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condi-

tion and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess public bathing use is generally the responsibility of state and/or local health departments.

Section 303(d) Listing

Kinderhook Lake is currently included on the NYS 2008 Section 303(d) List of Impaired Waters; it is included on Part 1 of the List as a waterbody with Impairment Requiring TMDL Development due to phosphorus and on Part 2b of the List as a Fish Consumption Water. (DEC/DOW, BWAM/WQAS, May 2008)

Smith Pond (1310-0009) Need Verific

Waterbody Location Information

Revised: 07/11/2008

Water Index No: H-204- 2- 9- 1-P42
Hydro Unit Code: 02020006/120
Waterbody Type: Lake
Waterbody Size: 26.9 Acres
Seg Description: entire lake
Drain Basin: Lower Hudson River
Middle Hudson River
Str Class: C
Reg/County: 4/Columbia Co. (11)
Quad Map: CHATHAM (L-26-3)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Recreation	Stressed	Possible

Type of Pollutant(s)

Known: - - -
Suspected: ALGAL/WEED GROWTH
Possible: Nutrients, Salts, Silt/Sediment

Source(s) of Pollutant(s)

Known: - - -
Suspected: URBAN/STORM RUNOFF
Possible: Onsite/Septic Syst

Resolution/Management Information

Resolution Potential: Medium
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 1 (Waterbody Nominated, Problem Not Verified)
Lead Agency/Office: DOW/BWAM
TMDL/303d Status: n/a

Further Details

Overview

Recreational uses in Smith Pond may experience minor impacts/threats due to excessive aquatic vegetation and/or algal growth. This assessment is based on previously reported concerns and conditions in the lake need to be verified.

Previous Assessment

Aesthetics in the lake were reported as being affected by excessive aquatic weed growth and odors. Storm sewers in the Village of Chatham that contributing floatables, silt/sediment, nutrients and various other pollutants to the pond were cited as the suspected source. (Columbia County SWCD, 1996)

Taghkanic Creek, Lower, and tribs (1310-0015) Threatened

Waterbody Location Information

Revised: 11/06/2007

Water Index No: H-204- 3- 8
Drain Basin: Lower Hudson River
Middle Hudson River
Hydro Unit Code: 02020006/110
Str Class: C(T)
Waterbody Type: River
Reg/County: 4/Columbia Co. (11)
Waterbody Size: 123.1 Miles
Quad Map: CLAVERACK (M-26-1)
Seg Description: stream and tribs, from mouth to New Forge

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Habitat/Hydrology	Threatened	Known

Type of Pollutant(s)

Known: - - -
Suspected: WATER LEVEL/FLOW, THERMAL CHANGES
Possible: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: HYDRO MODIFICATION
Possible: - - -

Resolution/Management Information

Resolution Potential: Medium
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC
TMDL/303d Status: n/a

Further Details

Overview

Hydrologic/habitat uses in Taghkanic Creek are thought to be impacted by drinking water withdrawals upstream by the City of Hudson. These withdrawals reduce flow in the creek and result in thermal stresses on the fishery during the summer. Under adequate flow conditions Fisheries staff indicates that this is a productive trout stream and should be protected. (DEC\FWMR, Region 4, 1996)

Water Quality Sampling

A biological (macroinvertebrate) assessment of Taghkanic Creek in Linlithgo (at Water Road) was conducted in 2002. Sampling results indicated non-impacted water quality conditions. The fauna was diverse and

all screening criteria for waters having no known impacts were met. (DEC/DOW, BWAM/SBU, June 2005)

Segment Description

This segment includes the portion of the stream and all tribs from the mouth near Claverack to/including Suydam Creek (-21) in New Forge. The waters of this portion of the stream are Class C(T). Tribs to this reach/segment, including Loomis Creek (-2), Mud Creek (-4) and Suydam Creek (-21) are Class C,C(T),C(TS). Middle/Upper Taghkanic Creek are listed separately.

Copake Lake (1310-0014) Impaired Seg

Waterbody Location Information

Revised: 04/30/2008

Water Index No: H-204- 3- 8-32-P108a
Hydro Unit Code: 02020006/110
Waterbody Type: Lake
Waterbody Size: 420.2 Acres
Seg Description: entire lake

Drain Basin: Lower Hudson River
Middle Hudson River
Str Class: B
Reg/County: 4/Columbia Co. (11)
Quad Map: HILLSDALE (M-26-2)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Possible
RECREATION	Impaired	Known
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (aquatic vegetation)
Suspected: NUTRIENTS (phosphorus)
Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: HABITAT MODIFICATION
Suspected: ONSITE/SEPTIC SYST, URBAN/STORM RUNOFF
Possible: Agriculture

Resolution/Management Information

Resolution Potential: Medium
Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: DEC/Reg4
TMDL/303d Status: n/a->4c*

Further Details

Overview

Recreational uses in Copake Lake are considered to be impaired due to aquatic weed and algal growth and low water transparency. Somewhat elevated nutrient (phosphorus) loads attributed to nonpoint sources contribute to recreational uses and aesthetic.

Water Quality Sampling

Copake Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) from 1996 through 2000. An Interpretive Summary report of the findings of this sampling was published in 2001. These data indicate that the lake continues to be best characterized as eutrophic, or highly productive, based on low water transparency, and elevated nutrient (primarily phosphorus) and algae levels. Phosphorus levels in the lake consistently exceed the state phosphorus guidance value indicating impacted/stressed recreational uses. Corresponding transparency measurements occasionally fail to meet what is recommended for swimming beaches. Eutrophication indicators showed some improving in the most recent sampling years. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5; occasionally high pH does not appear to impact aquatic life. The lake water color does not appear to influence transparency. (DEC/DOW, BWAM/CSLAP, June 2001)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This most recent assessment (2005) indicates recreational suitability of the lake to be only somewhat favorable. The recreational suitability of the lake is described most frequently as "slightly" impacted for most recreational uses. The lake itself is most often described as having "definite algae greenness," an assessment that is somewhat lower than indicated by measured water quality characteristics. Assessments have noted that aquatic plants typically grow to the lake surface, and are reported as being dense. Rooted aquatic growth appears to be driving the recreational assessment. (DEC/DOW, BWAM/CSLAP, June 2001)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach, for general recreation and aquatic life support, but not as public water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.

Previous Assessment

Residential development along the lake shore has increased the concern regarding lawn runoff, and inadequate onsite septic systems as potential sources. (A few homes that previously discharged raw sewage to the lake now discharge to a holding tank.) Nutrient and fertilizer runoff from a nearby golf course may also contribute to water quality problems. (Columbia County WQCC, 1996)

Section 303(d) Listing

Copake Lake is not currently included on the NYS 2008 Section 303(d) List of Impaired Waters. While this updated assessment suggests it is appropriate to consider the lake to be impaired due to aquatic weed growth, more recent sampling to verify nutrient levels in the lake is recommended before listing the waterbody for phosphorus. (DEC/DOW, BWAM/WQAS, May 2008)

Mill Creek and tribs (1301-0093) MinorImpacts

Waterbody Location Information

Revised: 10/05/1999

Water Index No: H-209
Hydro Unit Code: 02020006/080
Waterbody Type: River
Waterbody Size: 22.8 Miles
Seg Description: entire stream and tribs

Drain Basin: Lower Hudson River
Middle Hudson River
Str Class: C
Reg/County: 4/Columbia Co. (11)
Quad Map: HUDSON NORTH (L-25-3)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Suspected
Aesthetics	Stressed	Known

Type of Pollutant(s)

Known: NUTRIENTS, Aesthetics, Silt/Sediment
Suspected: D.O./Oxygen Demand, Pathogens

Possible: - - -

Source(s) of Pollutant(s)

Known: AGRICULTURE
Suspected: - - -
Possible: - - -

Resolution/Management Information

Resolution Potential: n/a
Issue Resolvability: ()
Verification Status: (Not Applicable for Selected RESOLVABILITY)
Lead Agency/Office: ext/SWCD
TMDL/303d Status: n/a

Further Details

Overview

The fishery as well as aesthetics of Mill Creek are thought to be affected by agricultural runoff in the watershed. Visual impairment of the creek has been reported by regional staff. The “J and J” dairy farm in Stuyvesant has been identified through the NYS Ag & Markets and the Statewide Soil and Water Conservation Committee’s AEM program as needing implementation of agricultural BMPs to protect water quality. (DEC\DOW, Region 4, June 1998)

Segment Description

This segment includes the entire stream and all tribs. The waters of the stream are Class C,C(T). Tribs to this reach/segment, including Stuyvesant Brook (-1), are also Class C. Lower tidal portions of these tribs are included with the Hudson Main Stem.

Appendix C: Plants and Animals of Columbia County

Table C-1. Common and scientific names of vascular plants mentioned in the Natural Resources Inventory. Scientific nomenclature follows Weldy et al. (2018).

Common Name	Scientific Name
alder	*Alnus*
alfalfa	*Medicago sativa*
apple	*Malus*
arrow-arum	*Peltandra virginica*
arrowhead, broad-leaved	*Sagittaria latifolia*
arrowhead, grass-leaved	*Sagittaria graminea* ssp. *graminea*
arrowhead, spongy	*Sagittaria montevidensis* ssp. *spongiosa*
arrowhead, stiff	*Sagittaria rigida*
arrowhead, strapleaf	*Sagittaria subulata*
arrowwood, northern	*Viburnum dentatum* var. *lucidum*
ash	*Fraxinus*
ash, black	*Fraxinus nigra*
ash, green	*Fraxinus pennsylvanica*
ash, white	*Fraxinus americana*
aspen, quaking	*Populus tremuloides*
aster	*Symphyotrichum*
aster, flat-topped white	*Doellingeria umbellata* var. *umbellata*
autumn-olive	*Elaeagnus umbellata*
azalea, swamp	*Rhododendron viscosum*
baneberry	*Actaea*
baneberry, red	*Actaea rubra*
barberry, Japanese	*Berberis thunbergii*
basswood	*Tilia americana* var. *americana*
bearberry	*Arctostaphylos uva-ursi*
beardtongue, foxglove	*Penstemon digitalis*
beech, American	*Fagus grandifolia*
beggarticks, estuary	*Bidens bidentoides*
birch	*Betula*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
birch, gray	*Betula populifolia*
birch, swamp	*Betula pumila*
birch, yellow	*Betula alleghaniensis*
bittercress, Pennsylvania	*Cardamine pensylvanica*
bittersweet, oriental	*Celastrus orbiculatus*
bladdernut	*Staphylea trifolia*
blueberry	*Vaccinium*
blueberry, highbush	*Vaccinium corymbosum*
bluestem, little	*Schizachyrium scoparium* var. *scoparium*
boxelder	*Acer negundo* var. *negundo*
bracken	*Pteridium aquilinum* ssp. *latiusculum*
buckthorn, alder-leaf	*Rhamnus alnifolia*
buckthorn, common	*Rhamnus cathartica*
bulrush, dark-green	*Scirpus atrovirens*
bulrush, river	*Bolboschoenus fluviatilis*
bur-reed	*Sparganium*
bur-reed, large	*Sparganium eurycarpum*
butternut	*Juglans cinerea*
buttonbush	*Cephalanthus occidentalis*
canary-grass, reed	*Phalaris arundinacea*
cancer-root, one-flowered	*Orobanche uniflora*
cattail	*Typha*
cedar, eastern red	*Juniperus virginiana* var. *virginiana*
cherry, black	*Prunus serotina* var. *serotina*
cherry/plum	*Prunus*
chokeberry, black	*Aronia melanocarpa*
cinquefoil, shrubby	*Dasiphora fruticosa*
cinquefoil, three-toothed	*Sibbaldia tridentata*
cliffbrake, purple	*Pellaea atropurpurea*
cliffbrake, smooth	*Pellaea glabella* ssp. *glabella*
clover	*Trifolium*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
columbine, wild	*Aquilegia canadensis*
coontail, common	*Ceratophyllum demersum*
corydalis, pale	*Capnoides sempervirens*
cottonwood, eastern	*Populus deltoides* ssp. *deltoides*
goldenrod	*Solidago*
cranberry	*Vaccinium*
cranberry, large	*Vaccinium macrocarpon*
cranberry, small	*Vaccinium oxycoccos*
creeper, Virginia	*Parthenocissus quinquefolia*
cress, rock	*Arabis/Arabidopsis/Borodinia*
cutgrass, rice	*Leersia oryzoides*
deerberry	*Vaccinium stamineum*
dewberry, northern	*Rubus flagellaris*
dodder, buttonbush	*Cuscuta cephalanthi*
dodder, field	*Cuscuta campestris*
dogwood, gray	*Cornus racemosa*
dogwood, red-osier	*Cornus sericea*
dogwood, silky	*Cornus amomum* ssp. *amomum*
dragon, green	*Arisaema dracontium*
duckweed	*Lemna* or *Spirodela*
elder, red-berried	*Sambucus racemosa*
elm	*Ulmus*
elm, American	*Ulmus americana*
elm, slippery	*Ulmus rubra*
false-indigo	*Amorpha fruticosa*
fern, cinnamon	*Osmundastrum cinnamomeum* var. *cinnamomeum*
fern, crested	*Dryopteris cristata*
fern, fragile	*Cystopteris fragilis*
fern, maidenhair	*Adiantum pedatum*
fern, marsh	*Thelypteris palustris* var. *pubescens*
fern, ostrich	*Matteuccia struthiopteris* var. *pensylvanica*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
fern, royal	*Osmunda regalis* var. *spectabilis*
fern, sensitive	*Onoclea sensibilis*
fern, walking	*Asplenium rhizophyllum*
figworts	*Scrophularia*
flatsedge, Schweinitz's	*Cyperus schweinitzii*
garlic-mustard	*Alliaria petiolata*
gentian, fringed	*Gentianopsis crinita*
goldenclub	*Orontium aquaticum*
goldenrod, bog	*Solidago uliginosa*
goldenrod, rough-leaf	*Solidago patula*
goldenrod, smooth	*Solidago gigantea*
goldenseal	*Hydrastis canadensis*
gooseberry/currant	*Ribes*
grape, river	*Vitis riparia*
grass, deer-tongue	*Dichanthelium clandestinum*
grass, panic	*Dichanthelium/Panicum*
grass, poverty	*Danthonia spicata*
grass-of-Parnassus	*Parnassia glauca*
hackberry	*Celtis occidentalis*
hairgrass, common	*Avenella flexuosa*
hawthorn	*Crataegus*
hemlock, eastern	*Tsuga canadensis*
hepatica	*Hepatica*
hickory	*Carya*
hickory, shagbark	*Carya ovata* var. *ovata*
hobblebush	*Viburnum lantanoides*
holly, winterberry	*Ilex verticillata*
honeysuckle, Bell's	*Lonicera* x *bella*
hornbeam, American	*Carpinus caroliniana* ssp. *virginiana*
horsetail, field	*Equisetum arvense*
horsetail, variegated	*Equisetum variegatum* ssp. *variegatum*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
horseweed	*Erigeron canadensis*
huckleberry, black	*Gaylussacia baccata*
indigo, wild	*Baptisia tinctoria*
iris, yellow	*Iris pseudacorus*
jewelweed, common	*Impatiens capensis*
knapweed, spotted	*Centaurea stoebe* ssp. *micranthos*
knotweed, Japanese	*Reynoutria japonica* var. *japonica*
knotweed, slender	*Polygonum tenue*
lady's-slipper, pink	*Cypripedium acaule*
larch, American	*Larix laricina*
oak, chestnut	*Quercus montana*
oak, pin	*Quercus palustris*
oak, red	*Quercus rubra*
oak, scarlet	*Quercus coccinea*
oak, scrub	*Quercus ilicifolia*
oak, swamp white	*Quercus bicolor*
oak, white	*Quercus alba*
orchid, purple-fringed	*Platanthera psycodes*
parsley/carrot/related plants	Apiaceae
pear	*Pyrus*
pickerelweed	*Pontederia cordata*
pine	*Pinus*
pine, eastern white	*Pinus strobus*
pine, pitch	*Pinus rigida*
pine, red	*Pinus resinosa*
pine, Scotch	*Pinus sylvestris*
pinweed, slender	*Lechea tenuifolia*
pipevine	*Endodeca/Isotrema*
pitcher-plant	*Sarracenia purpurea*
plantain	*Plantago*
plantain, English	*Plantago lanceolata*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
plantain, heartleaf	*Plantago cordata*
pod-grass	*Scheuchzeria palustris*
poison-ivy	*Toxicodendron radicans*
polypody, rock	*Polypodium virginianum*
pond-lily, fragrant	*Nymphaea odorata* ssp. *odorata*
pond-lily, yellow	*Nuphar variegata*
pondweed, perfoliate	*Potamogeton perfoliatus*
prickly-ash, American	*Zanthoxylum americanum*
primroses	*Oenothera*
purslane	*Portulaca oleracea*
quarters, lamb's	*Chenopodium album*
raspberry	*Rubus*
rattlebox	*Crotalaria sagittalis*
spleenwort, ebony	*Asplenium platyneuron*
spleenwort, maidenhair	*Asplenium trichomanes*
spruce, black	*Picea mariana*
spruce, Norway	*Picea abies*
stargrass, water	*Heteranthera dubia*
stiltgrass, Japanese	*Microstegium vimineum*
sundew, round-leaved	*Drosera rotundifolia*
sunflower	*Helianthus*
swallow-wort, black	*Vincetoxicum nigrum*
sweetfern	*Comptonia peregrina*
sweetflag	*Acorus*
switchgrass	*Panicum virgatum*
sycamore, eastern	*Platanus occidentalis*
tea, New Jersey	*Ceanothus americanus*
tearthumb, arrow-leaved	*Persicaria sagittata*
tearthumb, halberd-leaved	*Persicaria arifolia*
three-square	*Schoenoplectus pungens* var. *pungens*

Table C-1. Common and scientific names of vascular plants, cont.

Common Name	Scientific Name
thyme	*Thymus pulegioides*
timothy	*Phleum pratense* ssp. *pratense*
toothworts	*Cardamine*
top, purple	*Tridens flavus* var. *flavus*
tree-of-heaven	*Ailanthus altissima*
trefoil, tick	*Desmodium*
tulip-tree	*Liriodendron tulipifera*
turtlehead, white	*Chelone glabra*
vervain, blue	*Verbena hastata*
vetches	*Vicia*
viburnum, maple-leaf	*Viburnum acerifolium*
violet	*Viola*
violet, northern blue	*Viola septentrionalis*
wall-rue	*Asplenium ruta-muraria*
water-celery	*Vallisneria americana*
water-chestnut	*Trapa natans*
water-hemp	*Amaranthus tuberculatus*
watermilfoil, Eurasian	*Myriophyllum spicatum*
water-plantain	*Alisma*
watershield	*Brasenia schreberi*
waterweed, Nuttall's	*Elodea nuttallii*
water-willow	*Decodon verticillatus*
waterwort, American	*Elatine americana*
weed, spotted Joe-Pye	*Eutrochium maculatum* var. *maculatum*
wild-raisin, northern	*Viburnum nudum* var. *cassinoides*
willow	*Salix*
willow, autumn	*Salix serissima*
willow, sage-leaved	*Salix candida*
witch-hazel	*Hamamelis virginiana*
yew, American	*Taxus canadensis*

Table C-2. Vascular plants of statewide conservation concern in Columbia County.

From observations of the Farmscape Ecology Program, Hudsonia, and Rogers McVaugh (1959).

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
agalinis, small-flowered	*Agalinis paupercula*	R	S3	calcareous marsh
agrimony, small-flowered	*Agrimonia parviflora*	R	S3	pasture, thicket
angelica, hairy	*Angelica venenosa*	R	S1	dry forest
arrowhead, strapleaf	*Sagittaria subulata*	R	S3	tidal mudflat
arrowhead, spongy-leaved	*Sagittaria montevidensis* ssp. *spongiosa*	T	S2	tidal mudflat
avens, cream~	*Geum virginianum*	T	S2	wettish forest
beggar-ticks, Eaton's	*Bidens eatonii*		S1	tidal mudflat
beggar-ticks, estuary	*Bidens bidentoides*	R	S3	tidal mudflat
beggar-ticks, smooth	*Bidens laevis*	T	S2	tidal freshwater marsh
bellflower, American	*Campanula americana*	E	S1	forest, thicket, disturbed area
birch, bog	*Betula pumila*	T	S2	calcareous marsh
birch, river	*Betula nigra*	R	S3	riverbank, low wet area
bittersweet, American	*Celastrus scandens*	R	S3	dry forest, hedgerow
bladderwort, hiddenfruit	*Utricularia geminiscapa*	R	S3	open swamp, pond, marsh
bladderwort, lesser~	*Utricularia minor*	R	S3	calcareous bog
bulrush, Georgia~	*Scirpus georgianus*	E	S1S2	marsh, wet meadow
bulrush, Torrey's~	*Schoenoplectus torreyi*		S2?	wet meadow, pond edge
bur-reed, branched	*Sparganium androcladum*		S3S4	shallow water, muddy shore
bur-reed, narrowleaf	*Sparganium angustifolium*		S3S4	deep or shallow water
bush-clover, bushy~	*Lespedeza frutescens*	R	S3	dry forest, edge of forest, rocky summit
buttercup, small-flowered~	*Ranunculus micranthus*	R	S3	wet forested rock outcrop, ledge

Table C-2. Vascular plants of statewide conservation concern in Columbia County, cont.

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
chervil, spreading	*Chaerophyllum procumbens*	E	S1	floodplain
cliffbrake, smooth~	*Pellaea glabella* ssp. *glabella*	T	S2	limestone cliff
coontail, spiny-fruited	*Ceratophyllum echinatum*	R	S3	pond, lake, slow moving stream
Culver's-root	*Veronicastrum virginicum*	T	S2	wet meadow, streambank
elm, rock	*Ulmus thomasii*	T	S2S3	dry soils over calcareous bedrock
fairywand~	*Chamaelirium luteum*	E	S1S2	wet forest, bog
flatsedge, fragrant	*Cyperus odoratus*	R	S3	sandy soil near tidal Hudson River
flatsedge, red-rooted	*Cyperus erythrorhizos*	R	S3	dredge spoils
flatsedge, Schweinitz's~	*Cyperus schweinitzii*	R	S3	sandy soil
flax, grooved yellow~	*Linum sulcatum*	T	S2	dry, sandy, or stony soil
goldenclub	*Orontium aquaticum*	T	S2	tidal mudflat
goldenrod, Ohio flat-topped~	*Solidago ohioensis*	T	S2	rich fen, shaded ledge
goldenrod, stiff flat-topped	*Solidago rigida* var. *rigida*	T	S2	dry shaly slope
goldenseal~	*Hydrastis canadensis*	T	S2	rich soil at base of calcareous slopes
grama, side oats~	*Bouteloua curtipendula* var. *curtipendula*	E	S2	dry shaly slope
grape, frost~	*Vitis vulpina*	E	S1	forest, thicket
grass, northern reed	*Calamagrostis stricta* ssp. *inexpansa*	T	S2	rocky (schist) slope
grass, pod~	*Scheuchzeria palustris*	R	S3	bog

Table C-2. Vascular plants of statewide conservation concern in Columbia County, cont.

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
grass, prairie wedge~	*Sphenopholis obtusata*	E	S1	dry soil
hyssop, yellow giant	*Agastache nepetoides*	T	S2S3	open forest
knotweed, pleated leaved	*Polygonum tenue*	R	S3	dry, shaly, sandy hill & knoll
lady's-slipper, greater yellow	*Cypripedium parviflorum* var. *pubescens*		S3	rich, often calcareous forest
lady's-slipper, showy~	*Cypripedium reginae*		S3	rich swamp
lousewort, marsh	*Pedicularis lanceolata*	T	S2S3	tidal swamp, supratidal wetland edge, rich wetland
lupine, wild~	*Lupinus perennis* ssp. *perennis*	R	S3	dry, sandy, or shaly soil
mercury, Virginia three-seeded~	*Acalypha virginica*	E	S1	forest, field, roadside
milkweed, green	*Asclepias viridiflora*	T	S2	dry shaly slope
milkweed, whorled	*Asclepias verticillata*	R	S3	dry shaly slope
monkey-flower, sharp-winged	*Mimulus alatus*	R	S3	wet area along stream, wetland, pond
mouth, dragon's~	*Arethusa bulbosa*	T	S2	Sphagnum bog
mudwort, Atlantic	*Limosella australis*	R	S3	tidal mudflat
nymph, Muenscher's water	*Najas muenscheri*	E	S2	tidal mudflat
orchid, Hooker's~	*Platanthera hookeri*	E	S1	steep rocky acidic slope
pennyroyal, false~	*Trichostema brachiatum*	R	S3	dry, sandy or gravelly soil
pinedrops, woodland~	*Pterospora andromedea*	E	S1	conifer forest
pink, wild	*Silene caroliniana* ssp. *pensylvanica*	T	S2	dry forest on shaly or schistose rock
pitcher-plant, purple	*Sarracenia purpurea*		S3S4?	Sphagnum bog, calcareous wetland
plantain, heart-leaved	*Plantago cordata*	R	S3	rocky intertidal shore

Table C-2. Vascular plants of statewide conservation concern in Columbia County, cont.

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
plantain, kidneyleaf mud~	*Heteranthera reniformis*	R	S3	tidal mudflat
plum, American	*Prunus americana*		S3S4?	disturbed soils, forest edge
pondweed, Hill's	*Potamogeton hillii*	T	S2	clear, cold calcareous water
pondweed, Ogden's	*Potamogeton* x *ogdenii*	E	S1	alkaline water
pondweed, spotted~	*Potamogeton pulcher*	T	S2	shallow acidic water, muddy shore
pondweed, straight-leaved~	*Potamogeton strictifolius*	E	S1	alkaline pond, stream
pondweed, Tuckerman's~	*Potamogeton confervoides*	R	S3	shallow, acidic water
quillwort, lake~	*Isoetes lacustris*	R	S3	gravel in cold pond, lake, stream
quillwort, shore	*Isoetes septentrio-nalis*	E	S1	tidal mudflat
rattlebox, common~	*Crotalaria sagittalis*	E	S1	sandy or waste ground
rush, forked	*Juncus dichotomus*		S3?	sandy soils, marsh, shore of river or lake
sedge, ambiguous~	*Carex amphibola*	E	S3	forest, forested slope, floodplain of small creek
sedge, Bicknell's	*Carex bicknellii*	R	S3	dry shaly bank
sedge, blue~	*Carex glaucodea*	T	S2	hardwood forest, disturbed area, meadow
sedge, Bush's	*Carex bushii*	R	S3	rich meadowland
sedge, Buxbaum's~	*Carex buxbaumii*	T	S2	swamp
sedge, cattail~	*Carex typhina*	E	S2	wet forest, marsh
sedge, Davis'	*Carex davisii*	T	S2	alluvial forest, calcareous
sedge, false hop	*Carex lupuliformis*	T	S2	floodplain forest, marsh, shoreline, intermittent woodland pool
sedge, Fernald's	*Carex merritt-fernaldii*	T	S2S3	gravel pit, dry roadside, dredge spoil

Table C-2. Vascular plants of statewide conservation concern in Columbia County, cont.

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
sedge, handsome~	*Carex formosa*	T	S2	calcareous forest, thicket
sedge, reflexed	*Carex retroflexa*	T	S2S3	calcareous forest, rocky slope, meadow
sedge, Schweinitz's~	*Carex schweinitzii*	T	S2S3	swamp, springy bank
sedge, small yellow	*Carex cryptolepis*	R	S3	calcareous marsh, wet meadow
sedge, troublesome~	*Carex molesta*	T	S2S3	swamp
sedge, wheat~	*Carex atherodes*	R	S3	pond
sedge, Willdenow's	*Carex willdenowii*	R	S2S3	dry acidic forest
sorrel, violet wood	*Oxalis violacea*	T	S2S3	dry upland forest
speedwell, chained (water)~	*Veronica catenata*		S3S5	calcareous wetland
speedwell, glandular	*Veronica peregrina* ssp. *xalapensis*	R	S3	wet area, often disturbed, meadow
spleenwort, mountain~	*Asplenium montanum*	T	S2S3	dry, acidic rock
spikerush, Engelmann's~	*Eleocharis engelmannii*	E	S1	marsh, wet area
spikerush, ovate	*Eleocharis ovata*	E	S1S2	tidal mudflat
St. Johnswort, great	*Hypericum ascyron* ssp. *pyramidatum*	R	S3	alluvial or rocky soil near large stream
St. Johnswort, shrubby	*Hypericum prolificum*	T	S2	forest, cliff, swamp-margin, oldfield
tick-trefoil, hairy small-leaf	*Desmodium ciliare*	T	S2S3	open habitat with dry soils
tree, Kentucky coffee~	*Gymnocladus dioicus*	E	S1	rich bottomland, thicket, forest edge
trillium, nodding	*Trillium cernuum*		S3	moist forests
valerian, marsh	*Valeriana uliginosa*	E	S1S2	calcareous marsh
vervain	*Verbena x engelmannii*		S1?	forest, marsh, meadow
violet, green~	*Hybanthus concolor*		S3S4?	cool wet forest

Table C-2. Vascular plants of statewide conservation concern in Columbia County, cont.

Common Name[1]	Scientific Name	NYS Rank[2]	NYNHP Rank[3]	Habitat
water-marigold, Beck's	*Bidens beckii*		S3	shallow water at pond or lake edge
waterwort, American~	*Elatine americana*	E	S1	tidal mudflat

[1] ~ = plant species reported by McVaugh but not seen by recent observers.
[2] NY State ranks: E = Endangered / T = Threatened / R = Rare
[3] New York Natural Heritage Program ranks are explained in Appendix D.

Table C-3. Prominent non-native invasive plants of Columbia County and the region, listed and ranked for management priority (tiers) by the Capital-Mohawk Partnership for Invasive Species Management (PRISM).

Updated lists of invasive species are at http://www.capitalmohawkprism.org/uploads/8/1/4/0/81407728/capmo_is_tiersystem.pdf.

A. Non-native invasive plant species known to occur in Columbia County.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
alder, black (*Alnus glutinosa*)			X		wetland, shoreline
autumn-olive (*Elaeagnus umbellata*)			X		forest edge, meadow
barberry, European (*Berberis vulgaris*)		X			forest, meadow
barberry, Japanese (*Berberis thunbergii*)			X		forest, shrubland, meadow, floodplain
bittercress, narrowleaf (*Cardamine impatiens*)			X		forest
bittersweet, Asian (*Celastrus orbiculatus*)			X		forest, shrubland, waste ground
bower, Japanese virgin's (*Clematis terniflora*)	X				forest, shrubland, meadow
buckthorn, common (*Rhamnus cathartica*)			X		forest, shrubland, meadow
buckthorn, glossy (*Frangula alnus*)			X		forest, shrubland, meadow, swamp
bush, burning (*Euonymus alatus*)			X		forest, shrubland
canary-grass, reed (*Phalaris arundinacea*)			X		wetland, shoreline, meadow
celandine, lesser (*Ficaria verna*)	X				forest, floodplain, shoreline
chervil, wild (*Anthriscus sylvestris*)			X		forest edge, meadow
crabapple, Toringo (*Malus toringo*)	X				forest, shrubland
didymo (*Didymosphenia geminata*)				X	stream
elm, Siberian (*Ulmus pumila*)	X				forest edge, meadow, shoreline

Table C-3.A. Non-native invasive plant species known to occur in Columbia County, cont.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
floating-heart, yellow (*Nymphoides peltata*)	X				lake, pond, stream
garlic-mustard (*Alliaria petiolata*)			X		forest, floodplain
helmet, policeman's (*Impatiens glandulifera*)	X				meadow
honeysuckle, Amur (*Lonicera maackii*)	X				forest, shrubland
honeysuckle, Bell's (*Lonicera* x *bella*)			X		forest, shrubland, meadow
honeysuckle, Japanese (*Lonicera japonica*)			X		forest, shrubland, meadow
honeysuckle, Morrow's (*Lonicera morrowii*)			X		forest, shrubland
honeysuckle, Tartarian (*Lonicera tatarica*)			X		forest, shrubland, meadow
hops, Japanese (*Humulus japonicus*)	X				meadow, waste ground
iris, yellow (*Iris pseudacorus*)			X		wetland, shoreline
ivy, English (*Hedera helix*)	X				forest
knapweed, spotted (*Centaurea stoebe* ssp. *micranthos*)			X		meadow
knotweed, Japanese (*Reynoutria japonica* var. *japonica*)			X		forest, shoreline, floodplain, waste ground
lilac, Japanese tree (*Syringa reticulata*)	X				forest, meadow
locust, black (*Robinia pseudoacacia*)			X		forest, floodplain, meadow
loosestrife, purple (*Lythrum salicaria*)			X		wetland, shoreline, meadow
maple, Norway (*Acer platanoides*)			X		forest
maple, sycamore (*Acer pseudoplatanus*)	X				forest, floodplain

Table C-3.A. Non-native invasive plant species known to occur in Columbia County, cont.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
mugwort (*Artemisia vulgaris* var. *vulgaris*)			X		forest, meadow, waste ground
mulberry, white (*Morus alba*)			X		forest edge, meadow
naiad, brittle (Najas minor)			X		lake, pond, stream, river
parsnip, wild (*Pastinaca sativa*)			X		meadow
periwinkle (*Vinca minor*)			X		forest, meadow
pondweed, curly leaf (*Potamogeton crispus*)			X		lake, pond, stream, river
privet, border (*Ligustrum obtusifolium*)			X		forest, shrubland, meadow
reed, common (*Phragmites australis*)			X		wetland, shoreline
rose, multiflora (*Rosa multiflora*)			X		forest, shrubland, meadow, shoreline
spurge, cypress (*Euphorbia cyparissias*)			X		meadow
spurge, leafy (*Euphorbia virgata*)		X			forest edge, meadow, waste ground
stiltgrass, Japanese (*Microstegium vimineum*)			X		forest, meadow, shoreline, floodplain
swallow-wort, black (*Vincetoxicum nigrum*)			X		forest, meadow, shoreline
teasel, cut-leaf (*Dipsacus laciniatus*)			X		meadow, waste ground
thistle, bull (*Cirsium vulgare*)			X		meadow
thistle, Canada (*Cirsium arvense*)			X		meadow
tree, wayfaring (*Viburnum lantana*)	X				forest, meadow
tree-of-heaven (*Ailanthus altissima*)			X		forest, shrubland, waste ground
viburnum, European cranberry (*Viburnum opulus* var. *opulus*)	X				meadow, wetland, shoreline
water-chestnut (*Trapa natans*)			X		lake, pond, stream, river

Table C-3.A. Non-native invasive plant species known to occur in Columbia County, cont.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
watermilfoil, Eurasian (*Myriophyllum spicatum*)			X		lake, pond, stream
wineberry (*Rubus phoenicolasius*)	X				forest, meadow, rocky slope

Table C-3.B. Non-native invasive plant species not yet known to occur in Columbia County, but occurring elsewhere in the region.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
aralia, five-leaf (*Eleutherococcus sieboldianus*)	X				swamp
berry, porcelain (*Ampelopsis glandulosa*)	X				forest, meadow
carpetgrass, small (*Arthraxon hispidus*)	X				forest, floodplain, swamp
cup-plant (*Silphium perfoliatum* var. *perfoliatum*)	X				shrubland
elodea, Brazilian (*Egeria densa*)	X				lake, pond, stream
frogbit, European (*Hydrocharis morsus-ranae*)	X				lake, pond, stream
goutweed, bishops (*Aegopodium podagraria*)	X				forest, floodplain, meadow
grass, Chinese silver (*Miscanthus sinensis*)	X				meadow
jetbead, black (*Rhodotypos scandens*)	X				forest edge
Johnsongrass (*Sorghum halepense*)				X	meadow
knotweed, bohemian (*Reynoutria* x *bohemica*)			X		shoreline, floodplain, waste ground
knotweed, giant (*Reynoutria sachalinensis*)				X	meadow, shoreline, waste ground
loosestrife, yellow garden (*Lysimachia vulgaris*)	X				meadow

Table C-3.B. Non-native invasive plant species not yet known to occur in Columbia County, but occurring elsewhere in the region, cont.

Common Name (*Scientific Name*)	Tier 2[1]	Tier 3[1]	Tier 4[1]	Tier 5[1]	Habitat
maple, Japanese (*Acer palmatum*)	X				forest, meadow
hogweed, giant (*Heracleum mantegazzianum*)	X				road bank, forest, oldfield
swallow-wort, pale (*Vincetoxicum rossicum*)			X		forest, meadow, shoreline
thistle, Carline (*Carlina vulgaris*)				X	meadow
rush, flowering (*Butomus umbellatus*)		X			shoreline, marsh
vine, China fleece (*Fallopia baldschuanica*)				X	forest edge
vine, mile-a-minute (*Persicaria perfoliata*)	X				forest, meadow
waterwheel (*Aldrovanda vesiculosa*)				X	lake, pond
willow, rusty (*Salix cinerea* ssp. *oleifolia*)	X				forest edge, meadow, shoreline
wisteria (*Wisteria* spp.)	X				forest

[1]Tier 2: Eradication is recommended. High and very high impact species with low enough abundance to make eradication feasible within the Mohawk-Hudson PRISM region. Highest level of response efforts.

Tier 3: Containment is recommended. High and very high impact species that are likely too widespread for eradication, but low enough abundance to think about regional containment. Target strategic management to slow the spread since many surrounding regions could be at risk if left unattended.

Tier 4: Local control is recommended. Well-established species with high and very high impacts. Eradication efforts not feasible; only localized management over time to contain, exclude, or suppress, if justified to meet local management goals.

Tier 5: More research is needed. Species in or surrounding the PRISM region that need more research, mapping, and monitoring to understand invasiveness and impacts.

Table C-4. Dragonflies and damselflies of Columbia County.

Data are from the NYSDEC 2005-2009 statewide survey (White et al. 2010) and from Farmscape Ecology Program (FEP) observations 2003-2017. Habitats are from Vispo (2017) and Abbott (2006-2018).

Common Name	Scientific Name	Habitat	Statewide Status[2]
AESHNIDAE			
darner,[1] black-tipped	*Aeshna tuberculifera*	over fields & along edge of water	
darner, Canada	*Aeshna canadensis*	over fields & along shores of slow-moving water	
darner,[1] comet	*Anax longipes*	around ponds or over fields	S2S3
darner, common green	*Anax junius*	over small ponds, skimming lake edges, or over fields	
darner,[1] fawn	*Boyeria vinosa*	in forested swamps & over shaded streams	
darner,[1] green-striped	*Aeshna verticalis*	over fields	
darner,[1] harlequin	*Gomphaeschna furcillata*	edges of forests	
darner, lance-tipped	*Aeshna constricta*	over fields & ponds	
darner, shadow	*Aeshna umbrosa*	along forest edges, shaded areas	
darner,[1] swamp	*Epiaeschna heros*	wooded ponds & streams (incl. ephemeral pools & ponds)	S3
CALOPTERYGIDAE			
jewelwing, ebony	*Calopteryx maculata*	in shaded areas & along small streams	
jewelwing,[1] river	*Calopteryx aequabilis*	around all types of rivers & streams	
jewelwing,[1] superb	*Calopteryx amata*	by the sides of small, shaded streams	S3
rubyspot,[1] American	*Hetaerina americana*	streams, rivers	S3
COENAGRIONIDAE			
bluet, azure	*Enallagma aspersum*	near most slow-moving water	
bluet, big	*Enallagma durum*	around swampy ponds or slow-moving rivers	S3
bluet, double-striped	*Enallagma basidens*	around edges of still water where vegetation present	S3
bluet, familiar	*Enallagma civile*	around large, slow-moving water bodies	

Table C-4. Dragonflies and damselflies, cont.

Common Name	Scientific Name	Habitat	Statewide Status[2]
bluet, Hagen's	*Enallagma hageni*	along edges of ponds	
bluet,[1] marsh	*Enallagma ebrium*	around wetlands & open swamps	
bluet,[1] northern	*Enallagma annexum*	around still water & nearby vegetation	
bluet, orange	*Enallagma signatum*	near all types of still water	
bluet, skimming	*Enallagma geminatum*	around edges of most types of water	
bluet, stream	*Enallagma exsulans*	along sides of streams & lakes	
bluet,[1] tule	*Enallagma carunculatum*	slow-moving streams & rivers, occasionally lakes or ponds	
bluet,[1] turquoise	*Enallagma divagans*	slow-moving streams, lakes	S3
bluet,[1] vesper	*Enallagma vesperum*	around ponds & lakes	S4
damsel, aurora	*Chromagrion conditum*	near most water; esp. slow-moving or stagnant ponds	
damselfly,[1] eastern red	*Amphiagrion saucium*	around ponds or other stationary water	
dancer, blue-fronted	*Argia apicalis*	rivers, large streams, esp. deep & muddy	S3
dancer,[1] powdered	*Argia moesta*	around medium to large rivers, ponds, & lakes	
dancer, variable	*Argia fumipennis violacea*	around edges of most slow or still water	
forktail, eastern	*Ischnura verticalis*	wide variety incl. ponds, edges of slow-moving rivers, & fields	
forktail, fragile	*Ischnura posita*	wide variety incl. pond edges, forested swamps, streams, & fields	
sprite, sedge	*Nehalennia irene*	in wet, grassy, mostly open areas	
sprite,[1] sphagnum	*Nehalennia gracilis*	sphagnum bogs, fens	
CORDULEGASTRIDAE			
spiketail,[1] delta-spotted	*Cordulegaster diastatops*	unshaded seeps, small streams	
spiketail,[1] twin-spotted	*Cordulegaster maculata*	around rocky, shaded streams & along field edges	

Table C-4. Dragonflies and damselflies, cont.

Common Name	Scientific Name	Habitat	Statewide Status[2]
CORDULIIDAE			
baskettail,[1] beaverpond	*Epitheca canis*	bog ponds, slow-moving streams, & marshy lakes	
baskettail, common	*Epitheca cynosura*	around ponds & nearby fields	
baskettail,[1] prince	*Epicordulia princeps*	tree-tops	
emerald, American	*Cordulia shurtleffii*	near still ponds, bogs, fens, marshes, small lakes, & over meadows	
emerald,[1] brush-tipped	*Somatochlora walshii*	slow-moving clear streams through bogs, fens, & marshes	S3
emerald,[1] clamp-tipped	*Somatochlora tenebrosa*	edge of fields & along shady tree lines	
emerald,[1] Kennedy	*Somatochlora kennedyi*	bogs	SNA
emerald,[1] mocha	*Somatochlora linearis*	forested streams	S1
emerald,[1] racket-tailed	*Dorocordulia libera*	over ponds & bogs & along edges of forests	
shadowdragon,[1] umber	*Neurocordulia obsoleta*	small lakes	S1
GOMPHIDAE			
clubtail,[1] arrow	*Stylurus spiniceps*	over sandy streams or on the banks	S3
clubtail,[1] ashy	*Gomphus lividus*	moderately fast-moving streams & sheltered inlets of lakes	
clubtail,[1] dusky	*Gomphus spicatus*	over slow-moving or still water	
clubtail,[1] harpoon	*Gomphus descriptus*	fast-moving streams with sandy bottoms	S3
clubtail, lancet	*Gomphus exilis*	over fields, roads, & on rocks near water	
clubtail, least	*Stylogomphus albistylus*	around rocky streams	
clubtail,[1] lilypad	*Arigomphus furcifer*	around still water & slow-moving streams	
clubtail,[1] mustached	*Gomphus adelphus*	near riffles in clear streams, or along lakeshore	S2S3

Table C-4. Dragonflies and damselflies, cont.

Common Name	Scientific Name	Habitat	Statewide Status[2]
clubtail,[1] northern pygmy	*Lanthus parvulus*	over small shaded streams	S3
clubtail,[1] southern pygmy	*Lanthus vernalis*	clear streams. forested	S1, SPCN
clubtail,[1] russet-tipped	*Stylurus plagiatus*	rivers	S1
clubtail,[1] spine-crowned	*Gomphus abbreviatus*	rivers, lakes	S1
clubtail,[1] unicorn	*Arigomphus villosipes*	around ponds & lakes	
clubtail,[1] zebra	*Stylurus scudderi*	near streams & small rivers	S3
dragonhunter[1]	*Hagenius brevistylus*	along streams, esp. shaded ones	
snaketail,[1] boreal	*Ophiogomphus colubrinus*	fast-moving streams with gravel or sand bottoms, shaded	S1
snaketail, brook	*Ophiogomphus aspersus*	over clean running water, open sunny streams	S3
snaketail,[1] riffle	*Ophiogomphus carolus*	near swift streams & small rivers	S2S3
snaketail,[1] rusty	*Ophiogomphus rupinsulensis*	near rivers & on nearby rocks	
spinyleg,[1] black-shouldered	*Dromogomphus spinosus*	around clear rocky streams	
LESTIDAE			
spreadwing, amber-winged	*Lestes eurinus*	near still water; esp. boggy or temporary ponds	S3S4
spreadwing,[1] common	*Lestes disjunctus*	slow-moving streams with emergent veg, marshes, swamps, & bogs	
spreadwing,[1] elegant	*Lestes inaequalis*	near still water & in shaded environments	
spreadwing, slender	*Lestes rectangularis*	around forested pools & small clearings	
spreadwing,[1] southern	*Lestes australis*	still or slow-moving water, perm. or intermit. ponds, marshes, & lakes	S2S3, SPCN
spreadwing, spotted	*Lestes congener*	around still, marshy water	
spreadwing, swamp	*Lestes vigilax*	near still, swampy bodies of water	

Table C-4. Dragonflies and damselflies, cont.

Common Name	Scientific Name	Habitat	Statewide Status[2]
spreadwing, sweetflag	*Lestes forcipatus*	around still, swampy water	
LIBELLULIDAE			
amberwing, eastern	*Perithemis tenera*	around ponds & other still water, or in nearby fields	
corporal, chalk-fronted	*Ladona julia*	near ponds & small lakes	
dasher, blue	*Pachydiplax longipennis*	over still ponds	
glider,[1] spot-winged	*Pantala hymenaea*	open temp. ponds, pools (incl. artificial)	
glider, wandering	*Pantala flavescens*	over fields & wide open areas	
meadowhawk, band-winged	*Sympetrum semicinctum*	in meadows & fields	
meadowhawk,[1] cherry-faced	*Sympetrum internum*	around small ponds & nearby fields	
meadowhawk, ruby	*Sympetrum rubicundulum*	around swamps, wet meadows, & wetlands	S3
meadowhawk,[1] white-faced	*Sympetrum obtrusum*	in swamps & wet vegetated areas, or fields	
meadowhawk,[1] yellow-legged	*Sympetrum vicinum*	near still water or fields	
pennant,[1] banded	*Celithemis fasciata*	marshy ponds	S3
pennant, calico	*Celithemis elisa*	around ponds or in nearby fields	
pennant, Halloween	*Celithemis eponina*	in fields & around ponds	
pondhawk, eastern	*Erythemis simplicicollis*	around ponds or (for females esp.) in fields	
saddlebags, black	*Tramea lacerata*	over fields & meadows	
skimmer,[1] four-spotted	*Libellula quadrimaculata*	around ponds, swamps, & marshy streams	
skimmer, painted	*Libellula semifasciata*	marshy forested seeps, ponds, & slow-moving streams	
skimmer, slaty	*Libellula incesta*	around edges of ponds & lakes	
skimmer, spangled	*Libellula cyanea*	around ponds & streams	
skimmer, twelve-spotted	*Libellula pulchella*	near bodies of water & over fields	

Table C-4. Dragonflies and damselflies, cont.

Common Name	Scientific Name	Habitat	Statewide Status[2]
skimmer, widow	*Libellula luctuosa*	near ponds & lakes & in wide variety of fields	
whiteface, dot-tailed	*Leucorrhinia intacta*	around ponds or other small stagnant bodies of water	
whiteface,[1] frosted	*Leucorrhinia frigida*	mud-bottomed lakes & ponds with emergent veg, pools in fens, bogs	
whiteface,[1] red-waisted	*Leucorrhinia proxima*	bogs, fens, acidic ponds	
whitetail, common	*Plathemis lydia*	all types of water (except fast-moving) & in fields	
MACROMIIDAE			
cruiser, Illinois River	*Macromia illinoiensis*	over shaded rivers or more open areas	
cruiser,[1] stream	*Didymops transversa*	medium to large streams & rivers	

[1] Species known from five or fewer locations in the county.

[2] New York Natural Heritage Program ranks (S1, S2, S3, SNA) are explained in Appendix D. SPCN = NYS Species of Potential Conservation Need (https://www.dec.ny.gov/docs/wildlife_pdf/spnc2015list.pdf)

Table C-5. Butterflies of Columbia County, New York.

Compiled by the Hawthorne Valley Farmscape Ecology Program (FEP) with input from Harry Zirlin and others. Flight time and foods from Cech and Tudor (2005); habitats from Cech and Tudor and FEP observations.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
HESPERIIDAE					
broken-dash, northern		rare	early June-mid Aug	panic grasses	oldfield
cloudywing, northern		occasional	late May-early July	clovers & other legumes	"scrubby field"
cloudywing,[3] southern		rare	early June-mid July	legumes	open habitats
dash, black		occasional	late April-early June	sedges	sedgy wetlands
dash, long		occasional	early June-early July; Aug	grasses	open grassy meadow, often moist
duskywing, columbine		unseen but possible	May-June, July	columbine	calcareous ledge
duskywing,[3] dreamy		rare	mid May-June	willows, aspen, black locust	open forest & edges
duskywing,[3] Horace's		rare	May, June, Sept	oaks	dry, open oak woods
duskywing, Juvenal's		common	late April-early June	oaks	open upland habitats, usually not disturbed
duskywing,[3] mottled	S1, SGCN[HP]	rare	May-June, July-August	New Jersey tea	open, dry forest
duskywing, sleepy		unseen but possible	May	scrub oak	balds, barrens
duskywing, wild indigo		occasional	May-Aug	wild indigo, vetches	in or near alfalfa fields
edge,[3] hoary		rare	June-July	legumes, e.g., tick trefoil	oldfield & field edges

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
glassywing, little		occasional	late June-July	purple top & other grasses	oldfield & pasture
sachem		rare	vagrant; observed once in Sept	grasses	in & near disturbed grassy areas
skipper, arctic		rare	late May to mid June	grasses	grasses near forest
skipper, broadwing	S3	occasional	mid July-Aug	reeds, sedges, wild rice	wet areas with *Phragmites*
skipper, cobweb		rare	May-June	bluestems	dry fields
skipper, common checkered		occasional	mid May-Sept	mallows	short, sparse meadows & lawns
skipper, crossline		occasional	late June-early Aug	grasses	dry and moist fields
skipper, Delaware		rare	mainly July	little bluestem, switchgrass, other grasses	open habitats, dry to wet
skipper, Dion		rare	July	sedges	wetlands
skipper, dun		occasional	July-Aug	sedges, maybe grasses	oldfield
skipper, dusted	S2S3	unseen but possible	May - June	bluestems	dry open habitats
skipper, European		common	June-July	timothy & other introduced grasses	meadow
skipper, fiery		rare	Sept-Oct	grasses	open uplands
skipper, Hobomok		common	late May-early July	grasses	oldfield
skipper, Indian		rare	May-June	grasses, e.g., bluestem	dry, often shrubby, meadows
skipper, least		common	June-Oct	grasses	wet meadow, grassy marsh

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
skipper, Leonard's		rare	end of Aug-early Sept	native grasses, e.g., little bluestem	dry upland grassland near wet area
skipper, Ocola		rare migrant	Sept-Oct	rice cutgrass?	around flowers
skipper, Peck's		common	late May-Sept	grasses	meadow
skipper, pepper & salt		rare	May-June	grasses	forest openings
skipper,[3] roadside		rare	late May-mid June	grasses	forest openings
skipper, silver-spotted		common	June-Aug	black locust	shrubby fields
skipper, tawny-edged		common	late May-mid July; early Aug-Sept	grasses	grassy, often moist
skipper, two spotted		unseen but possible	late June-July	sedges, especially hairy-fruited sedge	wetlands
skipper, Zabulon		rare	late May-mid June; mid Aug-mid Sept	grasses	shrubby fields, roadside
sootywing, common		common	mid May-mid June; late July-Aug	lamb's quarters & others	open habitats
wing, mulberry		rare	mid July-early Aug	sedges	sedgy wetlands
LYCAENIDAE					
azure, spring-summer		common	April-Sept	(various)	mainly meadows
blue, eastern tailed		common	May-Sept	legumes	open, disturbed, low growth
blue, silvery		rare	April-June	legumes	openings in moist forest

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
copper, American		common	May-Sept	*Rumex* (docks)	drier meadows
copper, bog		unseen but possible	late June-July	cranberries	acidic wet meadows
copper, bronze		occasional	mid June-mid July; early Aug-mid Sept	*Rumex* (docks)	wetlands around ponds or streams
elfin, brown		rare	May	heaths	barrens, dry forest
elfin, eastern pine		rare	May-June	pines	near pine woods
hairstreak, Acadian		unseen but possible	July	willows	shrubby wet meadows & swamps
hairstreak, banded		occasional	May-Aug	oaks, hickories	edges, open habitats
hairstreak, coral		rare	June	cherries, plums	oldfield, second growth
hairstreak, early		unseen but possible	May-June, July-August	beechnuts	beech forest
hairstreak, Edward's	S3S4	unseen but possible	July	scrub oak	scrub oak forest, rocky barren
hairstreak, grey		occasional	early May-mid June	various meadow & shrubland plants	open, weedy, disturbed
hairstreak, hickory		occasional	late June-early Aug	hardwood trees	edges of rich, deciduous forests
hairstreak, juniper		rare	mid May-June; Aug	eastern red cedar	open uplands with red cedar
hairstreak, northern oak	S2S4, SGCN[HP]	unseen but possible	June-July	oaks	oak forest

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
hairstreak, red-banded		rare	May-June; Aug-Sept	rotting leaves	open habitats
hairstreak, striped		rare	late June-mid July	roses, cherries, hawthorns, heaths, American hornbeam	forest openings & edges
hairstreak, white M	SU	rare	May, Sept	oaks	oak forest
harvester		rare	May-Sept	alder aphids	alder swamp
NYMPHALIDAE					
admiral, red		occasional	May-Oct	nettles	moist forest & meadow, esp. floodplain forests
admiral, white		rare	mid June-early Aug; mid Aug-mid Sept	cherries	forests, edges, shrubland
brown, Appalachian		occasional	late June-Aug	sedges	forested wet areas, near sedges
brown, eyed		rare	late June-early Aug	sedges	sedgy habitats
buckeye, common		occasional migrant	July-Sept	plantains, figworts, vervains	open habitats with some bare ground
checkerspot, Baltimore		common	mid June-mid July	turtlehead, English plantain	meadow
checkerspot,[3] Harris'		rare	June-July	flat-topped white aster	wet, open habitats
checkerspot, silvery		unseen but possible	July	sunflowers	edges, stream banks
cloak, mourning		common	year around; most common in summer	willows, other trees	wanders among many habitats

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
comma, eastern		common	3 flights, April-Sept?	gooseberries, currants	woods, especially floodplain forests
comma, green		unseen but possible	3 flights, April-Sept?	gooseberries, currants, elm	"boreal woodlands"
comma, gray		rare	3 flights, April-Sept	gooseberries, currants, elm	forest clearings
crescent, pearl		common	mid May-early Sept	asters	meadow
crescent, tawny	SH, SC	regionally extinct?	June-July	certain asters	rocky, scrubby areas
emperor, hackberry		rare	July-Aug	hackberry	floodplains with hackberry
emperor, tawny	S2S4	unseen but possible	July-Aug	hackberry	hackberry habitats
fritillary, Aphrodite		rare	late June-early Sept	violets	upland habitats on acidic soils, moist grasslands
fritillary,[3] Atlantis		rare	mid June-mid Sept	northern blue violet	forest openings
fritillary, great spangled		common	late June-early Sept	violets	forest edges
fritillary, meadow		common	May-Sept	violets	moist fields
fritillary,[3] regal		regionally extinct?	late June-mid Sept	violets	extensive open areas with some wetness
fritillary,[3] silver-bordered		rare	June-Sept	wetland violets	overgrowing wet habitats, marshes, bogs
fritillary, variegated		rare	July-Oct	violets, thyme, plantains, purslane	open habitats

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
lady, American		occasional	mid May-late Oct	composites (asters, goldenrods, etc.)	(various)
lady, painted		common	May-Oct	various meadow plants	open habitats
mark, question		occasional	late June-Oct	elms	forests and edges
monarch	SPCN	common	mid June-Sept	milkweeds	oldfield, edges
nymph, common wood		common	July-early Sept	grasses	meadow with shrubs or other tall vegetation
pearly-eye, northern		common	late June-early Aug	grasses	forest, often near water
purple, red-spotted		occasional	mid June-early Aug; mid Aug-mid Sept	cherries	near deciduous, often moist forest
ringlet, common		common	late May-early July; late July-Aug	grasses	oldfields
satyr, little wood		common	late May-early Aug	grasses	edges, forest openings
snout, American		rare migrant	late June-mid Oct	hackberry	forested stream edges
tortoiseshell, Compton		occasional	March-fall	birches, willows	forest openings and edges
tortoiseshell, Milbert's		occasional	mid June-Oct?	nettles	wet or moist habitats near forest
viceroy		common	late May-early Oct	willow	moist, shrubby habitats
PAPILIONIDAE					
swallowtail, black		common	May-Sept	parsley, carrot, & related plants	mainly open meadows

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
swallowtail, Canada		unseen but possible	May-early June?	birches, aspens, cherries	near deciduous trees
swallowtail, eastern tiger		common	late May-Oct	black cherry, tulip tree, ashes	near deciduous trees
swallowtail, giant		rare	May-Sept	Rutaceae, esp. prickly-ash	various habitats, often semi-open
swallowtail, pipevine		rare	June-early Oct	pipevine	gardens, rocky forested uplands
swallowtail, spicebush		occasional	May-Aug	spicebush	various open habitats, usually near forest
PIERIDAE					
sulphur, clouded		common	May-mid Oct	legumes	open habitats
orange-tip, falcate		unseen but possible	May	mustards, rock cresses, two-leaved toothwort	"trap rock hills"
sulphur, cloudless		unseen but possible	Aug-Oct migrant	legumes	open habitats
sulphur, orange		common	mid May-early Oct	alfalfa and other legumes	open habitats, weedy, alfalfa meadows
white, cabbage		common	May-Oct	mustards	pastures or culti-vated fields
white, checkered	S1, SC	unseen but possible	late Aug-Sept	mustards	weedy, open habitats
white, mustard		unseen but possible	as early as late April-Aug	mustards, e.g., *Dentaria, Arabis, Cardamine*	edges, streamside habitats, oldfields
white, West Virginia	S3	rare	early April-late May	mainly *Dentaria & Cardamine diphylla*	rich moist woods

Table C-5. Butterflies, cont.

Common Name	State-wide Status[1,2]	Apparent Status in County	Flight Time	Caterpillar Food	Habitat
yellow, little		rare	mid Aug-early Sept	legumes	meadows and waste areas
RIONIDAE					
metalmark, northern	S1	unseen but possible	July	round-leaved ragwort	limestone outcrops

[1] New York Natural Heritage Program ranks (S1, S2, SH, etc.) are explained in Appendix D.

[2] NY State Ranks:
SC = special concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
SPCN = Species of Potential Conservation Need

[3] Indicates those that are listed at the Butterflies and Moths of North America website (http://www.butterfliesandmoths.org) as recorded from Columbia County, but have not been observed by FEP and colleagues. All other butterflies listed here have been observed by FEP or their collaborators, except for those marked as "unseen but possible" or "regionally extinct" or "rare."

Table C-6. Mollusks of Columbia County

Occurrence and habitat data for aquatic mollusks are from Strayer (1987), reviewed and updated by David Strayer in 2018. Occurrence and habitat data for land snails from Hotopp et al. (2018), compiled by Kathleen A. Schmidt.

A. Aquatic Mollusks

Scientific Name	Habitat	Native (Y/N)	Statewide Status[1,2]
ANCYLIDAE			
Ferrissia fragilis[3]	quiet waters	Y	
Ferrissia rivularis	quiet waters, flowing streams & rivers, freshwater tidal Hudson River	Y	
Laevapex fuscus	impoundments, rivers, freshwater tidal Hudson River, & lakes	Y	
BITHYNIIDAE			
Bithynia tentaculata	freshwater tidal Hudson River	N	
HYDROBIIDAE			
Amnicola limosa	streams, rivers, freshwater tidal Hudson River, lakes, ponds	Y	
Birgella subglobosa	rivers & freshwater tidal Hudson River	N	S3
Probythinella lacustris[3]	freshwater tidal Hudson River	Y	
LYMNAEIDAE			
Fossaria humilis	brooks, streams, rivers, freshwater tidal Hudson River, lakes, ponds & temporary pools	Y	
Radix auricularia	ponds	N	
Stagnicola catascopium	rivers, intertidal zone of Hudson River, & lakes	Y	
Stagnicola elodes	ponds (incl. temporary), canals, & marshes	Y	
PHYSIDAE			
Aplexa elongata	ponds (incl. temporary) & ditches	Y	S2, SPCN
Physa gyrina	streams, rivers, occasionally freshwater tidal Hudson River, lakes, & ponds	Y	
Physa acuta	rivers, lakes, & ponds	N	
PLANORBIDAAE			
Gyraulus circumstriatus[3]	temporary waters	Y	
Gyraulus deflectus	freshwater tidal Hudson River, lakes, & ponds	Y	

Table C-6.A. Mollusks: aquatic, cont.

Scientific Name	Habitat	Native (Y/N)	Statewide Status[1,2]
Gyraulus parvus	streams, rivers, freshwater tidal Hudson River, lakes, & ponds	Y	
Helisoma anceps	streams, rivers, freshwater tidal Hudson River, lakes, & ponds	Y	
Menetus dilatatus[3]	streams, freshwater tidal Hudson River	Y	
Planorbella campanulata	lakes & ponds	Y	
Planorbella trivolvis	rivers, freshwater tidal Hudson River, & ponds	Y	
Planorbula armigera[3]	temporary waters, marshes, ponds	Y	
Promenetus exacuous	freshwater tidal Hudson River, marshes, & ponds	Y	
PLEUROCERIDAE			
Pleurocera livescens	streams, large rivers, & freshwater tidal Hudson River	N	
Pleurocera virginica	freshwater tidal Hudson River	Y	S3
Pleurocera acuta	large rivers & freshwater tidal Hudson River	N	S3
SPHAERIIDAE			
Musculium lacustre	lakes & ponds (incl. temporary)	Y	
Musculium partumeium	slow-moving streams, swamps, & ponds (incl. temporary)	Y	
Musculium securis	lakes & ponds (incl. temporary)	Y	
Pisidium spp.[3]	variety of habitats		
Sphaerium occidentale[3]	temporary ponds	Y	
Sphaerium rhomboideum	creeks & rivers	Y	
Sphaerium simile[3]	streams	Y	
Sphaerium striatinum[3]	streams	Y	
UNIONIDAE			
Anodonta implicata	freshwater tidal Hudson River	Y	S1S2, SGCN[HP]
Anodontoides ferussacianus	streams & rivers	Y	

Table C-6.A. Mollusks: aquatic, cont.

Scientific Name	Habitat	Native (Y/N)	Statewide Status[1,2]
Elliptio complanata	streams, rivers, freshwater tidal Hudson River & lakes	Y	
Lampsilis radiata	streams, rivers, freshwater tidal Hudson river, & lakes	Y	
Lasmigona compressa	small streams	Y	S3S4
Leptodea ochracea[3]	tidal Hudson River	Y	S1
Ligumia nasuta	freshwater tidal Hudson River, Lake Taghkanic	Y	S2S3, SGCN
Pyganodon cataracta	streams, rivers, freshwater tidal Hudson River, lakes, & ponds	Y	
Strophitus undulatus[3]	creeks, small rivers	Y	
VALVATIDAE			
Valvata sincera	freshwater tidal Hudson River	Y	S1, SC, SPCN
Valvata tricarinata	streams, rivers, freshwater tidal Hudson River, lakes, & ponds	Y	
VIVIPARIDAE			
Campeloma decisum	streams, rivers, freshwater tidal Hudson River, lakes, & ponds	Y	
Cipangopaludina chinensis[3]	quiet waters	N	
Lioplax subcarinata	freshwater tidal Hudson River	Y	
Viviparus georgianus[3]	rivers, permanent ponds, and lakes	N	

[1] New York Natural Heritage Program ranks (S1, S2, SH, etc.) are explained in Appendix D.

[2] NY State Ranks:
SC = special concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
SPCN = Species of Potential Conservation Need

[3] Documented nearby and almost surely occurring in Columbia County (David Strayer, pers. comm.)

Table C-6. Mollusks, cont.

B. Land Snails

Species Name	Common Name	Habitat	Native (Y/N)
AGRIOLIMACIDAE			
Deroceras laeve[1]	meadow slug	open & developed areas, yards, fields, shrubs, young woods	Y
Deroceras reticulatum[1]	gray fieldslug	gardens & fields, a pest of crops	N
ARIONIDAE			
Arion circumscriptus[1]	brown-banded arion	leaf litter; lowland deciduous forests	N
Arion fasciatus[1]	orange-banded arion	near human habitation, gardens, fields, dumps, cemeteries, etc.	N
Arion hortensis[1]	garden arion	nurseries & farmland	N
Arion intermedius[1]	hedgehog arion	disturbed & developed habitats, yards, farms, woods, wetlands	N
CIONELLIDAE			
Cochlicopa lubrica	glossy pillar	open habitats, wetlands, grasslands, roadsides	Y
Cochlicopa lubricella[1]	thin pillar	colonies on developed sites, lawns, driveways	N
Cochlicopa morseana[1]	Appalachian pillar	deep leaf litter; cool mature forests	Y
DISCIDAE			
Anguispira alternata	flamed disk	leaf litter around logs, bark, rocks; hardwood or mixed forests	Y
Discus catskillensis	angular disk	among logs, stumps, rock talus, dead leaves; forests or old fields,	Y
Discus patulus[1]	domed disk	stumps, logs, or in deep layers of moist leaves; mature forests	Y
Discus rotundatus	rotund disk	among herbaceous veg, leaf litter, rocks; damp habitats, woods	N
Discus whitneyi[1]	forest disk	moist habitats, near springs, wetlands, low-lying meadows, roadsides	Y
ELLOBIIDAE			
Carychium exiguum[1]	obese thorn	damp calcium-rich environments	Y
Carychium exile[1]	ice thorn	leaf piles & fallen tree pits on wooded slopes & talus	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
Carychium nannodes[1,2]	file thorn	leaf piles & fallen tree pits on wooded slopes & talus	Y
EUCONULIDAE			
Euconulus chersinus	wild hive	moist leaf litter on wooded hillsides & steep valleys	Y
Euconulus dentatus[1]	toothed hive	dry leaf litter & around logs	Y
Euconulus fulvus egena[1]	brown hive	moist leaf litter	Y
Euconulus polygyratus	fat hive	leaf litter	Y
GASTRODONTIDAE			
Gastrodonta interna[1,2]	brown bellytooth	deep piles of wet leaf litter & rotting wood debris in damp woods	Y
Striatura exigua[1]	ribbed striate	leaf litter in mesic forests	Y
Striatura ferrea[1]	black striate	leaf litter in hardwood forests	Y
Striatura milium[1]	fine-ribbed striate	leaf litter; mesic upland woods, acidic wooded wetlands, fens	Y
Ventridens intertextus[1]	pyramid dome	leaf litter in acidic woods	Y
Ventridens ligera[1]	globose dome	richer soils; open weedy forest, floodplains, meadows, roadsides	Y
Zonitoides arboreus[1]	quick gloss	common & widespread; forest leaf litter & on logs & snags	Y
Zonitoides nitidus	black gloss	floodplains, streamsides, & wetlands	Y
HAPLOTREMATIDAE			
Haplotrema concavum[1]	gray-foot lancetooth	forest leaf litter	Y
HELICIDAE			
Cepaea nemoralis[1]	grovesnail	early successional habitats; roadsides, urban forests, floodplains	N
HELICODISCIDAE			
Helicodiscus parallelus	compound coil	decaying wood, leaf matter; floodplains, uplands, grassland, roadsides	Y
Helicodiscus shimeki[1]	temperate coil	leaf litter in upland woods; acidic environments	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
Lucilla singleyana[1]	smooth coil	urban terrain, open land, dry grass-lands, bare rock & talus, roadsides	Y
HYGROMIIDAE			
Trochulus hispidus[1]	hairy helicellid snail	damp, shady, weedy places	N
LIMACIDAE			
Limax flavus	yellow gardenslug	under logs & waste piles; disturbed habitats, gardens	N
Limax maximus[1]	giant gardenslug	wooded areas near houses, gardens, yards, sidewalks	N
OXYCHILIDAE			
Oxychilus alliarius[1]	garlic glass-snail	disturbed areas, yards, gardens, roadsides, abandoned lots	Y
Oxychilus cellarius[1]	cellar glass-snail	anthropogenic shaded habitats, forests, gardens, brushpiles, caves	N
Oxychilus draparnaudi[1]	dark-bodied glass-snail	moist shaded habitats in yards, gardens, woods	N
PHILOMYCIDAE			
Megapallifera mutabilis[1]	changeable mantleslug	upland forest, human habitations; moist areas around trees, under bark	Y
Pallifera dorsalis[1]	pale mantleslug	leaf litter; old growth & secondary upland forests	Y
Philomycus carolinianus[1]	Carolina mantleslug	wooded floodplains	Y
Philomycus flexuolaris[1]	winding mantleslug	on logs, snags, tree trunks; upland hardwood forests	Y
POLYGYRIDAE			
Euchemotrema fraternum	upland pillsnail	leaf litter & logs in woods, sometimes climbing on beech & maple trunks	Y
Euchemotrema leai	lowland pillsnail	lowlands, marshes, swamps, flood-plains, grassy meadows	Y
Inflectarius inflectus[1]	shagreen	leaf litter & under logs, rocks, & trash; wooded areas	Y
Mesodon thyroidus	white-lip globe	rich soil; lowlands, limestone ledges, oak & maple woods, gardens	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
Neohelix albolabris	whitelip	leaf litter, logs, woody debris; forests, damp rich lower forest slopes	Y
Neohelix dentifera[1]	big-tooth whitelip	upland forest, acidic, damp rocky slopes near streams, glacial talus, rhododendrons	Y
Neohelix solemi[1]	coastal whitelip	leaf litter & woody debris; open habitats, forests	Y
Patera appressa[1,2]	flat bladetooth	rocky areas of hardwood forests, roadsides, urban terrains	Y
Stenotrema hirsutum	hairy slitmouth	leaf litter under rocks; vine-covered talus, niches; rich soils	Y
Triodopsis juxtidens[1]	Atlantic threetooth	leaf litter & under logs & rocks in rich, hilly forests	Y
Triodopsis tridentata	northern threetooth	leaf litter, under logs; mixed hardwood forests, roadsides, meadows, urban	Y
Xolotrema denotatum	velvet wedge	near big logs, fallen trees, & snags; damp steep slopes, floodplains	Y
POMATIOPSIDAE			
Pomatiopsis lapidaria	slender walker	mud or debris near streams; riparian forests, calcium-rich habitats	Y
PRISTILOMATID			
Hawaiia minuscula	minute gem	leaf litter; wooded slopes, open ground on floodplains & roadsides	Y
Paravitrea multidentata[1]	dentate supercoil	moist leaf litter in rocky forests	Y
PUNCTIDAE			
Punctum minutissimum[1]	small spot	leaf litter; calcium-rich habitats	Y
PUPILLIDAE			
Pupilla muscorum	widespread column	roadsides, quarries, old fields, carbonate cliffs, glades, grasslands	Y
Pupoides albilabris	white-lip dagger	under stones, leaf litter, thatch; rock outcrops, bedrock glades, xeric prairie, old fields; calciphile	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
STROBILOPSIDAE			
Strobilops aeneus[1]	bronze pinecone	in old logs & leaf litter	Y
Strobilops affinis[1]	eightfold pinecone	on logs & in leaf litter; mixed hardwood forests	Y
Strobilops labyrinthicus[1]	maze pinecone	leaf litter, on old logs, & at the base of trees	Y
SUCCINEIDAE			
Catinella vermeta[1]	suboval ambersnail	around lowland streams & wetlands	Y
Novisuccinea ovalis	oval ambersnail	among herbaceous veg.; ditches, along streams, rivers, hillside woods	Y
Oxyloma retusum[1]	blunt ambersnail	on plants; damp fields, shoreline habitats	Y
Succinea putris[1]	European ambersnail	common around ponds, swamps, wet meadows, streams	N
VALLONIIDAE			
Planogyra asteriscus[1]	eastern flat-whorl	wetlands & occasionally upland woods	Y
Vallonia costata	costate vallonia	calcium-rich habitats; forest gaps, dry open places	Y
Vallonia excentrica	Iroquois vallonia	grassy places, roadsides, lawns	N?
Vallonia perspectiva[1]	thin-lip vallonia	talus slopes in woods, broken rock areas, railroad tracks; calciphile	Y
Vallonia pulchella	lovely vallonia	grassy places, meadows, roadsides, lawns	Y
VERTIGINIDAE			
Columella simplex	high-spire column	leaf litter, on leaves; various habitats, forests, open, acidic, calcareous	Y
Gastrocopta armifera	armed snaggletooth	leaf litter; bedrock glades, limestone ledges, limestone outcrop base; calciphile	Y
Gastrocopta contracta	bottlenose snaggletooth	leaf litter, under logs; varied habitats; wet, dry, forests, open	Y
Gastrocopta corticaria	bark snaggletooth	wooded calcareous ledges; in soil under e. red cedar; in wetlands	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
Gastrocopta pentodon[1]	comb snaggletooth	various habitats; dry, damp, open, forested, rich, acidic	Y
Gastrocopta procera[1]	wing snaggletooth	leaf litter, thatch, under stones; exposed (unforested) sites; calciphile	Y
Gastrocopta tappaniana[1]	white snaggletooth	leaf litter in flooplains, swamps, mesic & wet prairies, fens, bogs	Y
Vertigo bollesiana[1]	delicate vertigo	mesic upland forests under shrubs, cliff ledges, boulder tops	Y
Vertigo gouldi	variable vertigo	decomposed leaf litter; shaded calcareous ledges, forests	Y
Vertigo milium[1]	blade vertigo	decomposed leaf litter; mesic, rocky, riparian woodland; cliffs; roadsides; swamps	Y
Vertigo morsei[3]	six-whorl vertigo		Y
Vertigo ovata[1]	ovate vertigo	graminoid litter; cattail leaves; swamps; wet, mesic, calcareous [sedge] meadows; woods	Y
Vertigo pygmaea	pygmy vertigo	graminoid thatch, leaf litter; disturbed areas, grasslands, roadsides, old fields, quarries	Y
VITRINIDAE			
Vitrina angelicae[1]	eastern glass-snail	beneath wood or rocks; damp, grassy, wetlands, streams, rivers	Y
ZONITIDAE			
Glyphyalinia indentata	carved glyph	leaf litter; forests, open lots, roadsides, railways	Y
Glyphyalinia rhoadsi[1]	sculpted glyph	leaf litter; upland forests	Y
Glyphyalinia wheatleyi[1]	bright glyph	leaf litter; ravines, moist hillsides	Y
Mesomphix cupreus	copper button	damp leaf litter & around logs; mature upland forests	Y
Mesomphix inornatus[1]	plain button	under leaves & dead wood; upland forests	Y
Nesovitrea binneyana[1]	blue glass	leaf litter; upland mixed hardwood forests	Y

Table C-6.B. Mollusks: land snails, cont.

Species Name	Common Name	Habitat	Native (Y/N)
Nesovitrea electrina	amber glass	wet habitats, lake margins, freshwater marshes, wet prairies, forests	Y

[1] Documented nearby and almost surely occurring in Columbia County (Kathy Schmidt, pers. comm.)

[2] Unlikely in Columbia County

[3] Provisional in Columbia County

Table C-7. Fishes of Columbia County, New York.

Data mainly from the New York State Fish Atlas, 1934-2011, reviewed and updated by Robert E. Schmidt. Hudson River fishes are listed only if they inhabit the Columbia/Greene County reach of the river.

Common Name[1]	Scientific Name	Native (Yes/ No)	CC Status[2]	Hudson River	Other Streams	Ponds/ Lakes
alewife (SGCN)	*Alosa pseudoharengus*	Y	U	x	x	x
American eel (S2S3, SGCN[HP])	*Anguilla rostrata*	Y	C	x	x	x
American shad (SGCN[HP])	*Alosa sapidissima*	Y	U	x		
Atlantic sturgeon (E, S1, SGCN[HP])	*Acipenser oxyrinchus*	Y	R	x		
Atlantic tomcod (SGCN[HP])	*Microgadus tomcod*	Y	R	x		
banded killifish	*Fundulus diaphanus*	Y	U	x	x	x
black crappie	*Pomoxis nigromaculatus*	N	U	x	x	x
blueback herring	*Alosa aestivalis*	Y	U	x		
bluegill	*Lepomis macrochirus*	N	U	x	x	x
bluntnose minnow	*Pimephales notatus*	Y	U		x	x
brassy minnow	*Hybognathus hankinsoni*	Y	R	x		
bridle shiner (S2?, SGCN)	*Notropis bifrenatus*	Y	E		x	x
brook silverside	*Labidesthes sicculus*	N	R	x	x	
brook trout (SGCN)	*Salvelinus fontinalis*	Y	U	x	x	x
brown bullhead	*Ameiurus nebulosus*	Y	U	x	x	x
brown trout	*Salmo trutta*	N	C	x	x	x
central mudminnow	*Umbra limi*	N	R	x	x	
chain pickerel	*Esox niger*	Y	U	x	x	x
channel catfish	*Ictalurus punctatus*	N	U	x		x
cisco (SGCN)	*Coregonus artedi*	N	R			x
comely shiner (S2?, SGCN[HP])	*Notropis amoenus*	N	R	x		

Table C-7. Fishes, cont.

Common Name[1]	Scientific Name	Native (Yes/ No)	CC Status[2]	Hudson River	Other Streams	Ponds/ Lakes
common carp	*Cyprinus carpio*	N	U	x	x	x
common shiner	*Luxilus cornutus*	Y	C		x	x
creek chub	*Semotilus atromaculatus*	Y	C		x	x
cutlip minnow	*Exoglossum maxillingua*	Y	U		x	
eastern blacknose dace	*Rhinichthys atratulus*	Y	C		x	x
eastern creek chubsucker	*Erimyzon oblongus*	Y	R		x	x
eastern silvery minnow	*Hybognathus regius*	Y	R	x	x	
emerald shiner	*Notropis atherinoides*	N	R	x	x	x
fallfish	*Semotilus corporalis*	Y	C	x	x	x
fathead minnow	*Pimephales promelas*	N	U		x	x
fourspine stickle-back (SGCN[HP])	*Apeltes quadracus*	Y	U	x	x	x
gizzard shad	*Dorosoma cepedianum*	N	U	x	x	
golden shiner	*Notemigonus crysoleucas*	Y	C	x	x	x
goldfish	*Carassius auratus*	N	U	x	x	x
grass carp	*Ctenopharyngodon idella*	N	U			x
green sunfish	*Lepomis cyanellus*	N	U		x	x
largemouth bass	*Micropterus salmoides*	N	U	x	x	x
logperch	*Percina caprodes*	Y	R	x		
longnose dace	*Rhinichthys cataractae*	Y	U		x	
longnose sucker (SGCN)	*Catostomus catostomus*	Y	R		x	
margined madtom	*Noturus insignis*	Y	R	x		
mummichog (SGCN)	*Fundulus heteroclitus*	Y	C	x	x	x

Table C-7. Fishes, cont.

Common Name[1]	Scientific Name	Native (Yes/ No)	CC Status[2]	Hudson River	Other Streams	Ponds/ Lakes
northern hog sucker	*Hypentelium nigricans*	Y	U	x	x	
northern pike	*Esox lucius*	N	R	x	x	x
pumpkinseed	*Lepomis gibbosus*	Y	U	x	x	x
rainbow trout	*Oncorhynchus mykiss*	N	R	x	x	x
redbreast sunfish	*Lepomis auritus*	Y	C	x	x	x
redfin pickerel	*Esox americanus americanus*	Y	U	x	x	
rock bass	*Ambloplites rupestris*	N	U	x	x	x
rudd	*Scardinius erythrophthalmus*	N	R	x	x	x
satinfin shiner	*Cyprinella analostana*	Y	R	x	x	
sea lamprey	*Petromyzon marinus*	Y	R	x	x	
shortnose sturgeon (E, S1, SGCN)	*Acipenser brevirostrum*	Y	R	x		
slimy sculpin	*Cottus cognatus*	Y	R		x	
smallmouth bass	*Micropterus dolomieu*	N	C	x	x	x
splake	*Salvelinus fontinalis* x *namaycush*	N	C			x
spotfin shiner	*Cyprinella spiloptera*	Y	U	x	x	x
spottail shiner	*Notropis hudsonius*	Y	C	x	x	
striped bass	*Morone saxatilis*	Y	U	x		
tadpole madtom	*Noturus gyrinus*	Y	E		x	
tessellated darter	*Etheostoma olmstedi*	Y	C	x	x	x
tiger musky	*Esox lucius* x *masquinongy*	N	C			x
walleye	*Sander vitreus*	N	R	x	x	x
white catfish	*Ameiurus catus*	Y	R	x		x
white crappie	*Pomoxis annularis*	N	R	x		x
white perch	*Morone americana*	Y	U	x	x	x

Table C-7. Fishes, cont.

Common Name[1]	Scientific Name	Native (Yes/ No)	CC Status[2]	Hudson River	Other Streams	Ponds/ Lakes
white sucker	*Catostomus commersonii*	Y	C	x	x	x
yellow bullhead	*Ameiurus natalis*	Y	C		x	x
yellow perch	*Perca flavescens*	Y	U	x	x	x

[1] New York Natural Heritage Program ranks (S1, S2, SH, etc.) are explained in Appendix D.
NY State ranks:
E = endangered; T = threatened (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need
(http://www.dec.ny.gov/animals/9406.html)
(The SGCN rank also applies to all species ranked as E, T, or SC)

[2] Columbia County (CC) status: C = common; U = uncommon; R = rare; E = extirpated.

Table C-8. Amphibians and reptiles of Columbia County, New York.

Occurrence data are from the New York State Reptile and Amphibian Atlas.

Common Name	Scientific Name	Habitat	State-wide Status[1]
SALAMANDERS			
Allegheny mountain dusky salamander	*Desmognathus ochrophaeus*	cool stream	
blue-spotted salamander	*Ambystoma laterale*	swamp, vernal pool, upland forest	SC
eastern newt	*Notophthalmus viridescens*	perennial pond, other wetland, upland forest	
eastern red-backed salamander	*Plethodon cinereus*	upland forest	
four-toed salamander	*Hemidactylium scutatum*	swamp, upland forest	SGCN[HP]
Jefferson salamander	*Ambystoma jeffersonianum*	vernal pool, upland forest	SC
marbled salamander	*Ambystoma opacum*	vernal pool, upland forest	SC
mudpuppy	*Necturus maculosus*	perennial stream	SC
northern dusky salamander	*Desmognathus fuscus*	cool stream	
northern slimy salamander	*Plethodon glutinosus*	talus, upland forest	
northern two-lined salamander	*Eurycea bislineata*	small forested stream	
spotted salamander	*Ambystoma maculatum*	vernal pool, upland forest	
spring salamander	*Gyrinophilus porphyriticus*	rocky stream, forested seep	
TOADS & FROGS			
American toad	*Bufo americanus*	everywhere	
bullfrog	*Rana catesbeiana*	pond, marsh	
Fowler's toad	*Bufo fowleri*	sandy or rocky forest	SGCN
gray treefrog	*Hyla versicolor*	shallow pool, upland forest	
green frog	*Rana clamitans*	pond, marsh	
northern leopard frog	*Rana pipiens*	pond, marsh, meadow	
pickerel frog	*Rana palustris*	meadow, forest, wetland	
spring peeper	*Pseudacris crucifer*	upland forest, wetland	

Table C-8. Amphibians and reptiles, cont.

Common Name	Scientific Name	Habitat	State-wide Status[1]
wood frog	*Rana sylvatica*	vernal pool, upland forest	
TURTLES			
bog turtle	*Glyptemys muhlenbergii*	fen, nearby wetland	E
eastern box turtle	*Terrapene carolina*	upland forest, meadow	SC
northern map turtle	*Graptemys geographica*	Hudson River	SGCN
painted turtle	*Chrysemys picta*	pond, marsh, stream	
snapping turtle	*Chelydra serpentina*	pond, lake, wetland, meadow	SGCN
spotted turtle	*Clemmys guttata*	wetland, upland forest	SC
musk turtle (stinkpot)	*Sternotherus odoratum*	stream, lake	$SGCN^{HP}$
wood turtle	*Glyptemys insculpta*	perennial stream, upland forest, meadow	SC
SNAKES			
common garter snake	*Thamnophis sirtalis*	everywhere	
copperhead	*Agkistrodon contortrix*	forest, ledge, meadow	SGCN
Dekay's brown snake	*Storeria dekayi*	forest, meadow, wetland, yard	
eastern racer	*Coluber constrictor*	forest, meadow, ledge, talus	SGCN
eastern rat snake	*Elaphe alleghaniensis*	forest, ledge, talus	SGCN
eastern ribbon snake	*Thamnophis sauritus*	open wetland	SGCN
milksnake	*Lampropeltis triangulum*	meadow, forest, barnyard	
northern water snake	*Nerodia sipedon*	pond, lake, wetland, stream	
red-bellied snake	*Storeria occipitomaculata*	forest, meadow, wetland, yard	
ring-necked snake	*Diadophis punctatus*	forest, forest opening	
smooth greensnake	*Liochlorophis vernalis*	wet meadow, other wetland, open forest	SGCN
timber rattlesnake	*Crotalus horridus*	forest, meadow, ledge, talus	T

[1] New York State ranks:
E = Endangered; T = Threatened; SC = Special Concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need; $SGCN^{HP}$ = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
(The SGCN rank also applies to all species ranked as E, T, or SC)

Table C-9. Columbia County birds of conservation concern: A. Breeding birds, B. Winter birds

Data are from the NYS Breeding Bird Atlas (BBA) (Andrle and Carroll 1988, McGowan and Corwin 2008).

A. Breeding birds of conservation concern

Species	General Habitat Type for Nesting	NYNHP rank[1]	NYS rank[2]	BBA 1980-85[3]	BBA 2000-05[3]	Trend
GREBES						
pied-billed grebe	pond, marsh	S3B, S1N	T	y	y	i
HERONS						
American bittern	marsh		SC	y	y	s
least bittern	marsh	S3B, S1N	T	y	y	s
WATERFOWL						
blue-winged teal	marsh		SGCN	y	n	d
American black duck	marsh	S3B	SGCN^{HP}	y	y	d
RAPTORS						
bald eagle	forest (near water)	S2S3B, S2N	T	n	y	i
northern harrier	meadow	S3B, S3N	T	y	y	s
sharp-shinned hawk	forest		SC	y	y	i
Cooper's hawk	forest		SC	y	y	i
northern goshawk	forest	S3S4B, S3N	SC	n	y	d
red-shouldered hawk	forest		SC	n	y	i
American kestrel	meadow		SGCN	y	y	d
peregrine falcon	cliff, high bridge, tall building (near open habitat)	S3B	E	n	y	i
GALLINACEOUS BIRDS						
northern bobwhite	meadow		SGCN^{HP}	y	y	d
ruffed grouse	forest		SGCN	y	y	d

Table C-9.A. Birds: Breeding birds of conservation concern, cont.

Species	General Habitat Type for Nesting	NYNHP rank[1]	NYS rank[2]	BBA 1980-85[3]	BBA 2000-05[3]	Trend
SHOREBIRDS						
American woodcock	shrubland, forest		SGCN	y	y	d
CUCKOOS						
black-billed cuckoo	forest		SGCN	y	y	d
OWLS						
barn owl	(near) meadow	S1S2	SGCN^{HP}	y	n	d
NIGHTJARS						
common nighthawk	meadow, ledge, rooftop	S2S3B	SC	y	n	d
whip-poor-will	forest	S3B	SC	y	y	d
WOODPECKERS						
red-headed woodpecker	forest (& various other)	S2?B	SC	n	y	d
PERCHING BIRDS						
horned lark	meadow	S3S4B	SC	y	n	d
wood thrush	forest		SGCN	y	y	d
brown thrasher	shrubland		SGCN^{HP}	y	y	d
vesper sparrow	meadow		SC	y	y	d
grasshopper sparrow	meadow		SC	y	y	d
bobolink	meadow		SGCN^{HP}	y	y	s
eastern meadowlark	meadow		SGCN^{HP}	y	y	d
worm-eating warbler	forest		SGCN	y	y	d
Louisiana waterthrush	streamside		SGCN	y	y	d
golden-winged warbler	shrubland		SC	y	y	d
blue-winged warbler	shrubland		SGCN	y	y	i
cerulean warbler	forest		SC	y	y	d
black-throated blue warbler	forest		SGCN	y	y	s
prairie warbler	meadow		SGCN	y	y	s

Table C-9.A. Birds: Breeding birds of conservation concern, cont.

Species	General Habitat Type for Nesting	NYNHP rank[1]	NYS rank[2]	BBA 1980-85[3]	BBA 2000-05[3]	Trend
Canada warbler	forest		SGCN^{HP}	y	y	d
scarlet tanager	forest		SGCN	y	y	s

[1] New York Natural Heritage Program ranks are explained in Appendix D.
[2] New York State ranks
E = endangered; T = threatened; SC = special concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
(The SGCN rank also applies to all species ranked as E, T, or SC)
[3] NYS Breeding Bird Atlas data for survey periods 1980-85 and 2000-05:
y = recorded in Columbia County; n = not recorded in Columbia County
[4] Trend in BBA data between the two survey periods: i = increasing; d = declining; s = similar; ? = trend uncertain

B. Winter birds of conservation concern

Data are from eBird archives December 2009 – March 2018 and Alan Devoe Bird Club Christmas Counts 2010, 2011, 2014, 2015, and 2016.

Species	Where Seen in Winter[1]	NYNHP rank[2]	NYS rank[3]
LOONS			
common loon	Hudson River, lake		SC
GREBES			
pied-billed grebe	pond, marsh	S3B, S1N	T
horned grebe	Hudson River, lake		SGCN
CORMORANTS			
double-crested cormorant	Hudson River	S3	
WATERFOWL			
northern shoveler	lake	S2	
American wigeon	Hudson River	S3	
American black duck	marsh	S3B	SGCN^{HP}
northern pintail	Hudson River, lake	S1B, S3N	SGCN
green-winged teal	Hudson River, lake	S3	
greater scaup	Hudson River, lake		SGCN
lesser scaup	Hudson River, lake		SGCN
black scoter	lake		SGCN
long-tailed duck	lake		SGCN

Table C-9.B. Birds: Winter birds of conservation concern, cont.

Species	Where Seen in Winter[1]	NYNHP rank[2]	NYS rank[3]
common goldeneye	Hudson River, lake	S3	SGCN
red-breasted merganser	Hudson River	S3	
ruddy duck	lake	S1	SGCN
RAPTORS			
bald eagle	forest (near water)	S2S3B, S2N	T
golden eagle	?	SHB, S1N	E
northern harrier	meadow	S3B, S3N	T
sharp-shinned hawk	?		SC
Cooper's hawk	various		SC
northern goshawk	forest	S3S4B,S3N	SC
red-shouldered hawk	forest		SC
American kestrel	meadow		SGCN
merlin	lake and ?	S3?B	
peregrine falcon	cliff, high bridge, tall building (near open habitat)	S3B	E
RAILS			
American coot	lake	S3	
GALLINACEOUS BIRDS			
ruffed grouse	forest		SGCN
OWLS			
short-eared owl	?	S2	E
northern saw-whet owl	?	S3	
PERCHING BIRDS			
horned lark	meadow	S3S4B	SC
scarlet tanager	forest		SGCN
rusty blackbird	?	S2B	SGCN^{HP}

[1] Winter habitats are given only as reported in eBird or by other observers. Christmas bird count data are not reported by habitat.
[2] New York Natural Heritage Program ranks are explained in Appendix D.
[3] New York State ranks
E = endangered; T = threatened; SC = special concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
(The SGCN rank also applies to all species ranked as E, T, or SC)

Table C-10. Mammals of Columbia County, New York.

Occurrence data from Whitaker (in prep), Farmscape Ecology Program, and Hudsonia Ltd.

Common Name	Scientific Name	Statewide Status[1]
MARSUPIALS		
Virginia opossum	*Didelphis virginiana*	
INSECT-EATERS		
masked shrew	*Sorex cinereus*	
northern short-tailed shrew	*Blarina brevicauda*	
smoky shrew	*Sorex fumeus*	
water shrew[2]	*Sorex palustris*	
eastern mole	*Scalopus aquaticus*	
hairy-tailed mole	*Parascalops breweri*	
star-nosed mole	*Condylura cristata*	
BATS		
big brown bat	*Eptesicus fuscus*	
eastern red bat	*Lasiurus borealis*	SGCN
eastern small-footed bat[2]	*Myotis leibii*	SC
hoary bat	*Lasiurus cinereus*	SGCN
Indiana bat[1]	*Myotis sodalis*	E
little brown bat	*Myotis lucifugus*	
northern long-eared bat	*Myotis septentrionalis*	T
silver-haired bat	*Lasionycteris noctivagans*	SGCN
tri-colored bat	*Perimyotis subflavus*	SGCN
CARNIVORES		
black bear	*Ursus americanus*	
raccoon	*Procyon lotor*	
ermine	*Mustela erminea*	
fisher	*Martes pennanti*	
long-tailed weasel	*Mustela frenata*	
mink	*Mustela vison*	
river otter	*Lutra canadensis*	

Table C-10. Mammals, cont.

Common Name	Scientific Name	Statewide Status[1]
striped skunk	*Mephitis mephitis*	
gray wolf/eastern wolf[4]	*Canis lupus/Canis lycaon*	
eastern coyote	*Canis latrans*	
gray fox	*Urocyon cinereoargenteus*	
red fox	*Vulpes vulpes*	
eastern cougar[4]	*Felix concolor*	E
bobcat	*Lynx rufus*	
RODENTS		
woodchuck	*Marmota monax*	
northern flying squirrel[2]	*Glaucomys sabrinus*	
southern flying squirrel	*Glaucomys volans*	
eastern gray squirrel	*Sciurus carolinensis*	
red squirrel	*Tamiasciurus hudsonicus*	
eastern chipmunk	*Tamias striatus*	
American beaver	*Castor canadensis*	
deer mouse	*Peromyscus maniculatus gracilis*	
white-footed mouse	*Peromyscus leucopus*	
southern bog lemming[2]	*Synaptomys cooperi*	
meadow vole	*Microtus pennsylvanicus*	
southern red-backed vole	*Clethrionomys gapperi*	
woodland vole	*Microtus pinetorum*	
muskrat	*Ondatra zibethicus*	
Norway rat	*Rattus norvegicus*	
black rat	*Rattus rattus*	
house mouse	*Mus musculus*	
meadow jumping mouse	*Zapus hudsonius*	
woodland jumping mouse	*Napaeozapus insignis*	
common porcupine	*Erethizon dorsatum*	

Table C-10. Mammals, cont.

Common Name	Scientific Name	Statewide Status[1]
HARES & RABBITS		
snowshoe hare	*Lepus americanus*	
eastern cottontail	*Sylvilagus floridanus*	
New England cottontail	*Sylvilagus transitionalis*	SC
HOOFED MAMMALS		
white-tailed deer	*Odocoileus virginianus*	
moose[3]	*Alces alces*	SGCN

[1] New York State ranks:
E = endangered; T = threatened; SC = special concern (Environmental Conservation Law 6NYCRR Part 182.[g])
SGCN = Species of Greatest Conservation Need
SGCN^{HP} = Highest Priority Species of Greatest Conservation Need (http://www.dec.ny.gov/animals/9406.html)
(The SGCN rank also applies to all species ranked as E, T, or SC .)
[2] Occurrence in Columbia County is uncertain.
[3] Not known to breed in Columbia County.
[4] Extirpated, but rare recent sightings; not known to breed in New York.

Appendix D: Explanation of Rarity Ranks

Animals

The explanation below is from the New York Natural Heritage Program Rare Animal Status List (Schlesinger 2017). Explanation of all NYNHP ranks are given here, but the NRI lists none of the global (G) ranks, and considers only species in the S1, S2, and S3 categories to be of current conservation concern.

State & Federal Listings

NY Natural Heritage tracks a selected subset of New York's animals. The species we track are chosen based on their degree of rarity or imperilment within the state, and as new information comes in, new species are sometimes added while others are discontinued. Information on the species and communities tracked by NY Natural Heritage are used for conservation, research, and regulatory purposes.

Many of the species tracked by NY Natural Heritage are listed as "endangered" or "threatened" under the state Environmental Conservation Law (E.C.L.). Listing is a legal process that is conducted by the state agency with authority over the species in question, and for animals confers important protection requirements. See http://www.dec.ny.gov/animals/7494.html for all state-listed animals.

The NYDEC Division of Fish, Wildlife, and Marine Resources has jurisdiction over rare animal species listed as "endangered," "threatened," or "special concern" under E.C.L. §11-0535. Animals listed as endangered or threatened receive notable legal protection, as it is illegal to take or possess any of these species or their parts without a permit from NYDEC. Species of special concern warrant attention and consideration but current information does not justify listing them as either endangered or threatened.

A subset of the animal species listed under New York state law is also recognized under federal law. These species are so seriously imperiled across their entire range that they face the very real prospect of extinction. Species are listed as federally endangered or threatened by the U.S. Fish & Wildlife Service in consultation with state agencies and other experts, and the Service works closely with NYDEC on the protection of federally listed species in New York.

Ultimately, protection of New York's biodiversity lies with landowners and land managers regardless of state or federal listings. How private and public landowners manage their properties will determine what species and natural communities persist into the future. This situation is both a great opportunity and a serious challenge.

State legal listings are identified with the following codes:

E endangered
T threatened
SC special concern

Federal legal listings are identified with the following codes:

E listed endangered
T listed threatened
C candidate

NY Natural Heritage tracks all species listed as endangered and threatened. While we track many of the species listed as being of special concern, a subset of special concern species are currently not rare or imperiled enough to merit tracking at our precise scale. In addition, we track many species that are biologically rare and imperiled, but that have not gone through the review process necessary for state listing.

Active Inventory and Watch List

The NY Natural Heritage Program keeps two lists of rare animal species: the Active Inventory List and the Watch List. Species on the Active Inventory List are ones we currently track in our database; for the most part these are the most rare or most imperiled species in the state. Species on the Watch List are those that could become imperiled enough in the future to warrant being actively inventoried, or are ones for which we do not have enough data to determine whether they should be actively inventoried. Species are moved between lists, or off the lists entirely, as available information warrants.

Global and State Status Ranks

NY Natural Heritage's statewide inventory efforts revolve around lists of rare species and all types of natural communities known to occur, or to have historically occurred, in the state. These lists are based on a variety of sources including museum collections, scientific literature, information from state and local government agencies, regional and local experts, and data from neighboring states.

Each rare species is assigned a rank based on its rarity, population trends, and threats. Like those in all state Natural Heritage Programs, NY Natural Heritage's ranking system assesses rarity at two geographic scales: global and state. The global rank (G-rank) reflects the status of a species or community throughout its range, whereas the state rank (S-rank) indicates its status within New York. Global ranks are maintained and updated by NatureServe, which coordinates the network of Natural Heritage programs. Both global and state ranks are usually based on the range of the species or community, the number of occurrences, the viability of the occurrences, and the vulnerability of the species or community around the globe or across the state. As new data become available, the ranks may be revised to reflect the most current information. Subspecific taxa are also assigned a taxon rank which indicates the subspecies' rarity rank throughout its range.

For the most part, global and state ranks follow a straightforward scale of 1 (rarest/most imperiled) to 5 (common/secure). The Columbia County NRI refers only to the three ranks—S1, S2, S3—that indicate rarity or limited occurrence in the state, as follows:

S1 Critically imperiled because of rarity (5 or fewer occurrences, or few remaining acres or miles of stream) or factors making it especially vulnerable to extinction rangewide (global) or in New York (state)

S2 Imperiled because of rarity (6-20 occurrences, or few remaining acres or miles of stream) or factors demonstrably making it very vulnerable to extinction (global) or extirpation from New York (state)

S3 Either uncommon or local, typically with 21 to 100 occurrences, limited acreage, or miles of stream rangewide (global) or in New York (state)

Additional species lists and codes are at https://www.acris.nynhp.org/.

Codes sometimes have qualifiers attached:

T1, **T2**, etc. These ranks, which like global and state ranks run from 1 (rarest/most imperiled) to 5 (common/secure), are attached to global ranks to indicate the status of a subspecies or variety

Q Indicates that the species, subspecies, or variety is in taxonomic dispute

? Indicates that the state or global rank is uncertain and more information is needed

N Indicates the migratory status of a migratory species when it is not breeding in NY (for example, populations that are overwintering in the state)

B Indicates the state status of a migratory species when it has breeding populations in NY

Plants

The explanation below is from the New York Natural Heritage Program Rare Plant Status Lists (Young 2017).

The Columbia County NRI refers only to the three ranks —S1, S2, S3—that indicate rarity or limited occurrence in the state, as follows:

S1 = Critically imperiled in New York State because of extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extirpation from New York State due to biological or human factors.

S2 = Imperiled in New York State because of rarity (6 - 20 sites or few remaining individuals) or highly vulnerable to extirpation from New York State due to biological or human factors.

S3 = Vulnerable in New York State. At moderate risk of extinction or elimination due to very restricted range, very few populations (usually 21 - 35 extant sites), steep declines, or other factors.

Taxon Rank

The T-ranks are defined in the same way as the Global ranks, but the T-rank only refers to the rarity of the subspecific taxon, not the rarity of the species as a whole**.** If a species has a subspecific name that is the same as the species name it means there is also another subspecies of that species which we do not consider rare in New York or it does not occur in New York.

Double Ranks (i.e., S1S2, S2S3, S1S3)

The first rank indicates rarity based upon current documentation. The second rank indicates the probable rarity after all historical records and likely habitat have been checked. **Double ranks denote species that need additional field surveys.**

A "**Q**" indicates a question exists whether or not the taxon is a good taxonomic entity.

A "**?**" indicates that an identification question exists about known occurrences. It also indicates the rank presumably corresponds to actual occurrences even though the information has not yet been documented in heritage files or historical records. It serves to flag species that need more field studies or specimen identification.

Species of Greatest Conservation Need

The list of Species of Greatest Conservation Need was developed for the *New York State Wildlife Action Plan* (NYSDEC 2015).

High-Priority Species of Greatest Conservation Need

The status of these species is known, and conservation action is needed in the next ten years. These species are experiencing a population decline, or have identified threats that may put them in jeopardy, and are in need of timely management intervention, or they are likely to reach critical population levels in New York.

Species of Greatest Conservation Need

The status of these species is known and conservation action is needed. These species are experiencing some level of population decline, have identified threats that may put them in jeopardy, and need conservation actions to maintain stable population levels or sustain recovery.

Species of Potential Conservation Need

The list of Species of Potential Conservation Need was developed for the *New York State Wildlife Action Plan* (NYSDEC 2015).

A species whose status is poorly known, but there is an identified threat to the species or features of its life history that make it particularly vulnerable to threats. The species may be declining or begin to experience declines within the next ten years, and studies are needed to determine their actual status.