Northeast Lake Ontario-St. Lawrence Watershed Region

Authors: Gary Goff, Rich Taber, Miranda Reed, Cornell University Cooperative Extension, 2010
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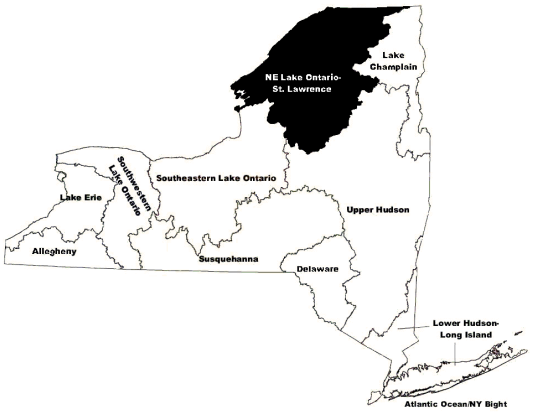
new york state Comprehensive Wildlife Conservation Strategy



Over 70% of the Northeast Lake Ontario-St. Lawrence watershed region is covered in forest of which at least 85% is privately owned. Consequently, the health and prosperity of the watershed's wildlife populations depend on how well these owners protect and enhance the habitat on which hundreds of species of invertebrates, amphibians, reptiles, fish, birds and mammals depend. The good news is that most forest wildlife species are thriving, but unfortunately many are not. 110 species of greatest conservation need **(SGCN)** in the Northeast Lake Ontario-St. Lawrence River Watershed have been identified in the NY Comprehensive Wildlife Conservation Strategy **(CWCS).**

A major goal of the CWCS is to inform forest owners of the need for management practices that will enhance forest biodiversity and thereby keep these SGCN from becoming rare or endangered. So much of the critical habitats for these species exists on private lands that landowner cooperation will be the ultimate deciding factor on whether species declines can be halted. The plan further lists the threats to these species and management strategies that will improve their habitat. Fortunately, for forest owners and wildlife alike, many species will benefit from sustainable forest practices, including timber production, when implemented in accordance with NYS DEC timber harvesting guidelines. *http://www.dec.ny.gov/lands/5240.html*.

Private forest owners are strongly encouraged to contact their regional DEC forester to seek professional management advice. *http://www.dec.ny.gov/lands/4972.html*

Sometimes, simply letting nature follow the course of natural succession, where grasslands convert, or succeed over time to shrublands, to pole-stand forests, and ultimately to old forest stands may not be best for all wildlife. There is a suite of species that depends on early successional forest as habitat. Humans have made an effort to suppress most of the natural forest disturbances that once generated young forest in the watershed. Without disturbances such as fire, pest outbreaks and disease to set succession back to younger forests, many of the species that rely on this habitat are now in decline. In the absence of these natural disturbances, there is now a need for forest owners to actively manage their land to create habitat for SGCN.

Oftentimes the task of creating early successional forest is carried out through even-aged

silvicultural methods such as clear-cutting. Permanent conversion of forests to non-forest development or clear-cutting in the tropical rainforest may be poor ecosystem management, but clear-cutting is a legitimate silvicultural tool for northeastern hardwood forests. It is an economically efficient manner to procure forest products for landowners and society, while simultaneously regenerating young forest habitat. Over time these young forests mature into older forests which also provide critical unique habitat for a different suite of wildlife species. When done correctly, this pattern of harvesting and growth over time, on a landscape scale, can provide a sustainable mix of habitats composed of stands of diverse tree species and diverse age- and size-classes. Recent research findings by Audubon New York, has shown that many song bird species that generally prefer mature forests, actually do quite well in managed forests that are composed of a mix of successional stages.

There are several SGCN that reside in forested habitats. When selecting a forest management medthod, (e.g., selection, shelterwood, clear cuting), it may be difficult for public and private forest managers to coordinate the wide array of habitat needs of these species with their timber management goals. It is important to understand the habitat needs of species that rely on various forested habitats (i.e., varying successional stages, vertical structure, tree and shrub species composition, etc.) and how to accommodate SGCN with seemingly competing habitat requirements. Obviously, no one forest stand or ownership parcel can supply all the habitat needs of all species simultaneously. Management objectives and activities should take into consideration the needs of "area sensitive" species and the availability of adjacent habitat across the overall landscape. For example, if your forest stand is home to an "area sensitive" species that needs large unfragmented forest tracts (e.g., Wood Thrush, Scarlet Tanager, and Cerulean Warbler), it is best to manage your stand as a mature forest and use light to moderate partial harvests, so that harvests do not drastically alter the habitat. But, some early successional forest species such as the golden-winged warbler are also area sensitive and may require large patches of young forest/shrubland habitat. Harvest techniques that promote such habitats would include large clear-cuts. Large patches of any habitat are generally rare across the landscape and are more valuable than smaller patches because they provide habitat for both area sensitive and non-area sensitive species.

It is also important to consider the context of your land. If your forest is one of the only large forests within several miles, uneven-aged techniques that do not drastically change the habitat or a forest preserve would be best for the wildlife that relies on your land. On the other hand, if your forest stand is in a heavily forested landscape, using even-aged techniques to create early successional forest (either large or small patches) will provide new and important habitat for some species without jeopardizing those that rely on the adjacent, large expanses of more mature forest.

PROMINENT THREATS TO SGCN

Habitat loss and fragmentation:

- loss of connectivity between forest patches
- increased negative edge effects (increases susceptibility to predation)
- decline of area sensitive species such as the Scarlet Tanager and Cerulean warbler which need large continuous tracts of mature forest
- reduction of forest size also results in reduction of populations and reduction in the types of species the forest patch can support.
- increased urbanization and development

Degraded water quality:

- destruction of vegetative riparian zones causes soil erosion and leads to increased sedimentation in streams and rivers
- on-site septic systems contaminate local ground water and surface water
- runoff introduces toxins and excess nutrients into water
- the St. Lawrence River is the primary drainage system for the Great Lakes Watershed and still receives toxins that degrade habitat for a variety of species. Pollution from past local area industrial production and waste disposal practices created contaminated sediments and hazardous waste sites that to a large degree are being remediated. The sources and causes include PCBs, mercury, DDE, Mirex, nutrients, metals, and physical disturbance.
- agricultural pesticides are often broad in their action and may kill off additional non-target

species such as benign and beneficial invertebrates and amphibians, particularly in the St. Lawrence Valley

Inappropriate forestry and agriculture practices:

- a need exists for more ecologically based objectives on a landscape scale
- cattle allowed access to stream banks can cause severe erosion leading to sediment overloading
- forestry operations that do not comply with best management practices and that are poorly planned and executed can damage habitat function and reduce habitat quality for SGCN
- mature and early successional forest habitats may suffer because of public reluctance or ability to engage in appropriate active management of these habitats

Human disturbance/interactions:

- habitats fragmented by roads and power lines increase direct mortality of SGCN due to collisions.
- illegal and unregulated harvest, (migrating birds, bats and herps most susceptible)
- illegal capture and sale of herpetofauna
- public misconceptions about reptiles, particularly snakes, may promote the killing and/or collection of these animals
- a lack of zoning in many towns often results in structures built too close to streams (which have a higher than average tendency to migrate in this watershed). Emergency measures taken to protect these structures further compounds unstable stream conditions
- vehicular and structural collisions

Invasive/Over-abundant species:

- threaten to reduce biodiversity
- several exotic insects such as Hemlock wooly adelgid, Emerald ash borer and Asian longhorn beetle are potential invaders to this region. These species lack natural predators and threaten to alter the composition of forest stands.
- compete with species of concern for forage or nest sites (e.g. Blue-winged vs. Golden-winged warblers)
- pose a predation threat
- reduce habitat quality by altering vegetative composition and structure (e.g., garlic mustard dominating understory, deer overbrowse limiting forest regeneration, hay-scented ferns dominating understory)

MODEL SPECIES OF GREATEST CONSERVATION NEED

Deciduous Mixed Forest Breeding Birds

Cerulean warbler

- prefers relatively mature forests and needs large un-fragmented forest tracts
- increasing forest patch size can reduce the risk of predation
- implementing deer control where it is affecting tree species regeneration can increase potential habitat
- requires low levels of forest management (light harvesting/patches)
- lengthen timber harvest cycle

Early Successional Forest/Shrubland Birds

Golden-winged warbler

- there is an annual average decline of 5.8% of the populations of early successional forest/shrubland birds
- prefers shrubby openings near tree lines or scattered trees and herbaceous ground cover
- threats include: the reversion of shrubland to forest and early successional forest to mature forest; fire suppression; inadequate forest management that includes even-aged and heavy partial removal and the public perception that forest management is harmful to birds
- interbreeding with blue-winged warblers is lowering the golden-winged population
- conservation efforts should focus on areas where blue-winged warblers are absent
- the decline signals a need for more sound and planned timber and abandoned agriculture field management
- a landowner incentive program is needed to convert and create habitat.

Forest Breeding Raptors

Red-shouldered hawk

- relatively large forest tracts are needed for successful breeding
- clear-cutting is a major source of raptor breeding habitat fragmentation
- disturbance around the nest site during breeding can cause nest failure
- creating small openings with wetlands or small ponds benefits forest breeding raptors

Herpetofauna (reptiles and amphibians)

Blanding's turtle

A Blanding's Turtle on her way to nest.

- The Blanding's turtle is a medium-sized turtle with an average shell length of approximately 18 to 23 cm. A distinguishing feature of this turtle is the bright yellow chin and throat.
- The primary threat to the Blanding's Turtle is habitat fragmentation and destruction as well as nest predation. It is listed as a threatened species in New York State.

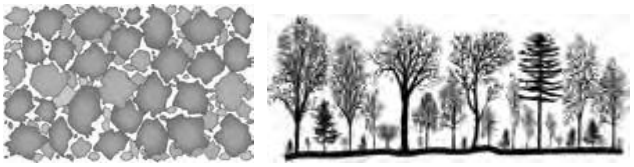
Vernal Pool Salamanders

Blue-spotted and Jefferson salamanders

- vernal pools are small unregulated wetlands that dot forested landscapes
- conservation efforts include securing large blocks of habitat containing both forest and wetlands, limiting off-road vehicles in surrounding area (vehicular collisions are a large source of mortality) and pursuing the legal protection of wetlands under 12.4 acres that contain SGCN habitat

- keep forest harvesting at least 100 feet from any vernal pools or spring seeps and maintain overhead canopy

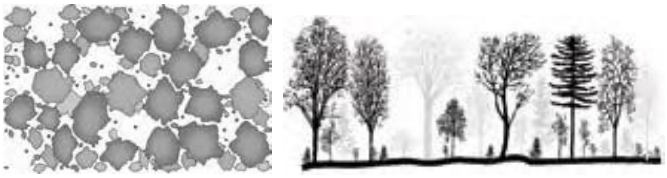
SILVICULTURAL SYSTEMS



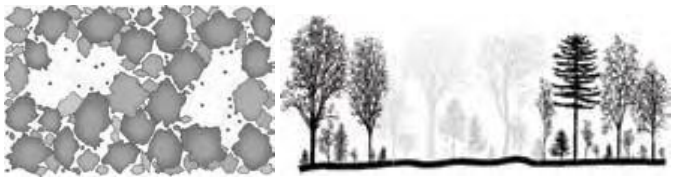
All-age or Uneven-age Silvicultural Systems

Stands composed of trees of a variety of ages and sizes, including saplings, poles, and sawtimber.

Single tree selection creates relatively small breaks in the forest canopy and therefore also favors shade tolerant tree species. Deer browsing can prevent the regrowth of more palatable species and can lead to long-term losses in plant biodiversity. This system is not a viable option in areas with high deer populations.



A **group selection/small patch clear-cutting** regime creates larger openings in the forest canopy which encourages a greater diversity of regenerating species when patches are large enough to let shade intolerant species compete.

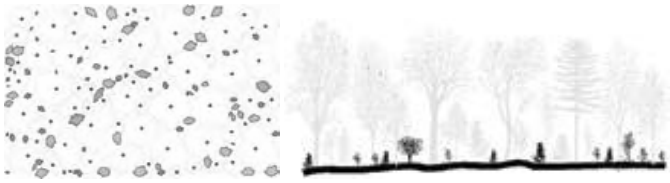


Even-aged Silvicultural Systems

Stands are composed of trees that are generally within 20 years of each other.

The **shelterwood** system clears trees in a series of 2 or 3 cuts over a decade and can increase the abundance of mid-tolerant and initially slow growing species such as oak.

Clear-cutting provides the necessary amount of sunlight for shade intolerant species such as aspen, paper birch, and black cherry to develop. This silviculture system is oftentimes the most efficient at producing early successional habitat.



A **reserve tree** or **seed tree** system can be described as a hybrid between a clear-cut and a shelterwood system. It preserves a few remaining trees from the clear-cut. These trees provide habitat for raptors and other birds and also serve as a seed source. This system promotes regeneration of shade intolerant and mid-tolerant species. It leads to two-aged stands if seed trees are not harvested for a number of years.

ECOREGIONS AND FORESTS OF THE NORTHEAST LAKE ONTARIO-ST. LAWRENCE WATERSHED

The Saint Lawrence Lowlands

The forests in this region typically are found on clay soils and include sugar maple, beech, hemlock, shagbark hickory, and bur and white oak. Sandy soils support black and red oak, white pine, pitch pine, and red maple. Red maple, swamp white oak, and white ash grow in wetland soils.

The Upper Saint Lawrence Valley

In this area second growth northern hardwood such as sugar maple, beech, black cherry, and yellow birch are common. Aspen, birch, and balsam poplar are common as well. Red, white, and black spruce and balsam fir grow in saturated or shallow soils.

Northern and Western Adirondack Foothills

Second growth northern hardwoods such as sugar maple, beech, black cherry, and yellow birch grow in this region. Significant amounts of white pine in the western foothills and in northern outwash areas are found. Aspen and birch predominate in the northern foothills. Red, white, and black spruce and balsam fir grow in saturated or shallow soils. Black spruce and tamarack (larch) occur in bogs and swamps with understory shrubs such as sheep laurel and Labrador tea. Historically, spruce dominated in these regions, but has not returned after extensive logging of the past.

VERNAL POOLS

Description: Vernal pools are temporary, small, shallow depressions usually located within an upland forest. They are typically flooded in spring after snow melt, or after a heavy rainfall, but are usually dry during summer and may fill again in autumn. The substrate is dense leaf litter over wet soils. Vernal pools typically occupy a confined basin (i.e., a standing water body without a flowing outlet), but may have an intermittent stream flowing out of it during high water. Since vernal pools cannot support fish populations, there is no threat of

fish predation on amphibian eggs and larvae. Vernal pools are home to SGCN salamanders such as the blue-spotted salamander, Jefferson's salamander and marbled salamander.

Management Suggestions for Forested Habitats

Northern Hardwoods

Clear-cutting creates dense shrub, herbaceous ground cover layers, soft mast, slash and low exposed perches that support more wildlife than untreated timber stands. Leave some wildlife trees (high exposed perches, cavity trees, coniferous overstory inclusion, snag trees).

- A shelterwood system leads to a partial overstory, partial early successional forest and promotes regeneration.
- Both clear-cutting and shelterwood techniques lead to an increase in raptor hunting areas.
- Silvicultural selection and thinning techniques have little impact on wildlife if done correctly.

Swamp Hardwoods

- Home to salamanders, frogs, turtles and snakes.
- Swamp hardwoods are usually of low economic value so wildlife management is often the primary reason for timber harvest.
- Clear-cutting with reserved patches and wildlife, den, nest and cavity trees is the most common and effective silvicultural technique.

Spruce-Fir

- High biodiversity exists during early successional stages due to the shrub layer.
- Lowest biodiversity occurs during the pole timber stage because the early shrub layer is shaded ou.t
- Highest biodiversity exists in mature and over-mature stands because of the increase in tree bole users.
- The shelterwood system is the most effective method at regeneration.
- Clear-cutting results in conversion to hardwood forests, in the absence of herbicide use and planting.

Eastern Hemlock

- Occurs with a broad array of associated tree species and provides a conifer component.
- Valuable for den and cavity using wildlife.
- The shelterwood method is the most effective at regeneration. Clear-cutting tends to convert the forest type to northern hardwoods.

Oak-Pine (including Pine Barrens)

- The number of wildlife species is high because species associated with both coniferous and deciduous forest types are brought together. Also many moth species are present that feed preferably on scrub oak.
- Species diversity follows the same pattern as spruce-fir forests (high during regeneration, low during pole stage, high in mature forest).
- High trees provide perching and nesting sites for hawks, great blue herons, osprey and bald eagles.
- Prescribed fire may be needed for forest types such as pitch pine-scrub oak barrens.

Some Individual Tree species

Maples

Red and sugar maple are found throughout the Northeast. Red maple has become the most common tree in many northeastern states. This increase has been attributed to fire suppression and the increased use of partial cutting (as opposed to the earlier practice of clear-cutting). Red maples are also profuse stump sprouters. Their ability to grow in light (red maple) to heavy shade (sugar maple) allows both species to persist for decades as small saplings under the shade of larger trees. The large hollows commonly found in old trees are favorite den sites of raccoons, porcupines, and flying squirrels. Chickadees, wrens, and cardinals eat the seeds; deer eat the leaves and twigs.

Oaks

Oaks are disturbance-dependent species; most of our oak forests arose on lands that were burned or clear-cut in the late 1800s to early 1900s. Northern red oak is one of the most valuable timber trees. Although oak seedlings can grow in partial shade, overstory removal (final stage shelterwood, clear-cutting, or patch cutting) is eventually required to achieve the full sunlight conditions necessary for seedlings to develop into mature trees. Oaks need protection from browsing where deer herds are large. Prescribed burning can enhance seedling growth.

American Beech

Beech is a common species in forest preserves and high-graded stands. This slow-growing, long-lived species is our most shade-tolerant hardwood and can develop in all but the darkest shade. American beech nuts provide food for large mammals such as black bears and small mammals such as white-footed mice, as well as a variety of birds. American beech is prone to develop cavities. The proliferation of the beech scale disease has devastated stands throughout the northeast. Its ability to stump and root sprout and lack of palatability to deer has resulted in complete understory domination in many stands.

- **Eastern Hemlock**

Eastern hemlock occurs with an array of tree species including northern hardwoods. It is very shade tolerant and therefore can persist in the understory for decades. In such conditions it grows very slowly. When gaps occur in the overhead canopy due to the death of adjacent trees or when stands are harvested, it can start growing again, although slowly. Because it can persist in the understory it provides important understory and mid-story structure that many wildlife species need, and shades out herbaceous ground cover. It often is the only conifer in stands that are dominated by hardwoods, thereby providing more diverse habitat for many wildlife species, especially those needing winter shelter. It is a preferred browse species of deer. It is found on steep slopes and on north and east facing slopes. It provides summer shade to streams and therefore contributes to brook trout habitat. Clear-cut harvests tend to covert hemlock stands to hardwoods. The hemlock wooly adelgid has recently invaded nearby watersheds and poses a serious threat to the existence of hemlock.

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Cornell Lab of Ornithology – The labs mission is to interpret and conserve the earth's biological diversity through research, education, and citizen science focused on birds. *http:*//www.birds.cornell.edu

National Wild Turkey Federation – A national nonprofit conservation and hunting organization that, along with its volunteers, partners and sponsors, has worked for the conservation of the wild turkey and preservation of the hunting tradition. *http://www.nwtf.org/*

New Hampshire Cooperative Extension Forestry and Wildlife Program – Their website is an excellent source of information about wildlife, their habitats, and habitat management. *http://extension.unh.edu/Wildlife/Wildlife.htm*

New York Natural Heritage Program –The program facilitates conservation of New York's biodiversity by providing comprehensive information and scientific expertise on rare species and natural ecosystems to resource managers and other conservation partners. *http://www.nynhp.org*

NYSDEC Comprehensive Wildlife Conservation Strategy – The overall plan describes the details for protection and management of the habitats and wildlife that live in NY State's 11 major watersheds. The plan for the Upper Hudson Watershed Region: *http://www.dec.ny.gov/docs/wildlife_pdf/upperhudsontxt.pdf*

The Ruffed Grouse Society – Dedicated to promoting conditions suitable for ruffed grouse, American woodcock and related wildlife to sustain our sport hunting tradition and outdoor heritage. *http://www.ruffedgrousesociety.org*

USGS – National Map of Land-Cover Vegetation. Depicts areas with various habitat types. Works well on a county basis. *http://www.gap.uidaho.edu/landcoverviewer.html*

New York Forest Owner's Association,- This organization represents over 2,200 private woodland owners in New York State. Go to the home page and scroll down to "Wild About Wildlife" section; information about wildlife Species of Greatest Conservation Need is there, along with a variety of free wildlife publications for download. *http://www.nyfoa.org.*

Forest Species of Greatest Conservation Need
Northeast Lake Ontario-St. Lawrence River Watershed Region

All species of conservation need in the Northeast Lake Ontario-St. Lawrence River basin total to 110 and include 61 birds, 15 insects, 15 herpetofauna, 10 fish (freshwater and marine), 5 mammals and 4 mollusks.

Species:	Habitat:	Status:
Birds:		
Bay-breasted warbler	Boreal forest	Decreasing
Cape May warbler	Boreal forest	Unknown
Olive-sided flycatcher	Boreal forest	Decreasing
Rusty blackbird	Boreal forest	Unknown
Spruce grouse	Boreal forest	Decreasing
Tennessee warbler	Boreal forest	Unknown
Three-toed woodpecker	Boreal forest	Unknown
Black-throated blue warbler	Deciduous/mixed forest	Stable
Cerulean warbler	Deciduous/mixed forest	Increasing
Louisiana waterthrush	Deciduous/mixed forest	Unknown
Prothonotary warbler	Deciduous/mixed forest	Unknown
Red-headed woodpecker	Deciduous/mixed forest	Decreasing
Scarlet tanager	Deciduous/mixed forest	Decreasing
Wood thrush	Deciduous/mixed forest	Decreasing
American woodcock	Early successional forest/shrubland	Decreasing
Black-billed cuckoo	Early successional forest/shrubland	Decreasing
Blue-winged warbler	Early successional forest/shrubland	Decreasing
Brown thrasher	Early successional forest/shrubland	Decreasing
Canada warbler	Early successional forest/shrubland	Decreasing
Golden-winged warbler	Early successional forest/shrubland	Decreasing
Prairie warbler	Early successional forest/shrubland	Increasing
Ruffed grouse	Early successional forest/shrubland	Decreasing
Whip-poor-will	Early successional forest/shrubland	Decreasing
Willow flycatcher	Early successional forest/shrubland	Decreasing
Cooper's hawk	Forest breeding raptors	Increasing
Golden eagle	Forest breeding raptors	Decreasing
Long-eared owl	Forest breeding raptors	Unknown
Northern goshawk	Forest breeding raptors	Increasing
Red-shouldered hawk	Forest breeding raptors	Increasing
Sharp-shinned hawk	Forest breeding raptors	Increasing
Osprey	Forest breeding raptors	Increasing
Peregrine falcon	Forest breeding raptors	Increasing
American black duck	Forest/forested wetlands	Decreasing
Blue-winged teal	Forest/forested wetlands	Decreasing
Cattle egret	Forest/freshwater marsh	Decreasing
Common goldeneye	Forest/open water	Unknown
Common loon	Forest/open water	Increasing
Red-throated loon	Forested ponds/bogs/wetlands	Unknown
Bicknell's thrush	High Altitude Conifer Forest	Unknown
Bald Eagle	Mature/old growth forest/open water	Increasing

Herpetofauna:

Four-toed salamander	Freshwater wetland	Unknown
Western chorus frog	Freshwater wetland	Unknown
Eastern ribbonsnake	Lake/river/forest	Unknown
Northern map turtle	Lake/river/forest	Unknown
Spiny softshell	Lake/river/forest	Unknown
Wood turtle	Lake/river/forest	Unknown
Blanding's turtle	Forested wetland	Decreasing
Spotted turtle	Forest/wetland	Unknown
Stinkpot	Forest/wetland	Unknown
Blue-spotted salamander	Vernal pools	Unknown
Jefferson salamander	Vernal pools	Unknown
Black ratsnake	Woodland/grassland	Decreasing
Smooth greensnake	Woodland/grassland	Unknown

Insects:

Ebony boghaunter	Forest/bogs/fens/ponds	Unknown
Forcipate emerald	Small forested streams/bogs/fens/ponds	Unknown
Incurvate emerald	Forest/wetlands	Unknown
Subarctic bluet	Wooded uplands/bogs/fens/ponds	Unknown
Arrow clubtail	Forested rivers/streams	Unknown
Brook snaketail	Forested rivers/streams	Unknown
Extra-striped snaketail	Forested rivers/streams	Unknown
Rapids clubtail	Forested rivers/streams	Unknown
Ocellated emerald	Small forest streams	Unknown
Gorgone checkerspot	Open woods/forest edge	Decreasing
Mottled duskywing	Open woods	Decreasing
Olympia marble	Open woods	Decreasing
Silvery blue	Open woods	Decreasing

Mammals:

American marten	Mature coniferous/mixed forest	Unknown
River otter	Lake/stream/forest	Stable
Indiana Bat	Tree bats	Stable
Eastern red bat	Tree bats	Unknown
Hoary bat	Tree bats	Unknown