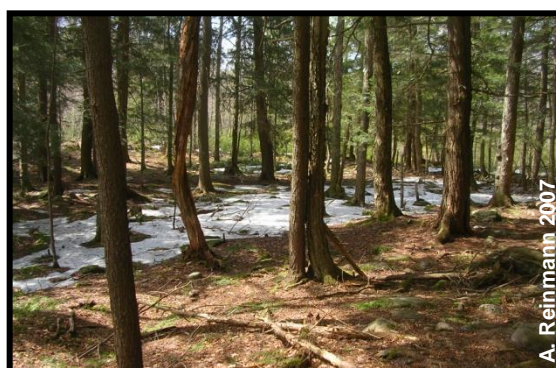


UPLAND FORESTS

Upland (non-wetland) forests are the most prevalent and extensive habitats in the region. They are extremely variable in vegetation, ages and sizes of trees, size of forest patches, and character of the forest habitats, but forests of all kinds can provide valuable habitats for common and rare plants and animals. **Large forests** are critical habitats for many area-sensitive species—including raptors, songbirds, reptiles, amphibians, large mammals—that are disappearing from our increasingly fragmented rural landscapes. Because forests facilitate efficient water infiltration through the soils, forest preservation is perhaps the most effective means of **maintaining the quality and quantity of groundwater and surface water resources**. Forests provide many other essential services such as **climate moderation** and **carbon sequestration**.



Upland hardwood forest



Upland conifer forest

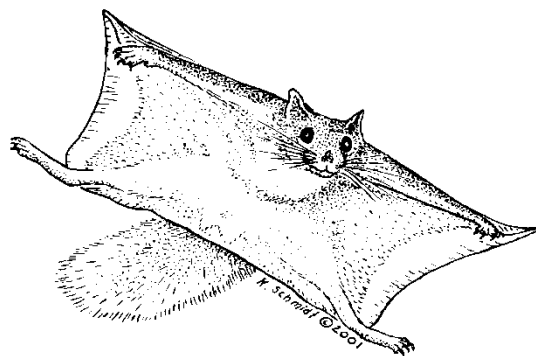
SPECIES OF CONSERVATION CONCERN

- Eastern box turtle, eastern racer, copperhead
- Sharp-shinned hawk, red-shouldered hawk, Acadian flycatcher, cerulean warbler, black-throated blue warbler
- Black bear, bobcat, fisher, southern flying squirrel
- Indiana bat, eastern small-footed myotis

These are just a few of the species of regional or statewide conservation concern that are known to occur in upland forests. See Kiviat & Stevens (2001) for a more extensive list.

TYPICAL PLANTS

- Maples, oaks, hickories, birches, white ash
- Eastern hemlock, white pine, eastern red cedar
- Wild sarsaparilla, Canada mayflower, trout-lily, Christmas fern, wood ferns



Southern flying squirrel

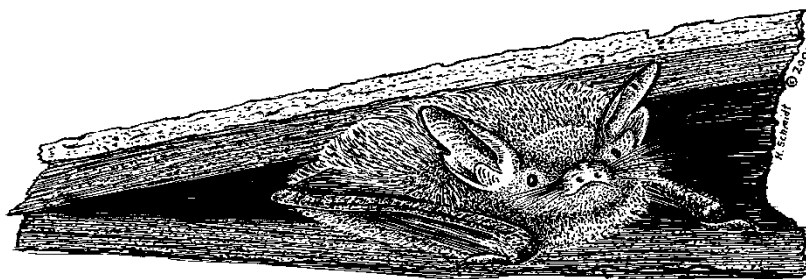
THREATS TO UPLAND FORESTS

Forests have long been affected by human activities such as **logging, recreation, and clearing** for agriculture and development. Forest disturbances such as **soil compaction, removal of overstory or understory vegetation, removal of standing snags**, downwood, and other organic debris can greatly diminish the habitat quality of forests for sensitive species. **Forest fragmentation** by construction of features such as roads, driveways, buildings, and utility corridors may be the most important and widespread threat to forest habitats in the region. Some of the **effects of fragmentation** are:

- **Reducing or eliminating areas of “interior forest” habitat** essential to many species of songbirds, raptors, and large mammals;
- **Creating pathways for intrusion** by
 - Human subsidized nest predators (e.g., raccoon, opossum, striped skunk),
 - The brown-headed cowbird, a nest parasite that lays its eggs in nests of other birds and reduces the reproductive success of the host species, and
 - Non-native plants (e.g., garlic-mustard, Japanese barberry, Bell’s honeysuckle) that outcompete native plant species, change the forest structure, and reduce native biodiversity;
- **Obstructing critical travelways** of amphibians, turtles, and other wildlife migrating overland between habitats.

CONSERVATION RECOMMENDATIONS

- ❖ Keep large forests and mature forests intact and unfragmented.
- ❖ Minimize construction of new roads, houses, and other forms of development in forests, and especially in large or mature forests. Concentrate any new developed uses at forest edges and near existing developed areas.
- ❖ Maintain intact habitats between forest patches to allow for migration and dispersal of plants and animals.
- ❖ Restrict logging to the winter months to minimize damage to soil, vegetation, and wildlife. Avoid logging on steep slopes, and leave tree crowns in the woods to conserve soil fertility and increase habitat diversity. Minimize gap size and road construction to prevent the establishment of non-native species (e.g., tree-of-heaven). Avoid high-grading (selectively harvesting the largest and most valuable) to preserve genetic diversity and forest structure.
- ❖ Minimize ATV use, which can damage vegetation and soil and disturb wildlife.



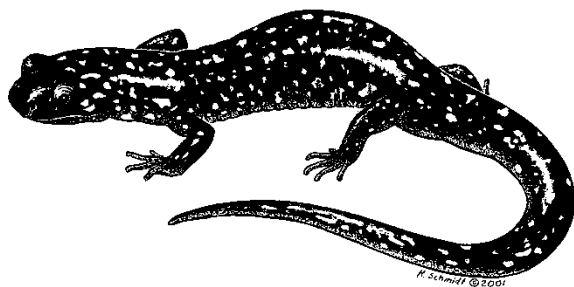
Indiana bat

References

Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.

CREST, LEDGE, AND TALUS

These are areas of small or large bedrock outcrops, cliffs, ledges, talus (accumulation of rock fragments below a ledge), or erratics (isolated boulders). Soils are shallow, and vegetation is often stunted and sparse, but many areas are well-forested. An extraordinary array of rare plants and animals are associated with these habitats in the Hudson Valley.



Slimy salamander, © K. Schmidt 2001

TYPICAL PLANTS

- Red oak, chestnut oak, sugar maple, black birch
- Scrub oak, low blueberries, huckleberries
- Lichens, mosses, grasses, sedges

On calcareous (calcium-rich) bedrock:

- Red cedar, hackberry, basswood
- Bladdernut, American prickly-ash
- Wild columbine, ebony spleenwort, maidenhair spleenwort

SPECIES OF CONSERVATION CONCERN

- Rare sedges, ferns, and wildflowers
- Northern hairstreak (butterfly)
- Timber rattlesnake, worm snake, copperhead
- Southern red-backed vole, longtail shrew, porcupine, fisher, bobcat
- Blackburnian warbler, worm-eating warbler

These are just a few of the species of regional or statewide conservation concern that are known to occur in crest, ledge, and talus habitats. See Kiviat & Stevens (2001) for a more extensive list.



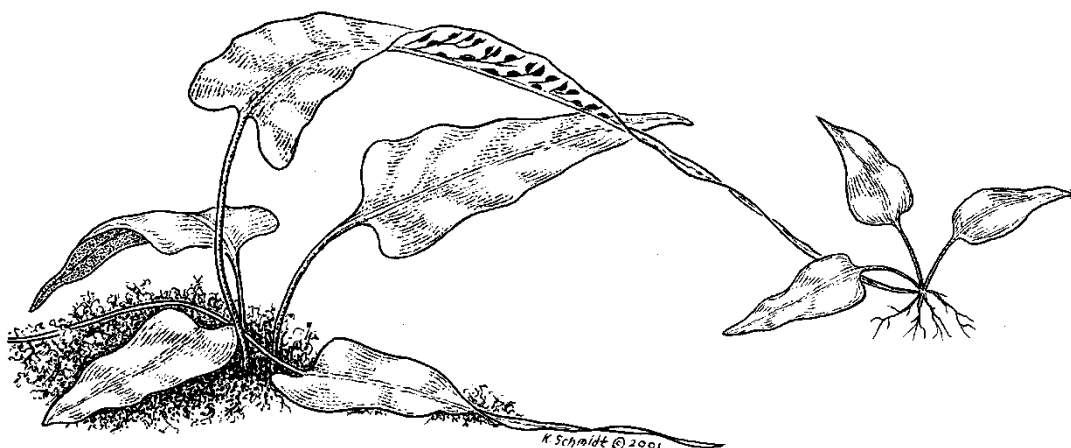
Purple-stemmed cliffbrake

THREATS TO CREST, LEDGE, AND TALUS HABITAT

Rocky crests are popular sites for recreational uses, communication towers, and even houses. **Construction of trails, roads, and buildings** destroys rocky habitats directly and causes fragmentation of these habitats and the forested areas of which they are a part. Rare plants of crests are vulnerable to **trampling** and **collecting**. Rare snakes are susceptible to road mortality, intentional killing, and collecting. Rare breeding birds of crests are easily disturbed by human activities nearby. The shallow soils of these habitats are vulnerable to **erosion** from construction and logging activities, and **compaction** from foot and ATV traffic.

CONSERVATION RECOMMENDATIONS

- ❖ Minimize construction of new roads and buildings on and near rocky ridges and hillsides.
- ❖ Protect crest, ledge, and talus areas from disturbances associated with high intensity human recreation, including soil compaction, trampling of sensitive plants, and disturbance of animals.
- ❖ Maintain intact habitats in the areas between crest, ledge, and talus locations to allow for dispersal of plant and animal populations.
- ❖ Avoid direct disturbance to dens of timber rattlesnake and other snakes of conservation concern, and restrict logging to the winter months when the snakes are hibernating.
- ❖ Consult with the Endangered Species Unit of the New York State Department of Environmental Conservation about any activity proposed in the vicinity of a timber rattlesnake habitat.



Walking fern

References

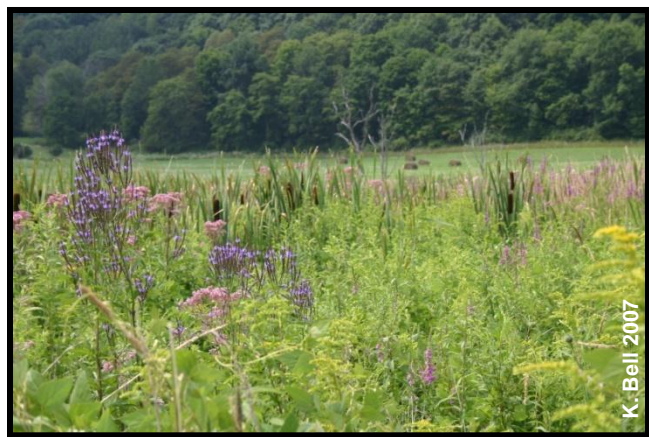
- Brown, W.S. 1993. Biology, status, and management of the timber rattlesnake (*Crotalus horridus*): A guide for conservation. Society for the Study of Amphibians and Reptiles, Herpetological Circular No. 22.
- Fitch, H.S. 1960. Autecology of the copperhead. University of Kansas publication. Museum of Natural History 13:85-288.
- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.

MEADOWS

Meadows include most areas dominated by herbaceous vegetation, including dry **upland meadows** and **wet meadows** that have standing water or saturated soils for part of the year. While there can be significant habitat value in small wet meadows and patches of upland meadow (for invertebrates and small mammals, for example), **large open areas** are especially important for grassland-breeding birds.



Upland meadow



Calcareous wet meadow with blue vervain

TYPICAL PLANTS

- Grasses, sedges, goldenrods, asters
- Reed canary-grass, purple loosestrife, sensitive fern, blue flag in wet meadows
- Rough-leaf goldenrod, blue vervain, sweetflag in calcareous wet meadows

SPECIES OF CONSERVATION CONCERN

- Rare butterflies such as Aphrodite fritillary, dusted skipper, Leonard's skipper
- Nesting wood, spotted, and box turtles
- Foraging ribbon snake, spotted turtle, and bog turtle
- Birds that depend on grasslands, such as northern harrier, upland sandpiper, grasshopper sparrow, savannah sparrow, bobolink, sedge wren

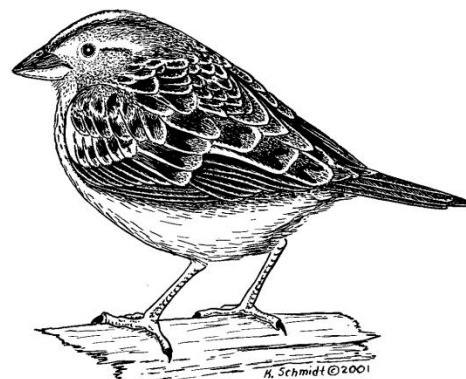
These are just a few of the species of regional or statewide conservation concern that are known to occur in meadows. See Kiviat & Stevens (2001) for a more extensive list.



Blue flag

THREATS TO MEADOWS

Large and contiguous patches of meadow, particularly pasture, hayfields, and oldfields, can be valuable habitats for rare and uncommon grassland-breeding birds and other organisms. Meadows are among the habitats most vulnerable to future **residential development**. Even when development does not destroy the entire meadow habitat, the remaining fragments are usually small and have much lower biodiversity value. Development around meadows can promote **increased predation** on grassland-breeding bird nests by human-subsidized predators such as raccoons and domestic cats. Grasslands and the rare species they support are also highly susceptible to other human disturbances such as **mowing, conversion to row crops, application of pesticides, and ATV traffic**.



Grasshopper sparrow

CONSERVATION RECOMMENDATIONS

- ❖ In general, hayfields, pastures, and perennial crops (such as orchards) are better for soil and water conservation and provide more wildlife habitat than annual row crops.
- ❖ Avoid overgrazing pastures.
- ❖ For meadows not in active agricultural production: delay mowing until after August, or mow only every 2-3 years, or practice rotational mowing so that each part of a field is mowed once every 2-3 years.
- ❖ For meadows in hay production: if possible, delay hay-cutting in some hayfields until after grassland birds have nested (late June-mid-July). If mowing must occur earlier, leave some unmowed strips or patches if possible. Hayfields mowed early in the season can be rotated annually with those that are mowed late in the season.
- ❖ On an active farm, if possible leave some fields out of production each year to provide wildlife habitat.
- ❖ Avoid cutting hay or mowing on wet soils.
- ❖ Remove fences or hedgerows between smaller fields to enlarge the habitat area for breeding birds.
- ❖ Raise mower blades six inches or more, use flushing bars, and avoid night mowing when birds are roosting to help reduce bird mortality.

References

- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.
- Ochterski, J. 2006. Hayfield management and grassland bird conservation. Cornell Cooperative Extension of Shuyler County, NY. 8 p.

SWAMPS

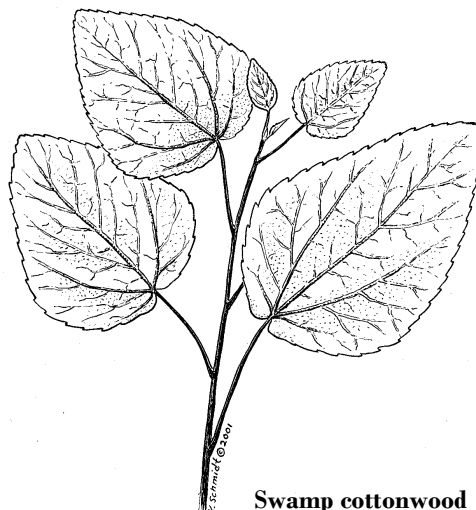
“Swamp” is the general term for any wetland dominated by woody vegetation (trees or shrubs). Swamps are perhaps the most common wetland habitats in the region. They can vary greatly in structure and hydrology—some have small pools between woody hummocks, while others lack hummocks and have little or no standing water; some have dense shrubs beneath a forest canopy, while others have a few widely spaced shrubs and trees; some retain standing water for much or all of the growing season, but most dry up at some point during the spring or summer. Swamps of all kinds can support **high levels of native biodiversity**, and are important components of the ecological landscape.



Cardinal flower

TYPICAL PLANTS

- Red maple, slippery elm, green ash, black ash, swamp white oak, pin oak, black tupelo, eastern hemlock, eastern red cedar
- High bush blueberry, swamp azalea, winterberry holly, silky dogwood, shrubby willows, northern arrowwood
- Sensitive fern, tussock sedge, skunk cabbage



Swamp cottonwood

SPECIES OF CONSERVATION CONCERN

- Swamp cottonwood
- Wood turtle, spotted turtle, blue-spotted salamander, four-toed salamander
- Wood duck, red-shouldered hawk, great blue heron, white-eyed vireo

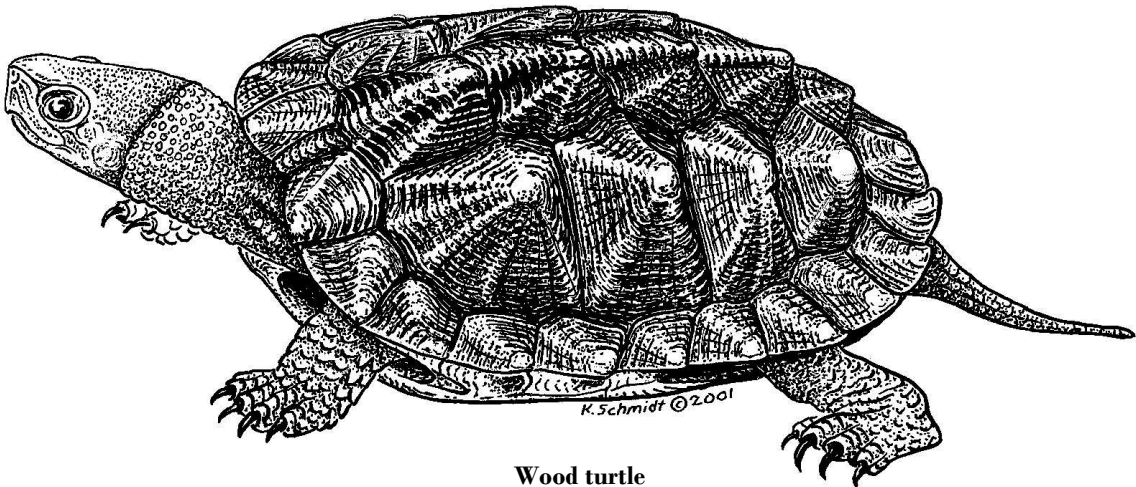
These are just a few of the species of regional or statewide conservation concern that are known to occur in swamps. See Kiviat & Stevens (2001) for a more extensive list.

THREATS TO SWAMPS

Many swamps are located in low-lying areas where human land uses are most concentrated. While some swamps may be protected by federal or state laws, that **protection is usually incomplete** or inadequate, and most swamps are still threatened by a variety of land uses. They are often **drained, filled, or converted to ponds**, and can be easily damaged by **polluted runoff** from agricultural land, lawns, roads, construction sites, and poor logging practices.

CONSERVATION RECOMMENDATIONS

- ❖ Protect swamps from filling, draining, or conversion to ponds.
- ❖ Maintain broad buffer zones of undisturbed vegetation and soils around swamps.
- ❖ Preserve connectivity between swamp habitats and nearby upland and wetland habitats to provide safe travelways for amphibians, turtles, and other wildlife that use a variety of habitats.
- ❖ Maintain existing water volumes and timing of groundwater and surface water inputs.
- ❖ Prevent nearby soil erosion, soil compaction, and contamination of surface waters from activities such as logging, construction, and ATV use.
- ❖ Restrict logging activities to seasons when the soils are frozen, and many wildlife and plant species are dormant.



Wood turtle

References

- Semlitsch, R.D. and J.R. Bodie. 1998. Are small, isolated wetlands expendable? *Conservation Biology* 12(5): 1129-1133.
- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.

INTERMITTENT WOODLAND POOL

An intermittent woodland pool is a small, shallow wetland mostly or entirely surrounded by forest and isolated from streams and other wetlands. It typically has standing water during winter and spring but dries up by mid- to late summer. The absence of fish (due to seasonal drying of the pool) is key for a **special group of amphibians** that require fish-free breeding and nursery habitats. Leaf litter from the surrounding forest is the base of the pool's food web, and forest provides essential habitat for the amphibians during the non-breeding seasons.



Spotted turtle

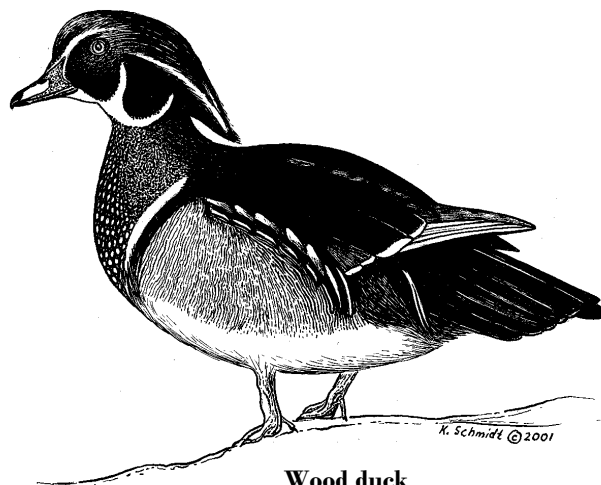
TYPICAL PLANTS

- Red maple, slippery elm, green ash, swamp white oak, pin oak, black tupelo (usually at the edge or scattered within the pool)
- Highbush blueberry, swamp azalea, buttonbush
- Sensitive fern, sedges, duckweeds, mosses

SPECIES OF CONSERVATION CONCERN

- Featherfoil, Virginia chain fern
- Black dash (butterfly), springtime physa (snail)
- Jefferson salamander, marbled salamander, wood frog, spotted turtle
- Wood duck, American black duck

These are just a few of the species of regional or statewide conservation concern that are known to occur in intermittent woodland pools. See Kiviat & Stevens (2001) for a more extensive list.



Wood duck

THREATS TO INTERMITTENT WOODLAND POOLS

Intermittent woodland pools are frequently **drained** or **filled** by landowners and developers, used as **dumping grounds**, **treated for mosquito control**, and sometimes **converted into ornamental ponds**. They are typically small (often less than 0.1 ac), and are often overlooked in environmental reviews of proposed developments. Even when the pools themselves are untouched, the **surrounding forest** so essential to their ecological function is frequently destroyed or degraded.

CONSERVATION RECOMMENDATIONS

- ❖ Avoid filling, draining, or excavating intermittent woodland pools.
- ❖ Minimize development and road construction in forests within 750 ft of an intermittent woodland pool to protect the adult habitat and travelways of pool-breeding amphibians.
- ❖ Avoid fragmentation of upland forests and preserve migration corridors between pools.
- ❖ Avoid activities near intermittent woodland pools that would increase soil erosion, alter runoff volume, or contribute pollutants. These activities include logging, construction of roads or buildings, ATV use, or use of pesticides and fertilizers. Organisms of these pools are sensitive to changes in water quality.



Marbled salamander

References

- Calhoun, A.J.K. and M.W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY. 57 p.
- Semlitsch, R.D. 2000. Size does matter: The value of small isolated wetlands. National Wetlands Newsletter 22(1):5-6,13.
- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.

FEN

A fen is a rare, low shrub- and herb-dominated wetland that is fed by calcareous groundwater seepage. Fens almost always occur in areas influenced by carbonate bedrock (e.g., limestone and marble), and are identified by their low, often sparse vegetation and their distinctive plant community. Tussocky vegetation and small seepage rivulets are often present, and some fens have substantial areas of bare mineral soil or organic muck.



TYPICAL PLANTS

- Grasses and sedges such as spike-muhly, sterile sedge, porcupine sedge, yellow sedge, and woolly-fruit sedge
- Shrubs including shrubby cinquefoil, alder-leaf buckthorn, and autumn willow
- Wildflowers including grass-of-Parnassus and bog goldenrod

SPECIES OF CONSERVATION CONCERN

- More than 12 state-listed rare plants are found almost exclusively in fen habitats, including handsome sedge, Schweinitz's sedge, bog valerian, scarlet Indian paintbrush, spreading globeflower, and swamp birch
- Rare butterflies such as Dion skipper and black dash
- Rare dragonflies such as forcipate emerald and Kennedy's emerald
- Bog turtle (Endangered in New York)
- Spotted turtle, ribbon snake
- Sedge wren, northern harrier

These are just a few of the species of regional or statewide conservation concern that are known to occur in fen habitats. See Kiviat & Stevens (2001) for a more extensive list.



Fringed gentian

THREATS TO FENS

Fens are highly vulnerable to degradation from direct disturbance and from activities in nearby upland areas.

Nutrient and salt pollution from septic systems, fertilizers, or road runoff, **disruption of groundwater flow** by new wells or nearby excavation, **sedimentation** from construction activity, or **direct physical disturbance** can lead to changes in the character of the habitat, including a decline in overall plant diversity and invasion by non-native species and tall shrubs. Such changes can render the habitat unsuitable for bog turtle and other fen animals and plants. Fens appear to be somewhat resilient if their chemical and hydrologic conditions are kept intact, which makes restoration of these habitats possible in some cases.



Grass-of-Parnassus
© K. Schmidt 2001

CONSERVATION RECOMMENDATIONS

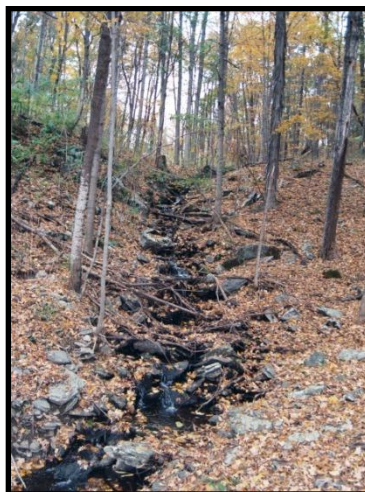
- ❖ Establish a 300 ft buffer zone around fens to help prevent or minimize the effects of human activities. Avoid activities such as development, mining, application of herbicides, pesticides, or fertilizers, overgrazing, and stream bank stabilization within this zone.
- ❖ Assess potential impacts within at least 2500 ft (750 m) of the fen. Development activities occurring within the drainage basin of the fen or within one-half mile (800 m) from the boundary of the buffer zone may adversely affect bog turtles and their habitat. Land development within this area may also sever important travel corridors between wetlands occupied or likely to be occupied by bog turtles, thereby isolating populations and increasing the likelihood of road mortality as turtles attempt to disperse.
- ❖ Thoroughly review all activity proposed within this 2500-ft zone, in consultation with the Endangered Species Unit of the New York State Department of Environmental Conservation, using the most up-to-date scientific information on the bog turtle and its sensitive habitats.

References

- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.
- Klemens, M.W. 2001. Bog turtle conservation zones. Appendix A in Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan. U.S. Fish and Wildlife Service. Hadley, MA. 103 p.

STREAMS

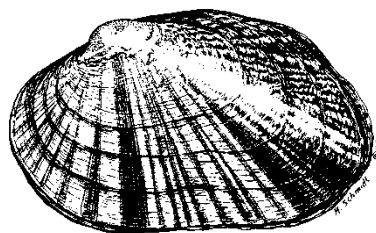
Perennial streams flow continuously in years with normal precipitation. They provide essential water sources for wildlife throughout the year, and are critical habitat for many plant, vertebrate, and invertebrate species. We loosely define “riparian corridor” as the zone along a perennial stream that includes the stream banks, the floodplain, and adjacent steep slopes. **Intermittent streams** flow only during certain times of the year or after rains. They provide important habitat and nutrient cycling services themselves, and are also vital water sources for perennial streams, lakes, ponds, and wetlands of all kinds.



Intermittent stream



Perennial stream



Brook floater

© K. Schmidt 2001

SPECIES OF CONSERVATION CONCERN

- Riverweed, goldenseal, cattail sedge
- Rare mollusks and dragonflies
- Wood turtle, northern dusky salamander, spring salamander
- Slimy sculpin, brook trout
- Muskrat, river otter, beaver, mink, Indiana bat
- Louisiana waterthrush, winter wren, great blue heron, American black duck

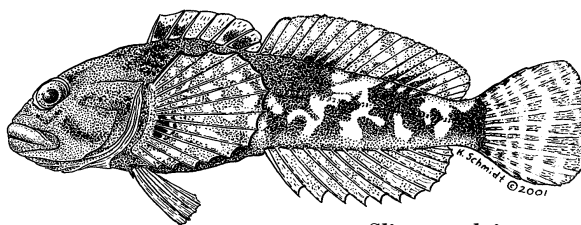
These are just a few of the species of regional or statewide conservation concern that are known to occur in and around stream habitats. See Kiviat & Stevens (2001) for a more extensive list.



K. Bell 2006

THREATS TO STREAMS

The habitat quality of a stream is affected not only by direct disturbance to the stream or its floodplain, but also by land uses throughout the watershed. Activities in the



Slimy sculpin, © K. Schmidt 2001

watershed that cause soil erosion, changes in surface water runoff, reduced groundwater infiltration, or contamination of surface water or groundwater are likely to affect stream habitats adversely. **Road runoff** often carries contaminants such as heavy metals and road salt into streams. **Applications of fertilizers and pesticides** in or near the riparian zone can degrade the water quality and alter the biological communities of streams. **Disruptive activities** such as construction, logging, soil mining, clearing for vistas, and creating lawns in and near riparian zones can adversely affect the species that depend on streams, riparian zones, and nearby upland habitats. **Removal of streambank trees and floodplain vegetation** can lead to elevated water temperatures, increased flooding downstream, scouring and bank erosion, and sedimentation. **Hardening of the streambanks** with concrete or other materials can be harmful both to stream and floodplain habitats. **Removal of snags** from the streambed degrades habitat for fishes, turtles, snakes, birds, muskrats, and their food organisms.

CONSERVATION RECOMMENDATIONS

- ❖ Avoid direct disturbance of streams such as damming, filling, hardening of streambanks, or removing snags and natural debris.
- ❖ Minimize impacts from new and existing roads and stream crossings.
- ❖ Establish a protective buffer zone extending at least 160 ft (50 m) on either side of **all streams** in the watershed, including perennial and intermittent tributary streams. Buffer zones should remain naturally vegetated and undisturbed. Avoid or minimize applications of fertilizers and pesticides on existing lawns and agricultural areas within this zone.
- ❖ Protect large, contiguous blocks of habitat (e.g., forests, meadows, wetlands) within 650 ft (200 m) of **large perennial streams**. Wood turtles and many other stream-dependent species range widely and need a complex of different habitats. Wood turtles often nest in upland meadow or open shrubland—habitats that tend to be prime areas for development.
- ❖ Maintain broad, naturally vegetated travel corridors between habitats (e.g., between stream habitats, wetlands, and upland meadows) and between neighboring habitat complexes.

References

- Harding, J.H. and T.J. Bloomer. 1979. The wood turtle (*Clemmys insculpta*): A natural history. Bulletin of the New York Herpetological Society 15(1):9-26.
- Kiviat, E. and G. Stevens. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New York State Department of Environmental Conservation, Albany. 508 p.
- Lowe, W.H. and G.E. Likens. 2005. Moving headwater streams to the head of the class. BioScience 55(3):196-197.

BACKYARDS FOR BIODIVERSITY

Yards and other areas around human development are most heavily used by common wildlife species that are adapted to disturbance (such as pigeons, starlings, gray squirrels, and raccoons), but uncommon species can also use these areas if nearby habitats are suitable. Depending on how it is managed, your backyard may serve as a buffer to nearby habitats by moderating the effects of development, may provide travel corridors for wildlife, or may itself provide habitat for certain species. The following measures can encourage wildlife to view your backyard as a haven rather than a threat.

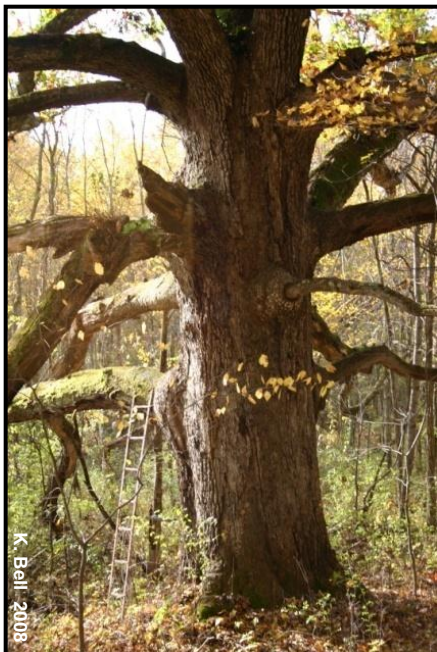
CREATE MULTI-LAYERED, DIVERSE LANDSCAPES

The more your yard resembles a natural, unmanaged habitat, the greater its value to native wildlife will be.

- Consider replacing lawns with wildflower meadows, perennial gardens, or ornamental woodlands.
- Preserve or promote (by planting or allowing natural regeneration) a variety of native tree species and tree sizes. Where safety concerns allow, leave dead trees standing and let fallen trees to decay in place.
- Leave parts of the yard unmanaged (without mowing, understory clearing, etc.) to increase benefits for wildlife.



- Landscape with native plants, which provide food and shelter for a variety of native wildlife. They often require less care and tend to be hardier than non-natives. Fruit-producing shrubs and trees are a great food source for birds, and native flowering plants attract butterflies and other pollinators.



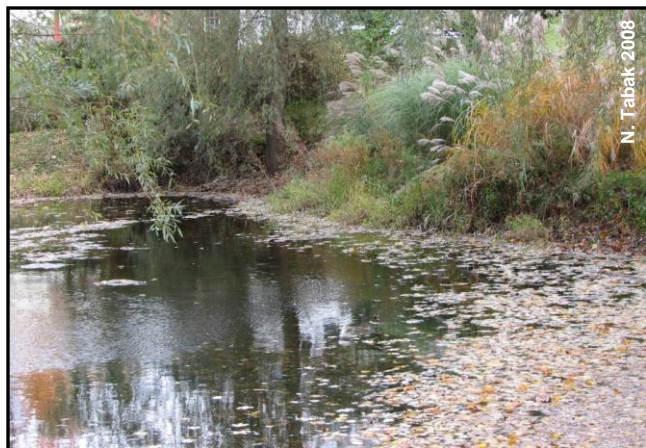
The "legacy" of lawn

Manicured lawns are the most popular form of residential landscaping, but have a lower habitat value than almost any other type of vegetation. While they are perceived as easy to maintain, they in fact require higher inputs of water, fertilizer, and labor than most other alternatives. Regular cutting with motorized mowers also contributes to air and noise pollution, and fertilizers and pesticides pollute the soil and nearby waterways. So let go of your lawn, and enjoy the benefits!

PRESERVE WETLANDS IN YOUR YARD

Wetlands, streams, and ponds, can be valuable habitats for countless species of plants and animals. Their quality as wildlife habitats is directly related to the quality of water they contain. Vegetated stream shorelines, floodplains, and wetlands help to protect water quality, as well as to control erosion and moderate downstream flooding.

- Plant or maintain vegetation on the shores of streams and ponds; allow for the widest possible vegetated buffer between developed areas and the wetland.
- Avoid the use of pesticides and fertilizers near or in wetlands.
- Protect wetlands from drainage, channeling, filling, dumping, pollution, and other damage.



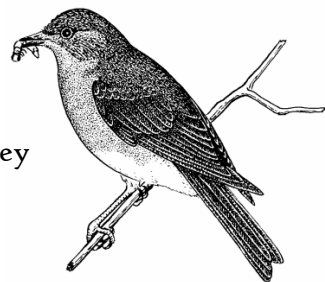
MINIMIZE HUMAN DISTURBANCES

High levels of noise, light, and traffic in urban and residential areas are a hazard or deterrent to most wildlife species of conservation concern.

- Direct outdoor lights downward (rather than outward or upward) to minimize the light pollution to offsite and overhead areas, and turn off or dim as many outdoor lights as possible to minimize the disorienting effect they can have on nocturnal wildlife.
- Avoid constructing long driveways and access roads through intact habitats; reduce your driving speed and watch out for wildlife crossing your driveway.
- Minimize noise pollution (e.g. loud music, fireworks).

Constructed ponds

Many landowners construct ponds for ornamental and recreational purposes. While such man-made ponds are used by some wildlife, their habitat value is greatly diminished by intensive management and nearby human activities. Their value to wildlife is seldom equal to that of the habitat they replaced. If you must add a new pond (or if you have an existing one), consider keeping the shoreline well-vegetated and designing the physical features of the pond to promote native wildlife (e.g., gently sloped and irregularly shaped shorelines).



Eastern bluebird
Kathy Schmidt

Beauty is in the eye of the beholder

Perhaps the hardest thing about providing more wildlife habitat in a residential yard is altering our perception of the ideal. In the eyes of a turtle, butterfly, or bird, manicured lawns are wastelands; fences are barriers; roads are hazards; window wells and steep-sided pools are pitfall traps. On the other hand, brush piles, creviced stone walls, and swamps may be valuable habitats. While personal and property safety is critical around a home, you may find beauty in less-intensively managed landscapes when you consider the needs of wildlife.