



**Working Forests
and Rare,
Threatened,
Endangered
Species**

EMPIRE STATE FOREST PRODUCTS ASSOCIATION

FIELD GUIDE



Female Spruce Grouse

New York State's 19 million acres of biodiverse forests are home to many rare, threatened and endangered species that rely on these woodlands to provide food, shelter and habitat for breeding. Some forest management actions can have adverse effects on at-risk species, while other management actions can be advantageous and improve habitat and population levels. This booklet is written for foresters, loggers, landowners, and other individuals who work on forested lands that contain **rare, threatened or endangered species**. It will provide guidance on identifying the locations of threatened and endangered species, and explain the regulations and guidelines that help protect these species while still allowing for sustainable forest harvesting operations.

New York State and Federally listed **endangered** and **threatened** plants and animals and their immediate habitats are protected by New York State and federal laws, regulations, and guidelines. These are in place to help safeguard the remaining populations or habitats of these species and must be followed during forest management operations. If a listed animal lives on or performs **essential behaviors** on your harvest site, you must comply with these laws, regulations, and guidelines to avoid a **take** and to avoid impacting the listed animal's habitat.

IMPORTANT: The first step when considering **threatened** and **endangered** species in a forest is to check the **Environmental Resource Mapper** at <http://www.dec.ny.gov/gis/erm/>. One of the data layers available through this on-line tool depicts the approximate locations of threatened and endangered species and the buffer zones required for management around those species. If your harvest site is within the ERM buffer zone for a threatened or endangered species you will need to contact the NYS Department of Environmental Conservation for guidance. Their staff will work with you to determine the management tactics for your harvest. See the On-Line Tools section (page 9) for complete information about this and other useful web based tools.

This booklet includes general guidance on management regulations and recommendations for selected threatened and endangered species. Beyond those officially listed, there are other species of concern which are limited in number or unique to certain habitats that are worth trying to protect through special management considerations. Recommendations provided in this guide for these **species of special concern** are considered to be best management practices.

These guidance pieces have been developed in coordination with the New York State Department of Environmental Conservation (NYSDEC) Bureau of Wildlife and the New York Natural Heritage Program and are current as of summer 2018.

Protecting Biodiversity 6

On-line Tools..... 9

Incidental Take Permit15

Laws and Regulations.....17

Species Profiles

 Bats.....21

 Reptiles..... 29

 Bald Eagle and Forest Nesting Raptors..... 39

 Forest Ground Nesting Birds..... 49

Plants and Habitats53

Closing Comments..... 58

Glossary.....60

PROTECTING BIODIVERSITY

Biodiversity is important for healthy forest ecosystems. Managing for biodiversity improves the resiliency of the forest as well as provides habitat for **rare** species which still play a vital role in the ecosystem. Threatened and endangered species contribute to the complex food web, keeping other animal and plant populations



Cavity tree

in balance.

Also, according to the USDA Forest Service National Woodland Owner Survey, three of the top four reasons New York State private landowners own forested property are for beauty, wildlife, and nature, whereas commercial harvesting ranks thirteenth.¹ Managing for biodiverse, healthy forest ecosystems can achieve many of these landowners' top objectives while at the same time producing high-quality forest products.

¹Butler, Brett J.; Butler, Sarah M. 2016. *Family forest ownerships with 10+ acres in New York, 2011-2013. Res. Note NRS-229. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 2 p. <http://dx.doi.org/10.2737/NRS-RN-229>*

Retain Dead and Dying Trees

Many species of wildlife rely on the resources in and on dead and dying trees. Decaying wood and loose bark provide habitat for fungi, insects and other



Coarse Woody Debris

animals to thrive which become food for larger animals. Cavities, loose bark and bare branches provide dens, shelter and perching sites. Keeping dead and dying trees and their debris in a forest is a way to promote biodiversity and a healthy ecosystem. Dead and dying trees that pose a threat to human health or property may be removed.



Vernal Pool

NYSDEC has guidelines for retaining live trees, dead trees (snags) and cavity trees in stands and for coarse and fine woody debris on forests floors during habitat operations that occur on State Forests. These guidelines can be applied on private

forestlands as well.

Examples of retention practices

(adapted from ONR-DLF-2 Retention on State Forests):

- Snags: at least two 11"-17" dbh and two 18" or more dbh trees per acre
- Cavity Trees: at least three 11"-17" dbh and one 18" dbh or greater trees with cavities per acre
- Coarse Woody Debris: Retain at least three logs that are at least 10" diameter at small end and at least 16' long per acre (or equivalent volume in other lengths).

For the complete text of the Retention Policy, including strategies for creating dead and dying trees and debris, retaining live trees, and more information on why retention is important to healthy forests, see the full document ONR-DLF-2 / Retention on State Forests at <http://www.dec.ny.gov/lands/69658.html>.

Protect Sensitive Habitats

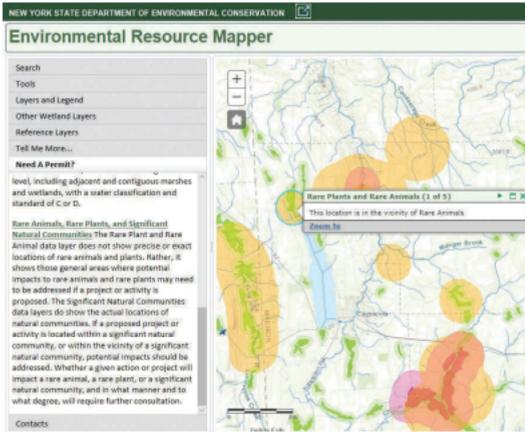
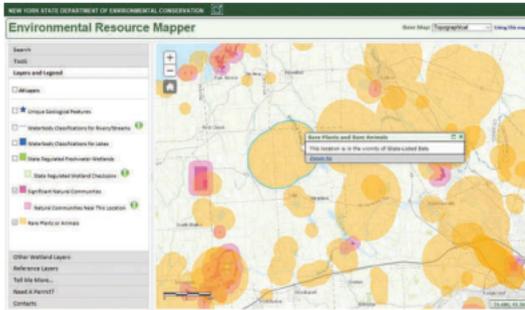
Many of the habitats where threatened and endangered species live are sensitive habitats which are easily disrupted. These include wetland and riparian areas, vernal pools, very shallow soils, dry ridgetops and rich, moist woods. To protect sensitive habitat and biodiversity on the site, spend time planning the project based on the site and follow the Voluntary Best Management Practices for Water Quality <https://www.nycwatershed.org/bmpguide/>.

ON-LINE TOOLS

The NYS Department of Environmental Conservation provides on-line tools to help you identify whether the parcel where you are about to work includes regulated wetlands and streams or is home to threatened or endangered species. Those tools include:

- Environmental Resource Mapper
- Environmental Assessment Form Mapper
- New York Nature Explorer

IMPORTANT: Before starting any work on a woodlot, consult the Environmental Resource Mapper for the presence of threatened or endangered species. Failing to do so could result in an accidental **incidental take** that impacts a listed species. Refer to the Incidental Take Permit section (page 15 of this booklet) for more information. If a threatened or endangered species is known to be on your parcel, NYSDEC has published guidelines for some species that may help you. Contact NYSDEC and/or New York Natural Heritage to determine the listed species' exact location and the best management practices for your site.



Environmental Resource Mapper

The Environmental Resource Mapper (ERM) provides approximate locations of **endangered** or **threatened** species and identifies regulated wetlands and streams.

1. Go to <http://www.dec.ny.gov/gis/erm/> and either search for or navigate to the harvest location.
2. Then open the “Layers and Legend” bar in the list on the left-hand side of your screen and select “Rare Plants or Animals.”
3. Orange polygons will appear on the map that indicate areas of known rare plants or animals. When the polygon is clicked, a pop-up text box appears stating whether it represents a rare plant, rare animal, or a state listed bat.

4. If your harvest site is located within one of these orange rare species areas, click on the “Need A Permit?” bar in the list on the left-hand side of the screen and follow the instructions on how to contact the NY Natural Heritage Program or the appropriate NYSDEC Regional Office for a project screening.

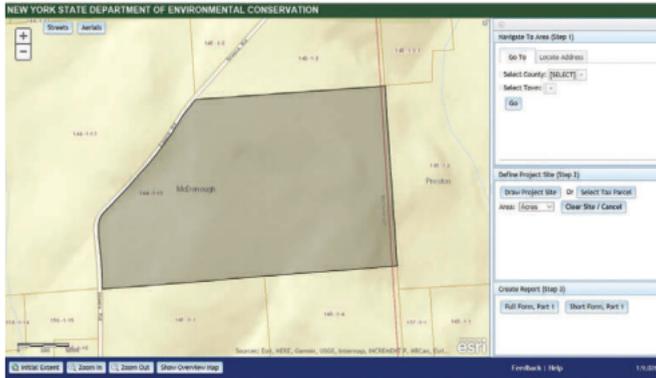
Requests to NY Natural Heritage for a project screening usually take two to three weeks to process. If the only result at your work site is for “State-Listed Bats”, contact the appropriate NYSDEC Regional Office directly (contacting NY Natural Heritage is not necessary).

If your work site is not located within one of the orange rare species areas, then NY Natural Heritage has no records of rare species near that site and has nothing to report. Therefore, there is no need to submit a request to NY Natural Heritage for a project screening.

If you find a rare species that is not represented on the ERM, you can report it through NY Natural Heritage: <http://www.nynhp.org/report-rare>.

Environmental Assessment Form Mapper

If the ERM reports that there are rare animal species found in the vicinity of your job site, visit the Environmental Assessment Form Mapper (EAF Mapper) <http://www.dec.ny.gov/eafmapper/>. This tool is designed to facilitate the completion of Environmental Assessment Forms (EAF) needed for the NY State Environmental



EAF Mapper Tax Parcel Selection

o. Does the project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Bald Eagle, Northern Long-eared Bat	
p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Common Loon	

EAF Mapper Long Form Report Section E.2 questions O and P.

Quality Review (SEQR) process. Although a SEQR is not required for timber harvesting, this mapping tool can report answers that are useful to the harvest planning process including whether the site contains any threatened or endangered animals and specifically what those animals are.

1. Once at the EAF Mapper webpage, either search for or navigate to the tax parcel where the harvesting will be taking place. Zoom in until the tax parcel numbers can be seen then either draw the site of interest or select the parcel of interest.

2. Next, under “Create Report,” click on “Full Form, Part 1”. The Full Form is recommended as it reports on not only the endangered and threatened animals, but also those of special concern that are on or near the property. Section E.2. of the resulting form contains much of the pertinent information.
3. If the EAF Mapper results for your location report:
 - A listed animal: contact the appropriate NYSDEC Regional Office directly for location information or management recommendations (contacting NY Natural Heritage is not necessary).
 - A rare plant, and you would like more information: contact NY Natural Heritage.
 - No species, but the ERM shows an orange polygon over your harvest site - there is most likely an unlisted rare animal near that site: for more information contact NY Natural Heritage.

New York Nature Explorer

This web portal allows you to view lists of the known animals, plants, and significant natural communities by county and to learn more about them.

Go to <https://www.dec.ny.gov/animals/57844.html> and launch New York Nature Explorer. Information can be generated by either selecting a location or searching for a species.

Selecting by location generates an interactive list that, for many species, directs you to web-based resources on identification, distribution, natural history, and management. You can select by town, county, or watershed, or create your own area. Occurrences of many species are only recorded at the county-level. Town-level reports will only include those species specifically reported in that town, but will not include state-listed animals; refer to the county-level list for more information.

Searching for a species will generate any additional informational resources found in the system (not all species are available) and a state-wide distribution map.

INCIDENTAL TAKE PERMIT

It is illegal to **take** a threatened or endangered species or disrupt habitat that is critical to any essential behavior (breeding, hibernation, reproduction, feeding, sheltering, migration and overwintering) without an Incidental Take Permit.

Most of the time, forestry operations can avoid a **take** or habitat disruption through proper planning and complying with NYSDEC guidance for forestry practices. If your project site contains a threatened or endangered species or its critical habitat, as indicated on the Environmental Resource Mapper, there may be NYSDEC published guidance you can follow (e.g. northern long-eared bat). Your local NYSDEC Wildlife staff can also work with you to determine the practices that will have the least impact on the listed species. This could include operating seasonally, excluding portions of a harvest or individual trees, routing roads around critical areas, or altering silvicultural practices. For most projects, this coordination with NYSDEC successfully prevents the need for an incidental take permit.

On rare occasions, a **take** or habitat disruption is unavoidable, and so an Incidental Take Permit is required. Incidental take refers to the fact that the take is not the intended purpose of the activity. Situations such as extreme hazard, natural disaster, or lack of viable alternatives could prompt the need for an incidental take. If you think your project may need an incidental take permit,

contact your Regional NYSDEC office as soon as possible and ask for their assistance.

They can help assess if you need one, and if you do, they can help you through the application process. To obtain an Incidental Take Permit, complete the Joint Application found in the Permits section of NYSDEC website <https://www.dec.ny.gov/permits/6222.html>. If a federal permit is needed, NYSDEC staff will coordinate with US Fish and Wildlife Service.

One of the requirements needed to obtain an Incidental Take Permit is to detail a plan that will provide a net conservation benefit to the affected species, including: mitigation efforts that improve the local or regional population numbers, improve habitat, or other effects that contribute to the recovery of that species in New York State. This mitigation plan should also include data on how the species in question uses the site, currently and historically, and how the execution of the work will affect the population going forward, as well as how the mitigation plan will be monitored.

The full requirements for the permit can be found in the Endangered and Threatened Species Regulations, 6 NYCRR Part 182 <http://www.dec.ny.gov/animals/7181.html>.

LAWS AND REGULATIONS

NEW YORK STATE

Endangered and Threatened Species of Fish and Wildlife Regulations

The taking, importation, transportation, possession or sale of any endangered or threatened species of fish, shellfish, crustacea or wildlife, or hides or other parts thereof, or the sale or possession with intent to sell any article made in whole or in part from the skin, hide or other parts of any endangered or threatened species of fish, shellfish, crustacea or wildlife is prohibited, except under license or permit from the department. (ECL: 11-0535, 6 NYCRR 182) To view the official list of species or for more information about the regulation and permits go to:

<http://www.dec.ny.gov/animals/7181.html>.

NYS Bald and Golden Eagle Act

It is unlawful to knowingly possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof of the foregoing eagles without a permit. (ECL: 11-0537)

Protected Native Plants Regulation

No person shall knowingly pick, pluck, sever, remove, damage by the application

of herbicides or defoliants or carry away, without the consent of the owner thereof, any protected plant.

There are four categories of protected plants: endangered, threatened, rare, and exploitably vulnerable. (6 NYCRR 193.3, ECL: 9-1503) More information can be found at <https://www.dec.ny.gov/animals/7135.html>. The list of rare plants can be found at <http://www.dec.ny.gov/animals/29338.html>.

FEDERAL

Endangered Species Act of 1973

The purpose of the Endangered Species Act is to protect and recover imperiled species and the ecosystems upon which they depend by prohibiting the “**take**” of listed animals and their interstate or international trade, except under Federal permit. The Act also allows for the acquisition of land for the conservation of listed species. The law’s ultimate goal is to “recover” species so they no longer need protection under the Endangered Species Act. The Endangered Species Act is jointly administered by the US Fish and Wildlife Service, which has responsibility for terrestrial and freshwater organisms, and the National Marine Fisheries Service, which is responsible for marine wildlife and anadromous fish such as salmon. Complete information about this Act and related permits can be found at <https://www.fws.gov/endangered/>.

Migratory Bird Treaty Act

This Act makes it illegal for anyone to intentionally **take**, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. For more information go to:

<https://www.fws.gov//birds/policies-and-regulations/laws-legislations.php>.

Bald and Golden Eagle Protection Act

Prohibits anyone, without a permit issued by the Secretary of the Interior, from **taking** bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who “**take**, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.”

SPECIES PROFILES

BATS

New York State is home to a few rare bats that rely on forests for rearing young and other **essential behaviors**, notably, the federally endangered Indiana bat and the federally threatened northern long-eared bat. Both of these bats exclusively



White-Nose Syndrome on a little brown bat. Credit - USFWS.

eat insects and New York's forests serve as their home range for roosting and foraging.

Winter hibernation for the Indiana bat and the northern long-eared bat (NLEB) occurs in caves and abandoned mine shafts, called **hibernacula**. These hibernacula previously hosted thousands of bats of many species each winter, but now due to white-nose syndrome the number of individuals in each have dwindled to just handfuls in some cases.

The onset of white-nose syndrome of bats, a disease spread from bat to bat while hibernating in close proximity, has decimated cave bat populations in the eastern U.S. and is the main reason the northern long-eared bat is on the

threatened list. White-nose syndrome is a fungal infection of the muzzle and wings. The fungus is a skin irritant which wakens the bats from hibernation, often multiple times during the winter. When bats come out of hibernation prematurely they use up their fat reserves and consequently don't survive until spring. Researchers are actively seeking for a solution for white-nose syndrome.

For both the Indiana bat and the NLEB, mating occurs in late summer or early fall near their winter hibernacula. Females store the sperm in their bodies until spring then fertilize their eggs. In the spring, females fly to maternal roost colonies and give birth to a single pup. Previously, maternal roost colonies of NLEB had 30-60 bats and Indiana bat colonies had up to 100. But, due to white-nose syndrome, roost colonies are now generally 10 or fewer individuals. Maternity roost trees are found in both hardwood and conifer forests and are often snags or trees with crevices or loose bark that provides protection.

Forests are used as summer roosting and foraging sites. Roost trees tend to have shaggy or peeling bark or crevices and some sun exposure for the bats to



Potential Roost Tree - Shagbark Hickory

stay warm. The NLEB also uses tree cavities. Trees can be alive, though are often damaged or dead. Shagbark hickory and large black locust are good bat roosts regardless of condition. Generally, any tree greater than 3 or 4 inches diameter, regardless of species, could be a bat roost tree. Because of the effects of white-nose syndrome and cave disturbance, protecting roost trees is important to preserving bat populations.



Indiana Bat. Credit - USFWS.

There are three other forest reliant bats that are species of special concern or are under consideration for federal protection in New York State: the tri-colored bat, the little brown bat and the eastern small-footed bat. Additional species of migratory bats breed in New York forests or pass through New York while moving to and from their winter range. Protecting roosting trees could benefit these species as well.

Indiana Bat (Indiana Myotis): *Myotis sodalis*

New York Status: Endangered

Federal Status: Endangered

Description:

The Indiana bat is about 2 inches tall with a wingspan of 10 inches. It is greyish brown and resembles the little brown bat, but is lighter in color and has a pinker face.

Range:

New York has eight known hibernacula located in Albany, Essex, Warren, Jefferson, Onondaga and Ulster counties. When they emerge in the spring, they fly to their summer feeding grounds, sometimes hundreds of miles away.

Threats:

Cave disturbance during hibernation from recreators, commercialization of caves, cave flooding, ceiling cave-ins and white nose-syndrome are all threats to the Indiana bat. Surveys across the eastern U.S. have shown that 76% of the known eastern population overwinter in just one hibernaculum in the Adirondacks. One major cave disturbance or outbreak of white-nose syndrome could have a significant impact on the entire population. The Indiana bat's status as an endangered species predates the onset of white-nose syndrome in the U.S. The long-term effect of white-nose syndrome has yet to be seen and may impact this species greatly. Maternity roost tree disturbance, summer habitat disruption and the use of insecticides are also threats.



Northern Long-Eared Bat.
Credit - USFWS.

Northern Long-eared Bat (Northern Myotis): *Myotis septentrionalis*

New York Status: Threatened

Federal Status: Threatened

Description:

Northern long-eared bats are medium sized bats, 3 to 3.7 inches tall with a wingspan of 9 to 10 inches. They have a brown body with a lighter belly and comparatively long ears.

Range:

Throughout New York State. A listing of occurrences by town can be found at NYSDEC NLEB webpage <http://www.dec.ny.gov/animals/106090.html>.

Threats:

White-nose syndrome is the major threat to NLEB. Other threats could include loss or disruption of summer habitats and hibernacula disturbance. The

northern long-eared bat was recently very common in New York State, with an estimated 500,000 or more individuals. Since 2006, when white-nose syndrome was discovered in New York, the NLEB population has dropped by 98%.

Forest Management & General Voluntary Recommendations to Help Protect Bats

To protect bats from unintentional harm, NYSDEC encourages a number of voluntary measures which include:

- Schedule harvest operations during hibernation (November 1 through March 31 for all of New York except Long Island which is November 15 through March 15), if possible, and use caution around hibernaculum
- Retain trees with exfoliating bark and ideally at least four large snags or cavity trees per acre. If no snags or cavity trees are present, retain at least one recruitment tree per acre (18” or greater). General snag and cavity tree recommendations are described in the “Protecting Biodiversity” section of this booklet.
- Maintain forest connections: hedgerows, treed riparian areas and other corridors. Bats favor areas with canopy cover.

Regulations and Guidelines for Forestry Operations

Indiana bat

Impacts to the Indiana bat may require permits from both the US Fish and Wildlife Service (USFWS) and New York State. In most cases, satisfying NY State regulations for impacts to Indiana bats will also satisfy federal regulations, but not always.

- Forestry operations conducted near known Indiana bat roost trees or hibernation sites must be reviewed by NYSDEC. (See the On-Line Tools section for information on the Environmental Resource Mapper.)
 - Forestry work outside these areas will not require a NY permit.
- Most forestry work done during the hibernation season (Nov. 1 – Mar. 31), even in known Indiana bat areas, may not require a permit.
 - Exceptions include cutting of known roost trees or the removal of a large percentage of the trees near a known roost or hibernation site.
- Forestry work done in known Indiana bat areas during the active season (Apr. 1 to Oct. 31) may require a permit.
- Begin the project review process for known Indiana bat areas by contacting NYSDEC. They will coordinate with the USFWS as needed.

Northern Long-eared Bat

NYSDEC has developed guidance for recommended measures to ensure that forest management activities are protective of the northern long-eared bat (NLEB) and do not result in an incidental take. This guidance is for sustainable forestry operations only, if your project will result in land use change, please see the additional requirements at NYSDEC Northern Long-eared Bat webpage

<http://www.dec.ny.gov/animals/106090.html>.

Forest management activities that incorporate the following guidance requirements do not need a permit from NYSDEC because the cutting of live trees under the prescribed conditions is unlikely to result in an incidental take of NLEB.

November 1 to March 31

During this period, NLEB are inactive and are within the **hibernacula**.

- Cutting of any trees may occur outside of the ¼ mile buffer around a **hibernaculum**.

April 1 to October 31

During this period, NLEB are active and will be found outside the **hibernacula**.

- Within 5 miles of known **hibernacula** or within 150' of documented roost trees the following management techniques should be implemented:
 - Leave uncut **all** snag and cavity trees unless their removal is necessary for protection of human life and property. For the purposes of this guidance, protection of human life and property includes removal of trees that, if not removed, could result in the loss of electric service. Snag and cavity trees are defined under DEC Program Policy ONR-DLF-2 Retention on State Forests. (See the Biodiversity Section for more information.)

- Leave uncut all known and documented roost trees, and any trees within a 150-foot radius of a known documented roost tree.
- If any bats are observed flying from a tree, or on a tree that has been cut, forestry activities in the area should be suspended and NYSDEC Wildlife staff notified as soon as possible.
- Within a $\frac{1}{4}$ mile of a hibernaculum, leave all trees uncut unless their removal is necessary for protection of human life and property.

If a project cannot follow by the guidance requirements above, a permit from NYSDEC and USFWS may be required. Please note that if any tree clearing activities are required within $\frac{1}{4}$ mile of a NLEB hibernaculum or within 150 ft of a summer occurrence for NLEB during June or July (pup season) you also may be required to obtain a permit from USFWS, contact NYSDEC Wildlife for assistance.

Outside of the 5-mile buffer around known hibernaculum and the 150-foot buffer around known roost trees, there are no cutting restrictions.

General locations of known hibernacula and known summer roost trees can be found through the Environmental Resource Mapper. See the On-Line Tools section for more information.

REPTILES

New York State is home to less than two dozen snakes and lizards and over 15 turtles. Being cold-blooded, reptiles need warm, sunny areas to bask as well as protected areas to escape from harm. Providing cover and basking locations can promote local populations of both rare and common reptiles.

Timber Rattlesnake: *Crotalus horridus*

New York Status: Threatened

Federal Status: Not Listed

Description:

Timber rattlesnakes are 3 to 4.5 feet long (up to 6 feet) with camouflage patterns on their backs. This venomous snake has a triangular head with a “pit” on each side of its face that is used to track prey and detect predators by sensing heat. Timber rattlesnakes also have rattles at the end of their tail. A new rattle is formed each time the snake sheds its



Black Phase Adult Female Timber Rattlesnake with Young. Credit NYSDEC, Giovanni Pambianchi.



Timber Rattlesnake Habitat- Talus (rocky) Slope. Credit - NYSDEC, Emily Underwood.



Timber Rattlesnake Habitat- Basking Site. Credit - NYSDEC, Emily Underwood.

skin, every 1-2 years. Rattlesnakes shake their rattle when they are disturbed.

There are two color forms: yellow and black. The yellow phase has brown and black bands crossing a lighter background and the black phase has black and brown bands crossing a darker background. Some timber rattlesnakes can appear almost black. Their scales are ridged and give this snake a rough appearance.

Habitat and Range:

Primarily, they are found scattered throughout the Southern Tier and southeastern New York and in a pocket along the very eastern edge of the Adirondacks in rough, steep, open deciduous or mixed forests. Timber rattlesnakes also use and move through a variety of other habitat types.

Summer habitat for pregnant (gestating) females is open, rocky deciduous forests, where they can easily bask and absorb heat. Summer habitat for males and non-pregnant females is also rocky and rough deciduous forests, but cooler with more tree cover.

Winter dens are on steep open, rocky, southerly slopes with fissures or talus that allow them to hibernate below the frost line. Dozens of snakes of different species may congregate in these winter dens. Snakes can migrate 3 miles from their winter dens in the summer, unless their movement is blocked by natural or man-made barriers (major highways, urban areas).

Natural History:

Timber rattlesnakes generally live 16-22 years, up to 40. They emerge from their winter dens in April and are active through mid-October. Females give birth every 3-5 years to 4-14 young in late August through mid-September.

Timber rattlesnakes feed on rodents, other small mammals, and birds. They use their venom to immobilize their prey then swallow it whole. This snake can bite humans if it is provoked, though this is rare and is treatable.



Rattlesnakes in Rock Crevice.

Credit - NYSDEC, Emily Underwood

Threats:

Historically, the timber rattlesnake was persecuted and had a bounty placed on its head. In combination with habitat loss and fragmentation, this once wide-ranging population dwindled. Currently, their naturally slow population growth is further limited by habitat loss due to development and fragmentation, road mortality, disturbance from human contact, and illegal collecting.

Management:

- Protect foraging and basking habitat and identify and protect den sites
- Avoid disturbing snakes
- Plan roads and skid trails to account for timber rattlesnakes
- Avoid placing recreational trails near timber rattlesnakes
- Keep rock piles and exposed flat rocks

Timber Rattlesnake Restrictions

To determine whether your harvest site is known to be occupied by timber rattlesnake, see the On-Line Tools section for information on the Environmental Resource Mapper.

To the extent possible, logging should be limited to the timber rattlesnake inactive season: November 1 to March 31.

Excessive habitat alteration can result in a **take** of habitat and is not permissible. An impact assessment which identifies and maps all habitats used by timber rattlesnake at each den location may be required.

Requirement	Distance and Site Type
Maintain 50% forest canopy cover	Within 3 miles of den sites (unless site is cut off by a major highway or natural barrier that prevents snake movement into the area)
Restrict timber harvest roads and landings	Within 330 feet of dens and potentially suitable basking and gestating habitats
Restrict soil disturbance from heavy equipment operations	Within 660 feet of known winter den sites (hibernacula)

If the impacted harvest site extends beyond the New York border, coordinate with that adjacent state's natural resources conservation staff to protect den sites and habitat.

Beneficial Habitat Management Recommendations

- 1) If basking, gestating and foraging habitats are limited near timber rattlesnake populations, improve potential areas through silvicultural operations:
 - a) If basking habitat within 0.5 miles of a den site is limited, create two-acre openings with 10-25% canopy cover in areas where there are suitable rocks for basking.
 - b) Thin vegetation where natural forest succession is causing over-shading of den or basking sites.
- 2) Provide rocks and logs large enough to shelter timber rattlesnakes in potential basking areas within 0.5 mile of the den site and potential gestating sites within 0.1 mile of the den site.

More specific guidance will be provided by NYSDEC personnel if your project site falls within the boundaries of a known timber rattlesnake population.

Skinks

Two other rare reptiles in New York State are the northern coal skink (*Plestiodon anthracinus*) and the five-lined skink (*Plestiodon fasciatus*). These little lizards live under coarse woody debris and rock piles in woodland openings, edges and fields. The five-lined skink is found in southeastern NY and on the very eastern edge of the Adirondacks. The northern coal skink is found scattered across the Southern Tier and western NY. Both live on rocky outcrops and steep hills in moist deciduous and mixed stands. The coal skink is also found in swamps and other wet areas and will escape to the water when threatened.



5-lined Skink (*Eumeces fasciatus*)

Credit - Ryan M. Bolton / Alamy Stock Photo

Although not endangered, these skink populations will benefit from proper habitat management:

- Leave large butt ends of logs at the edges of landings
- Create large brush piles, including some large logs, on landings
- Leave woody material on the ground throughout the harvest site
- Avoid impacting rock piles and exposed flat rocks that might be used for basking



Blanding's Turtle.

Credit - Ann Brokelman

Blanding's Turtle: *Emydoidea blandingii*

New York Status: Threatened

Federal Status: Not Listed

Description:

Blanding's turtle is 5-10 inches long and has a highly-domed, oblong shell. The upper shell is dark with yellow speckles, while the lower shell is yellow with dark, symmetrical blotches on the outer edge of each plate. A distinguishing characteristic of the Blanding's turtle is its yellow throat and chin. Its head, legs and tail are dark with pale flecks or spots, which can be difficult to see unless up close. The Blanding's turtle's shell has a semi-closable hinge, similar to a box turtle, that allows it to close part way when it feels threatened.

Habitat and Range:

While the Blanding's turtle is found in many states centered around the Great Lakes, northern New England and in Canada, its populations in New York are small. The largest population of Blanding's turtles occurs in St. Lawrence and Jefferson Counties and smaller populations occur in portions of Dutchess, Saratoga, Niagara, and Erie Counties. Recent research indicates the northeast populations are declining.

In New York, the Blanding's turtle is found in scrub-shrub wetlands dominated by buttonbush and willows. In southern NY, Blanding's turtles seek out vernal pools and related habitats for breeding and feeding. It is known to travel long distances over land from one pool to another.

During the winter, this turtle hibernates in wetlands. Individuals may also hide beneath vegetation, hummocks, or debris under the water. The distance between summer nesting and foraging grounds and winter hibernation locations can be more than a mile.

Natural History:

Blanding's turtles can live 80 or more years and become sexually mature at 20 years old. Females bury nests of approximately ten eggs under the ground in sandy, upland areas with direct sun exposure, which can include roadside areas.

This turtle is semi-aquatic and omnivorous, feeding on invertebrates, fish, plants and carrion both in and out of the water.

Threats:

Wetland loss, upland nesting habitat loss, road mortality, vernal pool and related habitat disruption, loss of habitat to development, nest predation by carnivores such as raccoons and skunks, and illegal collection.

Management:

To determine whether your harvest site is occupied by Blanding's turtle, see the On-Line Tools section for information on the Environmental Resource Mapper. Additionally, if you are working near known Blanding's turtle sites, following these guidelines can help improve population numbers.

- Avoid working in and around wetland areas, riparian areas, and vernal pools unless completely frozen.
- When possible, avoid creating forest roads in uplands within one mile of Blanding's turtle occupied wetlands, which may attract nesting turtles to the roads.
- Be aware of regular crossings by turtles. Avoid hitting them with vehicles and help them safely cross roads when feasible.
- If an area is heavily forested, create 1/4 - 2-acre openings over soft soils to provide nesting habitat for the species. These features should be created as close to the wetlands as possible and should not be pursued if there is a public roadway between the wetland and the project site.

For more information, a management plan for this species is available at https://www.dec.ny.gov/docs/wildlife_pdf/blandingsplan.pdf

BALD EAGLE AND FOREST NESTING RAPTORS

Forest Nesting Raptors build their nests, raise their young, and often hunt in forests. Oftentimes, human disturbance, such as timber harvesting, can cause them to abandon nests, eggs, or fledglings even if the nest or cavity tree isn't cut. Forest nesting raptors include Cooper's hawk, northern goshawk, broad-wing hawk, red-shouldered hawk, great-horned owl, northern saw-whet owl, and the bald eagle.



Bald Eagle. Credit - Nick Hunter.

Bald Eagle: *Haliaeetus leucocephalus*

State Status: Threatened and additionally protected under the NYS Bald and Golden Eagle Act

Federal Status: Not Listed (De-listed in 2007) but still protected under the Bald and Golden Eagle Protection Act

Description:

Bald eagles are 2.5 feet tall with a wingspan of 6-7 feet. Adult bald eagles have medium-brown bodies and white-feathered heads with a large, yellow,



Eagles in Nest. Credit - Nick Hunter.

bottom of the canopy. Nests can be 5-6 feet in diameter and are made from sticks and lined with softer plant materials. Nests are reused by the same pair and are added to each year. Alternate nests may be found within the breeding territory, and are used from time to time as breeding pairs return year after year.

Roost trees can be either conifers or hardwoods, but like nesting trees are also tall, mature trees. Deep-winter roost sites are communal and generally are found on eastern or southeastern slopes where they are protected from winds and winter temperatures. Winter roosts are often in areas with large eastern white pines.

hooked bill and a white tail. Males and females look the same though females can be one third larger than males. Juvenile bald eagles, general less than five years old, have brown and white mottled feathers with no distinct white head.

Habitat and Range:

Forested areas alongside lakes and rivers.
Found throughout New York State.

Tall, mature trees, especially conifers, are preferred for nesting (often eastern white pine). Nests are constructed close to the trunk at the

See the NYS Bald Eagle Wintering Areas Map.

Natural History:

Pairs of bald eagles have one to three eggs annually, but the eggs have a low survival rate. Eggs are incubated for seven weeks and fledglings live in the nest for up to 12 weeks. Around age five, bald eagles return to the area in which they were born to breed and they mate for life. Breeding season can start in January and last through September when fledglings leave the nests. Birds can live to be 15 to 20 years old.

Bald eagles eat fish and waterfowl and scavenge carrion.

Threats:

Populations of the bald eagle plummeted in the mid-1900s but are making a comeback due to the reduction of harmful pesticides in the environment, a successful breeding program, and strong regulations that protect their habitat and prohibit their harassment. Current threats include: habitat loss and



Bald Eagle Wintering Areas Map.

Credit - NYSDEC.





Bald Eagle Roosting.
Credit - Nick Hunter

destruction of nesting, perching and roosting trees; harassment, and lead poisoning through ingestion of ammunition from hunter-shot prey.

Federal and State Regulations:

Though federally delisted in 2007, bald eagles are still protected under the Migratory Bird Treaty Act, the Lacey Act and the Bald and Golden Eagle Protection Act. In New York, bald eagles are considered threatened and are additionally protected under numerous articles including the NYS Bald and Golden Eagle Act and are considered protected wildlife as a wild bird. Without a permit from the USFWS and/or NYSDEC, it is illegal to

take an eagle or a nest or to possess birds, eggs, or any parts. Restrictions are also in place that limit human-induced alterations around nests and alternate nests that disrupts eagle's ability to breed, feed or shelter or that causes death, injury or nest abandonment. Projects that will affect eagles and eagle habitat are reviewed to reduce negative impacts.

Strategies:

To determine whether your harvest site is known to be occupied by bald eagles, see the On-Line Tools section for information on the Environmental Resource Mapper.

NYS Bald Eagle Logging and Forestry Restrictions*

Season	Requirement	Site and Distance
Breeding Season (January 1 - September 30)	No harvesting, landings, or road building	660' of nest (or 330' of alternate nest with permission)
Wintering (December 1 - March 31)	No harvest	0.25 mile of important deep winter roosts
Year Round	Avoid clear-cutting and removal of large overstory trees	330' of nest or alternate nest

** If individual bald eagles are deemed to be more sensitive by NYSDEC staff, the buffer distances can be increased.*

Adapted from Conservation Plan for Bald Eagles in NYS and USFWS Bald Eagle Management Guidelines and Conservation Measures

If harvesting must occur along shorelines or wetland areas where roost and nesting trees are often found, leave the largest native pines and conifers and snags. In areas without large conifers, leave single trees as perch sites.

Recommended Bald Eagle Conservation Measures

Season	Recommendation	Site and Distance
Outside of Breeding Season (October 1 - December 31)	Permitted silvicultural practices including prescribed burning	660' of nest
Year Round	Retain large mature trees and old growth stands for potential nest and roost trees (especially native conifers)	0.5 mile of nest

Adapted from USFWS Bald Eagle Management Guidelines and Conservation Measures

Human disturbance of nests can cause the adults to abandon a nest or cause fledglings to leave the nest early making them susceptible to predation. If disturbances are to occur within 1 mile of a known nest, winter roost or winter foraging site contact NYSDEC for recommendations and guidance.

To read more about federal recommendations, including information about obtaining a Federal take permit or to print a copy of the recommendations for logging operations, go to the US Fish and Wildlife Ecological Services National Bald Eagle Management Guidelines at <https://www.fws.gov/northeast/ecologicalservices/eaglenationalguide.html>. The New York Bald Eagle Management Plan can be found at https://www.dec.ny.gov/docs/wildlife_pdf/nybaldeagleplan.pdf.

Forest Nesting Raptors

There are other birds of prey that rely on woodlands for breeding and nesting including many hawks and owls.



Northern Goshawk
Credit - Alamy Stock Photo

Northern goshawk: *Accipiter gentilis*

State Status: Species of Special Concern/
Greatest Conservation Need

Federal Status: None

The northern goshawk is found in upland locations of New York State in large dense forests. Their numbers are declining across the state. These two-foot-tall, blue-grey hawks with white “eyebrow” stripes create large stick nests in the canopies of both conifers and hardwoods, often in the largest trees around. They also may

return to the same nest for several years and can have several alternate nests. The northern goshawk defends its nest and has been known to swoop down on unsuspecting woodland travelers.

Red-Shouldered Hawk: *Buteo lineatus*

State Status: Species of Special Concern/
Greatest Conservation Need

Federal Status: None

The red-shouldered hawk populations are declining in the northeast. This medium sized, dark and white checked hawk has red shoulders, a red breast and a long, banded tail. Red-shouldered hawks favor tall trees with an open understory in moist woods. Nests are found in proximity to wetlands. They feed on small mammals, young birds, reptiles and amphibians.

Threats:

Forest nesting raptors are sensitive to forest activities like skidding and road building near their nests. Deep woods fragmentation and conversion have also reduced the suitable habitat.



Red Shouldered Hawk.

Credit: Dawna Moore / Alamy Stock Photo

Forest Nesting Raptor Management Recommendations

Species	Seasonal Restriction (avoid disturbance)	Canopy Closure After Cut	Minimum Tree Density After Cut (per Acre)	Minimum No-Cut Buffer Around Nest
Northern Goshawk	Mar. 1- Jul. 31	70%	80-120	330 feet
Red- Shouldered Hawk	Mar. 1- Jul. 31	70%	100	330 feet
Broad-winged Hawk	Apr. 20 - Aug. 15	70%	55	330 feet
Sharp-shinned Hawk	Apr. 15 - Aug. 15	90%	175	330 feet

Adapted from Raptor Management on State Forests, S. Crocoll, 2013

- A 66' no-cut buffer should be placed around all old nest sites to maintain forest habitat around a potential alternate nest site
- Row thinning can be used with both nesting northern goshawks and broad-winged hawks. Although, single tree selection appears to work better for northern goshawks and red shouldered hawks.



FOREST GROUND NESTING BIRDS

While dozens of bird species call New York's forests home, some have very specific requirements that have isolated them in patches of what was once expansive habitat. The spruce grouse is an example of one of these specialist species.



Male Spruce Grouse.

Credit: Design Pics Inc / Alamy Stock Photo



Female Spruce Grouse.

Credit: Design Pics Inc / Alamy Stock Photo

Spruce Grouse: *Falcapennis canadensis*

New York Status: Endangered

Federal Status: Not Listed

Description:

The spruce grouse is ground nesting bird of coniferous forests that stands 15 to 17 inches tall. They have white-banded brown and black feathers which camouflage them in the woods. Males are darker than females and have a black, circular patch on their chest and red combs over each eye that inflate during courtship or when agitated. Females are more brownish and may look like a ruffed grouse. The most obvious distinguishing characteristic

between a spruce grouse and a ruffed grouse is the tail. On a spruce grouse, the tail is blackish with a reddish-brown band at the tip. On a ruffed grouse, the tail is brown with a black tip.

Habitat and Range:

Spruce grouse was once common in northern New York. However, due to decades of habitat decline, loss and fragmentation, the population of spruce grouse in NY dwindled from six counties prior to 1974 to three counties in 2006: St.

Lawrence, Franklin and Essex. This is effectively a 71% reduction in the NY range extent from 1970-2006.

It is found in mid-successional, lowland conifer forests comprised of spruce, tamarack and balsam fir with a significant shrub layer in the understory to provide cover for foraging, nesting, and shelter. This shrub layer is intermixed with moss and sedge-covered open ground used for courtship and brood foraging. Shrubs are often **ericaceous** species such as blueberries. Spruce grouse prefer conifer stands that are less than 20 feet tall. Nests that are covered by shrubs tend to be more successful. Lateral and vertical cover are important.



Spruce Grouse chick. Credit: All Canada Photos / Alamy Stock Photo

Natural History:

Nests are located on the ground, typically adjacent to the trunks of trees and are well concealed by shrubs. Nesting generally begins in mid-May and eggs incubate for 3 to 4 weeks. The young stay with the female either through mid-September or into the spring before they disperse to find their own territories.

Spruce grouse almost exclusively eat balsam fir needles in the winter. In the spring, they eat spruce needles, insects, and berries. From mid-summer to early fall, spruce grouse eat a high percentage of tamarack needles.

Threats:

Historically, the population declined due to the loss of habitat from extensive softwood logging and the damming and subsequent flooding of habitat. Also, early accounts report whole family groups of spruce grouse being shot out of the same tree. Today, even with those factors no longer occurring with the same intensity, the population has not been able to rebound.

In the historical range of the spruce grouse there has been an ecological shift away from the preferred forest type of lowland boreal spruce-fir as more prolific hardwood species have taken over clearcut areas. Additionally, a significant portion of remaining lowland boreal forest that does exist is even-aged and mature, thus lacking low cover necessary for nesting and brood-rearing. Habitat fragmentation and lack of wildlife corridors between appropriate habitats and the

inability to actively manage State-owned stands within the Adirondack Park also contribute to the continued decline. Accidental shooting by hunters remains a significant source of mortality of the spruce grouse as birds travel to roadsides in the fall to eat grit and dust bathe.

Spruce grouse also have several predators and egg predators that significantly impact their mortality (namely red squirrels).

Management Recommendations:

To determine whether your harvest site is occupied by spruce grouse, see the On-Line Tools section for information on the Environmental Resource Mapper.

- Create mid-successional, conifer forests of balsam fir, tamarack, and spruce.
- Stands should be dense with dense ground vegetation
- Maintain vertical structure within stands. Retain some taller trees as perches and to facilitate foraging in lower canopy trees
- Manage for ericaceous shrubs, including blueberry and cranberry, as food sources and as cover for nests and young birds

If you are working with spruce-fir forests near known spruce grouse habitat and want to help create additional habitat through forest management, contact NYSDEC for guidance. More information can be found at

<https://www.dec.ny.gov/animals/89794.html>.

PLANTS AND HABITATS

There are numerous rare, threatened and endangered plants across New York and in New York's forests--too many to list in this guide. These plants are rare for a variety of reasons: habitat loss, collection, competition from invasive species, or are remnant populations with ranges that have moved through the years. More information on selected individual species can be found on the New York Natural Heritage Program Nature Guides website: <http://guides.nynhp.org/>.

Rare plants are protected under state and federal law. Both state and federal rare plants cannot be removed or harmed without permission from the landowner;



Yellow lady's slipper Cypripedium parviflorum var. pubescens, S3 Exploitably Vulnerable

however, they are not subject to the **take** rules. See <https://www.dec.ny.gov/animals/7135.html> for the full text of the NYS regulation. The complete list of NYS rare plants can be found at <http://www.dec.ny.gov/animals/29338.html>.

The list of federally protected plants and guidelines can be found at <https://www.fws.gov/endangered/>.

Generalized locations of state and federally listed threatened and endangered plants will appear on the Environmental Resource Mapper. See the On-line Tools section for more information. Contact NYSDEC or NY Natural Heritage if the ERM reports an occurrence on your harvest site. They will provide additional information and recommendations, if necessary.

General Rare Plant Considerations:

- Herbaceous (non-woody) plants are seasonal and can be protected in part by conducting forest operations in the winter.
- For some plants, timber harvesting practices may be used to improve their population.
- Many of these rare plants, like their rare animal associates, live in rare natural



*Spreading globeflower Trollius laxus, S3
Rare*



Coniferous Limestone Woodland

community types such as limestone pavement barrens and vernal pools.

Rare Natural Communities with Associated Rare Plant Examples:

- Northern white-cedar swamps: Spreading Globeflower *Trollius laxus*. State: Rare. Habitat: Open, wooded wetlands. Scattered in western, central and eastern New York.
- Vernal Pools: Cat-tail Sedge *Carex typhina*. State: Endangered. Habitat: Wet woods. Scattered throughout New York, mostly southern and eastern NY and the Champlain Valley.



Pitch Pine-Scrub Oak Barrens- Albany Pine Bush Preserve



Sweet artic coltsfoot Petasites frigidus var. palmatus. S1 Endangered. Credit - Jordan Jackson.



Cat-tail Sedge Carex typhina. S2 Endangered Copyright © 2018 Donald Cameron

- Riparian Areas: sweet arctic coltsfoot *Petasites frigidus* var. *palmatus*. State: Endangered. Habitat: Edges of wooded swamps and in wet open woods. Scattered in northern and western New York.
- Rocky outcrops: northern monkshood, *Aconitum noveboracense*. Fed: Threatened. State: Endangered. Habitat: Cool, moist sites. Catskills.
- Heath Barrens: northern bog violet *Viola nephrophylla*. State: Endangered. Habitat: Gravely, cold, or moist sites. Scattered in northern and western New York
- Pine Barrens: Stargrass *Aletris farinosa*. State: Threatened. Habitat: Open, sandy woods. Long Island.



Cork elm
Ulmus thomasi, S2S3
Threatened



Pink shinleaf
Pyrola asarifolia, S2
Threatened.
Copyright © 2018
Donald Cameron.

In addition to rare herbaceous plants there are also rare trees. These include:

Name	Scientific Name	State Status	Location
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>	Rare	Coastal and near coastal Long Island and Hudson Valley
Butternut	<i>Juglans cinerea</i>	Rare, Unprotected	Scattered throughout NYS
Cork elm	<i>Ulmus thomasii</i>	Threatened	Scattered throughout northern New York
Swamp birch	<i>Betula pumila</i>	Threatened	St. Lawrence, eastern Hudson Valley, northern Adirondacks
Shellbark Hickory	<i>Carya laciniosa</i>	Threatened	Scattered across central and western New York

CLOSING COMMENTS

Threatened and endangered species have “esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people”² and are worthy of protection from human-related impacts.

While forest management practices are affected by the presence of threatened and endangered species, oftentimes the restrictions are minimal or only seasonal. Additionally, silvicultural techniques can frequently improve habitat for these rare species.

This booklet was designed to provide background information on selected species and regulations as of summer 2018. As conditions on the ground change, so to do these strategies. Seek guidance from NYSDEC staff if you intend to work on a parcel known to have rare species. They will work with you to determine the best course of action to protect the species as well as have a successful harvest.

Through thoughtful modification of forest management practices or seasonal implementation, we can have successful timber harvests and protect species from extinction at the same time. Sound forest management practices help ensure that future generations have access to healthy, biodiverse, working forest ecosystems that allow forest-dependent species to prosper.

²*Endangered Species Act of 1973*

Credits:

This publication was made possible through a grant from the New York Wood Products Development Council and through the efforts of the Empire State Forest Products Association.



EMPIRE STATE FOREST PRODUCTS ASSOCIATION
The People Behind New York's Healthy Forests and Quality Wood Products

Authored by: J. Rebecca Hargrave, M.S.,
for Empire State Forest Products Association

Assistance or contributions from:

NYSDEC Wildlife and NY Natural Heritage Staff including: Nick Conrad, Dorothy Evans, Scott Crocoll, Carl Herzog, Lisa Masi, Joe Racette, Dan Rosenblatt, and Angelena Ross

Glenn Johnson- SUNY College at Potsdam

Kristi Sullivan- Cornell University

ESFPA Staff and Board Members

Cover Image: Yellow Phase Timber Rattlesnake adult. Credit - NYSDEC, Giovanni Pambianchi.

Inside Cover Image: Female Spruce Grouse. Credit: Design Pics Inc / Alamy Stock Photo.

Inside Back Cover Image: Blandings Turtle. Credit - Robert Scholl / Alamy Stock Photo.

Back Cover Image: Northern long-eared bat with white-nose syndrome. Credit - USFWS.

Images not credited are courtesy of the author.

GLOSSARY

Disturb (Fed.)*: as it relates to eagles: to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, 2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. This definition of disturb also applies to human-induced alterations which impact a previously used nest at a time when eagles are not present, that agitate or bother an eagle to such a degree that 1), 2), or 3) occur upon its return.

Endangered species*: native species that are in imminent danger of extirpation or extinction in New York and are on the official list found at <http://www.dec.ny.gov/animals/7494.html> and/or species listed as endangered by the United States Department of the Interior in the Code of Federal Regulations which can be found at <https://www.fws.gov/endangered/>.

Ericaceous: plants belonging to the Ericaceae/heath family which generally live in acidic and low-nutrient soils. Includes blueberry, huckleberry, rhododendron, and laurels.

Essential behavior*: any of the behaviors exhibited by a species listed as endangered or threatened that are a part of its normal or traditional life cycle

and that are essential to its survival and perpetuation. Essential behavior includes behaviors associated with breeding, hibernation, reproduction, feeding, sheltering, migration and overwintering.

Hibernaculum(a): An overwintering/hibernation location.

Incidental Take*: any taking of a species listed as officially endangered or threatened in New York State that is incidental to, and not the intended purpose of, an otherwise lawful activity.

Incidental Take Permit: a document issued by the NYS Department of Environmental Conservation, in accordance with section 11-0535 of the Environmental Conservation Law, allowing the incidental take of any species listed as endangered or threatened. (Refer to the Incidental Take Permit section)

Rare: as it relates to plants: species have 1) 20 to 35 extant sites, or 2) 3,000 to 5,000 individuals statewide. As it relates to animals: threatened, endangered, species of special concern, species of greatest conservation need, or species potential conservation need. See NY Natural Heritage Program webpage for more information <http://www.dec.ny.gov/animals/29338.html>.

Species of special concern*: native species of fish and wildlife found by the NYS Department of Environmental Conservation to be at risk of becoming threatened in New York and that are listed as species of special concern. Species of special

concern do not qualify as either endangered or threatened, but have been determined by NYSDEC to require some measure of protection to ensure that the species does not become threatened. The official list is found at <http://www.dec.ny.gov/animals/7494.html>.

Take or taking (NYS)*: the pursuing, shooting, hunting, killing, capturing, trapping, snaring and netting of any species listed as endangered or threatened by NYS, and all lesser acts such as disturbing, harrying or worrying.

Take (Fed.)*: to (or attempt to) harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. As it relates to eagles: pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.

Threatened species*: any species that are native species likely to become an endangered species within the foreseeable future in New York based on the criteria for listing and that are listed as threatened, official list found at <http://www.dec.ny.gov/animals/7494.html>, and/or species listed as threatened by the United States Department of the Interior in the Code of Federal Regulations which can be found at <https://www.fws.gov/endangered/>.

** Adapted from NYS and Federal Regulations*



Blandings Turtle



Northern long-eared bat with white-nose syndrome