Blanding's Turtle

Scientific Name: *Emydoidea blandingii*
New York Status: **Threatened**
Federal Status: Not Listed

Description

The Blanding's turtle is a medium-sized turtle with an average shell length of approximately 7-9 inches and a maximum length of 10 inches. A major feature that distinguishes this turtle from other species is its distinctive bright, solid yellow chin and throat. The head and legs are dark-usually with a pale yellow speckled or mottled appearance. The beak of the turtle is curved upwards at the corners of the mouth, creating a sense that the turtle is smiling at you. The carapace-or upper shell-is domed, but slightly flattened along the midline and appears oblong when viewed from above. It is speckled with numerous yellow or light-colored flecks or streaks on a dark background, although this may be difficult to see unless the turtle is close by. The plastron, or lower shell, is yellow with dark blotches that are (mostly) symmetrically arranged. Males have a concave plastron, and females have a more flattened plastron. The plastron is hinged, like the eastern box turtle's, allowing the shell to close to protect the head and front limbs from predators. However, the Blanding's turtle's shell does not close as tightly as a box turtle's. Because of this similarity, Blanding's turtles have been nicknamed the "semi-box" turtle.

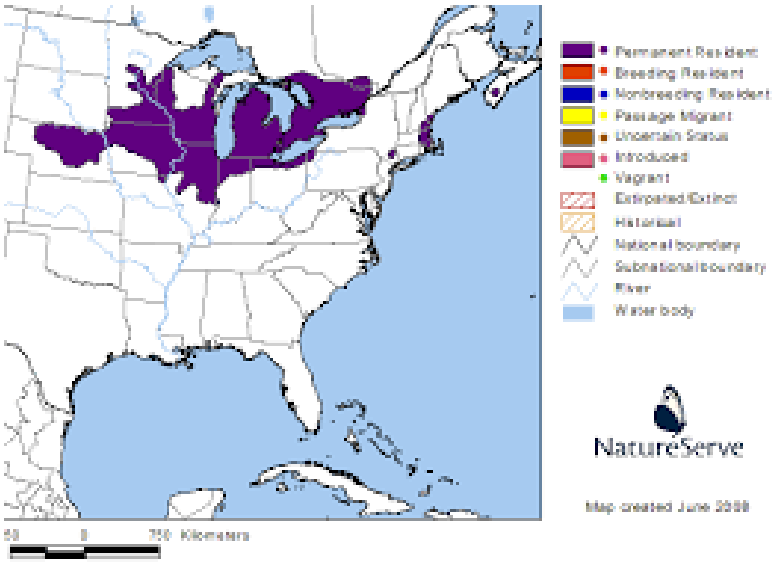
Life History

The Blanding's turtle is a long-lived species, with the oldest known individual reaching over 83 years of age. In New York, the species does not breed until it reaches at least 18 years of age, with some individuals not mating until they are 22 years old. Mating mostly occurs in April and early May, with nesting beginning in early June and lasting throughout the month. The clutch size, or number of eggs laid per female, varies across its range. In New York, the clutch size ranges from 4-18 eggs with an average of 10. Hatchlings emerge from August to October.

The Blanding's turtle is a shy turtle. When alarmed or approached, it may plunge into water and remain on the bottom for hours. If away from water, the turtle will hide in its shell. It is very gentle and almost never bites. It is a very agile swimmer.

The Blanding's turtle overwinters near or under water, in mud or under vegetation or debris where it will not freeze. During the nesting season, a female Blanding's turtle may be found more than a half mile from where she spent the winter. The Blanding's turtle is also known to estivate (spend a hot or dry period in a long state of dormancy) in leaf litter in uplands around wetlands. It is omnivorous, eating crustaceans and other invertebrates, fish, plants, and carrion (dead animals). It is even capable of catching live minnows.

Distribution and Habitat



This species' range centers around the Great Lakes and extends from central Nebraska and Minnesota eastward through southern Ontario and the south shore of Lake Erie as far east as Northern New York. A few isolated populations are in southeastern New York (Dutchess County), eastern New York (Saratoga County), New England, and Nova Scotia. Recent investigations in Northern New York report the range of this turtle to be primarily in the Thousand Island region along the St. Lawrence River. In this region, it is found in isolated coves and weedy bays, and further inland in shallow, marshy waters and ponds. It does not commonly occur in the main channel of rivers. Significant populations also occur from the westernmost reaches of St. Lawrence County to Massena, New York. Away from the St. Lawrence River, the turtle can be found in shrubby wetlands dominated by woody vegetation such as buttonbush and willow.

In all areas where Blanding's turtles are found, vernal (temporary) pools and emergent wetlands are also important parts of Blanding's turtle habitat, as are sandy soils in uplands that the turtles use for nesting.

Status

A major problem facing the Blanding's turtle in New York State is the destruction of its nesting and wetland habitats from the construction of housing developments, shoreline properties, and other summer recreation facilities. Roads that cross turtle migration routes between wetlands and ponds where turtles hibernate and upland areas where turtles nest are particularly hazardous to the species, as vehicle strikes are common. Loss of adult females by vehicle strikes is likely the most significant cause of population declines across the species' range. Since Blanding's turtles mature late and their populations depend on adults reproducing throughout their relatively long lifespan, the loss of even a single female can have a major impact on a population.

Management and Research Needs

Researchers from DEC and partner organizations are conducting field surveys to better define the range of this species in New York and to estimate population sizes and trends. They are using mark/recapture and radio telemetry techniques to further define turtles' daily and seasonal movements, habitat use, and nest site selection. Researchers are protecting selected nesting sites from predation in several areas where predators such as raccoons and skunks routinely dig up nests. They are also monitoring new, experimentally-created nesting areas that females can easily access without crossing roads. The monitoring efforts will help researchers determine if the created nesting areas are minimizing threats to nesting females as they move to and from nest sites.

Bog Turtle

Scientific Name: *Glyptemys muhlenbergii*

New York Status: Endangered
Federal Status: Threatened

Description
The bog turtle is New York's smallest turtle, reaching a maximum length of 4.5 inches. A bright yellow or orange blotch on each side of its head and neck are a distinctive feature of this species. The body color is dark with an orange-red wash on the inside of the legs of some individuals. The carapace (upper shell) is domed and somewhat rectangular, often with prominent rings on the shell plates (scutes). Older individuals may have smooth or polished shells, likely a result of burrowing into coarse soils. Generally dark brown, the carapace is sometimes highlighted by a chestnut sunburst pattern in each scute. The plastron (lower shell) is not hinged and patterned with black blotches. As with most turtles, the plastron of the male is slightly concave while in females it is flat.

Life History
Bog turtles emerge from overwintering sites by mid-April. Overwintering sites are typically found in densely vegetated areas often in association with tree roots and other submerged structures along streams or near underground springs. Abandoned muskrat lodges and a variety of wetland burrows may also be used. These overwintering sites can become communal in nature, housing many bog turtles and spotted turtles (*Clemmys guttata*). Turtles emerge when the air and water temperature exceed 50 degrees (F). This is necessary for the turtles to become active.

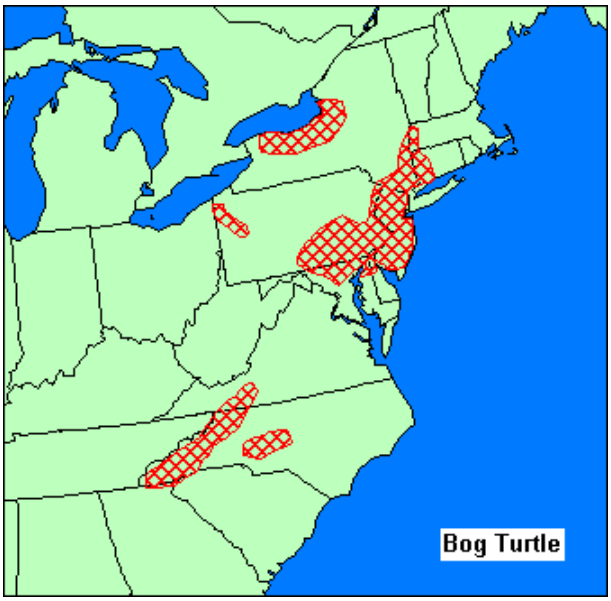
Mating generally occurs in the spring but autumn mating events are documented. This may be focused in or near their winter shelters. Nesting sites are typically located inside the upper part of an unshaded tussock (a tall, thick bunch of grass). A clutch of two to four eggs are deposited in early to mid-June, hatching around mid-September. It's been occasionally documented that some hatchings in southern populations overwinter in the nest, emerging the following spring. Bog turtles return to their overwintering sites in later October. Sexual maturity may be reached as early as eight years of age or as late as eleven. They may even live for more than 30 years.

This species is secretive in nature. The bog turtle can be seen basking in the open when the conditions are favorable for such behaviors, especially in the early spring. It is an opportunistic feeder, eating what it can get. It prefers invertebrates such as slugs, worms, and insects though seeds, plant leaves, and carrion are also included in its diet.

Distribution and Habitat
The bog turtle is found in scattered, separate colonies in the eastern United States from New York and eastern Massachusetts, south to eastern Tennessee and northwestern Georgia. This is a semi-aquatic species, preferring habitat with cool, shallow, slow-moving water with deep muck soils, and tussock-forming vegetation.

In New York, the bog turtle is generally found in open, early-successional types of habitats such as wet meadows or open calcareous boggy areas generally dominated by sedges (*Carex spp.*) or sphagnum

moss. Like other cold-blooded or ectothermic species, it requires habitats with a good deal of sunlight for basking and nesting. Plants such as purple loosestrife (*Lythrum salicaria*) and reed (*Phragmites australis*) can quickly invade such areas resulting in the loss of basking and nesting habitat.



Status

Of the more than 180 known bog turtle sites that occur in New York, a little more than half (61%) are known to support surviving populations. Due to the decreasing numbers found in these sites and difficulty in finding bog turtles, some sites are thought to no longer contain bog turtles; however, they may still contain a few individuals.

More than half of the 74 historic bog turtle locations in New York still contain what appears to be suitable habitat. About half of all bog turtle populations in the state have shown evidence of reproduction, such as finding juveniles, verified nests, or egg shells from hatched nests. Most of these populations have shown declines over time. Less than 15% of bog turtle populations in the state are ranked as having good to excellent survival rates. This means that long term persistence of many populations is thought to be rather low.

Pesticide contamination from agricultural run-off and industrial discharge may negatively affect the bog turtle and its habitat. Contaminants may also accumulate in invertebrates that turtles eat.

Habitat Loss

The primary threats to this species are loss/degradation of habitat and illegal collecting. In New York, development and natural succession (vegetation growing in over time) are the major threats to bog turtle populations. As sites deteriorate-are taken over by shady plants or invasive species-bog turtles normally move out of their old sites to new areas where fire, beavers, agriculture, or other events have created an open wet meadow-type habitat. However, residential and commercial development-especially roadway and reservoir construction-prevents their ability to move to new, potential habitat. So, new populations cannot be created as old sites deteriorate.

Illegal Collection

Collection of the bog turtle without a permit is prohibited in all states where it occurs. It was listed as threatened in 1997 by the U. S. Fish and Wildlife Service (USFWS), and has been listed in CITES Appendix I, (Convention of International Trade in Endangered Species) since 1975. Unfortunately, illegal collection still continues to threatening this long-lived, slow reproducing turtle.

Management and Research Needs

DEC has been conducting field surveys of historic, known surviving, and potential bog turtle sites in accordance with USFWS recommendations. Staff use these surveys to determine trends in population

size, habitat suitability, and knowledge of their distribution. Some currently inhabited bog turtle sites and some historic sites are under the ownership of DEC or other conservation organizations.

Many of the best remaining sites remain in private ownership and efforts have been made to restore and maintain habitat through programs such as the former Landowner Incentive Program. The success of this program was twofold. The restoration work expanded available habitat for a healthy population of bog turtles. Additionally, it served as a means for other interested landowners to develop relationships and enter agreements with federal agencies, such as the Natural Resources Conservation Service, to restore habitat and prevent further declines.

Researchers are also studying reproductive potential, daily and seasonal movements, and habitat use, as well as identifying hibernation areas by tracking animals fitted with radio transmitters. Since the bog turtle is sensitive to habitat changes that are the result of natural succession, they are also studying how bog turtle populations respond to these changes.

Eastern Hellbender

Scientific Name: *Cryptobranchus alleganiensis*

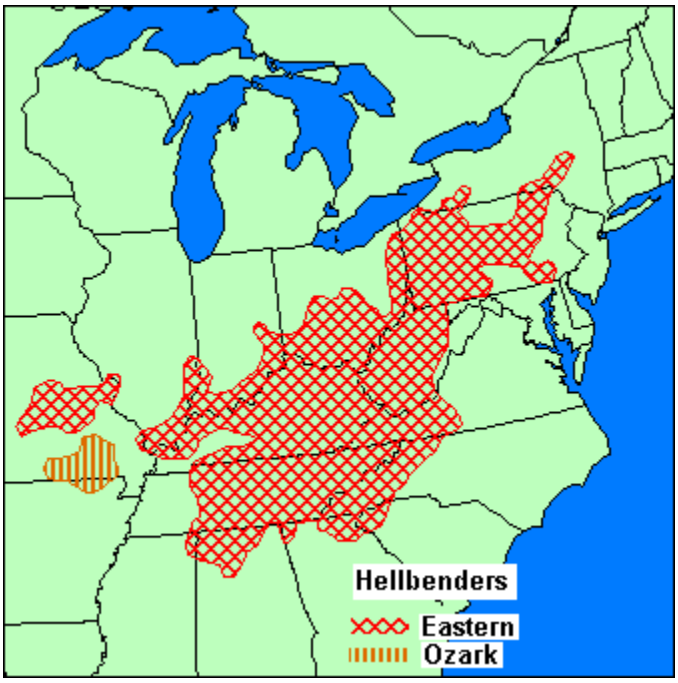
New York Status: Special Concern
Federal Status: Not Listed

Description
Inhabiting only two of New York State's river drainages, the eastern hellbender is an intriguing and bizarre animal and hails as the Americas' largest aquatic salamander. Sexually mature adult hellbenders range in size from 12-29 inches and vary in color from grayish to olive brown and occasionally entirely black. Individuals usually sport dark mottling over the back and upper sides. Several loose flaps of thick, wrinkled skin, which serve a respiratory function, run laterally along either side of the animal. These salamanders are perfectly adapted to their swift flowing stream habitats with their flattened head and body, short stout legs, long rudderlike tail, and very small beady eyes.

Life History
Hellbenders are aquatic organisms throughout their life and remain active year-round. These salamanders generally spend the daylight hours in a natural or self-excavated den beneath large slabs of rock or other shelter-providing objects (logs and boards) on the bottom of streams or rivers. Hellbenders become active after dark, leaving shelter to forage, feeding primarily on crayfish, fish, frogs and a variety of invertebrates. Courtship and breeding begin in late summer. Sexually mature salamanders migrate to and congregate within certain areas to breed. Hellbenders are more conspicuous at this time of the year and some diurnal activity may be observed on overcast days. Males excavate a large nest chamber beneath a rock in preparation for breeding. Gravid females are either attracted to or corralled into the nest sites by the males. Egg laying is initiated about the first week in September. Females simultaneously deposit two long strings of eggs in a softball-sized yellowish mass onto the nest bed. The eggs are 5-7 mm in diameter and number between 150-400 per egg mass. Eggs are fertilized externally as they are being deposited. The breeding pair slowly sways within the nest cavity during fertilization, thereby ensuring a thorough mixing of seminal fluid and eggs. Males then drive out the spent females and remain within the nest cavity to brood and safeguard the eggs until they hatch 68-75 days later in November. The larvae at hatching are approximately 1-1 1/4 inches in length and retain a large yolk sac. Very little is known about larval habits and survivorship, as very few are encountered in the field. It is likely that they either suffer high mortality (falling prey to fish and other predators) during the first years of life, or that they are utilizing some part of the aquatic habitat that makes them difficult to locate and document. Males and females become sexually mature in approximately 5-7 years and can live up to 30 years of age.

Distribution and Habitat
The eastern hellbender's North American range extends from southwestern and southcentral New York, west to southern Illinois, and south to extreme northeastern Mississippi and the northern parts of Alabama and Georgia. A disjunct population occurs in east-central Missouri. A subspecies, the Ozark hellbender (*Cryptobranchus a. bishopii*), exists as an isolated population in southeastern Missouri and

adjacent Arkansas. In New York, the hellbender is found solely in the Susquehanna and Allegheny River drainages, including their associated tributaries. Hellbenders prefer swift running, well oxygenated, unpolluted streams and rivers. An important physical characteristic of these habitats is the presence of riffle areas and abundant large flat rocks, logs or boards which are used for cover and nesting sites.



Status

The hellbender was listed as a special concern species of New York State in 1983. It is listed as Endangered in Maryland, Ohio, Illinois and Indiana and is threatened in Alabama. There is a lack of basic life history and distribution information on these animals. Insufficient historic data on population densities has contributed to a shortage of knowledge on long-term population trends. Available evidence does suggest that numbers of these salamanders have declined and there is little evidence of successful reproduction recently. Among the explanations that have been suggested to account for this apparent decline are pollution of the aquatic habitat, damming of rivers and streams, which eliminates critical riffle areas and lowers the dissolved oxygen content, and the siltation of streams and rivers resulting from agricultural practices and construction work (e.g. bridges and roadwork). An additional problem is the unintentional or intentional and senseless killing by fishermen who accidentally catch hellbenders and erroneously fear that they are venomous.

Management and Research Needs

Continued surveys and long-term monitoring of populations within the Allegheny and Susquehanna River drainages are essential for developing a recovery plan for this species. Of particular importance is an investigation of larval and juvenile habits, survivorship, and habitat use to provide insight into the hellbender's life cycle. Anglers fishing in hellbender habitat should be educated to understand that these salamanders are not dangerous animals nor do they deplete game fish populations. Captive breeding programs coupled with habitat cleanup and reestablishment of riffle areas and adequate stream flow may be warranted.

A radio telemetry study was completed in the Susquehanna River drainage basin. All animals captured were estimated to be 25 years of age or greater, indicating an ageing population with little or no successful reproduction. Hellbenders demonstrated an ability to home after being displaced more than a half mile. They also used a variety of microhabitats including large cover rocks, sunken logs, undercut banks and underwater talus piles for shelter and foraging. Over winter sites included deep water pools and fast flowing riffles that remain open year-round.

Eastern Massasauga

Scientific Name: *Sistrurus catenatus*

New York Status: **Endangered**
Federal Status: **Threatened**

Description
The massasauga rattlesnake is the smallest of the three venomous snakes found in New York State, the other two being the timber rattlesnake (*Crotalus horridus*) and the copperhead (*Agkistrodon contortrix*). Derived from the Chippewa language, "massasauga" translates to "great river-mouth" and probably refers to the snake's preference for wet habitats, including riverine bottomlands. The adult massasauga, also known as the "swamp rattler," is a stout-bodied snake with a broad head. It measures 18-40 inches in length. Average length is 27.5 inches. The body is distinctively marked with a row of large black or dark brown hourglass-shaped markings along the back and three rows of smaller dark spots on each side. The background coloration is gray or brownish-gray. A dark bar with a lighter border extends from the eye to the rear of the jaw. Some adults, however, are all black. This rattlesnake can also be identified by the nine large scales on the crown of the head, similar to most non-venomous snakes. The timber rattlesnake's head is covered with numerous small scales.

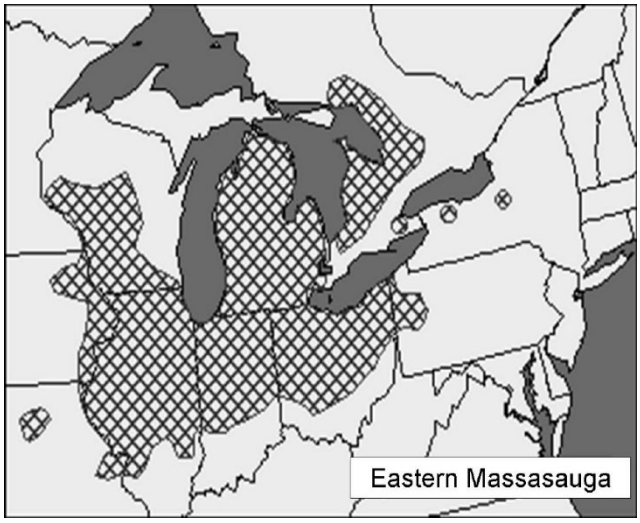
A rattlesnake's "rattle" is at the end of its tail. A unique structure, it is formed from loosely attached, hard, horny segments. A new segment is added each time the snake sheds. When the tail is vibrated, a distinct buzzing sound is produced, characteristic of a disturbed rattlesnake.

Life History
The breeding season generally takes place during May or June, but mating can occur almost anytime from late April until September. Young are born from mid-August to September. A litter of 3-19 snakes (typically 7-10), each measuring 6.5-9.5 inches in length, are produced every 2-3 years. Massasaugas give birth to live young; they do not lay eggs. The massasauga reaches sexual maturity in 3-4 years and may live for about 14 years.

In New York, massasaugas hibernate from late October through late April in low, wet areas, often under sphagnum hummocks. They do not hibernate in communal dens as do the other venomous species in New York. During the summer months, individuals may disperse into nearby woods and fields in search of prey. Although normally active during the daylight hours, massasaugas may resort to evening and nighttime activity to escape the mid-summer heat. The massasauga feeds primarily on small rodents, but may also take a variety of small animals including other snake species, shrews, and an occasional frog or nesting bird.

Distribution and Habitat
Massasauga rattlesnakes range from central New York and southern Ontario west to the prairies of Iowa and Missouri. The eastern massasauga is strongly associated with wetlands across most of its range. Wet prairie is the preferred habitat in the west, bogs and swamps in the east. The northern populations in Ontario, Canada, around Georgian Bay are found in rock outcrop areas that are more similar to the

habitat where we find timber rattlesnakes. Massasaugas frequent other wet, lowland habitats, including marshes and floodplains. Locations that provide open sunny areas with elevated hummocks for basking as well as shaded areas for retreat are ideal. The hummocks are also used as a place for bearing young and, most importantly, for hibernation during winter months. In the summer, the massasauga often moves to drier, upland areas.



Throughout most of its range, the distribution is decidedly disjunct, with many miles separating populations. Currently, there are only two known populations remaining in New York, both of which occur in boggy, forested wetlands with "open rooms" of low vegetation.

Status

Post-glacial changes affecting habitat conditions worked against the massasauga, eliminating the preferred prairie habitats in the eastern half of the range. Loss of habitat to development and agriculture, unregulated hunting, and snake collecting have all contributed to the decline of this species. They are also killed because people fear snakes in general and mistakenly perceive them to be a threat. Naturally occurring succession plays an important role as well, continually reducing the amount and quality of suitable habitat left. The two remaining sites in New York are safe from development, though natural succession is making them less suitable as time goes by.

Management and Research Needs

Mark/recapture and radio-telemetry studies were initiated in the early 1980s to determine the status of this species in New York State. Experimental habitat management has also been Carried out. Studies have been conducted in a continuing effort to determine the size and habitat requirements of New York's two populations. Reproductive success is also being investigated. Succession has been identified as the major factor negatively affecting the massasauga. Brush cutting, prescribed burning and herbicide use are being studied as methods to improve the habitat. Captive rearing of young for release back into the wild is another possible means of enhancing populations.

Eastern Mud Turtle

Scientific Name: *Kinosternon subrubrum*

New York Status: Endangered
Federal Status: Not Listed

Description

The mud turtle is a small, nondescript reptile, measuring 3-4 inches (7.5-10 cm). The carapace (upper shell) is olive to dark brown to almost black, patternless, smooth and keelless. It has only 11 marginal scutes (plates) rather than the 12 found on most turtles. The plastron (lower shell) is yellow to brown, double-hinged, with 11 plates. Males have a well-developed, blunt spine at the tip of the tail and rough scaly patches on the inside of the hind legs.

Life History

Most of the life history information is based on studies conducted at the southern end of the range. Breeding occurs soon after the turtles leave hibernation, which in New York occurs from late April to May. In June, the female digs a 3–5-inch cavity in vegetative debris or in sandy loam soil, where she deposits 2-6 eggs. In the south, three clutches are typically laid each year, but in New York, one clutch is most likely. The eggs incubate for an average of 76 days, but may overwinter in the nest. Muskrat and beaver lodges are occasionally used as nest sites. Females reportedly reach sexual maturity in 5-8 years; males require only 4-7 years. In New York, though, sexual maturity may take 8-11 years.

Distribution and Habitat

The range of this species covers Long Island, south to southern Florida, west to central Texas, and north up the Mississippi Valley to southern Illinois and southwestern Indiana. An isolated population occurs in northwestern Indiana. In New York, there are only five populations remaining. Within their range, mud turtles are semi-aquatic, though they often wander away from water in mid-summer. They can be found in fresh or brackish water, including marshes, small ponds, wet ditches and fields, and offshore islands. They prefer shallow, soft-bottomed, slow-moving water with abundant vegetation. Individuals can be seen prowling pond bottoms during warmer months. If the habitat dries up, they may move over land to another body of water, or burrow into the mud and aestivate (pass the summer in a state of stupor). In New York, mud turtles hibernate from September to April or May. Of all turtle species in New York, the mud turtle apparently has the shortest activity period. Burrows, 1 to 3 feet deep in mud, sand or dry leaves at marsh or field edges, below the frost line, are used for overwintering. Mud turtles migrate 200-400 meters from their pond to nest.

Status

The mud turtle is the rarest species of turtle in New York. Mud turtles are seen crossing roads, most likely in search of nest sites or

water. Turtles killed by passing cars are a very significant loss to populations. Draining wetlands for urban and industrial development has impacted populations, reducing the amount of suitable habitat. Upland nesting and hibernation sites have also been impacted by land clearing, development and fragmentation from road construction. Over collecting for the illegal pet trade exploits adults necessary for sustaining populations.

Management and Research Needs

Additional effort is needed to survey for mud turtles in potential habitat. Studies to identify upland habitat requirements have begun and need to be continued. At this time, efforts aimed at protecting mud turtles should concentrate on the acquisition and management of habitat where populations are still known to occur. Educating the public regarding the illegal pet trade and enhancing their awareness of statutory protection should be encouraged. Recommended habitat management activities include 1) elimination of barriers that hinder migration between ponds and nest or hibernation sites, 2) placement of "turtle crossing" signs to warn motorists of the turtle's presence in key areas, and 3) maintenance of open areas for nesting.

Eastern Tiger Salamander

Scientific Name: *Ambystoma tigrinum*

New York Status: **Endangered**
Federal Status: Not Listed

Description

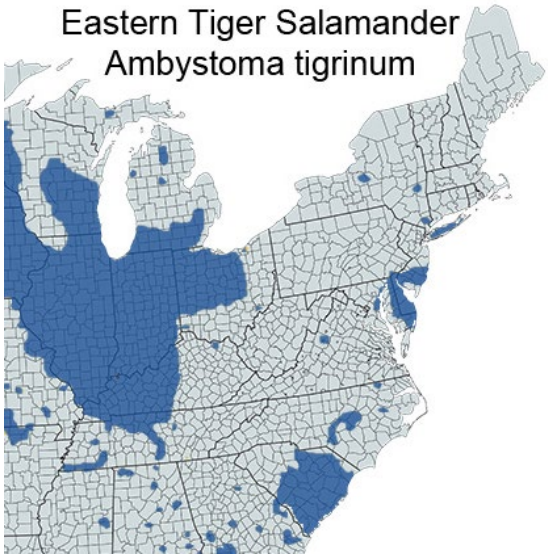
The tiger salamander is one of the largest terrestrial salamanders in the United States. The biggest specimen recorded was 13 inches long. The average size ranges between seven and eight inches. It is stocky with sturdy limbs and a long tail. The body color is dark brown, almost black, and irregularly marked with yellow to olive colored blotches. The only other salamander with which it might be confused is the smaller spotted salamander (*Ambystoma maculatum*). The spotted, however, has two rows of regular, yellow-to-orange spots running parallel down its back, as distinct from the irregularly distributed spots of the tiger salamander.

Life History

The tiger salamander spends most of its life underground, as do other members of the group referred to as "mole salamanders." On Long Island, it emerges from its burrow in February or March to migrate at night, usually during rain, to the breeding ponds. After a brief courtship which consists of the male pushing his nose against the female's body, eggs are laid in a mass and attached to twigs and weed stems under water. The female may deposit one or more egg masses containing 25-50 eggs per mass. Hatching occurs after approximately four weeks and the larvae remain in the ponds until late July or early August. After this time, the larvae transform into air breathing sub-adults measuring between four and five inches, and leave the ponds at night during wet weather to begin their underground existence. It takes four to five years for the salamanders to reach sexual maturity and they may live for 12-15 years. The tiger salamander eats invertebrates and small vertebrates.

Distribution and Habitat

The eastern tiger salamander ranges along the east coast from southern New York to northern Florida, west from Ohio to Minnesota and southward through eastern Texas to the Gulf. Historically, Albany is cited as being the northernmost point of this species' range along the east coast. The only two specimens recorded (1835, 1836) from this area may in fact have been brought into the area accidentally via the Erie canal. The tiger salamander inhabits sandy pine barren areas with temporary or permanent pools for breeding. In New York, the tiger salamander is found only on Long Island with most of the known breeding colonies restricted to the central Pine Barrens. In the absence of natural pools or ponds, it may breed in man-made depressions filled with water.



Status

Loss of habitat has been responsible for the extirpation of this species from heavily developed western Long Island. Recent surveys have identified about 90 breeding ponds in New York, confined to eastern Nassau County and Suffolk County. Its status at these remaining sites is tenuous because of pesticides and other contaminants, threat of development, and other land use patterns.

Disturbance at ponds, introduction of predatory fish into permanent pools and expansion of bullfrog populations threaten annual reproduction. Recreational activities, especially off-road vehicles further impact breeding sites and year-round habitat. Increased construction of roads has also bisected the habitat, jeopardizing migrating adults.

Management and Research Needs

Intensive surveys were conducted to determine the distribution of this species in New York. Breeding ponds have been designated as Class I wetlands. A five-year program to reintroduce tiger salamanders to an unoccupied historic site in Nassau County by transplanting egg masses was initiated in 1987 but has had limited success. A radio telemetry study, funded by Return A Gift to Wildlife was started in 1990 to study the biology and upland habitat requirements of this species is needed in order to develop appropriate management strategies.

The construction of salamander tunnels under roadways separating upland habitat from breeding ponds is being planned.

Northern Cricket Frog

Scientific Name: *Acris crepitans*

New York Status: Endangered
Federal Status: Not Listed

Recovery Plan

The northern cricket frog is a historic resident of New York State and represents an important amphibian component of wetland ecosystems. Conservation of the northern cricket frog and its habitat is important to preserving New York's biodiversity and unique character. The Recovery Plan for NYS Populations of the Northern Cricket Fog *(Acris crepitans)* aims to improve the frog's geographic diversity and ultimately increase its population.

Description

The northern cricket frog is one of New York State's smallest vertebrates. This frog is an aquatic species, and although it belongs to the tree-frog family, Hylidae, which includes such well-known climbers as the spring peeper (*Pseudacris crucifer*) and gray treefrog (*Hyla versicolor*), it does not climb very much. It is, however, among the most agile of leapers and can jump surprisingly long distances (5-6 feet) for its small size.

Adults average only 1 inch (2.5 cm) in length; the male is usually smaller than the female. Cricket frogs exhibit a myriad of patterns and combinations of black, yellow, orange or red on a base of brown or green. Distinguishing characteristics are small size, dorsal warts, a blunt snout, a dark triangular-shaped spot between the eyes, and a ragged, longitudinal stripe on the thigh. The webbing on the hind foot is extensive, reaching the tip of the first toe and the next to last joint of the longest toe.

This frog was named for its breeding call, which sounds very much like the chirp or trill of a cricket, "gick, gick, gick...," repeated for 20 or more beats. The sound has been likened to two pebbles being clicked together, slowly at first, then picking up in speed.

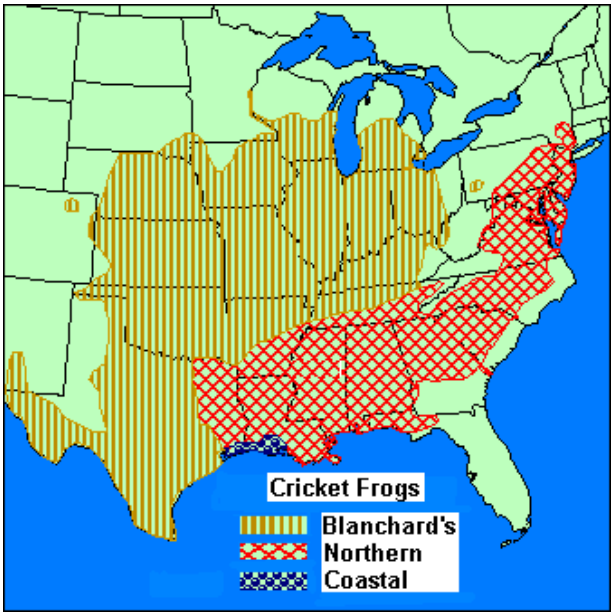
Life History

This frog, which may be reproductively active for 3-10 years, is one of the last frogs in the northern part of its range to come into full chorus in New York. Breeding occurs from June to July. A single female may lay several dozen filmy egg masses on aquatic vegetation, each containing 5-10 eggs. In about 4 days, tadpoles with black-tipped tails emerge. They develop relatively slowly, feeding mostly on algae and zooplankton, until transforming into sub-adults by mid-September, often at a length as small as 5/8 inch (16 mm). It is generally believed that the cricket frog spends the coldest winter months burrowed in muck or peat below the frost line, although there is evidence in New York that some individuals may overwinter in upland sites.

Distribution and Habitat

The cricket frog ranges throughout the central plains states from western Texas north to South Dakota and from the Florida panhandle north to southeastern New York, except for the coastal plain from Virginia to Florida and the northern Appalachians. In the east, populations reach their northern limit in the Hudson Highlands -

Shawangunk region of New York. As late as the 1920's, it also occurred commonly on Long Island and Staten Island. Recently, a population of these frogs was discovered on the east side of the Hudson River in Dutchess County.



Within its range, the cricket frog inhabits sunny, shallow ponds with abundant vegetation in the water or on the shores. Slow moving, algae-filled water courses with sunny banks are the preferred habitat. Deep water is generally avoided. Males are typically found calling from floating mats of vegetation and organic debris.

Status

By the 1940s, most historically known populations in New York State had been extirpated. This diminutive frog is now only locally present in a few scattered populations which still occur in the Hudson Highlands and Shawangunk area. The decline of the cricket frog apparently began in the 1800s with the clearing, drainage and alteration of thousands of acres of wetland habitat. Aerial spraying of DDT and other chlorinated hydrocarbon pesticides in the 1950s and 1960s is thought to have contributed to the decline of most remaining populations. Other factors that may have contributed to the cricket frog's decline are contamination of ponds by road salt and the introduction of predatory fish, which feed on their eggs.

Management and Research Needs

A survey to locate habitats that still contain cricket frogs and to identify biological and/or ecological factors affecting this species was recently conducted. Several locations in Orange County had populations of cricket frogs in the late 1980s which became extirpated in the early 1990s.

A habitat model has been developed that should help researchers locate additional populations. Additional effort is needed to document reasons for the decline and to measure the extent of upland habitat required and the role of dispersal in maintaining satellite populations of this species.

Queen Snake

Scientific Name: *Regina septemvittata*

New York Status: Endangered
Federal Status: Not Listed

Description

The Queen snake is a relatively small, slender species, ranging in size from 15 - 24 inches, with a maximum reported size of 37 inches total length. The scales are keeled, or have a lengthwise ridge along the top of each scale, giving the species an overall rough texture. Their color may vary from tan or olive to dark brown or black, with a ventral surface or belly color of yellow to cream, which extends onto the lower jaw, and down the length of the body on the top of the second scale row. Two broad, brown stripes running the length of the body cover the sutures of the first scale row and the outer margins of the ventral scales. There are also two centerline stripes running the length of the belly that may become intertwined or obscured towards the tail. Three dark dorsal stripes may be visible on adults in some localities, and on juveniles that may fade as the animal reaches maturity.

Life History

There is little known about the biology of queen snakes in the northeast, however, they appear to be most active diurnally, or during the day, and may exhibit nocturnal activity during the heat of the summer months. This species emerges from their overwintering retreats in early April and remain active until October. They will use a variety of structures for overwintering, including muskrat lodges, crayfish burrows, and other underground structures such as earthen or stone dams and possibly beaver dams. Mating occurs in spring, likely during the month of May, and from late July through early September queen snakes can give birth to 10-14 live young. A mere 7-9 inches at birth, growth of young has been shown to increase by as much as 80% in the first year, and within two years' time either sex is reproductively mature, although they likely do not breed until their third year.

The foraging ecology of the queen snake is of a rather selective nature, with freshly molted crayfish being nearly the sole item consumed. Surveys of the stomach contents from snakes originating in western New York show that 99% of the contents are newly molted crayfish, with a very small percentage being freshly molted invertebrates. This illustrates the importance of a healthy population of crayfish in areas occupied by queen snakes.

Distribution and Habitat

Although this species of snake is widely distributed throughout the eastern United States and may be common within certain localities, it can be considered one of the rarest snakes encountered in New York State. With only a handful of records attesting to its occurrence in the western reaches of the state, it is most frequently encountered in riparian corridors, along streams with ample shrubby floodplain and adjacent wetland habitats. Such streams are typically shallow, warm and have a rocky bottom. Cover can include overhanging vegetation, aquatic plants and streamside rocks. Queen snakes may be found basking in shrubby vegetation over water amongst streamside debris and aquatic vegetation. If similar conditions exist, queen snakes may also be found along the edges of ponds, ditches and canals.

Status

Although queen snakes are a state endangered species, New York State is the edge of their overall distribution in the United States, and this species is considered common in other parts of their range. Much of their occurrence in New York may still be undocumented. Agricultural practices may have a negative effect on their populations, as runoff is a potential detriment to the crayfish they are so closely associated with. Additionally, there is a negative association between brush clearing along aquatic habitats and their overall habitat use.

Management and Research Needs

Management requirements of queen snakes have received little attention in New York, likely due to this species limited distribution. Fencing along pastured streams deemed appropriate for queen snake habitat has been demonstrated to be effective in maintaining ample shrubby vegetation and stable water temperatures. The effects of siltation from agricultural or urban sources combined with various forms of pollution are detrimental to this species, as it directly affects the crayfish populations on which this species of snake so critically depends.

Additional research should start with comprehensive surveys to determine the extent of queen snake distribution in New York, with an emphasis on threats to known, viable populations. Another facet of queen snake conservation that deserves further study is the potential impact of the invasion of exotic, competitive species of crayfish which might replace native crayfish and be unpalatable to queen snakes. This has yet to be determined.

Sea Turtles

As water temperatures begin to rise in late spring and early summer, the waters of New York become more suitable for sea turtles. During these warm months, four species of sea turtles can be found: green, Kemp's ridley, leatherback and loggerhead sea turtles. They remain local to New York from approximately May through November and are particularly fond of the warmer waters in coastal bays and the Long Island Sound. By the end of November, they begin their migration south to warmer nesting waters.

Green Sea Turtle

Scientific Name: *Chelonia mydas*

New York Status: Threatened
Federal Status: 3 of the 11 distinct populations are endangered; all other populations are threatened.

- **Diet:** Algae and sea grass. This makes their cartilage and fat green, giving them their name.
- **Size & Lifespan**: Grow to 3 feet long and 350 pounds. On average they live for 60-70 years.

Green sea turtles are a wide-ranging species that, in the U.S Atlantic waters, can be found from Massachusetts to Texas. During the warmer months of the year, juveniles and occasionally adults are sighted in sea grass beds off the eastern side of Long Island and free-swimming in pelagic environments. They have also been sighted foraging in the Peconic Estuary. U.S green sea turtles nest from June through September in the southeastern United States.

Loggerhead Sea Turtle

Scientific Name: *Caretta caretta*

Status in New York: Threatened
Federal Status: Threatened

- **Diet:** Shellfish (horseshoe crabs, spider crabs, clams, mussels
- **Size & Lifespan:** Grow to 3 feet long and up about 250 pounds. They live between 70-80 years old.

Loggerhead sea turtles are the most frequently seen sea turtle in New York waters, though they inhabit different regions during different parts of their lives. Juveniles are frequently found in nearshore bays and Long Island Sound, while other age groups, including adults, are found up to 40+ miles off the southern Long Island coast. As juveniles age into adults, their habitat preferences shift to more shallow water habitats with open ocean access, such as the Florida Bay.

Leatherback Sea Turtle

Scientific Name: *Dermochelys coriacea*

Status in New York: Endangered
Federal Status: Endangered

- **Diet:** Primarily jellyfish. Their throats are lined with backward facing spines to help retain their food.
- **Size & Lifespan:** Grow to 6 feet long and up to 2,000 pounds. Their lifespan is currently unknown.

The leatherback sea turtle is a unique and phenomenal species. They are one of the largest reptiles on Earth. The leatherback sea turtle gets its name from its large, barrel-shaped body covered with leathery skin, as opposed to the hard, bony shells of other sea turtles. Leatherbacks are the most pelagic sea turtle and, due to their flexible shell.

Leatherbacks can regulate their body temperature and are able to travel farther north, giving them the largest range of any reptile species. Juveniles and adults forage along the east coast of the US and Canada, and their distributions and movements are believed to correlate with seasonally abundant prey. Leatherbacks are often seen on the south shore of Long Island, in the NY Bight region, and within the Long Island Sound.

Kemp's Ridley Sea Turtle

Scientific Name: *Lepidochelys kempii*

Status in New York: Endangered
Federal Status: Endangered

- **Diet:** Powerful jaws help them crush crabs, clams, mussels, and shrimp. Also eat fish, sea urchins, and jellyfish.
- **Size & Lifespan:** Grow to 2 feet long and up to 100 pounds. Live at least 30 years.

The Kemp's ridley sea turtle is the second most commonly seen sea turtle in New York. They're the smallest of the sea turtles and are identifiable by their heart-shaped carapace. Juveniles, between the ages of 2 and 5, can be found within shallow-benthic environments of Long Island Sound, Block Island Sound, Gardiner's Bay and Peconic Estuary, and less frequently in Jamaica Bay, lower NY Harbor and Great South Bay.

Threats

There are many significant and increasing threats to sea turtles throughout their range. **Some common threats of concern in New York are:**

Vessel Strikes and Fishing Gear

When sea turtles are at the surface to breathe, or while feeding or mating in shallow areas, they can be injured or even killed from blunt-force trauma by moving vessels. **Vessel strikes** are likely to occur more often than reported, so it is important for vessel operators and crew to keep an eye out for sea turtles and other marine animals to avoid collisions. Sea turtles can become trapped and drown in **fishing gear** that is submerged underwater, or become entangled in ropes resulting in serious injuries that may affect their ability to feed, swim and reproduce. The Atlantic Marine Conservation Society staff is trained in sea turtle disentanglement.

Marine Pollution

Marine debris is known to be mistaken for prey and consumed by sea turtles. Ingestion of items like plastic bags can cause blockages, starvation, and other digestive injuries that may eventually lead to death.

Coastal development can degrade or destroy important sea turtle habitat such as eelgrass beds. In addition to increased cold-stun risk, climate change is altering physical ocean properties like salinity and oxygen levels, which can cause shifts in the range, abundance, and quality of prey. Perhaps most importantly, changes in ocean currents could affect sea turtle migration and the survival of oceanic-stage juveniles, of which very little information is known.

Climate Change

The Northeast US is experiencing more rapid change in the form of rising water temperature than any other place on earth. As a result of this climate change impact, warmer water temperatures cause sea turtles to remain in the area longer than usual. When there is a sudden drop in water temperature before sea turtles migrate out of the area, they can fall victim to **cold-stunning,** a hypothermic condition that results in a lethargic state. Unless the turtles wash ashore and are rescued by stranding groups, cold-stunning often results in mortality.

Sea Turtle Stranding Response and Research

DEC works closely with partners from federal agencies and non-profit organizations on the monitoring and conservation of sea turtles. With authorization by NOAA Fisheries, the NY Marine Rescue Center (NYMRC) and the Atlantic Marine Conservation Society (AMSEAS) work together to respond to stranded sea turtles. They conduct these activities under contract with DEC and authorization by NOAA Fisheries, and help to provide entanglement and stranding data to DEC.

- **Acoustic and satellite tags** are used by NYMRC to track the behavior and movement patterns of sea turtles being released after rehabilitation. Tracking data derived from these tags allows NYMRC and DEC to better understand habitat use by sea turtles in New York waters and to determine if the animal was successfully rehabilitated.
- **Sea turtle sightings** are also recorded during the New York Bight Whale Monitoring Program aerial survey.

What To Do If You Encounter a Stranded Sea Turtle

Call the NYS 24-Hour Stranding Hotline at (631) 369-9829. Sea turtles that come onshore in New York are cold-stunned and need medical attention. Immediately call the Stranding Hotline and relay as much information as possible. **Do not put the turtle back in the water.** Please do NOT touch the animal, put the animal back in the water, or remove the animal from the beach. These are federally protected animals and are only to be handled by authorized personnel. Cold-stunned Sea turtles are lethargic; they can easily drown if placed back in the water. Any further sudden changes in temperature can lead to death. **Note the location of the sea turtle and if possible, mark the location.** The rescue team needs a detailed explanation of where the animal is located. If possible, write down the coordinates and/or mark the turtle's location with something, such as a stick or driftwood, that will be easy for the team to find.

Spotted Turtle

Scientific Name: *Clemmys guttata*

New York Status: Special Concern
Federal Status: Not Listed

Description

The "polka-dot" turtle has yellow spots on the head, neck, legs, and upper shell or carapace. Background coloration is black. The number and arrangement of spots is extremely variable and changes with age. Hatchling turtles usually have one spot on each plate, while older individuals are well sprinkled with 100 or more. Occasionally, individuals without any spots on the shells may be found, but they still have yellow and orange markings on the face. The lower shell or plastron is yellow and black in color. Male spotted turtles have dark pigment on the hard portions of both jaws; females have yellowish coloration there. Spotted turtles measure 3.5-5.0 inches (9-12.7 cm) in length.

Life History

Spotted turtles are active from March to October and may be seen singly or in groups basking in the sun. The breeding season extends from March to May. During this time, males are in an active, almost frantic pursuit of females; several males may be seen simultaneously chasing one female. When the female is ready, she lets one male catch her and allows him to climb onto her back. He grasps her shell with all four feet, positions his tail next to hers, and mates with her.

In May, at the end of breeding season, females leave the breeding pools in search of nesting areas. They may wander a good distance and, unfortunately, many are killed crossing roadways. An open site, such as a meadow, field, or the edge of a road, is most often chosen for nesting. Digging typically begins in the evening. The female digs the nest, measuring 2 inches deep and 2 inches in diameter, with her hind legs and feet. She rests when the cavity is complete, then begins to lay the eggs. Only 3-4 eggs are laid. The female then covers the eggs, as most turtles do, but goes one step further in disguising the nest. She smooths the dirt by dragging her body over the ground. In about 11 weeks, the 1-inch hatchlings emerge and head for wet, grassy areas in search of food and shelter. Sexual maturity is reached in 8-10 years and most individuals live for at least 25 years. Some members of this species probably reach 50.

Diet consists of snails, worms, slugs, and spiders. Daylight hours are spent eating and basking in the sun. In the evening, spotted turtles submerge and spend the night on the pond bottom.

Distribution and Habitat

The range extends from southern Maine and extreme southern Ontario west to Illinois and south to northern Florida in the east. Isolated colonies can be found in southern Quebec, southern Ontario, central Illinois, central Georgia and northcentral Florida. Spotted turtles spend their lives in marshy meadows, bogs, swamps, ponds, ditches, or other small bodies of still water.

Status

Loss of habitat has been largely responsible for the major decline of the spotted turtle throughout its entire New York range. In the early 1900's, it was reported to be the most common turtle in the vicinity of New York City. This turtle is very sensitive to pollution and toxicants and disappears rapidly with declining water quality. To further stress the species, pet collecting is currently responsible for the annual loss of significant numbers. Much concern has been expressed for this small reptile as local populations disappear. It is listed as endangered in Illinois and Ohio threatened in Maine and Vermont, special concern in Indiana, and protected in Massachusetts.

Management and Research Needs

More effort should be expended to document the statewide distribution and population trends of this species. Public education is necessary to inform people that populations are declining and efforts should be made to curb collecting. Habitat and water quality should be monitored in ponds and other water bodies with known populations of spotted turtles. Additional studies of life history and habitat use are needed.

Timber Rattlesnake

Scientific Name: *Crotalus horridus*

New York Status: Threatened
Federal Status: Not Listed

Description

Measuring from 3 to 4 feet or more in length, the timber rattlesnake is the largest venomous snake in New York. The record length in New York is 60 inches. Despite their size, cryptic patterns and coloration allow them to easily conceal themselves by blending in with their surroundings.

The coloration of the species is incredibly variable but can be broken down into two distinct color phases, light and dark. This designation is determined by the color of the head.
This species has coloration that varies considerably between individuals and populations. Dark crossbands or chevrons overlay the base color and can range from yellows and shades of brown to black. Timber rattlesnakes also have a dorsal strip, which is often chestnut but can vary between tan, light orange, and yellow. In dark individuals, this is often broken up by the chevrons. Snakes will have the same pattern and coloration for the duration of their lives. The pattern generally fades into black towards the tail, which results in the antiquated name "old velvet tail".

A member of the pit-viper family, the timber rattlesnake has paired temperature-sensitive openings, or loreal pits situated below and in between the eye and nostril. The purpose of this sensory organ is to detect prey and potential predators. Timber rattlesnake have a broad, triangular head with many small scales on the crown, bordered by a few large scales over the eyes, the loreal pit and rostrum (nose). Scales have a center ridge or keel, giving this rattlesnake a somewhat rough-skinned appearance.
The key feature distinctive to rattlesnakes-providing their namesake-is the rattle, which is made of loosely attached segments made of keratin. A new segment is added to the base of the rattle each time the snake sheds. When vibrated, the segments make rapid contact with each other, resulting in the buzzing sound characteristic of a disturbed rattlesnake.

Life History

Timber rattlesnake have an active season that runs from late April until mid-October. In Northern New York, emergence is often delayed until mid-May. Upon emerging from the den, they are rather lethargic and spend most of their time under cover or basking under partly cloudy to sunny skies.

The species is considered migratory, meaning they originate from a central location and move out across the landscape. Gravid (pregnant) females migrate to gestating habitat- open, rocky ledges where temperatures are higher for embryo development. Overall, they generally migrate from 1.3 to 2.5 miles from their den each summer. Males move the greatest distances through their active season-up to 5 miles.

Mating season begins in the early summer and continues into early autumn. Males are especially active during this time and can be found using basking and gestating habitat and looking for receptive females. After mating, females store sperm through the winter until implantation of the embryos occurs during the following spring as temperatures increase.

Timber rattlesnakes are viviparous, meaning they give birth to live young. Following a gestation period of 4-5 months, females give birth to 4-14 (average 9) young every three to five years between late August to mid-September. Neonates (newborn) timber rattlesnakes are about 10-14 inches long at birth. Each neonate is born encased in a transparent membrane, or yolk sac, which is shed within a few minutes.

The young are miniature versions of adults, complete with hollow fangs, venom and a tiny rattle segment called a "pre-button". Shortly after birth, they shed their skin and drop their pre-button to reveal the button, or tip of a rattlesnake's rattle. They remain in the area with their mother for 1-2 weeks until they shed and disperse. In the fall the young follow their parent's scent trail back to the den for the winter.

Timber rattlesnakes are long-lived and reproduce at a low rate, making for slow population growth. Males may become sexually mature in as few as 5 years, whereas females take longer to reach sexual maturity, between 5 and 11 years. Juvenile mortality is very high, but once they reach maturity, the average life span may be between 15 and 20 years, with individuals being documented to have lived for more than 50 years in the wild.

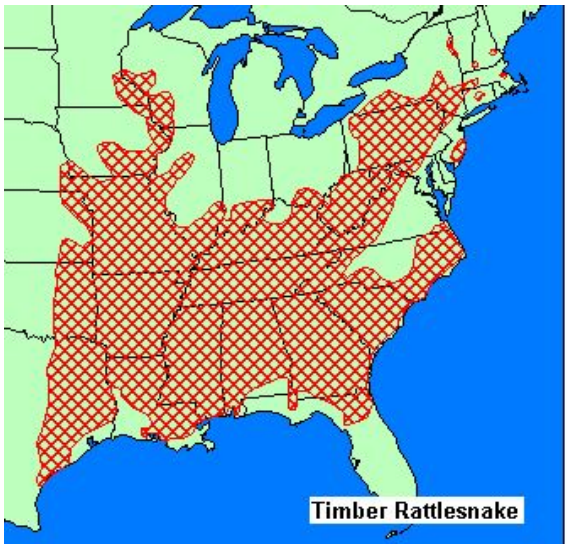
Timber rattlesnakes shed their skin once and sometimes twice a year depending on the age of the animal and latitude of the population. A new segment is added to the base of the rattle each time shedding occurs. Snakes with a complete rattle are rarely seen-segments regularly break off during the year.
Rattlesnakes primarily fed on:

- squirrels
- chipmunks
- voles
- mice
- small birds
- amphibians

The venom, which is used primarily to immobilize prey, can be fatal to humans if the bite is untreated. However, in New York there have been no records of human deaths attributed to rattlesnakes in the wild during the last several decades. Less than 15% of the snake bites reported over a ten-year period were actually from a venomous snake. **Contrary to popular opinion, a rattlesnake will not pursue or attack a person unless threatened or provoked**. Such instances are likely a result of the observer being between the snake and it's point of cover.

Distribution and Habitat

The range of the timber rattlesnake extends from southern New Hampshire south through the Appalachian Mountains to northern Florida and west to southeastern Texas and southeastern Nebraska and Wisconsin. Populations are isolated in the Northeast. Historically, the species likely occurred in most mountainous and hilly areas of NYS, except in the higher elevations of the Adirondacks, Catskills, and Tug Hill region. They are now found in smaller numbers throughout the state with isolated populations in southeastern New York, the Southern Tier, and in the edges of the eastern Catskills and Adirondacks.



Timber rattlesnakes are generally found in deciduous hardwood forests in rugged terrain. They can also be found in lowlands, wetlands, or residential areas near dens. Crevices in rocky faces or talus with westerly to easterly southern exposures are used for denning or overwintering. Open areas with rocky surfaces are used for basking, shedding, and birthing. The surrounding forests provide foraging habitat.

Status
While abundant in some areas, the timber rattlesnake population has severely declined in numbers and distribution (about 50-75%) in New York State due to unregulated collection, indiscriminate killing, and habitat destruction. Until outlawed in 1971, there was a bounty in certain counties in Northern New York for the rattles of these snakes. Even in areas without bounties, the rattlesnake was severely persecuted by local residents. In 1983, timber rattlesnakes were designated as a threatened species.

Despite these conservation efforts, their slow population growth is further hindered by:

- development
- road mortality
- illegal collecting
- continual disturbance of habitat by recreational users

Collecting timber rattlesnakes from the wild is now prohibited by law under Environmental Conservation Law 11-0535 and 11-0103(2)(c). However, poachers are still actively supplying the black-market pet trade.

Management and Research Needs
The DEC coordinates survey efforts for many of the remaining populations in New York State. These are designed to:

- verify the current status of known den sites;
- develop baseline estimates of population size;
- determine reproductive success; and
- document any threats to existing habitat.

New denning locations are currently being discovered in areas where the density of overwintering sites is high. Protection and management of habitat is now a primary concern.

Additional survey work is necessary to verify status in many populations. Long-term comparative measurements of rattlesnake populations has only been conducted in a single population in NYS. The recent discovery of Snake Fungal Disease has been noted in several populations of rattlesnake in New York. Further research is necessary to determine the full extent of the impacts of such infections. The impact may be determined by comparing populations of infected versus non-infected snakes.

If you encounter a timber rattlesnake: Do not panic! Keep a safe distance of 6ft or more away. Let them move along on their own. Do not kill or collect the individual. Timber rattlesnakes are not aggressive unless provoked. **If an accidental bite occurs, seek medical attention immediately or call 911.**