Species Status Assessment

Common Name: Central ratsnake **Date Updated:** April 2025

Scientific Name: *Pantherophis alleghaniensis* **Updated By:** C. Macklem, L. Pipino

Class: Reptilia

Family: Colubridae

Species Synopsis:

The central (formerly eastern) ratsnake, *Pantherophis alleghaniensis* (Holbrook 1836), was once known as the black rat snake (*Elaphe o. obsoleta*) until molecular and phylogenetic analyses were found to support a monophyletic group comprising all New World taxa, including *Pantherophis*, from the Old World genus, *Elaphe* (Utiger et al. 2002). Previously considered to be a subspecies of the western ratsnake (*P. obsoletus)*, *P. alleghaniensis* was reclassified following mitochondrial DNA and morphological studies, which determined that *P. obsoletus* should be divided into three distinct species: *P. alleghaniensis* (eastern), *P. obsoletus* (western), and *P. spiloides* (central) with no subspecies designations (Burbrink et al. 2000, Burbrink 2001, Burbrink et al. 2021a). Despite this advancement in understanding, the species nomenclature underwent further revision due to confusion surrounding the type locality of *alleghaniensis*. As noted by Hillis and Wüster (2021), *alleghaniensis* refers to the central clade of ratsnakes, which was incorrectly classified as '*spiloides*' by Burbrink et al. (2021a). Burbrink et al. (2021b) revised the taxonomy, such that *P. alleghaniensis* is the central clade (known as the 'central' ratsnake, found east of the Mississippi to the Atlantic Seaboard Fall Line in Virginia), *P. obsoletus* the western clade (known as the 'western' ratsnake, occurring west of the Mississippi), and *P. quadrivittatus* the eastern clade (known as the 'yellow' ratsnake, found southeast of the Fall Line in Virginia to the Florida Keys). We use this updated nomenclature for the remainder of the report, and provide commentary and figures for both *P. alleghaniensis* and *P. quadrivittatus* when sources don't reflect these updated designations.

According to the most recent assessment of North American ratsnakes, *P. alleghaniensis* is the only ratsnake species that occurs in New York (Burbrink et al. 2021a, Burbrink et al. 2021b). The species is found east of the Mississippi River to the Atlantic Seaboard Fall Line in Virginia and extends north to Wisconsin, Michigan, New York, Vermont, Massachusetts, and the provinces of Ontario and Quebec in Canada (Burbrink et al. 2021a, Burbrink et al. 2021b). However, the taxonomic relationship and hybridization zones of *P. alleghaniensis* and *P. quadrivittatus* may not be fully resolved. Discussions are ongoing as to whether these should be recognized as two distinct species or as a single species, *P. alleghaniensis*, due to the extent of hybridization and genetic admixture (Burbrink et al. 2021b, Hillis 2022). Early studies suggested that both *P. alleghaniensis* and *P. quadrivittatus* might occur in New York, with the Appalachian Mountains as a potential geographic divider (Burbrink et al. 2000, Burbrink 2001). However, more recent analyses assigned southeastern New York samples (south of the Appalachian Mountains) to *P. alleghaniensis* rather than *P. quadrivittatus* or a hybrid, although no samples from northern or western New York were included for comparison (Burbrink et al. 2021a, Burbrink et al. 2021b).

A mitochondrial DNA study of ratsnakes in Canada revealed that the Carolinian population in southern Ontario has mtDNA haplotypes that resemble *P. alleghaniensis*, the Great Lakes/St. Lawrence population in eastern Ontario has either *P. alleghaniensis* or *P. quadrivittatus*-specific haplotypes, and ratsnakes in the hybrid region have variable frequencies of mtDNA haplotypes (Gibbs et al. 2006). These results raise questions about the most recent analysis (Burbrink et al. 2021a, Burbrink et al. 2021b) that suggests only *P. alleghaniensis* occurs in the northeast. The lack of samples from key

regions, including northern and western New York, further complicates the understanding of the phylogenetic relationship of ratsnakes in the northeast. The need for additional sampling from these and other northern populations is evident to clarify the relationships among ratsnakes in New York and neighboring populations.

In New York, ratsnakes are found south of the Tug Hill Plateau and Adirondack Mountains, from Niagara and Erie counties east to Lake George and south through the Hudson Valley (Gibbs et al. 2007). They are largely absent from the Catskill mountains and southwestern New York, and there is a disjunct population from the Rideau Lakes district in eastern Ontario that extends into the New York side of the St. Lawrence River valley in Jefferson and St. Lawrence Counties (Gibbs et al. 2007). The preferred habitat of *P. alleghaniensis* includes areas where open lands and wooded lands intermix; the species thus benefits from agriculture and forestry practices that result in edges and a mosaic of habitats (Gibbs et al. 2007). Hibernation takes place communally in rocky talus, rocky woodland areas, or along ledges, as well as in basements, root cellars, cisterns, and wells (Hulse et al. 2001).

According to NatureServe (2025) the short-term trend for both *P. alleghaniensis* and *P. quadrivittatus* species is likely a decline of <30% to relatively stable. However, NatureServe currently depicts both species' distributions on outdated nomenclature. Using the distributions outlined in Burbrink et al. (2021b), trends for *P. quadrivittatus* appear stable while trends for *P. alleghaniensis* appear to be declining, particularly in the northern part of the species' distribution. Though this snake is somewhat tolerant of habitat modification, it is not tolerant of habitat loss—particularly loss of den sites—and populations at the edge of the range may have declined due to development (Gibbs et al. 2007).

I. Status

a. Current legal protected Status

i. **Federal:** Not Listed **Candidate:** No

ii. **New York:** Not Listed; SGCN

b. Natural Heritage Program

i. **Global:** G4G5

ii. **New York:** S4 **Tracked by NYNHP?:** No

Other Ranks:

-IUCN Red List: Least Concern
-COSEWIC 2018: Great Lakes/St. Lawrence population is Threatened, Carolinian population is Endangered (‘*Pantherophis spiloides’)*
-Northeast Regional SGCN List (2023): Not listed
-NEPARC Regional List (2010): Species of Moderate Concern

Status Discussion:

The ratsnake is listed as Endangered in Massachusetts, Threatened in Vermont, and is a species of Special Concern in Michigan, Wisconsin, and Rhode Island. The status of ratsnake populations in Ontario, Canada, were assessed and the species was listed as Threatened in 1998 and again in 2000 following documented population declines (Prior and Weatherhead 1998, COSEWIC 2000). After separating the two population units in Canada, the Great Lakes/St. Lawrence population was listed as Threatened while the Carolinian population was listed as Endangered under the Species at Risk Act in 2007 (COSEWIC 2007). This listing was reaffirmed in 2018, and a recovery strategy for both populations was published in 2020 (COSEWIC 2018; Environment and Climate Change Canada 2020).

The populations have the same listing status under the Ontario Endangered Species Act, and they are protected under the Fish and Wildlife Conservation Act as a Specially Protected Reptile in Ontario (COSEWIC 2018). The Northeast Partners in Amphibian and Reptile Conservation (NEPARC 2010) list the eastern ratsnake as a species of moderate concern because more than 25% (but less than 50%) of northeastern states list it as a Species of Greatest Conservation Need (SGCN).

II. Abundance and Distribution Trends:

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable	Last 20 years	N4N5	
Northeastern US	Yes	Declining	Declining	Last 20 years	S1S5	No
New York	Yes	Unknown	Unknown	Last 20 years	S4, Not listed	Yes
Connecticut	Yes	Stable	Stable	2005-2015	S4, Not listed	No
Massachusetts	Yes	Declining	Declining	2005-2015	S1, Endangered	Yes
New Jersey	Yes	Stable	Stable	2005-2015	SU, Not listed	No
Pennsylvania	Yes	Stable	Stable	2005-2015	S5, Not listed	No
Vermont	Yes	Declining	Declining	2005-2015	S2, Threatened	Yes
Ontario	Yes	Declining	Declining	Through 2018	S3, Threatened and Endangered	
Quebec	No	N/A	N/A			

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Note that Ontario ratsnake populations are included in the table above, despite the official use of the '*P. spiloides'* nomenclature in relevant publications, as they were published prior to the nomenclature revision to *P. alleghaniensis*. In Ontario, the Great Lakes/St. Lawrence population is listed as Threatened while the Carolinian population is listed as Endangered (COSEWIC 2007, COSEWIC 2018).

Monitoring in New York:

There are currently no regular monitoring activities for the ratsnake in New York. The New York Amphibian and Reptile Atlas Project (Herp Atlas), conducted from 1990-1999, documented the geographic distribution of all species of amphibians and reptiles in the state. The Herp Atlas database also includes pre-1990 records from various sources, such as museum records, researchers' field notes, agency reports, and published literature.

Trends Discussion:

According to NatureServe (2025a, 2025b) the short-term trend for both *P. alleghaniensis* and *P. quadrivittatus* species is likely a decline of <30% to relatively stable. However, NatureServe (2025a, 2025b) currently depicts both species' distributions based on prior nomenclature. Using the distributions outlined in Burbrink et al. (2021a, 2021b), trends for *P. quadrivittatus* appear stable while trends for *P. alleghaniensis* appear to be declining, particularly in the northern part of the species' distribution.

Massachusetts Division of Fisheries and Wildlife (2015) describes the ratsnake as previously being more common and widely distributed in the state. Populations today are found in just a few widely scattered locations in the state and appear to be restricted by the availability of suitable hibernating sites. Populations in Vermont are at risk of becoming Endangered due to the species having a very restricted range in the state and only a few remaining populations. Ratsnake populations in Ontario, Canada, have also been experiencing population declines and a reduction in the extent of occurrence (COSEWIC 2018). Long-term monitoring of the Great Lakes/St. Lawrence population indicates population declines and a decline in the extent of occurrence over an approximately 10-year period. A >30% decline over the last three generations has been inferred with a >30% projected and suspected decline in the next three generations. There are likely only a few hundred individuals in the Carolinian population, with two of the original four subpopulations now extirpated. An inferred >50% decline in mature individuals has been estimated for the Carolinian population over the last 10 years, and an 89% decline in the extent of occurrence was observed between 2007 and 2018.

No trends are known for the ratsnake in New York, though populations appear to be stable.

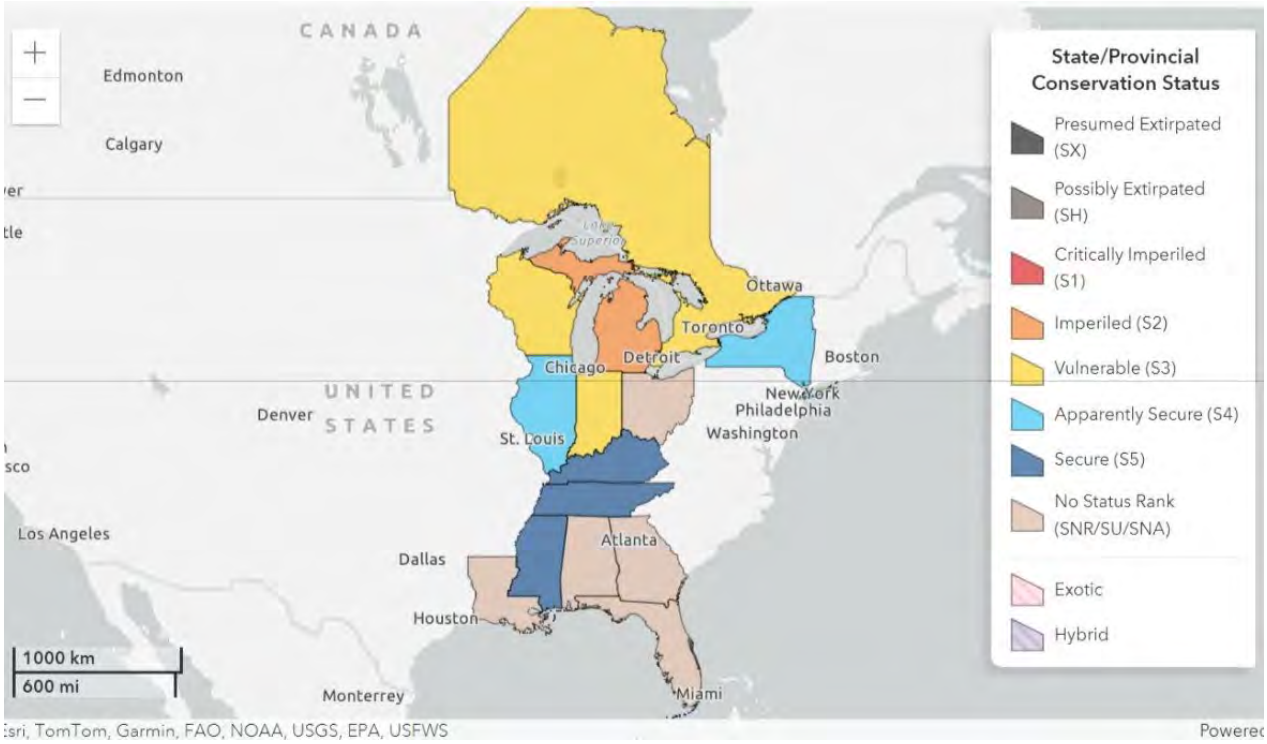

Figure 1. Conservation status of *Pantherophis alleghaniensis* (labeled as *P. spiloides* by NatureServe) in North America (NatureServe 2025b). Note that according to the most recent assessment of North American ratsnakes (Burbrink et al 2021b), this species occurs east of the Mississippi River to the Atlantic Seaboard Fall Line in Virginia and extends north to Wisconsin, Michigan, New York, Vermont, Massachusetts, and the provinces of Ontario and Quebec

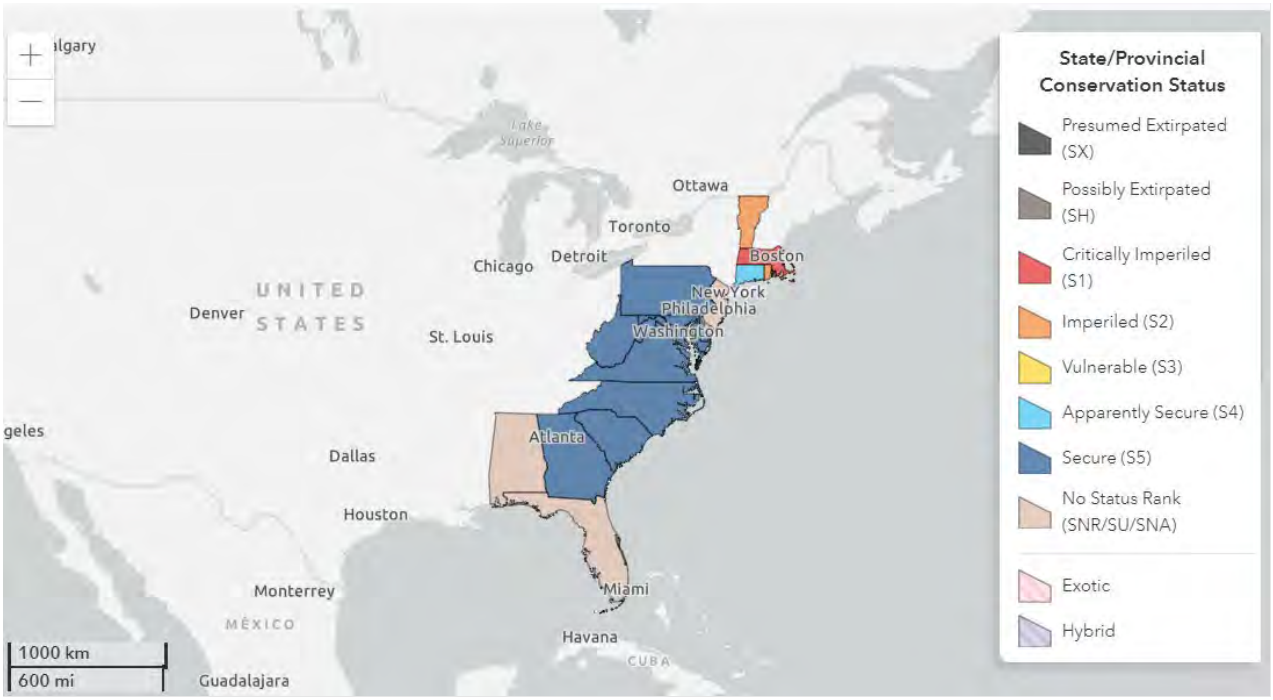

Figure 2. Conservation status of *Pantherophis quadrivittatus* (labeled as *P. alleghaniensis* by NatureServe) in North America (NatureServe 2025a). Note that according to the most recent assessment of North American ratsnakes (Burbrink 2021b), *P. quadrivattatus* is found southeast of the Fall Line in Virginia to the Florida Keys.

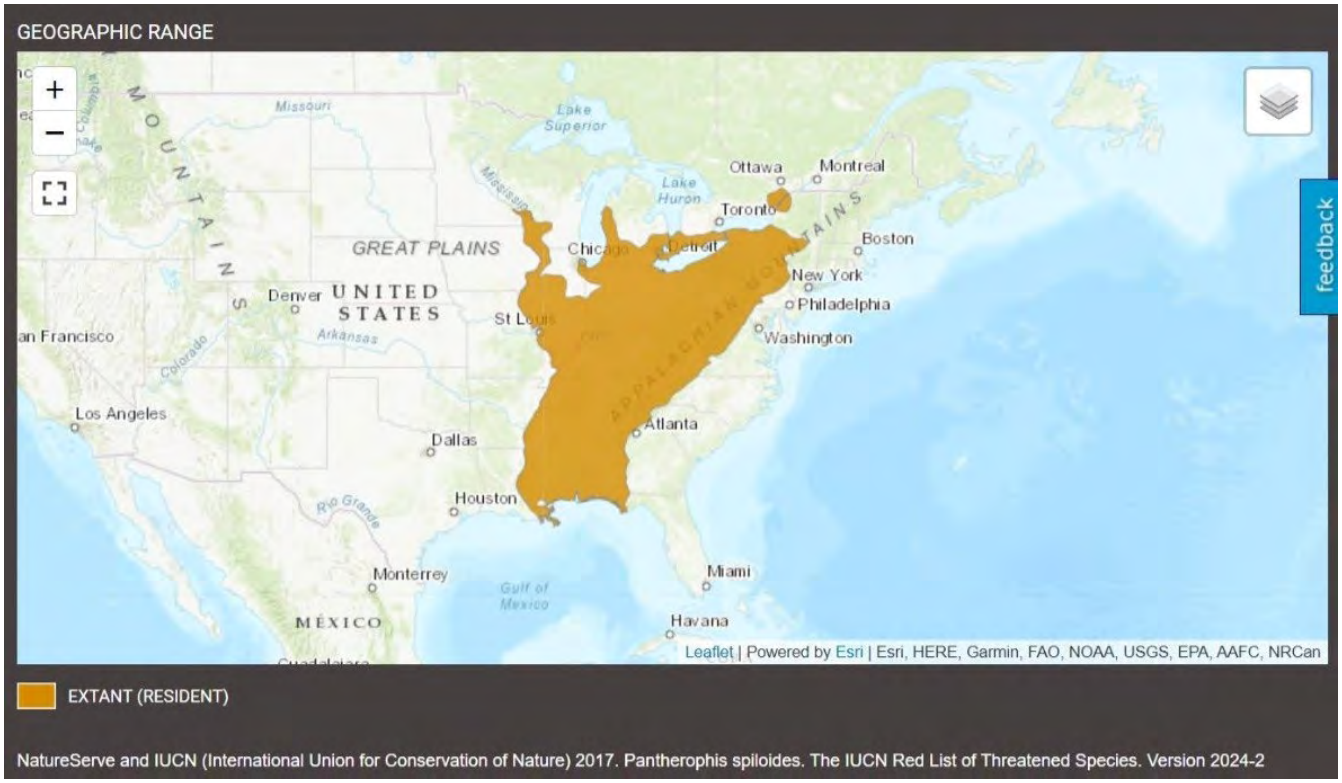

Figure 3. Range map of *Pantherophis alleghaniensis* (incorrectly labeled as *P. spiloides*) in North America (IUCN in Hammerson 2019b). According to Burbrink et al (2021b) this species occurs east of the Mississippi River to the Atlantic Seaboard Fall Line in Virginia and extends north to Wisconsin, Michigan, New York, Vermont, Massachusetts, and the provinces of Ontario and Quebec

Figure 4. Range map of *Pantherophis quadrivittatus* (labeled as *P. alleghaniensis* by IUCN in Hammerson 2019a). According to Burbrink et al (2021b), the range in Maryland, Delaware, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, and Vermont is occupied by *P. alleghaniensis*.

III. New York Rarity:

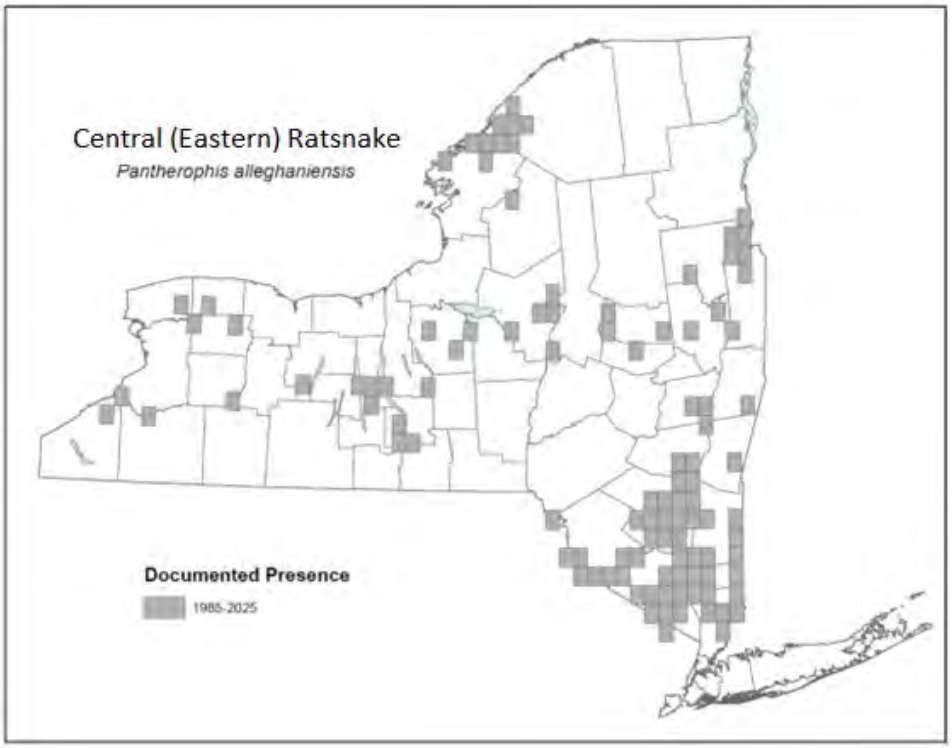

Figure 5. Distribution of Central (formerly Eastern) ratsnake, *Pantherophis alleghaniensis,* records in New York, 1985-2025 (NY Herpetology Database, NYSDEC)

Details of historic and current occurrence:

The New York State Herp Atlas (1990-1999) documented 'eastern' ratsnakes in 96 (~10%) of 979 survey quadrangles across the state. Data collected between 1985-1990 and post-1999 add an additional 11 quadrangles, for a total of 107 statewide (NY Herpetology Database).

Citizen science records submitted through iNaturalist align closely with occurrence records from the Herp Atlas (iNaturalist 2025). Unobscured records from this platform identify an additional 20 quadrangles not included in Figure 4. Additionally, 53 of the 107 known survey quads have been reconfirmed using iNaturalist community data.

New York's Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

1. Plantation and Disturbed Land Pioneer Forests
2. Rocky Outcrop
3. Non-Native Shrublands
4. Powerline
5. Old Field Managed Grasslands
6. Cliff and Talus
7. Cultivated Crops
8. Pasture/Hay
9. Residential/Rural
10. Oak-Pine Forest

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
Yes	No	Stable	

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Ratsnakes in the northeast inhabit areas that provide a mixture of open and forested habitats (Gibbs et al. 2007). Open areas include fields, thickets, early-successional habitats, wetland edges, and exposed rocky outcrops; occupied forests may be dense (Gibbs et al. 2007, COSEWIC 2018). Ratsnakes often seek shelter in standing snags, hollow logs, rock crevices, and under rocks (COSEWIC 2018), and may also take refuge in abandoned buildings, infrequently-used structures, and barns (Gibbs et al. 2007). McLeod and Gates (1998) found that ratsnakes were more common in cut-over hardwood forests than

in undisturbed hardwood forests in Maryland, possibly due to the higher abundance of rodent prey. Ratsnakes are proficient climbers and often spend time in trees, and are adept at swimming as well (Gibbs et al. 2007).

For nesting, ratsnakes use a variety of sites, including within decaying leaf litter or under materials such as rotting logs, roots, rocks and stumps (Gibbs et al. 2007). They have also been known to use compost, manure, or sawdust piles for egg-laying as well (Gibbs et al. 2007).

At the northern limit of the distribution in the northeast, ratsnakes may be limited by the availability of suitable hibernacula (Gibbs et al. 2007). Hibernation sites include rocky talus, rocky woodland areas, or along ledges, as well as basements, root cellars, cisterns, and wells (Hulse et al. 2001). Southern or southwestern exposure is necessary to maximize thermal benefit from the winter sun and to provide basking areas in spring and fall (Gibbs et al. 2007, COSEWIC 2018). This species may overwinter with black racers, timber rattlesnakes, common gartersnakes, and northern watersnakes (Gibbs et al. 2007).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	-	-	Yes	Yes	-

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion:

In the northeast, ratsnakes emerge from their hibernacula between mid-April to early June and move to adjacent woodlands to feed and mate (Blouin-Demers et al. 2000, Gibbs et al. 2007). Some individuals remain in forested areas while others spend more time in edge and field habitats (Gibbs et al. 2007). In New York, mating occurs from mid-May in the south to June in the north (Gibbs et al. 2007). The gestation period is 5 to 8 weeks. A clutch of 5 to 44 eggs (14 average) is laid and typically hatch by late August after 60-75 days of development (Gibbs et al. 2007).Several females may lay eggs in the same location and these communal nests produce young that are more fit than those from solitary nests (Blouin-Demers et al. 2004). Snakes enter the hibernacula in late fall, typically around mid-November (Gibbs et al. 2007).

A mark-recapture study in Ontario looked at the dispersal of 69 recaptured hatchling ratsnakes from 1996 to 2009 (Blouin-Demers and Weatherhead 2020). It found that recaptured hatchlings had moved from 1 m (after 1 active day) to a maximum of 4.3 km (after 438 active days, or 3 years). The average dispersal distance was 528 m. The study also found that dispersal distances increased with time, were not sex-biased, and that ratsnakes have high fidelity to their communal hibernacula with fewer than 3% of recaptured snakes changing sites between years. Once established, home ranges are occupied for many years, and range in size from 24 acres (10 ha) (Fitch 1963) to 158 acres (64 ha) (P. Mirick unpublished data in Massachusetts Division of Fisheries and Wildlife 2015). Home range size of ratsnakes in Ontario are three times larger for males than for females (Weatherhead and Hoysak 1989).

Blouin-Demers et al. (2002) showed that ratsnakes in a Maryland population reached sexual maturity in 4 years while snakes in an Ontario population reached sexual maturity in 10-12 years. Early maturity of the snakes in Maryland was balanced by a shortened average lifespan (MD=20 years, ON=30 years).

VI. Threats

Ratsnakes in the northeast face a range of significant threats, including habitat loss and alteration from development, road mortality, disease, and climate change.

The direct loss of habitat due to development is likely the greatest threat to ratsnakes in the region. In Massachusetts, the encroachment of residential housing along ridgelines and rock outcrops, the succession of agricultural land to second-growth forest, and mining operations have eliminated historical hibernacula refuges, reduced prey availability, and destroyed denning habitats, respectively (Klemens 1993, Massachusetts Division of Fisheries and Wildlife 2015). In Canada, habitat loss and fragmentation, particularly of communal hibernacula, due to urbanization, agriculture, and road expansion, have led to observed and projected declines of mature individuals and the overall range of ratsnakes (COSEWIC 2018). A population viability analysis also found that at least 141 mature individuals with a network of about 8 hibernacula locations is needed to support a viable population (Tews 2005). Consequently, the small, isolated ratsnake populations in Ontario, Massachusetts, and Vermont are particularly vulnerable to extirpation, as source populations are too distant to colonize, suitable hibernacula is limited or restricted, and the potential for stochastic loss of genetic diversity is high (Massachusetts Division of Fisheries and Wildlife 2015, COSEWIC 2018).

Indirect effects from increased development may further exacerbate impacts to ratsnakes. These include increased recreational activities, such as ATV use, which can fragment habitats and cause direct mortality, as well as increased subsidized predators such as raccoons, skunks, and coyotes that may further elevate mortality. Additionally, the expansion of human activity can lead to increased encounters with people, resulting in both intentional persecution (e.g., persecution based on negative attitudes towards snakes) and accidental mortality (e.g., from machinery, lawnmowers, and vehicles) (COSEWIC 2007, COSEWIC 2018). *Pantherophis* species were also found to be susceptible to entanglement in mesh products such as erosion control blankets, with some entanglement events leading to mortality (Ebert et al. 2019, Iverson and Lachiusa 2020).

Road mortality represents another major threat to ratsnakes. Snakes are particularly vulnerable to road mortality as they are often drawn to paved roads for thermoregulation, make significant movements during the active season, and may immobilize in response to vehicles (COSEWIC 2018). Row et al. (2007) demonstrated that although secondary roads do not create barriers to seasonal movements, the effect on the population can be significant. In their Population Viability Analysis (PVA) on a population in Ontario, they found the loss of three adult females per season increased the extinction probability to >90% over 500 years. Row et al. (2007) estimated adult mortality at nine individuals per year at the study, and a similar study along the St. Lawrence Parkway in Ontario estimated seven adult ratsnake mortalities per year (Garrah et al. 2015). Road mortality has also been documented elsewhere in eastern Ontario (Jones et al. 2024), and in southeastern Ohio, where ratsnakes were the most frequently killed species, with nearly 120 mortalities recorded from 2003-2018 (Wagner et al. 2021). Research has also found that approximately 3% of drivers will intentionally swerve to hit snakes on the road (Ashley et al. 2007). Given the species' propensity to use a variety of habitats, localized road mortality mitigation structures such as underpasses and fences may have limited benefits. Instead, mitigation efforts such as reduced speed limits, exclusionary fencing, and signage during peak activity periods may help reduce road mortality (Garrah et al. 2015, Wagner et al 2021). Roads also act as barriers to movement, fragmenting habitats and reducing population connectivity for ratsnakes (COSEWIC 2018).

Novel pathogens also pose a significant concern for *P. alleghaniensis*. Snake fungal disease, caused by the fungal pathogen *Ophidiomyces ophidiicola*, was first observed in free-ranging snakes in 2006 affecting a timber rattlesnake population (*Crotalus horridus*) (Clark et al. 2011). In 2008, it was histologically confirmed for the first time with samples from a free-ranging population of eastern massasauga rattlesnakes (*Sistrurus catenatus*) (Allender et al. 2011). As of 2021, the disease has been

documented in most eastern states (Di Nicola et al. 2022). It causes accelerated ecdysis cycles, flaking and discolored scales, granulomas, swelling, ocular cloudiness, and may progress internally causing inflammation and infections of the dermis, skeletal muscle, and bones and even mortality (Allender et al. 2011; McBride et al. 2015). *Pantherophis* snakes appear to be highly susceptible to morbidity and mortality from the disease. Snake fungal disease was first described in a captive *P. obsoleta* snake in 2009 (Rajeev et al. 2009). Since then, it has been documented in wild *P. alleghaniensis* snakes in Virginia (Guthrie et al. 2016, Guthrie 2016), Tennessee (Grisnik et al. 2016), New Jersey (Lorch et al. 2016), Vermont (Lorch et al. 2016), Pennsylvania (Regester et al. 2017), Kentucky (McKenzie et al. 2019), Connecticut (Licitra et al. 2019), Ontario (Davy et al. 2021), and others (Di Nicola et al. 2022). The pathogen is widespread, and the disease has already been documented in New York (Davy et al. 2021, Di Nicola et al. 2022). Mortality has been observed in about 10% of diagnosed or suspected *Ophidiomycosis* infections in free-ranging snakes, and sublethal effects of infection such as altered reproductive success could further threaten snake populations (Davy et al. 2021, Di Nicola et al. 2022).

In an assessment of vulnerability to predicted climate change conducted by the New York Natural Heritage Program, the ratsnake was identified as a second-priority species whose sensitivity should be assessed in the future (Schlesinger et al. 2011). Warmer winter temperatures caused by climate change could increase infection rates in hibernating snakes (Allender et al. 2015) and may increase stress and vulnerability to predation due to early emergence from hibernation (COSEWIC 2018).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	(loss/degradation of habitat)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
1. Residential and Commercial	1.1 Housing & Urban Areas	(increased predation by subsidized predators)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3. Energy Production & Mining	3.2 Mining & Quarrying	(habitat destruction)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads	4.1.1 Roads (road mortality)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.1 Hunting & Collecting Terrestrial Animals	5.1.4 Poaching/persecution of terrestrial animals (pet trade; persecution)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.1 Motor vehicles (ATV)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	(snake fungal disease)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.3 Changes in Temperature Regimes	(changes in temperature/precipitation may increase susceptibility to pathogens)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to the central (formerly eastern) ratsnake, *Pantherophis alleghaniensis*.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: ✓ **No:** _____ **Unknown:** _____

If yes, describe mechanism and whether adequate to protect species/habitat:

In 2006, the State of New York adopted legislation (ECL section 11-0107 sub 2) that gave all native frogs, turtles, snakes, lizards and salamanders legal protection as game species, with very few open to harvest. The legislation also outlaws the sale of any native species of herpetofauna regardless of its origin. These regulatory mechanisms are insufficient to protect against habitat alteration, particularly the loss of hibernacula habitat, or other threats such road mortality or disease.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Ratsnakes are one of the few reptiles in New York that benefit from forest fragmentation (Blouin-Demers and Weatherhead 2001), which increases the availability of the habitat that they prefer. Ratsnakes may benefit from small-scale agriculture and forestry because these land uses provide edge habitats that support prey species. Protection of known hibernacula locations and minimizing vehicular traffic within 1 km of hibernacula would reduce the loss of critical habitat and direct mortality for the species (Environment and Climate Change Canada 2020).

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for woodland/grassland snakes, which includes 'eastern' ratsnake. Actions that have been accomplished, or where progress has been made, are indicated with a check.

Easement acquisition:

____ Secure habitats critical to species survival by acquisition of conservation easements, or by other land protection mechanisms.

Habitat management:

____ Develop and implement mitigation measures to manage the adverse effects of habitat fragmentation.

Habitat research:

____ Develop standardized habitat survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the character, quality and extent of occupied habitat.

Life history research:

____ Document life history parameters specific to New York populations of the species, including age and sex ratios, longevity, age at sexual maturity, survivorship of young, predator-prey relationships, and habitat requirements.

Modify regulation:

✓ Adopt into New York's Environmental Conservation Law provisions which designate timber rattlesnake, smooth greensnake, eastern ratsnake, northern black racer, northern copperhead, eastern hognose snake, short-headed gartersnake and worm snake as protected small game species.

Other actions:

____ Determine significance of specific threats to populations of species in this group, and formulate management options to control significant threats.

____ Enhance law enforcement and public education to limit specimen collection, killing and translocation of woodland/grassland snake species.

____ Educate the New York public to abandon misconceptions about the menace/value of woodland/grassland snakes.

Population monitoring:

____ Conduct periodic re-survey of known sites of species occurrence, in order to detect population trends.

Statewide baseline survey:

____ Develop standardized population survey protocols, and implement survey protocols at all known and potentially suitable sites, to document the extent of occupied habitat for each of the woodland/grassland snake species in New York.

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct Habitat Management	Site/Area management
A.2 Direct Species Management	A.2.0.0.0 Direct Species Management	Invasive/problematic species control
B.3 Outreach	B.3.1.0.0 Outreach, communication, and distribution	Awareness & Communications
B.4 Law Enforcement and Prosecution	B.4.0.0.0 Law Enforcement and Prosecution	Compliance and Enforcement
C.6 Design and Plan Conservation	C.6.0.0.0 Design and Plan Conservation	Site/area and resource/habitat protection
C.6 Design and Plan Conservation	C.6.5.1.3 Develop a conservation, management, or restoration plan for protected private lands	Habitat and natural process restoration
C.7 Legislative and Regulatory Framework or Tools	C.7.1.2.0 Create, amend, or influence legislation	Legislation

Table 2. Recommended conservation actions for central (formerly eastern) ratsnake, *Pantherophis alleghaniensis*.

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