

Species Dossier

State of New York
Endangered Species Working Group
Date compiled:

Common Name: Black Rat Snake
Scientific Name: *Elaphe o. obsoleta*
Family: Colubridae

I. General Status

Current New York Status: Unlisted
Current Federal Status: Unlisted
Recommended New York Status: Status secure (Stechert, pers. comm.); special concern/threatened (Peterson, pers. comm.).

Current status in surrounding states/provinces:

Connecticut:
Massachusetts:
New Jersey: Common
Ohio: Common
Ontario:
Pennsylvania: Common
Quebec: out of range
Vermont:

Current Natural Heritage rank (TNC): G5 (N) S5
global state

Global and North American Ranges:

Southwestern New England and southern Ontario to Georgia in the east; southwest Wisconsin to Oklahoma and northern Louisiana in the midwest. Four separate disjunct populations occur in eastern Ontario and adjacent New York. Isolated record in the Oklahoma panhandle

New York's position within global range:

central **peripheral** disjunct

II. Historic New York Status and Distribution (>25 years ago)
Provide numbers and/or percent of state occupied and/or number of regions occupied (and basis for estimates), narratives, maps (if available and appropriate), and references/documentation:

Generally throughout New York State excluding the Adirondacks. Specimens exist from Wayne, Jefferson, St. Lawrence and Ulster Counties.

III. Current New York Status and Distribution

Provide numbers and/or percent of state occupied and/or number of regions occupied (and basis for estimates), narratives, maps (if available and appropriate), and references/documentation:

New York is the northern most limit of this species' contiguous range. Generally blackrat snakes occur south of Mohawk River and Lake Ontario. Absent from the coastal plain. Individuals have been found along the St. Lawrence River (Jefferson Co.), southeastern New York (Rockland, Orange, Westchester, Putnam, Sullivan, Ulster) and in Warren and Washington Counties.

IV. Author's Current Estimate of Population/Habitat Trends

Population Trend _____ Essential Habitat Trend

Declining
Stable

Increasing
Unknown

Declining
Stable

Increasing
Unknown

V. Biological Description

1. Reproductive information:

Breeds in New York: yes
Confirmed in last 2 years: yes
Confirmed in last 10 years: yes
Confirmed in last 25 years: yes
Confirmed prior to 25 years ago: yes
Unconfirmed:

OR

2. Does not breed in New York; is migrating or seasonal?

OR

3. Species periodically expands or contracts into or out of New York?

Age to sexual maturity: 4th year; ♂'s 1095-1835mm, ♀'s 715-1800mm.

Number of breeding attempts per year: Annual reproduction with the strong likelihood for a & biennial cycle in the northern parts of the range (Prior, pers. comm.).

Average number of young per breeding attempt: 6-30 eggs

Estimated number of reproductive years per female: 15-18 yrs

Other narrative on species biology:

The black rat snake is a diurnal and fairly nonsecretive animal best known for its arboreal nature. Emergence from the hibernaculum occurs from mid-April to early May probably in response to a combination of factors (e.g. thermal

changes within the den and/or endogenous rhythms). Individuals disperse soon after emergence to their home ranges established in previous seasons. Blackrat snakes exhibit yearly fidelity to these areas. In Ontario, males move farther and more frequently than the females and maintain home range, on average, three times larger than those of females (total home range size for ♂s averaged 7.57 ha; ♀s 1.41 ha). Both include a variety of habitat types within their ranges.

Mating occurs sometime in June following dispersion in the northerly parts of the range. Males actively pursue females in courtship, wherein the female is physically stimulated. Copulation is accomplished with the eversion of one of two hemipenes, by the male, followed by intromission. Eggs are probably laid sometime during mid-July and hatch later in September. Nest sites include: within rotten stumps, beneath logs, sawdust piles, and moist soft soil. Eggs deposited in varying depths ranging from being barely covered or up to 7.6cm below the surface. In Ontario, a number of nest sites have clearly been used by several females in the same season and in successive years, indicating possible communal nesting. The eggs are approximately 46 x 23.5mm and adhere to one another (eggs are found in clusters or singly). Male hatchlings range from 286-343mm snout vent length (SVL), while hatchling females average 252-343mm SVL. Neonate coloration is distinct from that of the adults consisting of black blotches on gray background. Growth is very rapid during the first growing season, and neonates may show 36mm monthly gain for either sex. Growth decreases in the 3rd or 4th year (approx. 3mm/month for large adults in the growing season) yet may be continuous for healthy individuals throughout their lifetime. Sex ratios are variable, in Maryland, hatchlings had a 1:1 male to female ratio. Males tended to decline during the years probably due to their more motile nature. In Kansas, male hatchlings outnumbered females 4:1, yet the same trend as in Maryland appeared, with males declining over time. Much of this basic information is lacking for New York's blackrat snake populations.

Elaphe obsoleta preys on a variety of items, but rodents and birds (nestlings and eggs) make up the bulk of their diet. There exists seasonal variation with diet. Bird prey is taken mostly during May-July, coinciding with the bird breeding season. Mammals are taken increasingly during the fall months. Amphibians and reptiles are occasionally taken. Prey is killed by constriction and individual snakes are occasionally injured by prey animals, particularly rodents, attempting to defend themselves.

Migration to the wintering site occurs between September and early October. Entry into the den at this time is probably triggered by temperature. Black rat snakes are communally denning animals and often share dens with other nonvenomous and venomous snakes.

VI. Habitat
(describe type, vulnerability, distribution and trend in amount over time, also estimate future trends - do you expect habitat to be lost in future? Amount, location, type?)

The black rat snake may be found in a variety of habitats from sea level to considerable altitudes. In Ontario (Canada), individual snakes have a strong association with edge habitat forest/field interface (ecotone) with direct available sunlight. This association is pronounced during the bird breeding season when the chances of locating eggs or nestlings, preferred food items, is increased due to preferential nesting of many bird species in such areas. *Elaphe o. obsoleta* may be found under ground shelter such as rocks, logs, brush piles and hollow logs within oak/hickory woods and other forested lands. Individuals also inhabit rocky hillsides of open woodlands as well as grasslands.

Fall hibernaculum sites are located on rocky wooded hillsides, mammal burrows, rock outcrops, abandoned rock quarries, old stone wells and cisterns. The black rat snake often shares winter den sites with other snake species.

VII. Discussion of Problems/Threats/Limiting/Overall Vulnerability
(of both individuals and essential habitat):

1. Senseless killing of individuals because of the many human misconceptions surround snakes in general.
2. Habitat loss or fragmentation through human activities such as the construction of roads and other developments.
3. Disturbances or damage (natural or human) to hibernacula could pose serious problems for these communally denning animals. Large portions of a population may potentially be lost if such a situation were to occur.
4. Vehicular collisions.

VIII. Additional Study, Documentation, Research or Management Needed:

1. Thorough surveys to establish the occurrence of populations and their densities.
2. Radio telemetry studies on New York snakes to investigate animal movements, habitat use and identification of critical den sites.
3. Public education.

IX. Prognosis for Recovery:

Although populations of *Elaphe o. obsoleta* are lower than historically, the outlook seems good. In many instances, populations are fairly isolated greatly reducing potential disturbances or adverse interactions with humans. More importantly would be to educate people about the snake's ecological role as well as its usefulness (and harmlessness) to us. Many den sites are shared with the state threatened timber rattlesnake, *Crotalus horridus*. This association likely provides some unwritten protection and prove beneficial to black rat snake populations.

X. Documentation/References:

(also list or attach pertinent references, survey documents, studies, etc.)

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15. Weatherhead, P.J., M.B. Charland. 1985. Habitat Selection in an Ontario Population of the Snake *Elaphe obsoleta*. J. Herpetol. 19(1): 12-19.

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XI. Experts Consulted/Reviewers of Dossier:

1. Allen Peterson.

2. Kent Prior, Department of Biology, Carleton University, 587 Tory Bldg., 1125 Colonel By Drive, Ottawa, Canada K1S5B6.

3. Randy Stechert, 90 Bank St., Midland Park, NJ 07432.

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Preparer's Status Recommendation:

Endangered
Threatened
Special Concern
Status Unknown
Status Secure
(no listing)