

Species Dossier

State of New York
Endangered Species Working Group
Date compiled:

Common Name: Short-headed Garter Snake
Scientific Name: *Thamnophis brachystoma*
Family: Colubridae

I. General Status

Current New York Status: Unlisted
Current Federal Status: Unlisted
Recommended New York Status:

Current status in surrounding states/provinces:

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

Current Natural Heritage rank (TNC): G4 (N) S4
global state

Global and North American Ranges:

Southwestern New York and northwestern Pennsylvania (introduced and established at Pittsburgh, Butler and Erie Counties, PA). Also south-central New York.

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:

E.D. Cope (1892). Allegheny and Susquehanna drainage. Fishkill in Dutchess Co., Cold Spring in Putnam Co. and in the Allegheny High Plateau. Cattaraugus County (Tununquant valley, Lillibridge Creek, Redhouse Lake and Hinsdale).

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:

Chautauqua, Cattaraugus and Allegany Counties all in the Alleghany and Susquehanna drainage. Isolated population in Horseheads, Chemung Co., New York in the divide of the headwaters of Catherine and Newton Creek. In most of its New York range, the snake occupies unglaciated areas.

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

<u>Population Trend</u>	<u>Essential Habitat Trend</u>
Declining	Declining
Stable	Stable
Increasing	Increasing
Unknown	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: Males 282mm; Female 332mm
Number of breeding attempts per year: 1 attempt, evidence for biennial reproductive cycle.
Average number of young per breeding attempt: 7.2 to 8.6 young, with a range of 7-11 possible

young.

Estimated number of reproductive years per female

Other narrative on species biology:

Thamnophis brachystoma is a thigmothermic animal of the Alleghany High Plateau. They spend the winter months in a hibernaculum, which consists of small opening in a sandstone/shale bluff or slope. Individuals are found 17-45 inches underground wedged between rocks and soil. One hibernaculum excavation exposed 13 individuals (Bothner 1963).

Emergence is in late March to early April in response to spring time warming trends. The reproductive

cycle, sperm and egg production, coincides with mean monthly temperature (photoperiod is secondary). Breeding occurs immediately after emergence from hibernation. A pair will lay side-by-side, wherein the male will perform a spasmodic series of pre-coital courtship movements. When sufficiently stimulated, the male will evert one of two hemipenes and insert it into the female cloaca, followed by caudocephalic waves by the male. Sperm is stored in the oviduct by the female until eggs are ovulated in May or June. Sperm is produced by the male throughout its active season and stored during hibernation to be used the following spring. Gestation is approximately 9 weeks and the young are born (viviparous) in August and September enveloped in a fetal membrane. Increased female body size is correlated to increased litter sizes. Neonates vary in size from 130.7mm for males and 129.9mm for females. Female Short-headed Garter Snakes produce 7-11 young.

Important life history data is lacking for the Short-headed Garter Snake. Baseline studies in southwestern New York show sex ratios of different populations to be close, with a mean of 1.19 : 1 female/male sex ratio. Population densities are lower, but stable, than in previous years and studies with a current estimate of 1 specimen/1383 M². The bulk of *Thamnophis brachystoma*'s diet consists of earthworms, although slugs and other invertebrates are probably also taken.

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

During the active season, the Short-headed Garter Snake, within its small New York range, prefers open, herbaceous areas such as old fields, meadows and marsh borders. These are usually well grown in with sedges, grasses and other early successional species, and individuals may be found under some sort of cover such as rocks and logs. They have also been found around collapsed remains of old houses or buildings which have become heavily overgrown and provide various appropriate shelter in the form of metal sheeting, plywood, roofing material, canvas and boards. *Thamnophis brachystoma* tends to avoid mature forest habitat.

Individuals spend the winter months in a hibernaculum. The hibernating area is usually found on a slope or bluff (facing south or southwest) in shale and/or sandstone outcroppings. The opening to the hibernaculum is small, 1 by 1 inch. The Short-headed Garter Snakes are found 17-45 inches underground below the frost line, usually wedged between soil and rocks or between two rocks. Ground temperatures vary from 37-38 degrees fahrenheit.

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

1. Habitat loss - growing up of older meadows and abandoned farm fields.
2. Overcollecting
3. Herbicide/pesticide contamination.

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

1. Lack of detailed life history studies such as: population densities, population age structure and long term population trends.
2. Age specific survivorship and den finding mechanisms of neonates from birthing area to the winter sites.
3. Animal movement and habitat use.

XI. Prognosis for Recovery:

X. Documentation/References:
(also list or attach pertinent references, survey documents,
studies, etc.)

1. Asplund, K.K. 1963. Ecological Factors in the Distribution of *Thamnophis brachystoma* (Cope). *Herpetologica* 19(2): 128-132.
2. Bothner, R.C. 1963. A Hibernaculum of the Short-headed Garter Snake, *Thamnophis brachystoma* Cope. *Copeia* No. 3: 572-573.
3. Bothner, R.C. 1976. *Thamnophis brachystoma* (Cope) Short-headed Garter snake. *Catalogue of American Reptiles and Amphibians*: 190.1-190.2.
4. Bothner, R.C. 1986. A Survey of the New York State Populations of the Short-headed Garter Snake, *Thamnophis brachystoma* (Cope) (Reptilia: Colubridae). Project performed for NYSDEC Endangered Species Unit under contract No. C001340 1986.
5. Collins, J.T. 1990. Standard Common and Current Scientific Names for North American Amphibians and Reptiles. Society for the Study of Amphibians and Reptiles, *Herp. Circular* No. 19.
6. Conant, R.C., J.T. Collins 1991. *Peterson Field Guide to Reptiles and Amphibians of Eastern/Central North America*. Houghton Mifflin Co., Boston. Page 168, Map No. 128.
7. DeGraaf R.M., D.D. Rudis 1981. Forest Habitat for Reptiles and Amphibians of the Northeast. U.S. Government Printing Office, Forest Service and U.S. Dept. of Agriculture Eastern, Region.
8. Ernst, C.H., R.W. Barbour 1989. *Snakes of Eastern North America*. George Mason University Press.
9. Ernst, C.H., S.W. Gotte 1986. Notes on the Reproduction of the Shorthead Garter Snake, *Thamnophis brachystoma*. *Bulletin Maryland Herpetological Society* 22(1): 6-9.
10. French, T., D. Pence 1991. Legal Categories of Rare Species in the Northeastern States. Northeast Nongame Technical Committee.
11. Klingener, D. 1957. A Marking Study of the Short-headed Garter Snake in Pennsylvania. *Herpetologica* 13(2): 100.
12. Pisani, G.R. 1967. Notes on the Courtship and Mating Behavior of *Thamnophis brachystoma* (Cope). *Herpetologica* 23(2): 112-115.
13. Pisani, G.R., R.C. Bothner 1970. The Annual Reproductive Cycle of *Thamnophis brachystoma*. *Science Studies* Vol. 26: 15-34.
14. Pleuthner, R. 1981. Summation of Natural Heritage Ranks (for Amphibians and Reptiles).
15. Stewart, M.M. 1961. An Ecological Survey of Amphibians, Reptiles and Mammals of Allegany Indian Reservation and Vicinity. *New York State Museum and Science Service* Vol. 383: 62-88.
16. Wozniak, E.M., R.C. Bothner 1966. Some Ecological Comparisons between *Thamnophis*

brachystoma and *Thamnophis sirtalis sirtalis* on the Allegheny High Plateau. Ohio Herp. Soc. Journal Vol 5: 164-165.

17. Wright, A.H., A.A. Wright 1970. Handbook of Snakes of the United States and Canada Vol. II. Comstock Publishing Associates, Division of Cornell University Press. Pages 814-816.

18. Checklist of the Amphibians, Reptiles, Birds and Mammals of New York State, Including Their Protective Status 1987. N.Y.S. Dept. of Env. Con. Div. of Fish and Wildlife Nongame Unit.

XI. Experts Consulted/Reviewers of Dossier:

1. Terry Moore, NYS-DEC, Olean Sub-Office, 128 South Street, Olean, NY 14760.

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Preparer's Status Recommendation:

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