

Species Dossier

State of New York
Endangered Species Working Group
Date compiled:

Common Name: Blue-spotted Salamander
Scientific Name: *Ambystoma laterale*
Family: Ambystomatidae

I. General Status

Current New York Status: Unlisted (special concern)
Current Federal Status: Unlisted
Recommended New York Status: Special Concern

Current status in surrounding states/provinces:

Connecticut:
Massachusetts: state special concern
New Jersey: state endangered
Ohio:
Ontario:
Pennsylvania: out of range
Quebec:
Vermont:

Current Natural Heritage rank (TNC): G5 (y) S4
global state

Global and North American Ranges:

North of the hybrid zone with *A. jeffersonianum*. Pure examples on the north shore of the Gulf of St. Lawrence, west across southern Canada to southeast Manitoba and south along the western edge of its range to northeast Illinois and adjacent Indiana. Disjunct population in Labrador, southern Nova Scotia and adjacent islands, east-central Iowa and western shore of Lake Winnipeg. Isolated colonies in east Long Island and northern New Jersey.

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:

Several factors have contributed to problems in delineating the historic range of the blue-spotted salamander these include: past misidentification and confusion with the Jefferson salamander and the hybridizations that occur between these two species in areas of range overlap. Generally, the northern part of western New York; northern New York and eastern part of southeast New York.

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:

Northern part of western New York; northern New York and eastern part of southeast NY. Disjunct population on eastern Long Island. Southern portion of this species contiguous range is in New York State.

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

Population Trend _____ Essential Habitat Trend

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: 2 yrs for both sexes; ♂'s 42mm snout vent length (SVL), ♀'s 51mm SVL.
Number of breeding attempts per year: 1 attempt
Average number of young per breeding attempt: 225-250 eggs.
Estimated number of reproductive years per female: 8-10 years.

Other narrative on species biology:

The biology of the blue-spotted salamander is similar to that of the Jefferson salamander. They are secretive animals during the non breeding season, and spend much time under various ground cover of leaf litter, rocks, logs and burrows in a mixed or hardwood forest habitat. They are not strong burrowers and can be found close to or on the ground's surface.

The breeding season extends from March to April and is initiated by a mass migration of individuals from their winter woodland habitats to their breeding pools. Migration is generally a nocturnal activity in response to optimal levels of precipitation (snowmelt), humidity and temperature. The timing of migration varies from year to year with climatic

variation. Males of the species are among the first wave of migrants to arrive at the pools. Male migration, once initiated, is continuous until the pool, suitable cover or severe weather conditions are encountered. Females wait for stable, favorable conditions before migration is undertaken.

Breeding begins with the male's courtship behavior. The female is embraced in an axillary amplexus usually with his forelimbs just behind the females'. The pair will then lay quietly or swim about. Competing males often attempt to interrupt amplexic pairs. An amplexic male counters such interference by physically transporting the female away from the competitor through vigorous swimming movements. This intense breeding competition scatters the pairs throughout the pool bottom rather than producing aggregations characteristic of the genus. The male undergoes a stimulatory phase of rubbing or stroking the females head and snout. The male releases his hold and moves ahead, typically depositing 2-4 spermatophores (range 1-34 spermatophores). A sufficiently stimulated female will follow the male and squat upon a spermatophore, making cloacal contact, to recover either the sperm cap or the entire spermatophore.

The female deposits eggs within two days after insemination singly or in masses of up to four eggs. These are often attached to leaves, rocks and other bottom debris or loosely scattered amid the pond litter. Egg size ranges from 1.5-1.7mm and are enveloped in a gelatinous material surrounded by membranes.

The larvae hatch approximately 30 days after deposition and are approximately 8-10mm in length. The larvae typically have large plumose gills and are dark brown in color with faint yellowish bars across the back (the fins are transparent). The ventral side of the larvae are without pigment. The larval period and size at metamorphosis of *A. laterale* is variable, but generally occurs between early July to mid-September with lengths ranging from 24.5-38.4mm. Larval period was found to increase with increased number of larvae with in a pool. This increased larval density also tends to decrease the size required to metamorphose. This demonstration of transformation plasticity may allow the blue-spotted salamander to use less permanent ponds unsuitable for other salamander species.

A. laterale's diet consists of arthropods, annelids, centipedes, beetles and beetle larvae. blue-spotted salamander larvae preyed upon small invertebrates (mosquito larvae, cladocerans and ostracods).

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?)

The blue-spotted salamander's habitat requirements are similar to that of the Jefferson salamander. The blue-spotted salamander is not a strong burrower, and in the off breeding season, can usually be found under logs, leaf litter and other ground cover in mixed or hardwood forests as well as open areas including pastures and grassy fields supporting permanent or ephemeral pools or ponds. It's occasionally found in areas of sandy soils, but also associated with bogs, marshes and other poorly drained sites. *A. laterale* in New Jersey occupied a lowland mix of true swamp woodland and cattail marsh and adjacent highland hardwood forests. *A. laterale* is not usually found in actual prairie habitat, although it may occur in ponds within patches of woodland surrounded by prairie during the breeding season. *A. laterale's* habitat requirements are similar to *A. jeffersonianum's* in areas of range overlap.

The breeding habitat of the blue-spotted salamander is a vernal or permanent pool/pond (formed by ground water seepage, surface runoff and/or precipitation), 20-40 yards long and approximately 3' in depth. The ponds usually have mud bottoms and thick vegetation above and below the water's surface.

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

1. Wet spot excavation and the creation of farm ponds or larger bodies of water with subsequent introduction of game fish may prove detrimental to adults and larvae through increase predation.
2. Wetland drainage resulting in loss of critical breeding habitat due to lack of protection and enforcement of wetland laws.
3. Upland nonbreeding habitat destruction (e.g. incursion by humans through various activities such as new constructions and developments) and lack of protection for these areas.
4. Acid rain and decreased pH levels (below optimal level) may result in embryo death and larval deformities.

5. Hybridization between Jefferson and blue-spotted salamanders in areas of range overlap resulting in the loss of genetic pureness and of either species as well as the production of confusing hybrids with unknown consequences.
6. Vehicle collisions during breeding migrations across roads.

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

1. Precisely delineating the area of hybridization and the consequences of these interactions.
2. Investigations into population densities and long term population studies to better understand and manage the species. Surveys of potential and known habitats for blue-spotted salamanders.
3. Animal movements and habitat (breeding and nonbreeding) use.
4. Strict protection of breeding and nonbreeding habitats.

IX. Prognosis for Recovery:

Identification and protection of blue-spotted salamander sites and populations would likely aid in maintaining current population densities.

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

1. Anon. 1987. Checklist of the Amphibians, Reptiles, Birds and Mammals of New York State, Including Their Protective Status. N.Y.S.-D.E.C. Division of Fish and Wildlife Nongame Unit.
2. Anderson, J.D., R.V. Giacosis. 1967. *Ambystoma laterale* in New Jersey. *Herpetologica* 23 (2): 108-111.
3. Bishop, S.C. 1941. The Salamanders of New York. New York State Museum Bulletin. No. 324. Albany, New York.
4. Bishop, S.C. 1969. Handbook of Salamanders The salamanders of the United States, of Canada, and of Lower California. Comstock Publishing Associates, Ithica, NY.
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. Field Guide to Reptiles and Amphibians of Eastern/Central North America. Houghton Mifflin Co., Boston, MA.
7. DeGraaf R.M., D.D. Rudis. 1981. Forest Habitat for Reptiles and Amphibians of the Northeast. Milwaukee, WI: United States Department of Agriculture Eastern, Forest Service, Eastern Region.
8. Douglas M.E., 1979. Migration and sexual selection in *Ambystoma jeffersonianum*. *Can. J. Zoo.* Vol. 57: 2303-2310.
9. French, T., D. Pence. 1991. Legal Categories of Rare Species in the Northeastern States. Northeast Nongame Technical Committee.
10. Pflingsten, R.A., F.L. Downs. 1989. Salamanders of Ohio. Bulletin of the Ohio Biological Survey 7(2). The College of Biological Sciences The Ohio State University, Columbus, OH.

11. New York Natural Heritage Program Biological Conservation Data System/New York State Department of Environmental Conservation. October 21, 1991. Summation of Natural Heritage Ranks for Amphibians and Reptiles.

12. Uzzel, T.M. 1964. Relations of the Diploid and Triploid Species of the *Ambystoma jeffersonianum* Complex (Amphibia, Caudata). Copeia No. 2: 257-300.

13. Uzzel, T.M. 1967. *Ambystoma laterale* (Hallowell) Blue-spotted Salamander. Catalogue of American Amphibians and Reptiles: 48.1-48.2.

XI. Experts Consulted/Reviewers of Dossier:

Prepared By: Denis P. Blais

Preparer's Status Recommendation:

Endangered

Threatened

Special Concern

Status Unknown

Status Secure

(no listing)