

T11.15 AMPHIBIANS AND REPTILES



Plate T11.15.1: Juvenile Wood Turtle on the St. Mary's River system in Guysborough County (Unit 572). Photo: R. Merrick

T11.15 Amphibians and Reptiles

The amphibians and reptiles are normally treated together as herpetofauna, although they represent two different vertebrate classes with distinct characteristics and habitat requirements. There are twenty-five species recorded from Nova Scotia, including three marine turtles¹ (see Table T11.15.1). The fauna is relatively poor when compared to adjacent mainland areas of the continent.

COLONIZATION

Post-glacial colonization occurred mainly by way of the Chignecto Isthmus (Unit 523). Distribution patterns reflect the past colonization routes, climate and habitat factors. As the climate of the area cooled at the end of the hypsithermal period, several Nova Scotia species became isolated from the main conti-

ental populations. Due to this isolation, these species tend to show a higher degree of morphological variation than is seen in continental populations. The survival of amphibians and reptiles in Nova Scotia depends heavily upon climate and available habitat for breeding and hibernation. Blanding's Turtle and Northern Ribbon Snake exhibit disjunct population in southwest Nova Scotia.

FAMILY	SPECIES	DISTRIBUTION
ORDER CAUDATA		
Ambystomatidae	Blue-spotted Salamander	Common, northern mainland and C.B. (one isolated pocket in SW)
Ambystomatidae	Yellow-spotted Salamander	Common throughout
Salamandridae	Red-spotted Newt	Common throughout
Plethodontidae	Eastern Redback Salamander	Common throughout, where woodland exists
Plethodontidae	Four-toed Salamander	Locally common
ORDER ANURA		
Bufonidae	Eastern American Toad	Common throughout
Hylidae	Northern Spring Peeper	Common throughout
Ranidae	Bullfrog	Common on mainland; no breeding population on C.B.
Ranidae	Green Frog	Common throughout
Ranidae	Mink Frog	Common throughout
Ranidae	Wood Frog	Common throughout
Ranidae	Northern Leopard Frog	Common throughout
Ranidae	Pickerel Frog	Common throughout
ORDER TESTUDINES		
Chelydridae	Common Snapping Turtle	Common on mainland; no breeding population on C.B.
Emydidae	Wood Turtle	Northern mainland/southern C.B.*
Emydidae	Blanding's Turtle	South/central mainland**
Emydidae	Eastern Painted Turtle	Mainland; no breeding population on C.B.
Cheloniidae	Atlantic Ridley	Uncommon; marine visitor
Cheloniidae	Atlantic Loggerhead	Uncommon; marine visitor
Dermodochelyiidae	Atlantic Leatherback	Uncommon; marine visitor (annual)
ORDER SERPENTES		
Colubridae	Northern Redbelly Snake	Common throughout
Colubridae	Northern Ribbon Snake	South/central mainland*
Colubridae	Maritime Garter Snake	Common throughout
Colubridae	Northern Ringneck Snake	Common on mainland (Atlantic lowlands); 2 localities north C.B.
Colubridae	Eastern Smooth Green Snake	Common throughout

Table T11.15.1: Distribution of Nova Scotia's amphibian and reptile species.

AMPHIBIANS

There are thirteen species of amphibians, including five salamanders and eight frogs. With the exception of the Eastern Redback Salamander, these species are dependent upon water for reproduction. There is a distinct spring or early summer mating and egg-laying period, and larval development takes place throughout the summer. Metamorphosis usually takes place from mid-to-late summer. For the tad-

poles of frogs, this involves a change from aquatic herbivore to largely terrestrial carnivore. Amphibians normally spend the winter either in the soil or in bottom sediments of ponds.

Dependence on water for functions other than breeding varies between species. Among the salamanders, there is a tendency towards independence from water. Adult Blue spotted and Yellow-spotted salamanders remain in the ponds for only a few days in order to breed; the Eastern Redback Salamander

does not even breed in water, whereas the newt is mostly aquatic during its adult life. The adult Eastern American Toad, Northern Spring Peeper and Wood Frog are largely independent of water except for breeding, but the Bullfrog has a prolonged larval development and spends almost all of its adult life in the water.

REPTILES

The reptiles in Nova Scotia fall into three distinct groups: five species of snakes, four species of freshwater turtles and three species of marine turtles.

Snakes

The Northern Redbelly Snake, Maritime Garter Snake and Eastern Smooth Green Snake are found throughout the province, particularly in ecotone situations which provide shelter, food and open areas for sunning. The Northern Ribbon Snake is restricted to Queens and Lunenburg counties, in habitats along the edge of water. The Northern Ringneck Snake occurs only in the granite and quartzite areas of the Atlantic Uplands and in parts of Cape Breton.

Snakes exhibit two forms of reproduction: egg-laying and live bearing of young. The two egg-laying species, the Northern Ringneck Snake and Eastern Smooth Green Snake, require adequate nesting sites (for example, under rocks, where eggs can be laid and remain protected during development). Snakes require places in which to hibernate during the winter. None of these species is poisonous.

Freshwater Turtles

The freshwater turtles spend a large part of their time in association with water, but must come ashore to find sand or gravel banks and loose-soil situations in which to lay their eggs. The Wood Turtle often spends the daytime during summers away from water but, like the other species, must hibernate under water. Turtles are most common in mainland Nova Scotia but may have limited distributions. Painted Turtles are common in the central and southwestern parts of the province, but only a few isolated populations have been reported from the northern part of the mainland. Only the Wood Turtle occurs naturally in Cape Breton Island. Common Snapping Turtles are common in mainland Nova Scotia; those recorded in Cape Breton are believed to be introductions.

Marine Turtles

Three marine turtle species have been recorded as summer visitors in Nova Scotia waters: Atlantic Ridley, Atlantic Loggerhead and Atlantic Leatherback. It is the Atlantic Leatherback that is usually brought to the attention of the public because of its large size. It is also the only "regular" summer visitor of the three. They breed in the tropics. The Leatherback is listed as endangered under COSEWIC.

SPECIAL FEATURES

1. Some species of reptiles are considered vulnerable to disturbance and require protection because of restricted distribution and particular habitat requirements.² The Blanding's Turtle is recognized under COSEWIC as a threatened species in Nova Scotia.³ The Wood Turtle, which occurs in some watersheds in northern mainland Nova Scotia and Cape Breton, is vulnerable during early development, and especially during adult life, when specimens are taken as pets and later released away from the main breeding populations. Marine turtles are protected in their breeding sites in the tropics but not when they enter Nova Scotian waters as adults. Specimens caught in fishing nets are not normally released in sufficient time to survive. Blanding's and Wood Turtles may not reproduce until age twenty. It is difficult for populations to recover from any unnatural loss of adults.
2. Several species show interesting morphological variation within populations. Of particular interest are the dark or melanistic variety of the Maritime Garter Snake, colour-pattern variation on the Northern Ringneck Snake, triploid individuals of the Blue-spotted Salamander and the erythristic (all red phase) Eastern Redback Salamander.¹
3. A goldfish pond at Mount St. Vincent University, Halifax is being transformed into an amphibian pond as a project under DAPCAN (Declining Amphibian Populations in Canada). The project was initiated under IUCN (International Union for the Conservation of Nature and Natural Areas) to monitor species' response to environmental changes such as global warming.⁴

CULTURAL FACTORS

The availability of breeding ponds close to woodland habitats is the most important ecological consideration for amphibians. The construction of isolated ponds and ditches has been of great benefit to amphibians, since the larval development can proceed at a faster rate in the warm, shallow water and there is only limited predation by fish.

The ditches created by road construction are small and shallow, and amphibian breeding and egg development is rapid.

The car becomes the population's predator on rainy nights when amphibians are active, and when adults migrate to ponds in spring and the young disperse from the ponds in late summer.



Associated Topics

T4.1 Post-glacial Climatic Change, T4.3 Post-glacial Colonization by Animals, T8.2 Freshwater Environments, T8.3 Freshwater Wetlands

Associated Habitats

H3 Fresh Water, H4 Freshwater Wetlands

References

- 1 Gilhen, J. (1984) *The Amphibians and Reptiles of Nova Scotia*. Nova Scotia Museum, Halifax.
- 2 Gilhen, J. and F. Scott (1981) Distributions, Habitats and Vulnerability of Amphibians, Reptiles, and Small Native Mammals in Nova Scotia. Nova Scotia Museum, Halifax. (*Curatorial Report* No. 45).
- 3 Herman, T.B., T.D. Power and B.R. Eaton (in press) "The status of Blanding's Turtle (*Emydoidea blandingi*) in Nova Scotia." *Can. Field Nat.*
- 4 Gilhen, J. (1993) Nova Scotia Museum, Personal communication.

The temperature in which eggs incubate is determined by the microclimate of an area and will influence the sex of hatchling turtles. Higher temperatures tend to produce more males. A dramatic change in climate, which would have an effect on the microclimate, could create an imbalance in sex ratio.

Additional Reading

- Bleakney, J.S. (1958) A Zoogeographical Study of the amphibians and reptiles of eastern Canada. National Museum of Canada. (*Bulletin* No. 155).
- Dale, J., B. Freedman and J. Kerekes (1985) "Experimental studies of the effects of acidity and associated water chemistry on amphibians." *Proc. N.S. Inst. Sci.* 35(2).
- Kejimikujik National Park Study on Blanding's Turtle
- Milton, G.R. and J. Towers (1992) Amphibian and Small Mammal captures on conventional clearcut and whole-tree harvested sites. St. Mary's River Forestry-Wildlife Project, Canadian Institute of Forestry, Antigonish, N.S. (*Report* No. 17).
- 8 Power, T.D. (1989) *Seasonal movements and nesting ecology of a relict population of Blanding's Turtle (Emydoidea blandingii [Holbrook]) in Nova Scotia*. M.Sc. thesis, Acadia University, Wolfville, Nova Scotia.
- Saunders, G. (1991) *Wildlife of Atlantic Canada and New England*. Nimbus Publishing, Halifax.