

## The Brown Morph of the Northern Ringneck Snake, *Diadophis punctatus edwardsii*, on Big Tancook Island, Mahone Bay, Nova Scotia

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I describe a brown morph of the Northern Ringneck Snakes (*Diadophis punctatus edwardsii*) that occurs in a population on Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia, Canada.

Key Words: Brown morph, Northern Ringneck Snake, *Diadophis punctatus edwardsii*, Big Tancook Island, Mahone Bay, Nova Scotia.

The Northern Ringneck Snake, *Diadophis punctatus edwardsii*, is a small, slender, nocturnal, woodland snake. The most commonly observed dorsal colour is black to slate-grey. This rear-fanged but harmless snake was known to the Mi'kmaq People in Nova Scotia as "the worst snake, Um-taa-kum (k)", (phonetic, from Harry Piers Museum Number 5321, Gilhen 2000).

In Nova Scotia the Northern Ringneck Snake is common in the Atlantic Interior, Theme Region 400 (Davis and Browne 1997). It is most commonly observed in southwestern mainland of Nova Scotia, and less commonly observed in the northeastern mainland. Only four localities are known on Cape Breton Island (Figure 1). Big Tancook Island is a coastal drumlin situated at the mouth of Mahone Bay: 44°27'00"N, 64°10'00"W. There are exposed slate rock areas, particularly along the shore. A gravel road on the island stretches from southeast to northwest giving residence access to the ferry. Although fishing is an important industry, many residents take pride in their extensive lawns and gardens. This extensive edge habitat, with lots of loose slate rock and wood debris, adjacent to the coniferous forest provides cover for three species of snake which are common on the island: Maritime Garter Snake, *Thamnophis sirtalis pallidulus*, Eastern Smooth Green Snake, *Ophedrys vernalis*, and Northern Ringneck Snake.

The colour of the Ringneck Snake, *Diadophis punctatus*, varies over the range of the species in North America. Ernst and Ernst (2003) described the species as a complex of 12 subspecies and give the general dorsal colour as an "olive, greenish grey, blue black, or black snake with a dark head and a cream, yellow or orange neck band". However, Conant (1958) gives the dorsal colour of the Northern Ringneck Snake, the subspecies native to Nova Scotia and Canada, as bluish black, bluish gray, slate, or brownish, with a golden collar.

Most published accounts for Canadian populations of the Northern Ringneck Snake agree that this snake is basically bluish-slate gray to black in colour on the back, with a yellowish or yellowish-orange neck band

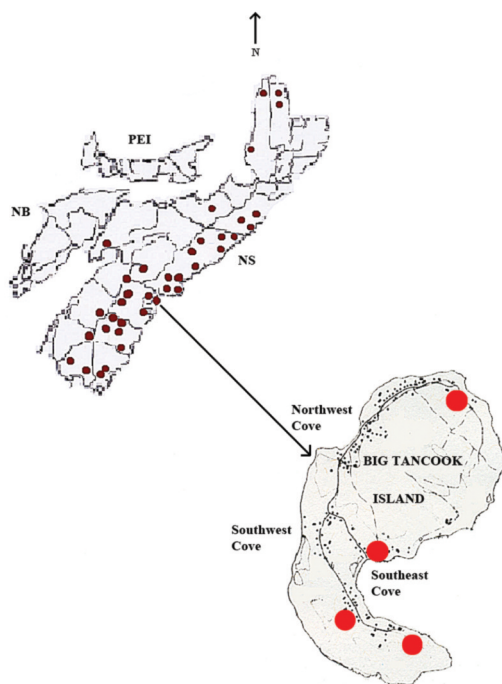


FIGURE 1. Distribution of the Northern Ringneck Snake, *Diadophis punctatus edwardsii*, in Nova Scotia.

(Cook 1984 [Canada], Logier 1958 [Ontario], Desroches and Rodrique 2004 [Quebec], Gorham 1970 [New Brunswick]).

In Nova Scotia the dorsal colour of hatchling Northern Ringneck Snakes is black on the back of the head, trunk and tail. Juveniles can be slightly lighter grey-black. Most observations of adults in Nova Scotia are of a black or bluish slate-grey snake with a yellowish-orange collar (Martin 1969; Gilhen 1970, 1984).

I first became aware that brown individuals represented a distinct brown morph in Nova Scotia, and not



FIGURE 2. Two brown and one bluish slate-grey Northern Ringneck Snakes (*Diadophis punctatus edwardsii*) from Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia.

an anomaly, while reviewing Harry Piers' Accession Books 1899 to 1939 (Gilhen 2000). Two of the nine specimens (22%) he catalogued were brownish above. He described one Northern Ringneck Snake (NSM 3410), from Tufts Cove, Dartmouth, Halifax County, Nova Scotia, collected 22 August 1909 by Lancelot A. Purcell as "Above, brownish-black (clove brown), paler on the sides..." A second brownish individual (NSM 3591) collected at Point Pleasant Park, peninsular Halifax, Halifax County, Nova Scotia, on 12 August 1910, by Ralph McDonald and Robert Walsh was described as "Above grayish hair-brown (perhaps more like dark mouse-gray); dark (clove brown) on top of head. The colour of the back passes into bluish-gray (light French-gray) on one or two rows of scales above the belly." I have observed the brown variations described by Piers in Nova Scotia. The shade and brightness depends on the light and time before or after the skin is shed. Fresh shed individuals appear glossy and iridescent, particularly on the lower sides. Piers referred to the glossy lower sides as "slight bronzy and bluish play of colours in some lights".

In 1969, during a study of the variation of Northern Ringneck Snakes at McCabe Lake, Halifax County, Nova Scotia, the author observed that the dorsal colour of two adults (8%) was a cinnamon-brown colour anteriorly, gradually changing to bluish slate-grey posteriorly. In 2005 he also noticed that on Big Tancook Island, Mahone Bay, Nova Scotia, that approximately 50%, were brown anteriorly (Figure 2). Based on

Smithie (1974) the cinnamon-brown colour, observed on two individuals at McCabe Lake and those of the Big Tancook Island population, would vary from Antique Brown (Color 37) to Cinnamon (39) depending on light and time before or after shedding. On 10 June 2010 several freshly shed individuals observed on Big Tancook Island were noted to be a bright orange-brown on the back of the head, trunk and tail (Figure 3) and varied from Tawny (Color 38) to Cinnamon-Rufous (40) depending on light.

The individual dorsal scales of the brown adult Northern Ringneck Snakes from McCabe Lake and Big Tancook Island are black in ground colour with numerous bluish-grey and brown spots. The brown spots are more plentiful anteriorly and overwhelm the grey spots, thus giving these snakes a brownish appearance anteriorly. At about mid-trunk length the proportion of grey spots gradually increase so that the dorsal colour of the individual changes from brown to bluish slate-grey.

Although the ventral colour of Northern Ringneck Snakes in Nova Scotia can vary from yellowish-orange, orange to reddish-orange, on Big Tancook Island the bluish slate-grey individuals are yellowish-orange while brown individuals tend to be a darker orange. Also, on Big Tancook Island mid-ventral spotting is extensive and extremely variable, as found on the mainland at McCabe Lake (Gilhen 1969, 1984)

The Northern Ringneck Snakes in Figure 2 were retained as voucher specimens and deposited in the





FIGURE 3. One brown morph of the Northern Ringneck Snake, *Diadophis punctatus edwardsii*, from Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia.

Nova Scotia Museum of Natural History, Halifax (NSM55555) as well as a series of colour photographs of the Big Tancook Island snakes.

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