

## A Partial Albino Hatchling Northern Ring-necked Snake, *Diadophis punctatus edwardsii*, from Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia, Canada

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On 10 June 2012 a sample of seven gravid female Northern Ring-necked Snakes (*Diadophis punctatus edwardsii*), from Big Tancook Island, Lunenburg County, Nova Scotia, was selected for a seasonal live display at the Nova Scotia Museum of Natural History in Halifax. A total of 13 eggs was removed from the display in late June 2012 and incubated for public viewing. The eggs began hatching on 22 August 2012. One of the hatchlings was partial albino (with zanthophores or amelanistic). This is the first record of an albinistic Northern Ring-necked Snake in Nova Scotia.

**Key Words:** partial albino, zanthophore, amelanistic, hatchling, Northern Ring-necked Snake, *Diadophis punctatus edwardsii*, Big Tancook Island, Nova Scotia.

We collected seven gravid female Northern Ring-necked Snakes (*Diadophis punctatus edwardsii*) from among approximately 40 adults observed on Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia (44°27'00"N, 64°10'00"W) (Figure 1) on 10 June 2012 for a live display in the Netukulimk Gallery

of the Nova Scotia Museum of Natural History in Halifax over the summer. The females (three slate grey and four brown morphs) were found under loose slate, boards, and other debris in tall grass in a clear-cut area about 100 m from the sea shore. Big Tancook Island is a drumlin 4 kilometers long and 1.6 km wide.

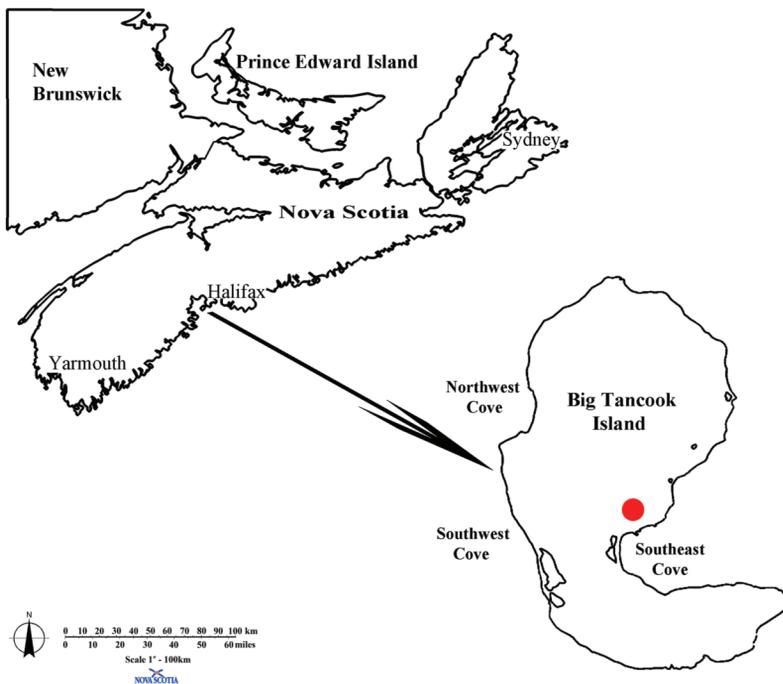


FIGURE 1. Map of Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia. Photo by Roger Lloyd.



FIGURE 2. Dorsal view of an albinistic and a normal Northern Ring-necked Snake, *Diadophis punctatus edwardsii*, both hatched on 22 August 2012 from eggs laid by gravid females that were collected on 10 June 2012 from Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia. Photo by Roger Lloyd.

A total of 13 eggs were laid by the females in late June 2012. The eggs were removed from the display and incubated so that the public could observe them hatching. One of the hatchlings (see cover illustration) was comparable to the partial albino (with zanthophores or yellow pigment) described by Drykacz (1981). It was also amelanistic in that it completely lacked black pigment, which is characteristic of the ground colour of this subspecies in Nova Scotia (Gilhen, 1970).

This hatchling, approximately 12 cm total length and 1.2 grams in weight, had pink eyes and a white tongue. The dorsal colour was pinkish-white with a pale yellow neck band. The neck band was bordered anterior and posteriorly by a narrow grey translucent band (Figure 2). The underside was yellowish-orange (Figure 3), paler than that of normal hatchlings.

A partial leucistic adult male Northern Ring-necked Snake (leucistic with erythrophores) approximately 30 cm in total length was found under a large piece of quartzite in a boulder field at Geizer Hill, west of peninsular Halifax City, Nova Scotia (44°39'03"N, 63°39'28"W), on 28 June 1997 (Gilhen 1999) (Figure 4). This snake lacked black pigment except for the eyes, which were black. Above, the snake was greyish-white on the trunk and pinkish-white on the tail. The skin between the scales was dull white. The major dif-

ferences between that specimen and the albino hatchling described above is that the albino hatchling had pink eyes and a white tongue (see cover illustration) and the leucistic individual had black pigmented eyes and red tongue (Figure 4). The head of the hatchling was pinkish-white and the head of the adult male was orange brown. Both had a pale yellow band round the neck with a greyish translucent border above and below. The underside of the hatchling was yellowish-orange while the adult male was darker orange. Based on these differences, we propose that this hatchling is the first record in Nova Scotia of a partial albino Northern Ring-necked Snake with zanthophores.

### Discussion

In Nova Scotia, reports of albino, leucistic, and amelanistic amphibians and reptiles have increased in recent decades. Such anomalies happen rarely in nature. However, in Nova Scotia these phenomena are believed to be the result of inbreeding in isolated, disturbed and fragmented habitats (Russell et al 2012).

Nova Scotia is a narrow and elongate province which juts out into the Atlantic Ocean. With the exception of sea turtles and species introduced onto Newfoundland, it represents the northeastern limit for amphibians and reptiles. The entire landscape is almost completely sur-



FIGURE 3. Ventral view of an albinistic and a normal Northern Ring-necked Snake, *Diadophis punctatus edwardsii*, both hatched on 22 August 2012 from eggs laid by gravid females that were collected on 10 June 2012 from Big Tancook Island, Mahone Bay, Lunenburg County, Nova Scotia. Photo by Roger Lloyd.



FIGURE 4. Dorsal view of an adult male leucistic Northern Ring-necked Snake, *Diadophis punctatus edwardsii*, from Geizer Hill, west of peninsular Halifax, Halifax County, Nova Scotia, on 28 June 1997. Photo by Roger Lloyd and Richard Plander.

rounded by the sea, and the present native herpetofauna has been isolated here for thousands of years (Bleakney 1958, Cook 1967 and Gilhen 1984). The province is also characterized by a varied geology, topography, and climate, which can limit the distributional gene flow for some species, such as the Northern Ring-necked Snake (Gilhen, 1984).

The Atlantic coast of Nova Scotia in many areas is clustered with islands inhabited by amphibians and reptiles, particularly salamanders and snakes, separated from the mainland for centuries and in some cases thousands of years. Major highways follow the coast and often separate the amphibians and reptiles inhabiting the numerous coastal peninsulas and further inhibit gene flow. In recent years, urbanization of these peninsulas has created an "island" effect, which further divides amphibian and reptile populations.

This carving up of the landscape makes it more likely that individuals carrying a recessive gene for the albino, leucistic and amelanistic conditions will encounter and mate with individuals of similar genotype in these small, isolated habitats. Consequently, in the future, we expect more frequent reports of amphibians and reptiles in Nova Scotia that manifest these aberrant conditions.

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