

## Two Amelanistic Eastern Red-backed Salamanders (*Plethodon cinereus*) from Eastern Canada

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Moore, Jean-David, and John Gilhen. 2011. Two amelanistic Eastern Red-backed Salamanders (*Plethodon cinereus*) from eastern Canada. *Canadian Field-Naturalist* 125(1): 58–60.

Three colour morphs of the Eastern Red-backed Salamander, *Plethodon cinereus*, are known in eastern Canada: red-backed, lead-backed, and erythristic. Anomalies, including two albino and four leucistic individuals, are also known from eastern Canada. We report the first salamander individuals exhibiting amelanism, which is a lack of black skin pigment, but with black eyes, one from Quebec and one from Nova Scotia, Canada.

**Key Words:** Amelanistic, Eastern Red-backed Salamander, *Plethodon cinereus*, deciduous forest, Quebec, coniferous forest, Nova Scotia, Canada.

The Eastern Red-backed Salamander, *Plethodon cinereus*, is probably the most abundant salamander in eastern North America (Conant and Collins 1998). Three colour morphs of this species are known in eastern Canada. The two most common are the grey-black with a reddish dorsal stripe (red-backed morph) and the grey-black without a dorsal stripe (lead-backed morph). The erythristic morph (all red) is apparently rare, at least in eastern Canada (Bleakney 1958; Cook 1967; Gorham 1970; Cook 1984; Gilhen 1984; MacCulloch 2002; Desroches and Rodrigue 2004). Anomalies, including albino and leucistic individuals, are known from populations in eastern Canada. The albino individuals, one from Nova Scotia (personal communication, J. Gilhen) and one from Quebec (personal communication, J.-F. Desroches), are pinkish white with pink eyes. The leucistic individuals, two from Nova Scotia (personal communication, J. Gilhen), one from New Brunswick (personal communication, G. Jongsma) and one from Ontario (Rye 1991), vary from pinkish white to milky white with black eyes.

We report the first salamander individuals exhibiting amelanism, one from Quebec and one from Nova Scotia, Canada. Amelanism (also known as amelanosis) is a pigmentation abnormality characterized by the lack of skin pigments called melanins, which are responsible for black, brown, and yellow colours, but with black eyes. Amelanistic specimens are pale in colour, although they may have some colour, especially red or pink, owing to the presence of other pigments.

### Study Area

The Quebec specimen was captured 50 km northwest of Quebec City, in the Lake Clair watershed, Quebec (46°57'N, 71°40'W), at an elevation of 270 to 390 m. The habitat consists of mostly uneven-aged deciduous woods with small patches of conifers. The deciduous area is composed of Sugar Maple (*Acer saccharum*), Yellow Birch (*Betula alleghaniensis*), and American

Beech (*Fagus grandifolia*). The coniferous patches are principally Balsam Fir (*Abies balsamea*) with some Red Spruce (*Picea rubens*). Additional details on the habitat are described in Moore and Wyman (2010).

The Nova Scotia specimen was captured on Route #212 (Station 10), in the Goffs area of the Salmon River watershed, Halifax County, Nova Scotia (44°53.841'N, 63°26.857'W), at an elevation of about 230 m. The habitat consists mostly of clear-cut coniferous forest on the southeastern side of the highway. This salamander was migrating to the northwestern side, which is maturing coniferous forest composed mostly of White Spruce (*Picea glauca*), Balsam Fir, and Tamarack (*Larix laricina*). The ditches on both sides of the highway were wet, with sphagnum (*Sphagnum* sp.) and some Broadleaf Cattail (*Typha latifolia*) and banked by Speckled Alder (*Alnus incona*), seedling conifers, and Red Maples (*Acer rubrum*).

### Methods

Snout-vent length of the Quebec specimen was measured in the field using a dial calliper. Salamanders were weighed with a 10 g Pesola® spring scale. No attempt was made to determine the gender of the animal, but the presence of eggs was noted. Following examination and photographing, it was released on site. The Nova Scotia specimen was also measured using a dial calliper. It was weighed using SARTORIUS Model 2256 Top-loading Balance. Sex was determined by dissection. The salamander was photographed one day after capture.

In the descriptions that follow, we use Smithe (1975) to identify colours, and the identification number is included with the first mention in text.

### Specimens

#### Quebec

The first specimen, an adult female (Figure 1), was 80.15 mm in total length, 41.8 mm in snout-vent



FIGURE 1. Adult amelanistic Eastern Red-backed Salamander, *Plethodon cinereus*, observed and photographed by Jean-David Moore on 13 October 2005, Lake Clair watershed, 50 km northwest of Quebec City, Quebec, Canada.

length, and weighed 1.15 g. It was found on 13 October 2005 by J-DM during a study of *Plethodon cinereus* (Moore and Wyman 2010).

The back of the Quebec individual was a heavy dappling of Peach Red (94) (Smithe 1975) on Pratt's Gray (88), with Peach Red becoming infrequent on white on the posterior of the tail. The sides of the trunk were pinkish white with some Peach Red spotting, and the sides of the tail were cream white.

The legs were Pratt's Gray with a dappling of Peach Red and Medium Plumbeous (87), the front legs being slightly darker than the back legs. The underside was transparent Pratt's Gray, exposing a Mauve (75) blood vessel anteriorly. The underside of the tail was slightly darker than the sides. The eyes were approaching Jet Black (89).

#### *Nova Scotia*

The second specimen, also an adult female (Figure 2), was 58.0 mm in total length, 33.0 mm in snout–vent length, and weighed 0.8 g. It was collected at night on wet highway on 11 June 2009 by JG. This specimen was deposited in the Nova Scotia Museum of Natural History (NSM55494), Halifax.

The back of this individual was a dappling Peach Red on Pratt's Gray, with small Pratt's Gray skin spots on the posterior trunk. The Peach Red became infrequent on Pratt's Gray on the posterior tail. The sides were a dappling of Peach Red on Pratt's Gray with a



FIGURE 2. Adult amelanistic Eastern Red-backed Salamander, *Plethodon cinereus*, collected by John Gilhen on 11 June 2009, Route #212, at Goffs (Station 10), Halifax County, Nova Scotia, Canada.

small amount of Medium Plumbeous posteriorly. The legs were Pratt's Gray with a dappling of Peach Red and Medium Plumbeous, the front legs being slightly darker than the back legs. The underside was transparent Pratt's Gray exposing a Mauve blood vessel on the anterior trunk. The eyes were approaching Jet Black.

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Received 10 August 2010

Accepted 29 January 2011