



FIG. 3. *Eurycea chisholmensis* captured on 31 October 2019, with a missing right forelimb (left), then recaptured on 27 January 2020 with a regrown right forelimb (right; 88 d between captures).

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NOTOPHTHALMUS VIRIDESCENS (Eastern Newt). HABITAT.

Notophthalmus viridescens (Salamandridae) is a wide-ranging species found in North America. Endemic to the eastern United States and Canada, they are often locally abundant within suitable habitat, including throughout the state of Michigan. *Notophthalmus viridescens* has a complex life history, including four distinct life stages: egg, larva, juvenile/eft, and adult. Adult newts have high site fidelity and prefer two broad categories of aquatic habitats: small to medium-sized permanent bodies of water and ephemeral wetlands (Roe and Grayson 2008. J. Herpetol. 42:22–30). Adults and efts exhibit terrestrial behavior and may be found overwintering in both wetlands and woodlands adjacent to ephemeral wetlands, marshes, ponds, rivers, and lakes (Stockwell et al. 1989. J. Herpetol. 23:409–414). They have also been reported from other wetlands including floodplains, bogs, and vernal pools (Butler et al. 2005. NENA 12:1–10). However, *N. viridescens* has not been reported from a fen, at any life stage. Fens are minerotrophic peatlands and typically manifest as open, alkaline to slightly acidic habitats. Fens are currently understood to have little to no species richness or abundance with respect to salamanders (Stockwell et al. 1989, *op. cit.*). An occasional exception in North America is *Hemidactylium scutatum* (Four-toed Salamander; Plethodontidae), which has a strong association with mosses in the genus *Sphagnum* (King and Richter 2022. Diversity 14:995).

A single *N. viridescens* was observed traversing a lakeshore northern fen at 1041 h on 9 September 2024. The fen survey was conducted from 0900 h to 1100 h at Lake Skegemog Wildlife Area, Clearwater Township, Kalkaska County, Michigan, USA (44.81397°N, 85.31061°W; WGS 84; 181.7 m elev.). Upon initial detection and visual inspection, the individual was determined to be an adult male. The individual was observed for 10 min and



FIG. 1. Left: lakeshore northern fen habitat where the *Notophthalmus viridescens* was encountered in Michigan, USA. The view is oriented towards the north, with a cedar swamp in the background. Right: the encountered post-breeding male, viewed dorsally, amongst *Utricularia intermedia*, *Carex stricta*, and *Scorpidium scorpioides*. Scale bar = 2 cm.

remained motionless for several minutes of observation, upon which the specimen was measured (821 mm total length; Fig. 1). The individual was not collected. The *N. viridescens* was 51 m north of the central-west shoreline of Lake Skegemog and 48 m south of a cedar swamp. Lake Skegemog has an area of 11 km², with approximately half of the shoreline being developed. The surrounding habitat is part of the Lake Skegemog Wildlife Area, which is protected and managed by the Michigan Department of Natural Resources and the Grand Traverse Regional Land Conservancy. The weather was cloudy without precipitation; air temperature was 20.5°C, ground temperature was 16.4°C, and the temperature of the surface of the skin at dorsal midbody was 20°C. The individual was moving hastily underneath a layer of several species of sedges (*Carex aquatilis*, *C. buxbaumii*, *C. stricta*), *Typha angustifolia*, shrubs (*Dasiphora fruticosa*, *Toxicodendron vernix*, *Chamaedaphne calyculata*, *Lonicera oblongifolia*), and stunted conifers (*Larix laricina*, *Thuja occidentalis*, *Picea mariana*). The individual was observed actively walking over sphagnum mosses (*Sphagnum* sp.), brown mosses (Amblystegiaceae), *Scorpidium scorpioides* (Hooked Scorpion Moss), and *Utricularia intermedia* (Flat-leaved Bladderwort).

To my knowledge, this is the first published observation of *N. viridescens* in a fen. Fens within other US states and Canadian provinces should be surveyed specifically for *N. viridescens*. Further research is needed to determine the extent to which fens are utilized during post-breeding dispersal. Further surveys should target not only adults, but every life stage, as it is currently unclear whether *N. viridescens* inhabit fens during the eft, larval, and/or egg stage. Open water pools are often present within several varieties of fen, and may occasionally offer suitable breeding, egg deposition, and or larval habitat.

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PLETHODON CINEREUS (Eastern Red-backed Salamander).

GRAVID LEUCISTIC FEMALE. Many amphibians exhibit color polymorphism (Beukema et al. 2015. J. Zool. Syst. Evol. Res. 54:1–10; Hoffman and Blouin 2000. Biol. J. Linn. Soc. 70:633–665), including *Plethodon cinereus* (Moore and Ouellet 2014. Can. Field-Nat. 128:250–259). Color morph variation can have fitness



FIG. 1. A) Leucistic morph of a *Plethodon cinereus* found in an urban park in Riverview, New Brunswick, Canada, on 23 October 2023; B) dorsal view of the leucistic *P. cinereus* showing large white patches where the egg masses are visible through the skin.

implications for various taxa through differences in sexual selection, predation, and habitat selection (Nevo 1973. *Evolution* 27:353–367; Galeotti et al. 2013. *Evol. Bio.* 40:385–394; Karpestam et al. 2016. *Sci. Rep.* 6:22122). *Plethodon cinereus* have a well-known polymorphism in their skin pigmentation and dorsal striping (Moore and Ouellet 2014, *op. cit.*). Most individuals have black-grey skin and a red-orange stripe along their back, however, lead-backed (unstriped) and erythristic (i.e., entirely red-orange) morphs are also relatively common and are found throughout their range (e.g., Jongsma 2012. *Herpetol. Rev.* 43:318; Moore and Ouellet 2014, *op. cit.*). There are also rare observations of other color morphs, including iridistic (i.e., iridescent flecking on the body), albino (i.e., entirely lacking pigment), and leucistic (i.e., lacking pigment on the body but typical pigmentation on irises) individuals (Moore and Ouellet 2014, *op. cit.*).

The fitness of *P. cinereus* color morphs can differ regionally due to variations in primary predators, with avian and mammalian predators exhibiting different preferential predation between striped and unstriped morphs (Grant et al. 2018. *J. Herpetol.* 52:127–135). Common morphs of this salamander also exploit different microhabitats and behave differently, with unstriped individuals being more sensitive to desiccation, heat, and predation on the forest floor (Straub et al. 2024. *Ecol. Evol.* 14:e10978). Color morphs are heritable traits in *P. cinereus*. However, it is likely that there are also epistatic and climatic effects on the dominance patterns between striped and lead-backed individuals (Highton 1959. *Copeia* 1959:33–37; Highton 1974. *Genetics* 80:363–374; Evans et al. 2020. *Oecologia* 192:909–918). Due to limited observations of rare morphs, most studies on the adaptive role of *P. cinereus* color have focused on striped, lead-backed, and erythristic morphs.

On 23 October 2023 at 1500 h, we found a rare leucistic morph of *P. cinereus* (Fig. 1A) in an urban park near Riverview High School in Riverview, New Brunswick, Canada (46.0530°N, 64.8011°W; error = 1.8 m; WGS 84) during a general amphibian survey. The individual was a gravid adult female (Fig. 1B) found under a cover object with a juvenile unstriped (lead-backed) individual. The leucistic salamander had an SVL of 41 mm and a total length of 75 mm (measured to the nearest 1 mm with a plastic ruler). The individual had a mass of 0.92 g (measured

to the nearest 0.01 g with a digital scale; Fusion, Model No. BX-200). After observation, the cover object was replaced, and the salamander was allowed to retake refuge under the object. While little is known about the fitness implications of leucism in *P. cinereus*, the fact that this individual survived to adulthood and reproduce suggests that its abnormal coloration did not meaningfully reduce its fitness.

This is only the second formally published observation of a leucistic *P. cinereus* in New Brunswick, with the only other occurring in Fredericton (Jongsma 2012. *Herpetol. Rev.* 43:460). In New Brunswick, one additional individual was documented informally on the community science platform iNaturalist, in Rothesay, NB (<https://inaturalist.ca/observations/133910603>, 23 July 2024). There have been five other formally published observations of this morph in Canada, including an observation in Nova Scotia (Gilhen 1986. *Can. Field-Nat.* 100:375) and two observations in Ontario (Rye 1991. *Can. Field-Nat.* 105:573–574; Lamond 1994. *The Reptiles and Amphibians of the Hamilton Area: a Historical Summary and the Results of the Hamilton Herpetofaunal Atlas*. Hamilton Naturalists' Club, Ontario, Canada. 174 pp.), and two observations in Québec (Moore and Ouellet 2014, *op. cit.*). Our observation is important because it documents a rare occurrence of a gravid female leucistic *P. cinereus*.

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PLETHODON METCALFI (Southern Gray-cheeked Salamander). **DIET.** On 2 September 2024, at 1632 h, a *Plethodon metcalfi* was observed engaging in diurnal foraging behavior while consuming a tussock moth caterpillar (*Orygia* sp.) at the Pisgah National Forest, Jackson County, North Carolina, USA (35.35122°N, 82.98465°W; WGS 84; 1829 m elev.). The caterpillar identification was confirmed by Clyde Sorenson of North Carolina State University. When startled by our approach, the *P. metcalfi* darted across the trail with the partially consumed *Orygia* caterpillar protruding from its mouth (Fig. 1). The species of *Orygia* could not be identified.