



FIG. 1. Aggregation of *Notophthalmus v. viridescens* efts at hibernacula site in Ashtabula Co., Ohio, USA.

On 2 April 2006, I observed a minimum of 19 *N. viridescens* red efts congregated beneath a slab of stone (Fig. 1). The observation was made at ca. 1645 h under partly cloudy conditions with an ambient air temperature of ca. 13.5°C. The stone was not particularly close to the base of any trees, but was located within 30 m of a small woodland pool in Ashtabula County, Ohio, USA. The pool, which currently holds water year-round, was excavated to a depth of ca. 1–2 m about 10 years prior and an adult *N. viridescens* was observed surfacing near the edge of this pool. Beneath the slab were a number of small holes leading to subterranean spaces of unknown depth. At least one eft was observed to escape down one of these holes (Fig. 1). The group of efts encompassed a wide range of sizes and appeared to represent multiple age-classes. Also found beneath the slab was a Red-backed Salamander (*Plethodon cinereus*) and a Leopard Slug (*Limax maximus*). The spaces beneath this slab coupled with the large number of efts and the rapidity with which they moved toward the holes gave the strong impression that this site was used as winter hibernacula. A thorough search of additional cover objects in the surrounding area revealed no additional efts. To the best of my knowledge this is the first report of such behavior by *N. viridescens* efts. However, the utilization of specific sites as winter hibernacula would seem to be congruent with reports of strong homing ability and spatial cognition in this species.

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PLETHODON CINEREUS (Red-backed Salamander). **LEUCISM.** Leucism, a lack of skin pigmentation caused by defective chromatophores (Bartlett and Bartlett 2005. *Designer Reptiles and Amphibians*. Barron's Educational Series. New York), has been recorded in a number of plethodontid salamanders (Seeliger 1945. *Copeia* 1945:122; Miller and Braswell 2006. *Herpetol. Rev.* 37:198). Documented cases of leucism in *Plethodon cinereus* exist for West Virginia (Pauley 1974. *Redstart* 42:104), Maryland (Harris

1968. *Bull. Maryland Herpetol. Soc.* 4:57–60; Mitchell and Mazur 1998. *Northeast. Nat.* 5:367–369), and southern Ontario (Rye 1991. *Can. Field Nat.* 105:573–574). Here, we report two additional cases of leucism in *P. cinereus*, in Massachusetts and New York.

During August 2007, an adult *P. cinereus* of unknown sex, white in coloration with darkly colored eyes, was discovered beneath a decaying log in the Stony Brook Reservation in West Roxbury, Suffolk County, Massachusetts (WGS84, 42.2652778°N, 71.14°W, elev. 64 m) (E. O'Brien, pers. comm.). The specimen was found within 1 m of a heavily traveled footpath in a forested area comprised predominately of *Pinus strobes* and *Fagus grandifolia* with *Comptonia peregrines* ground cover, and was left in situ. An abundance of decaying logs was present. Both "red-backed" and "lead-backed" phenotypes of *P. cinereus* are common in the area. Several successive searches of the area were carried out over the next two weeks in an effort to photograph the specimen. On 5 Sept 2007, a leucistic adult of unknown sex measuring ca. 6.5 cm TL was found together with an adult and a neonate of the "red-backed" phenotype beneath a log in the immediate area where the original leucistic specimen was discovered (Fig. 1). Since there is no photographic record from O'Brien's original sighting, it remains unclear whether this second sighting represents the original specimen or a second individual.

On 20 Sept 2008, an adult *P. cinereus* of unknown sex (ca. 7.5 cm TL) lacking skin pigmentation and patterning with dark eyes, was discovered beneath some fallen tree bark among a 2–3 cm layer of moist leaf litter in a wooded area located directly behind the reptile house and service yard of the Wildlife Conservation Society's Bronx Zoo in Bronx County, New York (WGS84; 40.8502583°N, 73.8777417°W, elev. 20 m). The overall coloration of the specimen was white, although its skin was partially transparent, allowing visibility of some visceral organs. The wooded area is situated on a slight 10–15° north-facing incline, is bordered by service yard



FIG. 1. Leucistic *Plethodon cinereus* with "red-backed" adult and juvenile from Suffolk County, Massachusetts.

buildings to the south and a paved public pathway to the north, and is dominated by *Quercus* sp., *Acer* sp., and *Liquidambar styraciflua*. An abundance of felled trees and tree bark litter the area and provide considerable ground cover. *Plethodon cinereus* of the "red-backed" morph are common in the immediate area although no "lead-backed" or additional polymorphic phenotypes have been found.

Plethodon cinereus is considered to be one the most abundant terrestrial vertebrates in deciduous forests of northeastern North America (Burton and Likens 1975. Copeia 1975:541–546), with densities reaching up to 2.8 salamanders/m² (Mathis 1991. Oecologia 86:433–440). Likewise, it also has an extensive distribution, ranging from North Carolina to Quebec and westward to Minnesota (Petranka 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC. 587 pp.). Given these attributes, combined with a general ease of locating them beneath logs, rocks, and leaf litter, it can be expected that occasional specimens exhibiting coloration abnormalities will be found. The fact that there are currently more documented cases of leucism in *P. cinereus* than any other caudate is likely an artifact of the relative abundance of *P. cinereus*, rather than a greater incidence of color anomaly in the species. Given its fossorial and nocturnal terrestrial habits (Petranka 1998, *op. cit.*), leucism as well as other conspicuous phenotypes documented for *P. cinereus* such as albinism (Hensley 1959. Pub. Mus. Michigan State. Univ., Ser. 1:135–139; Dyrkacz 1981. SSAR Herpetol. Circ. 11:1–31; Gilhen 1986. Can. Field Nat. 100:375) may not be as deleterious to *P. cinereus* as they would be for less reclusive amphibian species. Both observed leucistic individuals were adults in good physical condition and were found in close proximity to conspecifics.

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PLETHODON CINEREUS (Red-backed Salamander). **ELEVATION.** On 2 Sept 2008, we observed a single dead, adult red-backed salamander in a granitic seepage at 1173 m elevation on the north headwall of the North Basin, Katahdin, Mount Katahdin Township (T3 R9 WELS), Piscataquis County, Maine, USA (45.931°N, 68.922°W). Red-backed Salamanders are commonly reported from low elevations in the Katahdin region, and have been reported at elevations exceeding 1219 m in the southern Appalachians, but similar elevation records do not exist for the northeastern United States, where tundra communities occur above 1200 m (Hunter et al. 1999. Maine Amphibians and Reptiles. University of Maine Press, Orono, Maine; Taylor 1993. The Amphibians and Reptiles of New Hampshire. Nongame and Endangered Wildlife Program, New Hampshire Fish and Game Department, Concord, New Hampshire). This record provides limited information about the potential elevational distribution of this species and is unusual because the surrounding vegetation is subalpine and arctic-alpine, a vegetation type not present in the southern Appalachians. Dominant vascular plants observed in the

surrounding snowbed community included the following unusual subalpine assemblage: *Carex intumescens*, *Carex flava*, *Carex scirpoidea*, *Glyceria striata*, *Campanula rotundifolia*, *Dasiflora fruticosa*, *Sibbaldiopsis tridentata*, *Drosera rotundifolia*, *Arnica lanceolata*, and *Prenanthes trifoliolata*. *Plethodon cinereus* is not the only amphibian occurring at this elevation on Katahdin; 179 m SW of this location at a similar elevation, we observed an adult American Toad (*Anaxyrus americanus*). The amphibian communities of these northern, alpine communities are more diverse than typically acknowledged and are in need of additional, focused research.

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PLETHODON DORSALIS / EURYCEA LUCIFUGA / ANEIDES AENEUS (Zigzag Salamander, Cave Salamander, Green Salamander). **ARBOREALITY.** Salamanders of the genus *Aneides* are found in arboreal habitats in temperate rainforests of northwestern North America (Spickler et al. 2006. Herpetol. Cons. Biol. 1:16–26) and hardwood forests of the eastern United States (Wilson 2003. Contemp. Herpetol. 2003[2]:1–6). However, no studies have reported the use of arboreal habitats by salamanders in the genera *Plethodon* and *Eurycea*. Herein, I report arboreal habitat use in both *Plethodon dorsalis* and *Eurycea lucifuga*. On 12 May 2005 and 15 Oct 2006, I observed *P. dorsalis* (N = 3), *E. lucifuga* (N = 5), and *Aneides aeneus* (N = 2) between 1.5 m and 4 m above ground on tree trunks (dbh greater than 114 cm). All areas of observation were adjacent to small streams. Observations were made in two different old-growth hardwood forest stands of southeastern Tennessee, USA (site 1, Dick's Cove, [35.2199417°N, 85.9599778°W]; site 2, Morgan's Steep, [35.2026833°N, 85.9320167°W]). Both sites were mesic cove forests. Individuals were observed between 2200 and 0100 h. On the two nights of observation the weather was cool with light rain. *Plethodon dorsalis* and *A. aeneus* were both observed on large Black Oak (*Quercus velutina*; site 1) while *E. lucifuga* were observed on Tulip Poplars (*Liriodendron tulipifera*; site 2). One individual *P. dorsalis* was observed foraging (ca. 2 m above ground) on small flies. These observations provide new habitat associations for both *P. dorsalis* and *E. lucifuga*.

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PLETHODON GLUTINOSUS (Northern Slimy Salamander). **REPRODUCTION AND BEHAVIOR.** *Plethodon glutinosus* has an extensive geographic distribution in the eastern United States. Extensively studied accounts of female reproductive behavior in nature remain sparse, leaving gaps in the knowledge of the reproductive behavior of this species. Currently much of what is known about nesting and associated behavior has been gained from observations made during experimental manipulations of brooding female *P. glutinosus*, their clutches, or nesting environments (Peterson 2000. Ethology 106:781–794; Trauth et al. 2006.