

An Unusually Colored Red-backed Salamander (*Plethodon cinereus*) From Northern Virginia

Joseph C. Mitchell¹, Department of Biology,
University of Richmond, Richmond, Virginia 23173
Thomas K. Pauley, Department of Biology, Marshall University,
Huntington, West Virginia 25755 and
C. Todd Georgel, 8720 Higgenbothom Place,
Richmond, Virginia 23229

ABSTRACT

We describe an orange-pink, patternless, translucent morph of the Red-backed Salamander (*Plethodon cinereus*) found in northern Virginia on 27 September 2001. This is the first description of this unusual phenotype in this terrestrial salamander.

Key Words: Salamander, Caudata, *Plethodon cinereus*, Albinism, Virginia

The Red-backed Salamander (*Plethodon cinereus*) is a widespread terrestrial plethodontid in eastern North America (Conant and Collins, 1998; Petranka 1998). Two to three distinct phenotypes occur in most populations. The most common include two color phases, the red-backed phase and the lead-backed phase, both of which occur throughout most of its range. The former morph consists of a dark dorsum with a wide stripe that is usually reddish, although yellowish and greenish colors replace the red color in some individuals. The latter morph lacks the stripe. These phenotypes are widespread geographically in Virginia and elsewhere in its range (Highton, 1975; Petranka, 1998; Mitchell and Reay, 1999). The other primary color morph is the coral-red pattern (erythristic morph) that occurs in the glaciated portion of the Northeast (Pauley et al., 2001 and references therein). Leucistic red-backed salamanders have been reported from Maryland (Harris, 1968; Mitchell and Mazur, 1998) and West Virginia (Pauley, 1974). In this paper we report on an unusual coloration in this species that has heretofore not been described.

On 27 September 2001 we found an unusually colored *Plethodon cinereus* in the southern floodplain of the Potomac River at Balls Bluff Regional Park, adjacent Leesburg, Loudoun County, Virginia. The riparian habitat consisted of large sycamore (*Platanus occidentalis*) and yellow poplar (*Liriodendron tulipifera*) trees with abundant paw-paw (*Asimina triloba*) in the understory. The forest floor had a deep leaf and litter layer and abundant downed woody debris. The unusual individual was found under a log, along with other normally-colored salamanders.

The salamander was a small female (33.2 mm snout-vent length; 20.0 mm tail length, 0.28 g) with 18 costal grooves (Figure 1). The dorsum and lateral portions of the body were uniformly colored throughout except for a dark patch on the left side. The color was orange-pink (light robin rufous; Smithe, 1975) and completely translucent. The dorsal stripe was absent. A patch of dark pigment (blackish neutral gray) on



FIGURE 1. *Plethodon cinereus* from Loudoun County, Virginia with the translucent phenotype

the left side covers three costal grooves (between the 7th and 10th) and extends from the margin of the venter to the top of the costal grooves. The head was uniformly colored robin rufous and its shape was typical of other *P. cinereus*. The eyes were typical dark grayish brown. Eye shape was typical of other *Plethodon* - round and protruding. A dark triangular area speckled with light neutral gray occurs on the center of head dorsally. A narrow line of light neutral gray runs from the nostril to the eye on both sides following upper labial area. The chin is clear and the eyes are visible through the skull when viewed from the ventral aspect. The venter of the body from the neck fold to the vent is translucent without pigment, and the organs are readily visible. The tail is translucent and round in cross-section. Lateral pigmentation on the tail changes from robin rufous to light neutral gray toward the tip of the tail. Gray pigmentation starts about 10 mm posterior of the vent on both sides. The legs are translucent, especially the anterior pair. All digits are present and without dark pigment.

We found a total of 29 other *P. cinereus* at Balls Bluff Regional Park on the same day on which the unusual morph was found; all exhibited the normal red-backed or lead-backed phenotypes. The translucent phenotype described here is likely a rare variant that inherited an unusual combination of genes for color and pattern. It was found in relatively undisturbed habitat, although periodic flooding of the Potomac River would inundate this low riparian terrace. No obvious anthropogenic factors influenced the generation of this unusual salamander. E. Lanham (pers. comm.) reported to us that she saw a similar phenotype at Mountain Lake Biological Station in summer 2002 but did not describe or photograph it. Thus, this phenotype may occur in some *P. cinereus* populations in Virginia but only rarely. Other salamanders, and indeed other vertebrates, that show unusual phenotypes should be described once discovered because they show the magnitude of deviations from normal patterns in biology.

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LITERATURE CITED

- Conant, R. and J.T. Collins. 1998. Reptiles and Amphibians in Eastern Central North America. Third Expanded Edition, Houghton Mifflin Co., Boston, MA. 616 pp.
- Harris, H.S., Jr. 1968. A Survey of Albinism in Maryland Amphibians and Reptiles. Bull. Maryland Herpetol. Soc. 4:57-60.
- Highton, R. 1975. Geographic Variation in Genetic Dominance of the Color Morphs of the Red-backed Salamander, *Plethodon cinereus*. Genetics 80:363-374.
- Mitchell, J.C. and J. Mazur. 1998. Leucistic Red-backed Salamanders (*Plethodon cinereus*) from Maryland. Northeastern Naturalist 5:367-369.
- Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Spec. Publ. No. 1, Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.
- Pauley, T.K. 1974. A Leucistic *Plethodon cinereus* from West Virginia. Redstart 41:104.
- Pauley, T.K., J.C. Mitchell and M.B. Watson. 2001. The First Reported Population of the Erythristic Morph of *Plethodon cinereus* in Pennsylvania. Northeastern Naturalist 8:355-358.
- Petranka, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC. 587 pp.
- Smithe, F.B. 1975. Naturalist's Color Guide. American Museum of Natural History. New York, NY. 23 pp.