

Catalogue of American Amphibians and Reptiles.

Highton, Richard. 1988. *Plethodon shenandoah*.

Plethodon shenandoah
Highton and Worthington
Shenandoah Salamander

Plethodon richmondi shenandoah Highton and Worthington, 1967:619. Type-locality, "Appalachian Trail, 0.02 mile northeast of its junction with Naked Top Mountain Trail, 0.4 air mile west of the top of Hawksbill Mountain, Shenandoah National Park, Page County, Virginia, 3650 ft. elevation." Holotype, Nat. Mus. Nat. Hist. (USNM) 157379, an adult male collected on 20 April 1966 by Richard Highton, Richard D. Worthington and Robert G. Jaeger.

Plethodon cinereus: Thurow, 1968: 32.

Plethodon cinereus cinereus: Thurow, 1968: 36.

Plethodon nettingi shenandoah: Highton, "1971"(1972):150-151.

Plethodon shenandoah: Highton, 1977:15.

- **Content.** No subspecies are recognized.

- **Definition.** *Plethodon shenandoah* is a member of the *P. cinereus* group of eastern *Plethodon* as defined morphologically by Highton (1962) and biochemically by Highton and Larson (1979). The modal number of trunk vertebrae is 19. Adults range from 40-57 mm (body) and 85-110 mm (total) length. There are two color morphs, a striped morph with a narrow red or yellow dorsal stripe and an unstriped morph that is uniformly dark brown. The unstriped morph usually has small dorsal red spots. The sides have many white spots. The belly is dark brown with a variable number of small white or yellow spots. The chin usually is more mottled than the belly.

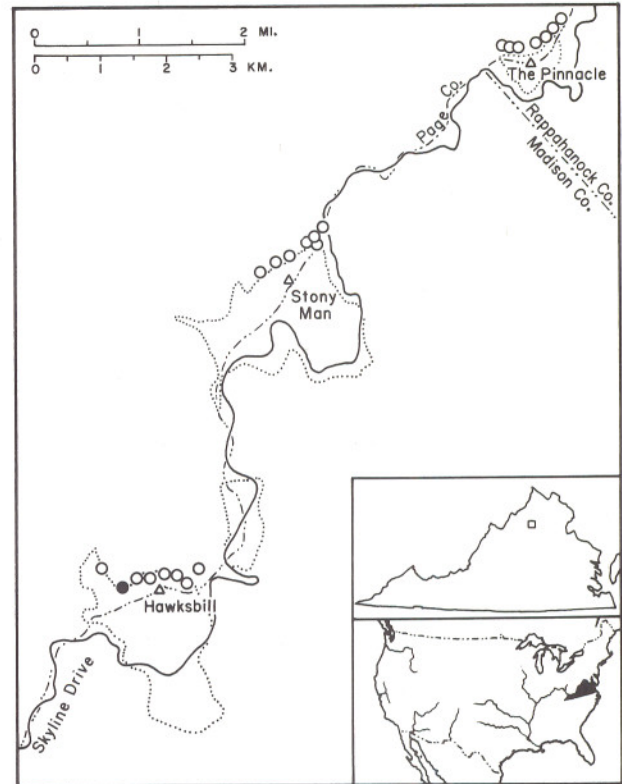
- **Descriptions.** Highton and Worthington (1967) described the type series and discussed variation among populations from the three isolates. Descriptions are in Conant (1975), Behler and King (1979), and Martof et al. (1980).

- **Illustrations.** Martof et al. (1980) provided a color photograph of both color morphs. Smith (1978) has a color drawing of the unstriped morph. A drawing of the male mental gland is in Dodd and Brodie (1976).

- **Distribution.** *Plethodon shenandoah* is known only from northwest-facing talus slopes of three isolated mountains in Shenandoah National Park, Madison and Page counties, Virginia: Hawksbill, Stony Man, and The Pinnacle.

- **Fossil Record.** None.

- **Pertinent Literature.** Highton and Worthington (1967) discussed the habitat distribution of *P. shenandoah* and *P. cinereus*, the heritability of the distinguishing characters of the two species, and possible hybridization between them at the northeast end of the Hawksbill isolate. Jaeger (1970, 1971a, 1971b, 1972, 1974a, 1974b, 1980) studied habitat distribution, potential extinction, tolerance to desiccation and competition between *P. shenandoah* and *P. cinereus*; Wrobel et al. (1980) examined aggressive interaction between the two species. Intra- and interspecific communication through chemical signals between the same two species was studied by Jaeger and Gergits (1979). Jaeger (1981) compared clutch size and diet diversity of aquatic and terrestrial salamanders including *P. shenandoah*. Temperature dependent assimilation efficiencies are in Bobka et al. (1981). Kaplan (1977) studied exploitative competition for food between *P. shenandoah* and *P. cinereus*. Thurow (1976) studied aggression, territoriality, social dominance and food competition between *P. shenandoah* and several other species of *Plethodon*.



Map. The solid circle shows the type locality. Hollow circles indicate other records. Dotted line indicates the 3500 ft. contour.

Highton and Larson (1979) compared electrophoretic variation in 29 proteins of *P. shenandoah* with that in all 25 other species of the genus *Plethodon* recognized at the time. Its albumin was compared immunologically to several other species of *Plethodon* by Maxson et al. (1979) and Maxson et al. (1984). DNA sequence homologies to cRNA of *P. cinereus* were studied using DNA/cRNA hybridization techniques by Macgregor et al. (1973). Chromosomal morphology, genome size and DNA sequence homologies to eastern and western species of *Plethodon* were studied by Mizuno and Macgregor (1974). Larson (1984) reviewed patterns of evolution in the salamander family Plethodontidae and compared *P. shenandoah* to other species. He also estimated the time of divergence between *P. shenandoah* and *P. cinereus* based on a time-calibration of protein divergence. A comparison of the male mental gland with other species is in Dodd and Brodie (1976). Conservation was discussed by Bury et al. (1980).

- **Etymology.** *P. shenandoah* was named for Shenandoah National Park.

- **Comment.** *Plethodon shenandoah* was originally described as a subspecies of *P. richmondi* because of overlapping variation in the ranges of the morphological diagnostic characters used to diagnose all the forms in the group (*richmondi*, *hubrichti*, *nettingi* and *shenandoah*). Further work by Highton (1971) indicated that *P. richmondi* is subdivided into two species (*P. richmondi* and *P. hoffmani*), both closer morphologically to each other than either is to the other three forms. For that reason, *hubrichti* and *shenandoah* were then considered subspecies of *P. nettingi*, a morphologically more similar form. On the basis of genetic distance data, all three were recognized as full species by Highton and Larson (1979). Thurow (1968) synonymized *P. shenandoah* with *P. cinereus*, but later (1976) regarded *shenandoah* as a valid form.

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Richard Highton, Department of Zoology, University of Maryland, College Park, Maryland 20742.

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