

Catalogue of American Amphibians and Reptiles.

HIGHTON, RICHARD. 1986. *Plethodon hoffmani*.

***Plethodon hoffmani* Highton
Valley and ridge salamander**

Plethodon richmondi: Netting and Mittleman, 1938 (part).

Plethodon cinereus cinereus: Hoffman, 1945:200.

Plethodon hoffmani Highton, 1971 (1972):151. Type-locality, "Clifton Forge, Alleghany County, Virginia." Holotype, National Museum of Natural History (USNM) 135203, an adult male collected in April, 1954, by Richard L. Hoffman. The actual date of publication is April 5, 1972.

P[lethodon] r[ichmondi] hoffmani: Smith, 1978:118. This listing must be in error because Smith states that *P. hoffmani* "is now considered a full species."

• CONTENT. No subspecies are recognized.

• DEFINITION. *P. hoffmani* 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 varies geographically from 21 to 22. Adults range from 40–64 mm (body) and 90–137 mm (total) length. The dorsum is brown with scattered very small white spots and abundant brassy flecking. There are larger white spots on the sides. The belly is mostly brown with scattered white spots and the chin is heavily mottled with white spots. Most populations have only the unstriped morph described above, but some individuals with narrow red dorsal stripes are known from the vicinity of Reddish Knob and Shenandoah Mountain, in Virginia and West Virginia (Highton and Jones, 1965).

• DESCRIPTIONS. Descriptions are in Highton (1971), and Martof et al. (1980).

• ILLUSTRATIONS. Color photographs are in Behler and King (1979) and Martof et al. (1980). Black and white photographs are in Minton (1972) and Highton and Jones (1965). McCoy (1982) cited the photograph in Harrison (1949) as that of a *P. hoffmani*, but the specimen (CM 27669) is actually a *P. richmondi* from Pittsburgh, Allegheny County, Pennsylvania. A drawing of the ventral coloration is in Conant (1975). Coss (1974) gives scanning electron microscopic photographs of maxillary and premaxillary teeth.

• DISTRIBUTION. *Plethodon hoffmani* inhabits the Valley and Ridge Physiographic Province from central Pennsylvania southwest to the New River in Virginia and West Virginia. It also occurs westward in some adjacent parts of the Appalachian Plateau Physiographic Province and eastward to the Blue Ridge Physiographic Province in Botetourt County, Virginia.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Highton (1962: fig. 30) mapped the distribution of the species based on its light chin and belly before it was recognized taxonomically as distinct from *P. richmondi*. Highton and Worthington (1967: fig. 3) also recognized the different ventral coloration of these populations. Highton and Jones (1965) discussed variation in the dorsal coloration in *P. hoffmani* from the vicinity of Reddish Knob, Virginia. Highton (1971) analyzed its distributional interactions with *P. cinereus* and *P. richmondi*. McCoy (1982) showed the distribution in Pennsylvania and provided literature references to the species. Richmond (1952) described the habitat in Centre County, Pennsylvania. Cooper (1961) recorded its occurrence in West Virginia caves. Stewart and Bellis (1970) recorded associated species and Netting (1939) discussed its habitat and seasonal activity in Pennsylvania. The life history in southern Pennsylvania and Maryland was studied by Angle (1969). Fraser (1974, 1976a, 1976b) studied seasonal activity, food size use, foraging behavior, clutch size, replacement by other species of *Plethodon* along moisture and altitudinal gradients, and distributional interactions with congeneric species on Shenandoah and Great North Mountains, Virginia. Highton and Larson (1979) compared electrophoretic variation in 29 proteins of *P. hoffmani* with that in all 25 other species of *Plethodon* recognized at that time. Its albumin was compared immunologically to albumins of several other species of *Plethodon* by Maxson et al. (1979) and by Maxson et al. (1984). DNA sequence homologies to cRNA of *P. cinereus* were studied using DNA/cRNA hybridization techniques by Macgregor et al.

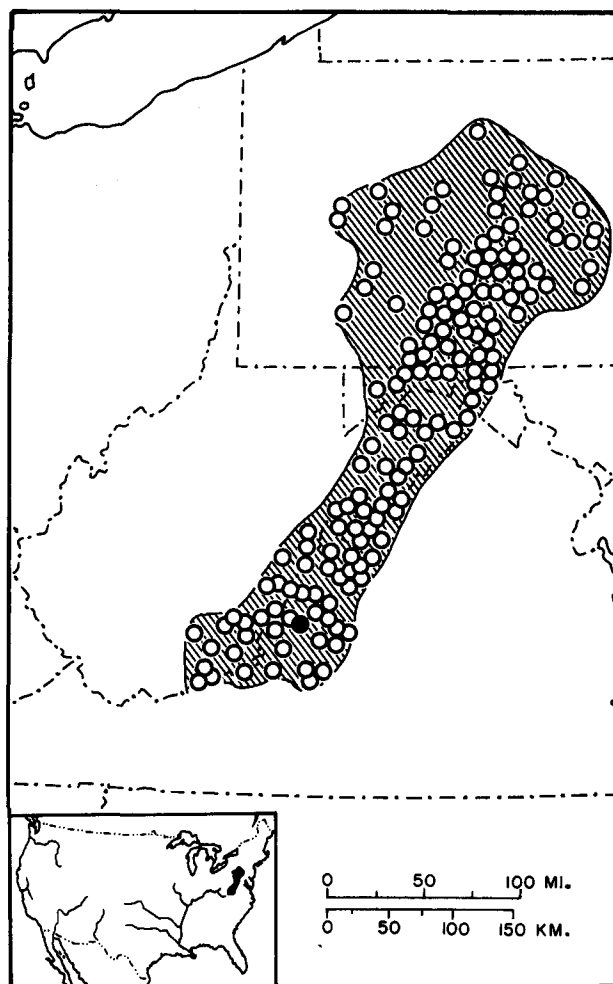
(1973). Chromosomal morphology, genome size and DNA sequence homologies to eastern and western species of *Plethodon* were studied by Mizuno and Macgregor (1974). Larson (1984) reviewed patterns of evolution in the salamander family Plethodontidae and compared *P. hoffmani* to other species. He also estimated the time of divergence between *P. hoffmani* and *P. cinereus* and *P. richmondi* based on a time-calibration of protein divergence. Coss (1974) did a comparative scanning electron microscopic study of maxillary and premaxillary dentition. Dodd and Brodie (1976) described the shape of the male mental gland and compared it with other species of the genus.

• ETYMOLOGY. *P. hoffmani* is a patronym honoring Richard L. Hoffman who first found the species in Virginia and recognized it as different from *P. richmondi*.

COMMENT

Highton and Jones (1965) called attention to the presence of a red striped morph in populations from the vicinity of Reddish Knob, Virginia. The same morph also occurs on nearby Shenandoah Mountain. *P. hoffmani* from those areas also differ from most other populations of the species by having a lower mean number of trunk vertebrae (Highton 1962). This morphologically differentiated form has a distribution similar to that of the range of *Plethodon punctatus*. Unpublished genetic data obtained from an electrophoretic analysis of proteins by the writer also indicate that these populations of *P. hoffmani* are genetically differentiated from those of the remainder of the species.

I thank the National Science Foundation for financial support of my research on *P. hoffmani* (Grant DEB-81-17983).



Map. The solid circle shows the type-locality. Open circles indicate other records.

LITERATURE CITED

- Angle, John P. 1969. The reproductive cycle of the northern ravine salamander, *Plethodon richmondi richmondi*, in the Valley and Ridge Province of Pennsylvania and Maryland. *J. Washington Acad. Sci.* 59:192-202.
- Behler, John L., and F. Wayne King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York. 719 p.
- Conant, Roger. 1975. A field guide to reptiles and amphibians of eastern and central North America. Second edition. Houghton Mifflin Co., Boston. xviii + 429 p.
- Cooper, John E. 1961. Cave records for the salamander *Plethodon r. richmondi* Pope, with notes on additional cave-associated species. *Herpetologica* 17(4):250-255.
- Coss, Howard Thomas. 1974. Maxillary and premaxillary dentition of salamanders of the tribe Plethodontini (family Plethodontidae). Ph.D. Thesis, Clemson University, ix + 70 p.
- Dodd, C. Kenneth, Jr., and Edmund D. Brodie, Jr. 1976. Observations on the mental hedonic gland-cluster of eastern salamanders of the genus *Plethodon*. *Chesapeake Sci.* 17(2):129-131.
- Fraser, Douglas F. 1974. Interactions between salamanders of the genus *Plethodon* in the central Appalachians: studies on coexistence and competition. Ph.D. Thesis, University of Maryland, College Park, x + 153 p.
- . 1976a. Coexistence of salamanders of the genus *Plethodon*: a variation of the Santa Rosalia theme. *Ecology* 57(2): 238-251.
- . 1976b. Empirical evaluation of the hypothesis of food competition in salamanders of the genus *Plethodon*. *Ibid.* 57(3): 459-471.
- Harrison, Hal H. 1949. Pennsylvania reptiles and amphibians. No. 8-salamanders. *Pennsylvania Angler* 18(11):24.
- Highton, Richard. 1962. Revision of North American salamanders of the genus *Plethodon*. *Bull. Florida State Mus.* 6(3): 235-367.
- . "1971" (1972). Distributional interactions among eastern North American salamanders of the genus *Plethodon*, p. 139-188. *In* Perry C. Holt et al. (eds.), *The distributional history of the biota of the southern Appalachians. Part III: Vertebrates. Res. Div. Monogr. (4)*, Virginia Polytechnic Inst., Blacksburg.
- , and Duvall A. Jones. 1965. A striped color phase of *Plethodon richmondi* in Virginia. *Copeia* 1965(3):371-372.
- , and Allan Larson. 1979. The genetic relationships of the salamanders of the genus *Plethodon*. *Syst. Zool.* 28(4): 579-599.
- , and Richard D. Worthington. 1967. A new salamander of the genus *Plethodon* from Virginia. *Copeia* 1967(3):617-626.
- Hoffman, Richard L. 1945. Notes on the herpetological fauna of Alleghany County, Virginia. *Herpetologica* 2(7-8):199-205.
- Larson, Allan. 1984. Neontological inferences of evolutionary pattern and process in the salamander family Plethodontidae. *Evol. Biol.* 17:119-217.
- Macgregor, H. C., Heather Horner, C. A. Owen, and I. Parker. 1973. Observations on centromeric heterochromatin and satellite DNA in salamanders of the genus *Plethodon*. *Chromosoma* 43:329-348.
- Martof, Bernard S., William M. Palmer, Joseph R. Bailey, and Julian R. Harrison III. 1980. Amphibians and reptiles of the Carolinas and Virginia. Univ. North Carolina Press, Chapel Hill. 264 p.
- Maxson, Linda R., Richard Highton, and David B. Wake. 1979. Albumin evolution and its phylogenetic implications in the plethodontid salamander genera *Plethodon* and *Ensatina*. *Copeia* 1979(3):502-508.
- , ———, and David Ondrula. 1984. Immunological evidence on genetic relationships of *Plethodon dorsalis*. *J. Herpetol.* 18(3):341-344.
- McCoy, C. J. 1982. Amphibians and reptiles in Pennsylvania. *Spec. Pub. Carnegie Mus. Natur. Hist.* (6): 91 p.
- Minton, Sherman A., Jr. 1972. Amphibians and reptiles of Indiana. *Monogr. Indiana Acad. Sci.* (3): v + 346 p.
- Mizuno, Shigeki, and Herbert C. Macgregor. 1974. Chromosomes, DNA sequences, and evolution in salamanders of the genus *Plethodon*. *Chromosoma* 48:239-296.
- Netting, M. Graham. 1939. The ravine salamander, *Plethodon richmondi* Netting and Mittleman, in Pennsylvania. *Proc. Pennsylvania Acad. Sci.* 13:50-51.
- , and M. B. Mittleman. 1938. Description of *Plethodon richmondi*, a new salamander from West Virginia and Ohio. *Ann. Carnegie Mus.* 27:287-293.
- Richmond, Neil D. 1952. First record of the green salamander in Pennsylvania and other range extensions in Pennsylvania, Virginia and West Virginia. *Ann. Carnegie Mus.* 32:251-260.
- Smith, Hobart M. 1978. *Amphibians of North America*. Golden Press, New York. 160 p.
- Stewart, George D., and Edward D. Bellis. 1970. Dispersion patterns of salamanders along a brook. *Copeia* 1970(1):86-89.

RICHARD HIGHTON, UNIVERSITY OF MARYLAND, COLLEGE PARK, MARYLAND 20742

Primary Editor for this account, Stephen G. Tilley.

Published 30 October 1986 and Copyright 1986 by the SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES.