

## Catalogue of American Amphibians and Reptiles.

STORM, ROBERT M., AND EDMUND D. BRODIE, JR. 1970. *Plethodon vehiculum*.

*Plethodon vehiculum* Cooper

## Western red-backed salamander

*Ambystoma vehiculum* Cooper, 1860: pl. 31, fig. 4. Type locality, "Astoria, Oregon." Type not known to exist. No description accompanies the figure but there is little doubt as to the salamander's identity even though the number of costal grooves is drawn incorrectly (Highton, 1962).

*Plethodon intermedius* Baird in Cope, 187:209-210. Type-locality, "Fort Tejon, California." Holotype, U.S. Natl. Mus. 4732-a, an adult female collected by J. Xantus. The type-locality is undoubtedly an error.

*Plethodon vehiculus*: Bishop, 1934:171. New combination.

*Plethodon vehiculum*: Slater, 1940:43. Emendation of specific name.

- CONTENT. No subspecies are recognized.

- DEFINITION AND DIAGNOSIS. A medium-sized (to 115 mm in total length) *Plethodon* with 2 phalanges in the fifth hind toe, a modal number of 17 trunk vertebrae, and an even-edged dorsal stripe. The stripe may be red, orange, yellow, green, or tan. Melanism and reduced melanism are not uncommon in some populations. The stripe extends to the tip of the tail. The dark brown to black ground color is darkest along the stripe and lightens gradually ventrally. The sides are not invaded by the band color. The dark venter is sprinkled with small white iridophores, the gular area and ventral tail surface being lighter and often having small patches of stripe color. The iris is dark brown with heavy gold flecking above the pupil and light flecking below. The largest individual measured is 62 mm in snout to vent length; the smallest is 13 mm (snout-vent measurements to posterior margin of vent). The toes are unwebbed. Costal grooves number 14 to 18, and are usually 16. There are 5 to 14 vomerine teeth; three to five and one-half (usually 4 to 4.5) folds between adpressed limbs. Sexual maturity is reached at a snout to vent length of about 45 mm. Males possess a more pointed lower jaw, short rounded free flaps at the posterior end of the vent (Stebbins, 1951), and a mental gland (Brodie, 1968). Females have a pleated vent margin (Stebbins, 1951). The dorsal stripe of juveniles has less melanin pigmentation than does that of adults.

*Plethodon vehiculum* is distinguished from congeneric sympatric species by the following characteristics of those species: *P. dunni*, dorsal stripe lacks an even margin and does not extend to tail tip, flecks of stripe color on sides of trunk, shape of mental gland (Brodie, 1968); *P. elongatus*, shorter legs and more elongate body with 6 to 8 and one-half costal folds separating the adpressed limbs; *P. larselli*, red-orange venter, short 5th toe, no mental gland (Brodie, 1968); *P. vandykei*, 13 to 16 (usually 14) costal grooves, webbed toes, uneven stripe.

- DESCRIPTIONS. Published descriptions are those of Bishop (1943), Cope (1867), Dunn (1926), Gordon (1939), Highton (1962), Slevin (1928), and Stebbins (1951, 1954, 1966). Those by Bishop, Dunn, and Stebbins (1951) are the most detailed

and accurate. Eggs laid in the laboratory are described by Stebbins (1951). Brodie (1968) described the mental gland in the male, and Hilton (1951) mentioned the presence of a nasal gland. The same albino is recorded by Hensley (1959) and Brame (1962).

- ILLUSTRATIONS. Photographs of adults are shown by Bishop (1934, 1943). Brame (1962) presents a photograph of a partial albino. Drawings are given by Cooper (1860, the original description) and Stebbins (1951, 1954, and 1966, in color). We include a drawing (by Dianne Brodie) showing a more lateral aspect of the animal and more clearly depicting differences from *P. dunni* (see Storm and Brodie, 1969). The mental gland is figured by Brodie (1968), and the distribution of teeth by Gordon (1939). Hilton (1951) presents drawings of the nasal glands of several plethodontids, not including *P. vehiculum*, but implies a similarity in his text. Stebbins (1951) presents a drawing of the egg with its jelly envelopes.

- DISTRIBUTION. The species occurs on Vancouver Island (Guppy, 1953) north at least to Kyuquot and in southwestern British Columbia. The northern limits of the range in British Columbia are uncertain. Logier and Toner (1961) give details of Canadian distribution and cite relevant publications. To the south *P. vehiculum* ranges through western Washington (Slater, 1955) and eastward to an altitude of between 2000 and 2500 feet in the Washington Cascades. The easternmost record in the Columbia Gorge is 2.5 miles east of Stevenson, Skamania County. In Oregon, the species is absent from the northern Cascades, except for a record near Boring, east of Portland. It occurs in the Cascades south of about Oakridge, Lane County, but only to the North Umpqua River in Douglas County, where it has been collected near Steamboat at 4100 feet, the only record for any northwestern *Plethodon* over 2500 feet. Coastally, the southern range limits are 2 miles south of Canyonville, Douglas County, and 3 miles southwest of Powers, Coos County. Brown and Slater (1939), Slater and Brown (1941), and Slater (1955) give records for the coastal islands of Washington. In the Coast Range of Oregon this species is most often associated with rocky outcrops and talus of fine-

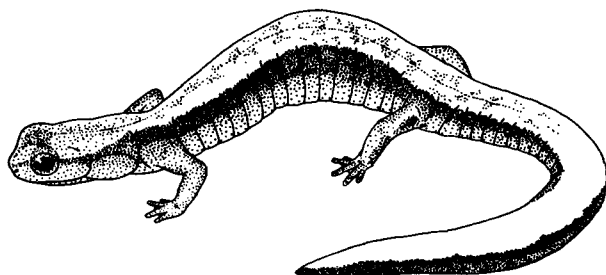
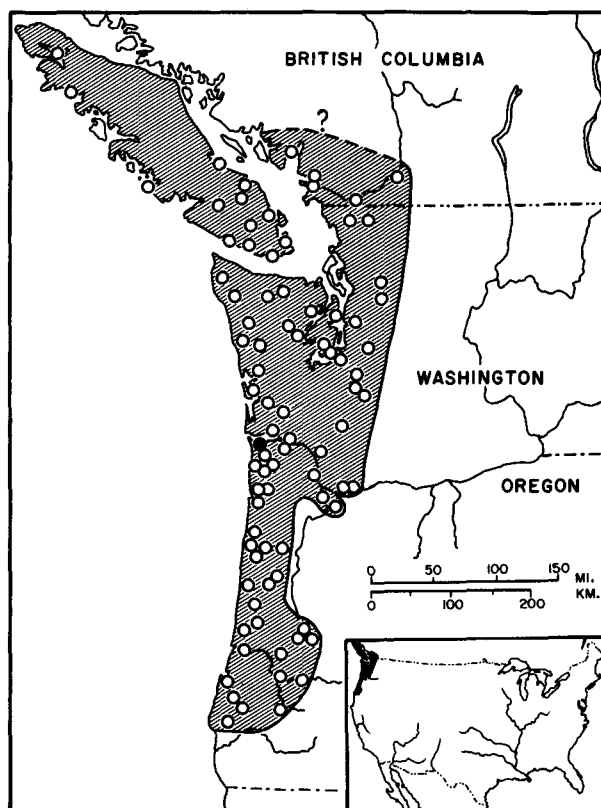


FIGURE. Drawing of *Plethodon vehiculum*, lateral aspect.



MAP. Distribution of *Plethodon vehiculum*. The solid spot marks the type-locality; open circles indicate other records.

grained sandstones and shales (Dumas, 1956), but during moist seasons it can be found under the bark of and in decaying logs, under ground cover, and within cleavage planes among dead leaves (Stebbins, 1951). Dumas collected animals at sites with temperatures between 5° and 19°C (mean = 10.4°).

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** The most complete account of *P. vehiculum* in the literature is that of Stebbins (1951). Highton (1962) diagnoses and describes the species, compares it with other western *Plethodon*, and includes remarks on phylogeny and zoogeography. Burns (1954) presents some comparative ecological information. Dumas (1956) analyzes several ecological parameters for *P. vehiculum* where it is sympatric with *P. dunni*. Brattstrom (1963) gives information on body temperatures, temperature preferences, and critical thermal maximum.

In addition to the references cited, the species is briefly mentioned by Slater (1964a, b) and Thurow (1968). The Literature Cited is thought to contain all the scientifically pertinent literature on the species.

• **ETYMOLOGY.** The specific name is apparently based on the Latin "*vehiculum*," which pertains to a vehicle.

• **REMARKS.** Graf, Jewett, and Gordon (1939) recorded *P. vehiculum* from Fernwood (= Fernview) Forest Camp on the South Santiam River, Linn County, Oregon. At that time some confusion existed as to the specific distinctness of *P. vehiculum* and *P. dunni*. Graf's specimens cannot be located and further efforts at Fernview and nearby localities have produced over 50 specimens of *Plethodon*, all *P. dunni*.

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