

SNYDER, RICHARD C. 1963. *Ambystoma gracile*. p. 6. In W. J. Riemer (ed.), Catalogue of American Amphibians and Reptiles. American Society of Ichthyologists and Herpetologists, Bethesda, Maryland.

Ambystoma gracile (Baird)
Northwestern salamander

Siredon gracilis Baird, 1859:13. Type-locality, "Cascade Mountains near 44° N. latitude," [Oregon]. Two syntypes (larvae), U.S. Natl. Mus. 4080, collected by Dr. J. S. Newberry. Collection date unknown; catalogued 2 August 1858.

Ambystoma gracile: Dunn, 1926:136. Transfer of *S. gracilis* to *Ambystoma*.

• CONTENT. Two subspecies are recognized: *Ambystoma gracile gracile* south of latitude 51° N. and *Ambystoma gracile decorticatum* north of latitude 51° N. The subspecies are not well differentiated (see Dunn, 1944, for discussion).

• DEFINITION. Adults are dark blackish brown above, lighter brown below. Parotoid glands are prominent and often lighter colored (lighter brown or tan) than the head. A glandular ridge is present along the top of the tail; the tail is rounded above and sharply edged below. Costal grooves are typically 11. Small irregular whitish or yellowish spots and blotches occur on the dorsum (*A. g. decorticatum*) or are lacking (*A. g. gracile*). Individuals are commonly neotenic, particularly at high altitudes. Average size of full grown individuals is 80-90 mm snout-vent length.

Larvae are of the pond type. Their ground color is deep brown to greenish brown; dark spotting may be evident or not on the dorsum and upper sides, and distinct yellowish spots may be present or not on the sides of the trunk and tail. The glandular ridge is distinct at the juncture of the dorsal tail fin and the muscular portion of the tail. The venter is uniform slate gray or blackish brown faintly flecked with cream in breeding males; it is light brown, flecked and spotted with cream, and the gular region is cream colored in breeding females. Size at metamorphosis under natural conditions is not known. There are no apparent differences between neotenic larvae and those destined to transform.

• DESCRIPTIONS. Egg masses are described by Slater (1936), Bishop (1947), Stebbins (1951), Snyder (1956, 1960), and Knudsen (1960); larvae by Storer (1925), Logier (1932), Carl & Cowan (1945), Watney (1941), Bishop (1947), Stebbins (1951), Farner & Kezer (1953), and Snyder (1956); metamorphic behavior by Watney (1941), Carl & Cowan (1945), and Snyder (1956); secondary sexual differences of the adults and of the neotenic larvae by Snyder (1956); the condition of the reproductive organs at breeding time by Snyder (1956); courtship activity by Knudsen (1960); larval egg deposition by Slater (1936), and Snyder (1956); cranial osteology by Larsen (1958), osteology and phylogeny by Tihen (1958); and thyroid function by Schmidt (1956). Adults are described by Watney (1941), Bishop (1947), and Stebbins (1951). Spermatophores have not been described.

• ILLUSTRATIONS. See Bishop (1947) for photographs of adults, Stebbins (1951) for drawings of adult and larval stages, Snyder (1956) for photographs of adults, subadults, young larvae, metamorphic stages of 5-month-old and year-old larvae, and dorsal and ventral views of neotenic larvae, and Henry & Twitty (1940) for photographs of an embryo and early (40 mm total length) larva. Adequate illustrations of eggs are not available.

• DISTRIBUTION. The species occurs from southeastern Alaska (from May Island at 54°30' N. latitude) south to the mouth of the Gualala River, Sonoma County, California. It is confined to coastal forests west of the Cascade Divide, but occurs from sea level to timberline. The range includes Vancouver Island, British Columbia; and Cypress, Whidbey, Bainbridge, and Vashon Islands, Washington.

The nonbreeding adult lives beneath logs, in leaf litter, stumps, or other damp places in deciduous or coniferous forests; larval life is confined to ponds and lakes. Montane populations are composed primarily of neotenic individuals; at lower elevations, populations of neotenic salamanders may coexist in the same ponds with larvae destined to metamorphose (Snyder, 1956).

• FOSSIL RECORD. Unknown.

• PERTINENT LITERATURE. For the important references see DESCRIPTIONS.

• REMARKS. The species was first described from the larval form by Baird, 1859. In 1867, Baird in Cope described the adult stage for the first time, making no association between it and the larvae described earlier. The division of the two subspecies is based on adult characters. The attempt to distinguish their larvae (Dunn, 1944) on the basis of belly pigmentation and lateral spotting may not be valid since these characteristics vary with age and sex, and possibly with altitude in Washington (Snyder, 1956).

• ETYMOLOGY. The name *gracile* signifies "slender" or "delicate" from the Latin *gracilis*. The name *decorticatum* signifies "like bark" from the Latin *de* "from" and *cortex* "bark or cork."

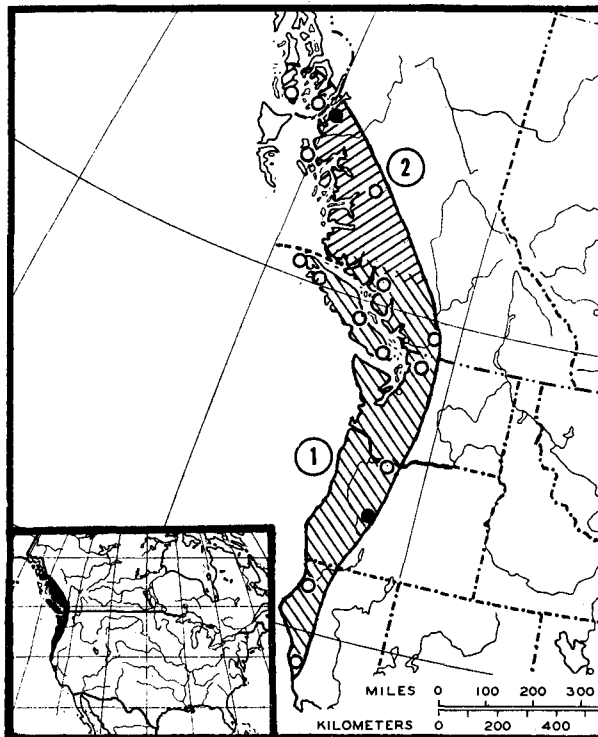
1. *Ambystoma gracile gracile* (Baird)

Siredon gracilis Baird. See species account.

Ambystoma gracile: Dunn. See species account.

Ambystoma gracile gracile: Dunn, 1944:130.

Amblystoma paroticum Baird in Cope, 1867:200. First description of adult; see REMARKS. Type-locality, "Chiloweyuck, W. T. [Chiloweynck, Washington Territory]" [now Chilliwack Lake, British Columbia]. Holotype, female, U.S. Natl. Mus. 4708a, received from A. Campbell, 1859. Cochran, 1961, lists USNM 4708a and 7021 as cotypes [syntypes], the latter from "Puget Sound (Washington)," collected by the U.S. Exploring Expedition, 1841. Baird mentions USNM 7021, but not as a type, and he records the collector as "Dr. Kennerly."



MAP. Solid circles mark type-localities. Hollow circles are other selected localities. After Goode Base Map 202, © University of Chicago 1937.

Chondrotus paroticus: Cope, 1887:88. Transfer of *A. paroticum* to *Chondrotus*.

Ambystoma paroticum: Grinnell & Camp, 1917:139. Emended generic name. Stejneger & Barbour also proposed this combination (12 December 1917), but because Grinnell & Camp preceded them (11 July 1917), the latter are cited as the authority.

• DEFINITION. Three phalanges are present in the 4th toe; prevomerine teeth occur in 4 groups, 2 posterior to the choanae and 2 medial to the choanae; the body is uniform dark blackish brown above and lighter brown below; the parotoid glands and glandular tail ridge usually are lighter than the dorsal surface; there are 10 or 11 grooves.

• REMARKS. Prevomerine teeth may be broken into 3 or 4 series (Bishop, 1947).

2. *Ambystoma gracile decortiatum* Cope

Amblystoma decortiatum Cope, 1886:522. Type-locality, "Port Simpson, Alaska" [British Columbia]. Holotype, U.S. Natl. Mus. 14493, collected by T. H. Streets, 9 December 1885.

Chondrotus decortiatum: Cope, 1887:88. Transfer of *A. decortiatum* to *Chondrotus*.

Ambystoma decortiatum: Stejneger & Barbour, 1917:9. Emended generic name.

Ambystoma gracile decortiatum: Dunn, 1944:130.

• DEFINITION. Four phalanges are present in the 4th toe; prevomerine teeth occur in 2 groups postero-medial to the choanae; the dorsum is marked with irregular light spots and dots (whitish, yellowish, or bronze in life) on a dark background; there are 11 or 12 costal grooves.

• REMARKS. Slater (1936) and Bishop (1947) refer to individuals of *A. g. gracile* from a pond near Deer Lake, 6 miles S Sol Duc Hot Springs, Olympic Mountains, Washington, as marked above with yellow flecks and spots. Examination shows that these specimens are transformed breeding males, that they have 3 phalanges in the 4th toe (as in *A. g. gracile*), that the prevomerine teeth are in 3 groups postero-medial to the choanae (*gracile*), and that there are 11 costal grooves (as in *A. g. decortiatum*). A similarly marked individual was collected by Slater (1930) at Forks, Washington. The possibility exists of an undescribed Olympic Mountain form (Dunn, 1944; Stebbins, 1951). Carl (1944) states that bronze spotting is found in adults from Croteau Lake, Vancouver Island, British Columbia, where only *A. g. gracile* is reported to occur. It is possible that individuals with this color pattern represent variants from the norm. Cowan (Carl & Cowan, 1945) examined two specimens of *A. g. decortiatum* from islands adjoining Hecate Strait, British Columbia, that were marked dorsally by circular, honey-colored spots up to 2 mm in diameter.

COMMENT

There is a need for intensive collecting and studies of variation in northern Washington and southern British Columbia to clarify the status of populations there and the nature of the zone of intergradation.

Common names are omitted from the subspecies. British Columbia salamander is descriptive for the subspecies *decortiatum*, but brown salamander for the subspecies *gracile* is essentially meaningless. The basic objection is that these "official" common names show no relationship to the common name for the species.

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Issued 31 December 1963. Publication is supported by National Science Foundation grant G24231. © American Society of Ichthyologists and Herpetologists 1963.