

**STEREOCHILUS**  
**S. MARGINATUS**

**AMPHIBIA: CAUDATA: PLETHODONTIDAE**

RABB, GEORGE B. 1966. *Stereochilus* and *S. marginatus*. Catalogue of American Amphibians and Reptiles, p. 25.

***Stereochilus* Cope**  
**Many-lined salamander**

*Stereochilus* Cope, 1869:100. Type-species *Pseudotriton marginatus* Hallowell, 1856, by monotypy.

• **CONTENT.** One species only, *Stereochilus marginatus*, without subspecies.

• **DEFINITION.** The edge of the tongue is attached anteriorly; eyes are normal; sensory pits of the lateral line system are conspicuous on the head; a maxilla is present; the single premaxilla has a dorsal process that may or may not have a fontanelle. Five toes are present on the hind foot. The larva is aquatic and has a dorsal fin extending onto the body in early stages.

• **DESCRIPTIONS, ILLUSTRATIONS, DISTRIBUTION, FOSSIL RECORD, and PERTINENT LITERATURE.** See species account.

• **ETYMOLOGY.** *Stereochilus* is from Greek *stereos*, meaning "firm" or "solid," and Greek *cheilos*, a noun meaning "edge" or "lip." The combination may possibly refer to the shelflike lower lip, but Cope probably intended it to allude to the attachment of the tongue, which he emphasized as a taxonomic character. Although *Stereochilus* is of neuter gender, it is treated as masculine, following an arbitrary pronouncement by the International Commission on Zoological Nomenclature (1961:art. 30(a) (i) (3) Examples).

**COMMENT**

Contrary to Cope's original assessment of relationships, Dunn (1926:26, 247), Noble (1931:480), and Piatt (1935) consider *Stereochilus* to be more nearly allied to the free-tongued *Eurycea* group than to the other detoglossal plethodontid salamanders. Although von Wahlert (1957) classifies the genus with *Plethodon* and its relatives, no cogent arguments for this view have been expressed in recent years. In his comprehensive review of the family, Wake (1966) places *Stereochilus* in the tribe Hemidactyliini, subfamily Plethodontinae.

***Stereochilus marginatus* (Hallowell)**  
**Many-lined salamander**

*Pseudotriton marginatus* Hallowell, 1856:130. Type-locality, Liberty Co., Georgia. Holotype, Acad. Nat. Sci. Philadelphia 514, an adult male. Collector, Major John Leconte; Exact date unknown.

*Stereochilus marginatum*: Cope, 1869:100. Transfer of *P. marginatus* to a new genus, *Stereochilus*, on anatomical grounds.

*Spelerpes marginatus*: Strauch, 1870:83. Transfer of *P. marginatus* to *Spelerpes* on nomenclatural grounds.

*Geotriton marginatus*: Garman, 1884:40. Transfer of *P. marginatus* to *Geotriton* on nomenclatural grounds.

*Stereochilus marginatus*: Cope, 1889:152.

• **CONTENT.** No subspecies are recognized.

• **DEFINITION.** Same as for the genus.

• **DESCRIPTIONS.** Habitus is slender; limbs are slim and digits elongate; the head is narrow, elongate, and depressed; the tail is compressed distally, with a prominent keel dorsally. Total length of adults, 63 to 112 mm. Usually slightly less than half of the total length is tail. There are 16 to 18 costal spaces. Between the adpressed limbs there is a gap of 7 to 9 costal spaces. Sexual dimorphism is not apparent.

Sensory pits on the head are in conspicuous series about the eyes. A series of pits on the chin parallels the lower jaw. Dorsolateral, lateral, and ventrolateral pits on the body number one each per body segment. Dorsolateral and lateral series continue onto the tail.

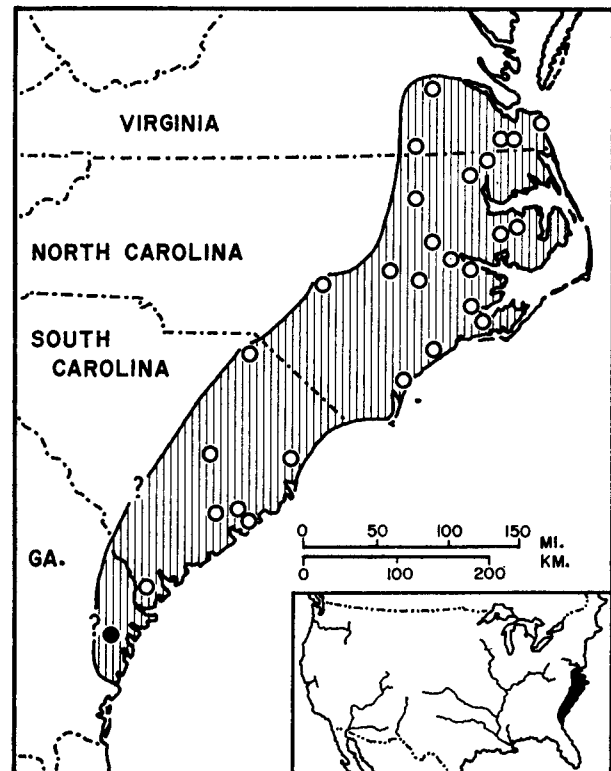
Jaw teeth have two cusps, the inner cusp larger. Teeth are irregular in size; 60 to 70 maxillary-premaxillary teeth are present in average-sized adults. Vomerine teeth are about 7 on a side; vomerine rows are continuous with the paravomerine

teeth. The two lines of paravomerine teeth are close anteriorly, but diverge posteriorly, where they are arranged in ranks of 2-4 visible teeth.

Dorsal ground color is yellowish brown. A more or less continuous blackish line occupies the middorsal depression; on each side a similar dark line runs from the naris through the eye onto the tail. Below this dorsolateral line, which may be a series of disconnected streaks, there are three variably distinct sets of dark lines. On the tail the longitudinal dark lines or streaks link to give a meshlike appearance. The venter is light to dusky yellow with scattered dark brown or black flecks.

Dunn (1926) provides a general description of the dental pattern and external morphology of the adult. Other details of these features are supplied by Bishop (1943), who also reports on color variation in adults and the nature of the gills and coloration of larvae. Color pattern and general morphology of the hatching larva are described by Schwartz & Etheridge (1954). Hilton (1950) describes the distribution and variation of the lateral line system in adult and larval stages. Cope (1869) notes some of the skeletal features of the adult, as do Dunn (1926) and Hilton (1945). An account of the entire skeletal anatomy is provided by Wake (1966). Piatt (1935) describes parts of the throat musculature and the hyobranchial apparatus. The description of eggs produced under hormonal inducement (Noble & Richards, 1932) is apparently valid for naturally laid eggs (Rabb, 1956).

• **ILLUSTRATIONS.** Bishop (1943) illustrates the features of the mouth cavity of an adult and the general habitus of a large larva. His account also contains photographs of a living adult in three views. A small colored picture of an adult appears in Conant (1958). Schwartz & Etheridge (1954) provide a drawing of a hatchling. The egg is illustrated in drawings and photographs by Noble & Richards (1932), and sketches of egg arrangements are provided by Wood & Rageot (1963). Cope (1889) figures the sensory pits on the head, and Hilton (1950) supplies more sketches of them. The microscopic



MAP. The solid symbol marks the type-locality. Hollow symbols indicate localities mentioned in the literature or represented by museum specimens. Question marks show uncertain boundaries.

anatomy of the flank skin is illustrated by Noble (1925:373). Piatt (1935) supplies drawings of the hyobranchial skeleton and superficial ventral throat musculature. Undetailed drawings of the skull, hyobranchial apparatus, vertebrae, and limb elements of adults appear in Hilton (1945). A later paper (Hilton, 1947) has figures of the larval and adult hyobranchial skeletons. Wake (1966) has drawings of ventral and dorsal views of the skull.

• **DISTRIBUTION.** The coastal plain is occupied from near Petersburg in southeastern Virginia, at least to the Savannah River in South Carolina, and perhaps to the vicinity of Riceboro in eastern Georgia (see **REMARKS**).

So far as is known the species is an inhabitant of *Taxodium* (cypress) and *Nyssa* (gum) swamps and small ponds in pine forests. Adults of *Stereochilus* are apt to be found in sphagnum moss or under leaf debris in the water, or under logs and smaller objects at the water's edge.

The pedicellate eggs are laid in or under logs or attached to plants. These egg sites are either in or close to water. Wood & Rageot (1963) report that *Stereochilus* shows a strong preference for laying on the water-moss *Fontinalis* at sites in the Dismal Swamp, Virginia, where sphagnum moss is common. Egg-laying dates range from late January in South Carolina to early April in Virginia. Larvae apparently transform in May and June.

• **FOSSIL RECORD.** None.

• **REMARKS.** Neill (1957) and Conant (1958:map 177) question the occurrence of the species in Georgia, and thus the type-locality. However, a collection in South Carolina near the mouth of the Savannah River (Cooper, 1962) and an overlooked second record from Georgia (Cope, 1889) lend some support to the original Georgia record.

• **PERTINENT LITERATURE.** The primary references to the species are Dunn (1926) and Bishop (1943). The habitat was first described by Brimley (1909, 1939). The nest sites and egg numbers in natural situations are reported on by Schwartz & Etheridge (1954), Rabb (1956), and Wood & Rageot (1963); these authors contrast their findings with the experimental ones of Noble & Richards (1932). Mating behavior is outlined by Noble & Brady (1930) in comparison with that of *Eurycea bislineata* and other forms.

• **ETYMOLOGY.** *Marginatus* is a Latin adjective meaning "bordered" or "lined," and refers to the streaked or striped color pattern on the lower sides of some individuals.

#### COMMENT

Various aspects of the biology (e.g., food, mating season, breeding behavior, larval period) deserve further work and fuller descriptions. Geographic variation also needs study, preferably with larger series of both larvae and adults than are now available.

#### LITERATURE CITED

- Bishop, Sherman C. 1943. Handbook of salamanders: the salamanders of the United States, of Canada, and of Lower California. Comstock Publ. Co., Ithaca, New York. xiv + 555 pp.
- Brimley, C. S. 1909. Some notes on the zoology of Lake Ellis, Craven County, North Carolina, with special reference to herpetology. Proc. Biol. Soc. Washington, 22: 129-138.
- 1939. Amphibians and reptiles of North Carolina. Installment 6. Carolina Tips, 2(6):22-23.
- Conant, Roger. 1958. A field guide to reptiles and amphibians of the United States and Canada east of the 100th meridian. Houghton Mifflin Co., Boston. xviii + 366 pp., 40 pls.
- Cooper, John E. 1962. *Stereochilus marginatus* in southeastern South Carolina. Copeia, 1962(1):212.
- Cope, [Edward] D. 1869. A review of the species of the Plethodontidae and Desmognathidae. Proc. Acad. Nat. Sci. Philadelphia, 21:93-118.
- 1889. The Batrachia of North America. U.S. Natl. Mus. Bull., (34):1-525, pls. 1-86.
- Dunn, Emmett Reid. 1926. The salamanders of the family Plethodontidae. Smith College 50th Anniversary Publ., Northampton, Massachusetts. viii + 441 pp.
- Garman, Samuel. 1884. The North American reptiles and batrachians. A list of the species occurring north of the Isthmus of Tehuantepec, with references. Bull. Essex Inst., 16:1-46.
- Hallowell, Edward. 1856. Description of two new species of urodeles from Georgia. Proc. Acad. Nat. Sci. Philadelphia, 8:130-131.
- Hilton, William A. 1945. The skeleton of *Stereochilus*. Jour. Entomol. Zool., 37:81-82.
- 1947. The hyobranchial skeleton of Plethodontidae. Herpetologica, 3(6):191-194.
- 1950. Dermal sense organs of *Stereochilus*. *Ibid.*, 6(5): 135-136.
- International Commission on Zoological Nomenclature. 1961. International Code of Zoological Nomenclature. Internat. Trust for Zool. Nomen., London. xvii + 176 pp.
- Neill, Wilfred T. 1957. Distributional notes on Georgia amphibians, and some corrections. Copeia, 1957(1):43-47.
- Noble, Gladwyn Kingsley. 1925. The integumentary, pulmonary, and cardiac modifications correlated with increased cutaneous respiration in the Amphibia: a solution of the "hairy frog" problem. Jour. Morphol. Physiol., 40:341-416.
- 1931. The biology of the Amphibia. McGraw-Hill Book Co., New York. [xiv] + 557 pp. Reprinted in 1954 by Dover Publ., New York.
- Noble, Gladwyn Kingsley, & M. K. Brady. 1930. The courtship of the plethodontid salamanders. Copeia, 1930(2): 52-54.
- Noble, Gladwyn Kingsley, & L. B. Richards. 1932. Experiments on the egg-laying of salamanders. Amer. Mus. Novitates, (513):1-25.
- Piatt, Jean. 1935. A comparative study of the hyobranchial apparatus and throat musculature in the Plethodontidae. Jour. Morphol., 57:213-251.
- Rabb, George B. 1956. Some observations on the salamander, *Stereochilus marginatum*. Copeia, 1956(2):119.
- Schwartz, Albert, & Richard Etheridge. 1954. New and additional herpetological records from the North Carolina coastal plain. Herpetologica, 10(3):167-171.
- Strauch, Alexander. 1870. Revision der Salamandriden-Gattungen nebst Beschreibung einiger neuen oder weniger bekannten Arten dieser Familie. Mém. Acad. Imp. Sci. St.-Petersbourg, 16:1-109, 2 pl.
- Wahlert, Gerd von. 1957. Biogeographische und ökologische Tatsachen zur Phylogenie amerikanischer Schwanzlurche. Zool. Jahrb. Syst., 85:253-282.
- Wake, David B. 1966. Comparative osteology and evolution of the lungless salamanders, family Plethodontidae. Mem. South. California Acad. Sci., 4:1-111, 1 pl.
- Wood, J. T., & R. H. Rageot. 1963. The nesting of the many-lined salamander in the Dismal Swamp, Virginia. Jour. Sci., n. s. 14:121-125.

C. B. RABB, CHICAGO ZOOLOGICAL PARK, BROOKFIELD, ILLINOIS 60513

Issued 23 December 1966. Primary editor for this account, William J. Riemer. Publication is supported by National Science Foundation grant G24231. ©American Society of Ichthyologists and Herpetologists 1966.