SIREN INTERMEDIA

AMPHIBIA: CAUDATA: SIRENIDAE

Catalogue of American Amphibians and Reptiles.


Siren intermedia Le Conte
Lesser sirens

Siren intermedia Le Conte (In Harlan, 1827:322). Scant original description was by Harlan, but accredited to John Ectott in Le Conte's manuscript notes. Le Conte's description (1823:132) appeared later. Stejneger and Barbour, 1933 and 1939, and Schmidt, 1953, erroneously refer to Le Conte, 1827. Type locality, "southern states" restricted to Riceborough, Liberty County, Georgia (Harper, 1935). No type specimens designated.

• CONTENT. Three subspecies have been described: intermedia, nettingii, and texana.

• DESCRIPTION. See generic account. This large, eel-like salamander varies in maximum total length from 380 mm in the southeastern states, to 302 mm in the Mississippi Valley and to 686 mm in the Rio Grande Valley. Males attain larger size than females and the masseter region of the head is enlarged. Costal grooves range from 31 to 35; specimens from the southeastern states average 32.75; Mississippi Valley, 34.97; and Rio Grande Valley, 37.22. Digits rank 4-1-3-2 in order of increasing length, often 4-1-2-3 or 4-3-1-2. Rarely specimens have 3 or even 5 digits (Goin, 1957). Digital coronations may be absent in some large adults. The vomerine teeth are in 2 divergent patches. Each female lays a clump of about 200 eggs in a 2-inch pocket in the bottom of a pond (Noble and Marshall, 1932; Bishop, 1943; Collette and Gehlhab, 1961; Hubbs, 1962). The ova average about 3 mm in diameter. About 40% of the surface of each egg is pigmented (brownish-gray). Details of embryonic development are lacking, but the gross anatomy of late embryos and hatchlings is well known (Noble and Marshall, 1932). Hatchlings are about 11 mm in total length and have a small head, a long body, a very short tail, and a conspicuous dorsal fin. They very soon develop a distinctive color pattern. Meanwhile the head broadens, the tail elongates, and the dorsal fin begins to decrease in size. The tail comprises 19 to 25% of the total length of hatchlings and 28 to 40% of that of adults. The dorsal part of the tail fin extends anterior to the anus in juveniles but is entirely postanal in adults. In 6 weeks a 30-mm larva may transform and grow to 111 mm (Smith, 1961). The young are boldly marked. Hatchlings have a narrow, light longitudinal stripe extending from the neck region to the tip of the tail, a longitudinal light streak on the side of the body, and another along the ventrolateral region. Light markings also occur on the head: a broad band on the snout, a longitudinal marking over each eye, and a transossipital band. These light areas are early invaded by lipochromes and become orange or reddish (Smith, 1961; Neill, 1949) or even yellowish (Noble and Marshall, 1932). The light markings gradually disappear but those on the head are more persistent, sometimes lasting into adult life as does the lateral stripe in some Texas specimens. The broad band on the snout is the most persistent and diagnostic marking. Older juveniles are olive-green with tiny brown spots.

In adults the dorsum may be dark brown, black, dark olive, olive-green or grayish blue. Dark individuals lack markings but lighter ones have scattered black or brown dots. The vent is slightly lighter than the dorsum; white to yellow flecks may occur on the sides of the body.

Sexual maturity is reached in two years; females then average 150 mm in snout-vent length and males 180 mm. Sexual dimorphism in size is often conspicuous. E.g., in a large collection from Texas (Davis and Knapp, 1953), the adult males averaged larger than the largest female (215 mm snout-vent and 321 mm total length). The largest male was 313 mm snout-vent and 465 mm total length.

• DIAGNOSIS. See generic account for characteristics distinguishing Siren from other salamanders. S. intermedia differs from S. lacertina by having a much wider distribution. They occupy the same general types of habitat; however in the area of sympatry, S. intermedia does not occur as abundantly in streams and rivers. Specimens of S. intermedia are generally much smaller than S. lacertina, have a more slender body and fewer costal grooves. Western specimens may have a grayer dorsum with smaller dark spots and the chin, axillae, and undersurfaces of the limbs are lightly pigmented.

The eggs of S. intermedia are about one mm smaller in diameter, have thinner capsules, and tend to be laid in clumps (Hubbs, 1962) rather than scattered singly or in small groups. The average complement of eggs is about 200 for S. intermedia and slightly over 500 for S. lacertina. Juveniles have a relatively broader head than occurs in S. lacertina and are differently colored. The light markings are more reddish; furthermore, that on the snout is very broad and conspicuous.


• DISTRIBUTION. This is the most widespread of all sirens. It occurs in the Coastal Plain from southeastern North Carolina to southern Florida, westward in the Gulf states to the lower Rio Grande Valley and adjacent Mexico, and northward in the Mississippi Valley through Illinois, Indiana, and southwestern Michigan. This species inhabits shallow, warm, quiet, sometimes turbid waters where vegetation abounds: swamps, ditches, sloughs, ponds, lakes, and to a lesser extent rivers and streams.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. The most comprehensive treatment of the biology is by Noble and Marshall (1932). Other fine black and white photographs are Bishop (1953); Goin (1957; Smith (1961); and Freytag (1965). General accounts of geographic distribution include Noble and Marshall (1932); Goin (1942, 1957); Bishop (1943); and Conant (1958). More localized accounts include: Southeastern U. S.—Harper (1935); Chermonck (1952); Carr and Goin (1953); Freeman (1955); Collette and Gehlhab (1961); Caldwell and Howell (1966); Duellman and Schwartz (1958); Funderberg and Lee (1967); Sanderson and Lee (1970). Mississippi Valley—Vioesa (1925); Bishop, Begg (1947); Blair (1952); Bishop and McCarley (1953); Liner (1954); Gentz (1958); Dowling (1957); Smith and Minton (1957); Smith (1961); Williams (1961); Walker (1963); Klimstra and Hutchison (1965); Fouquetté and Delahoussaye (1966); Altig (1967); Bennett and Taylor (1968); Minton (1970); Texas—Smith and...
grades with part of adjacent Mexico. It is intermediate between the smallest (maximum total length 380 mm). The dorsum is black, brown, black flecks or spots. The vent is lighter than the dorsum in number of costal grooves (33 to 37, average 34.97) and in development, and comparisons with S. lacertina see Noble and Marshall (1932). The ontogeny of cranial bones is described by A.S. Davis (1955). The lungs and distribution of respiratory capillaries by Czopek (1962a, 1962b); the chromosomes by Mittleton (1973).

1. **Siren intermedia intermedia**
   **Le Conte**

   **Eastern lesser siren**

   **Siren intermedia intermedia**
   Goin, 1942:211. Subspecific status proposed.

   - **Definition and Diagnosis.** Members of this taxon have the fewest costal grooves (31 to 35, average 32.75) and are the smallest (maximum total length 380 mm). The dorsum is black, brown sprinkled with minute black dots. This subspecies inhabits the southern Coastal Plain from North Carolina to eastern Mississippi. It intergrades with S. i. nettingi along the Pearl River system of southwestern Mississippi and southeastern Louisiana (Boyd and Vickers, 1963).

2. **Siren intermedia nettingi**
   **Goin**

   **Western lesser siren**

   **Siren intermedia nettingi**

   - **Definition and Diagnosis.** This subspecies is intermediate in number of costal grooves (33 to 37, average 34.97) and in body size (maximum total length 502 mm). The dorsum is brown, black, olive or bluish gray with numerous tiny black flecks or spots. The venter is lighter than the dorsum and often marked with light flecks. This siren inhabits central Alabama, the Mississippi Valley north to Michigan, and south to the central Gulf Coast region of Texas.

3. **Siren intermedia texana**
   **Goin**

   **Rio Grande siren**

   **Siren intermedia texana**
   Goin, 1957:37. Type locality, "Texas, Cameron County, seven miles north of Brownsville." Holotype, Texas Cooperative Wildlife Collection (College Station, Texas) No. 10,567, adult female, collected June 7, 1953 by W. P. Kerr.

   - **Definition and Diagnosis.** This subspecies has 36 to 38 (average 37.22) costal grooves and attains a maximum total length of 600 mm. The dorsum varies from dark gray to yellowish gray with no discernible pattern to light or brownish gray with numerous tiny, dark flecks or spots. The venter is lighter, especially under the jaws, limbs, gills and vent. The many costal groves and the large size distinguish this subspecies from other S. intermedia. It differs from S. lacertina by having a pointed tail, an average of one less costal groove and smaller dark spots on the dorsum. It is restricted to the lower Rio Grande Valley and to northern Yucatan, Mexico. In Jim Wells and Kleberg counties (33) to west of the Panhandle and into Panuco and Aransas counties (Raun and Gehlbach, 1972), Texas, it intergrades with S. i. nettingi.

   - **Etymology.** The name intermedia (Latin inter, among, between and medius, mid or middle) refers to its intermediate size, smaller than S. lacertina but larger than Pseudobranchus striatus; nettingi is a patronym for M. Graham Netting; and texana refers to its geographic restriction to Texas and a small part of adjacent Mexico.

**Literature Cited**


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