

Catalogue of American Amphibians and Reptiles.

CHRISTMAN, STEVEN P. 1982. *Storeria dekayi****Storeria dekayi* (Holbrook)**
Brown snake

Coluber Dekayi Holbrook, "1836" (probably 1839):121. Type-locality, "Massachusetts, New York, Michigan, Louisiana"; restricted by Trapido (1944) to "Massachusetts," and by Schmidt (1953) to "Cambridge, Massachusetts." See Remarks. Only known syntype (Acad. Natur. Sci. Philadelphia 5832) designated lectotype by Trapido (1944) and erroneously referred to as holotype by Malnate (1971); adult female, collector, and date unknown (not examined by author).

[Coluber] ordinatus: Storer, 1839:223 (part).

Tropidonotus Dekayi: Holbrook, 1842 Vol. IV:53.

Tropidonotus occipito-maculatus: Holbrook, 1842:55 (inserted addenda slip).

Storeria Dekayi: Baird and Girard, 1853:135.

Ischnognathus Dekayi: Duméril et al., 1854:507.

Storeria tropica Cope, 1885:175. Type-locality "Peten, Guatemala." Holotype, U.S. Nat. Mus. 6759, adult male, collected by H. Hague (date unknown) (not examined by author).

Storeria victa Hay, 1892:199. Type-locality "banks of the Oklawaha River, Florida." Holotype collected by H. T. Mann (date unknown) from the gut of a *Micrurus fulvius* was apparently never deposited in the U.S. Nat. Mus. as Hay (1892) said it would be (Trapido, 1944).

Ischnognathus victa: Boulenger, 1896:611.

• CONTENT. Eight subspecies: *anomala*, *dekayi*, *limnetes*, *temporalineata*, *texana*, *tropica*, *victa*, and *wrightorum*.

• DEFINITION. *Storeria dekayi* is a small (23–33 cm) natricine snake of the tribe Thamnophiini (Rossman and Eberle, 1977) characterized by a diploid count of 36 macrochromosomes, 17 dorsal scale rows (15 in *victa*) without row reduction, the absence of a loreal, keeled scales, divided anal plate, usually 7 supralabials, a grayish or pale brown dorsum with a variable pattern of small black spots, and a pale venter. The summation of ventral and subcaudal scales ranges from 158–227.

• DIAGNOSIS. Distinguished from all other North American snakes by the combination of 7 supralabials, 15 or 17 rows of keeled scales, divided anal plate, and no loreal.

• DESCRIPTIONS. Best descriptions are in Trapido (1944), Wright and Wright (1957), and Conant (1975). Other descriptions are in Holbrook (1836 [1839]), Cope (1885, 1900), Hay (1892), Carr (1940), Carr and Goin (1955), Duellman and Schwartz (1958), Anderson (1961), Fouquette and Rossman (1963), Paulson (1968), Sabath and Sabath (1969), and Behler and King (1979). Feuer (1959) described juveniles. Baker et al. (1972) described the karyotype, and Whiting (1969) described the cloacal glands.

• ILLUSTRATIONS. Color photographs are in Conant (1975) (*victa* and *dekayi*) and Behler and King (1979) (spp. not indicated). Black and white photographs are in Ditmars (1936) (*dekayi*), Trapido (1944) (*anomala*, *dekayi*, *victa*, *temporalineata*, *texana*, *tropica*, and *wrightorum*), Carr and Goin (1955) (*victa*), Wright and Wright (1957) (*dekayi*, *temporalineata*, *texana*, *victa*, and *wrightorum*), Smith (1961) (*wrightorum*), and Anderson (1965) (*wrightorum* × *texana*), among many others. Line drawings of head pattern variation are in Anderson (1961), Sabath and Sabath (1969) and Conant (1975). Photographs of the head are in Anderson (1961) (*limnetes*) and Weaver and Christman (1978) (*victa*). Baird (1854), Cope (1900), and Conant (1975) provided line drawings of scutellation and pattern. Cope (1895) figured the hemipenis and Baker et al. (1972) the karyotype.

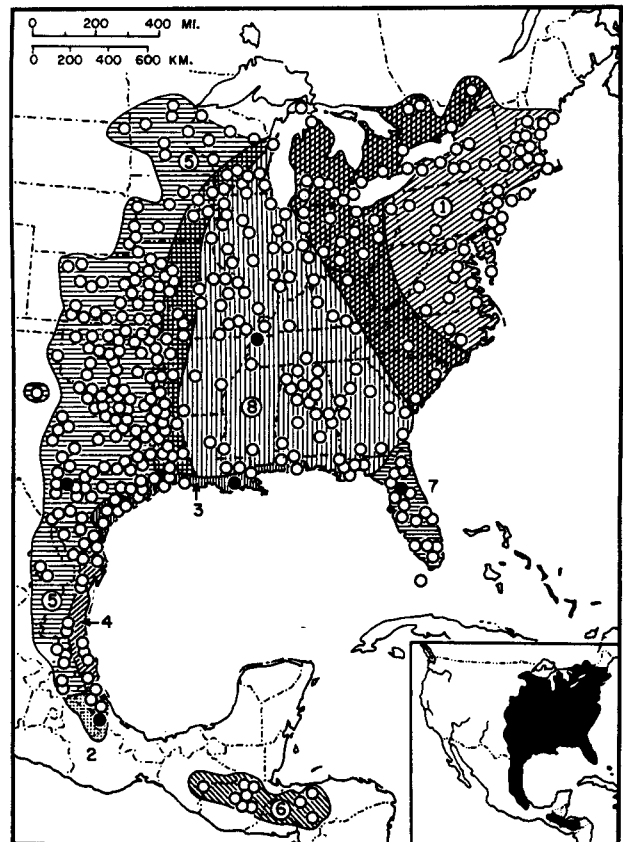
• DISTRIBUTION. *Storeria dekayi* is a common and ubiquitous inhabitant of nearly all wetland and terrestrial habitat types (including edification situations) east of the Great Plains from sea level to at least 1400 meters. The species ranges from southern Maine, Quebec, and Ontario to the southern tip of the Florida peninsula (with a disjunct population on the lower Florida Keys), west to eastern South Dakota and eastern Nebraska, south through the eastern half of Texas and eastern Mexico and into Guatemala

and western Honduras. There apparently is a hiatus along the Suwannee River Valley in northern Florida, and also a discontinuous distribution in Central America.

• FOSSIL RECORD. Auffenberg (1963) and Gut and Ray (1963) recorded *Storeria* cf. *dekayi* from the Rancholabrean (Pleistocene) of Florida, and Holman (1962) listed *S.* cf. *dekayi* from the Rancholabrean of Texas. *Storeria* sp. is reported from the Irvingtonian and Rancholabrean of Kansas (Brattstrom, 1967), and the Rancholabrean of Virginia (Guilday, 1962), and Pennsylvania (Guilday et al., 1964; Richmond, 1964).

• PERTINENT LITERATURE. Trapido (1944) wrote the most complete account of the species. Subsequent taxonomic contributions have included: Neill (1950a), who considered *S. victa* a subspecies of *dekayi*, Anderson (1961), who resurrected Cope's *S. tropica*, and Sabath and Sabath (1969), who returned *tropica* to subspecific status. Stuart (1954), Bleakney (1958), Savage (1966), Paulson (1968), and Christman (1980) reported on variation and zoogeography. Other distributional reports include: Carr (1940), Taylor (1942), Duellman and Schwartz (1958), Fouquette and Rossman (1963), and Ideker (1974). Reports on morphological variation, size, and anomalous color patterns include: Feuer (1959), Hensley (1959), Heckman (1960), Smith (1961), and Thrall (1971). Weaver and Christman (1978) described the legally-protected disjunct population on the ecologically-threatened Lower Florida Keys.

Morphological studies include Parsons' (1959) description of the nose, Clark's (1966) analysis of sexual dimorphism in relative tail length, Whiting's (1969) description of cloacal glands, and Saiff's (1975) description of the preglottal structure. Rahn (1939, 1940) described the corpus luteum. Goin and Jackson (1965) reported hemoglobin values, Bordley and Richards (1933) described kidney function, and Bush (1963) provided water, lean, and lipid weights. Marx and Rabb (1970) included *S. dekayi* in an analysis of tooth count variation. Wacha and Christiansen (1975) and Rau et al. (1978) described parasites.



MAP. Solid circles mark type-localities; open circles indicate other records.

Wright and Bishop (1915), Clark (1949), Carpenter (1958), Brode and Allison (1958), Henderson (1974), Freedman and Catling (1978), Elick et al. (1979), and others described natural history and habitat preferences. Reports on seasonal occurrence and abundance include: Littleford (1945), Neill (1950b), Fitch (1956), and Ziminski (1970). Fitch (1956), Kitchell (1967), and Elick et al. (1979) discussed temperature relations. Clausen (1936a), Noble and Clausen (1936), Lachner (1942), Stickel and Cope (1947), Bailey (1948), Neill (1948a), Carpenter (1953, 1958), and Grogan (1975) described hibernation and aggregating behavior.

Clark (1949), Stewart (1950), Judd (1954), Hamilton and Pollack (1956), and Brode and Allison (1958) described feeding habits. Burghardt (1967) reported on innate food preferences. Limer (1977) reported death feigning and Neill (1948c) described arboreal behavior. Reports on predation upon *S. dekayi* by spiders, lizards, snakes, and birds include: Schmidt (1932), Neill (1948b), Hamilton and Pollack (1961), Netting (1969), Fitch and Fleet (1970), and Browning (1973). Swanson (1946) discussed the effect of snake venom.

Reports on reproduction include: Shields (1929), Force (1930), Clausen (1936b), Noble (1937), Trapido (1940), Minton (1944), Harwood (1945), Stuart (1948), Taylor (1949), Clark (1949), Triplehorn (1955), Carpenter (1958), Fouquette and Rossman (1963), Regan and Metz (1971), Morris (1974a, 1974b), Dyrkacz (1975), Iverson (1978), and Kofron (1979). Rahn (1939, 1940), Colombo and Pesavento (1973), and Colombo and Yaron (1976) described gestation physiology. Reikum (1960) discussed the species in captivity.

● **REMARKS.** Adler (1976) pointed out that the holotype of *S. dekayi*, illustrated on plate 24 in Hobrook ("1836", probably 1839), is apparently the same specimen figured in De Kay (1842) from "... a large bay on the northern coast of Long Island." If Adler is correct, the type locality restrictions of Trapido (1944) and Schmidt (1953) are unwarranted and the type locality should actually be the northern coast of Long Island, New York.

● **ETYMOLOGY.** The specific name, *dekayi*, honors the 19th century New York naturalist, James Edward De Kay. The subspecific name, *anomala*, is from Latin and refers to the unusual number of chin shields in that race; *limnetes* is Greek for "living in marshes"; *temporalineata* (derived from Latin) refers to the dark stripe on the anterior temporal scale; *texana* honors the state in which the holotype of that race was collected; *tropica* (derived from Latin) refers to the tropics; *victa* may be from the Latin for victim and refer to the fact that the holotype of that race was recovered from the stomach of a coral snake; *wrightorum* honors Albert Hazen Wright and Anna Allen Wright.

1. *Storeria dekayi dekayi* (Holbrook)

Coluber Dekayi Holbrook. See species synonymy and Remarks. *Storeria dekayi dekayi*: Trapido, 1944:47.

● **DIAGNOSIS.** Differs from the other subspecies by the combination of a diagonal or vertical dark bar on the anterior temporal, non-connected paired spots dorsolaterally, and fewer than 175 ventrals plus caudals.

2. *Storeria dekayi anomala* Dugés

Storeria dekayi var. *anomala* Dugés, 1888:9. Type-locality, "Orizaba, Veracruz, Mexico." Holotype in Museum of Alfredo Dugés, Univ. Guanajuato, Mexico (Smith and Taylor, 1945), adult female, collector and date unknown (not examined by author).

Storeria dekayi anomala: Trapido, 1944:73.
Storeria tropica anomala: Anderson, 1961:245.

● **DIAGNOSIS.** The only race with 3 pairs of chin shields.

3. *Storeria dekayi limnetes* Anderson

Storeria tropica limnetes: Anderson, 1961:246. Type-locality, "Waggaman, a settlement south of Harahan, St. Charles Parish, Louisiana." Holotype, Tulane Univ. Collections 11374, adult male, collected by H. Whitten, December 2, 1944 (not examined by author).

Storeria dekayi limnetes: Sabath and Sabath, 1969:154.

● **DIAGNOSIS.** Distinguished from *temporalineata* and *tropica*

by having more subcaudals, and from *anomala* by having only two pairs of chin shields. Differs from the remaining subspecies by lacking dark markings on the sixth and seventh labials, and by having a median horizontal dark line through the long axis of the anterior temporal scale.

4. *Storeria dekayi temporalineata* Trapido

Storeria dekayi temporalineata Trapido, 1944:70. Type-locality, "San Rafael, Jicaltepec, Veracruz, Mexico, alt. circa 100 feet." Holotype, U.S. Nat. Mus. 32148, adult female, collected by C. H. T. Townsend, July 2, 1896 (not examined by author).

Storeria tropica temporalineata Anderson, 1961:245.

● **DIAGNOSIS.** Differs from *tropica* by having more ventral scales and from *limnetes* by having fewer subcaudals. Distinguished from *anomala* by having only two pairs of chin shields. Distinguished from the remaining subspecies by the absence of dark markings at the corners of the mouth, and by having a horizontal dark line through the long axis of the anterior temporal.

5. *Storeria dekayi texana* Trapido

Storeria dekayi texana Trapido, 1944:63. Type-locality, "Edge Falls, 4 miles south of Kendalia, Kendall County, Texas." Holotype, Cornell Univ. 3530, adult female, collected by A. J. Kirm, June 16, 1942 (not examined by author).

● **DIAGNOSIS.** Distinguished by having an immaculate anterior temporal and dark occipital blotches which are broader than in other subspecies.

6. *Storeria dekayi tropica* Cope

Storeria tropica Cope, 1885:175. Type-locality, Peten, Guatemala. Holotype, U.S. Nat. Mus. 6759, adult male, collected by H. Hague, date unknown (not examined by author).

Storeria dekayi tropica: Trapido, 1944:77.

Storeria tropica tropica: Anderson, 1961:244.

● **DIAGNOSIS.** Differs from *temporalineata* by having fewer ventral scales; from *anomala* by having only two pairs of chin shields; from *limnetes* by lower subcaudal counts; and from the remaining subspecies by lacking dark markings at the corners of the mouth and by having a horizontal dark line through the anterior temporal.

7. *Storeria dekayi victa* Hay

Storeria victa Hay, 1892:199. Type-locality, "Banks of the Oklawaha River, Florida." Holotype, collected by H. T. Mann, date unknown, apparently lost.

Storeria dekayi victa: Neill, 1950a:155.

● **DIAGNOSIS.** The only subspecies with 15 scale rows.

8. *Storeria dekayi wrightorum* Trapido

Storeria dekayi wrightorum: Trapido, 1944:57. Type-locality, "Reelfoot Lake, Tennessee." Holotype, Univ. Michigan Mus. Zool. 78583, collected by N. Hartweg and W. Clanton, April 9, 1933 (not examined by author).

● **DIAGNOSIS.** Differs from all other subspecies by having the dorsolateral spots fused into narrow crossbands.

COMMENT

The zones of intergradation between most of the races are apparently very wide and Trapido (1944) referred to the variation as clinal. I personally find the diagnoses and descriptions of most of the subspecies vague and unconvincing. The apparent gap between the ranges of *victa* and *wrightorum*, however, (no specimens are known from northern peninsular Florida) and the consistent morphological and behavioral differences between them, suggest that they are evolving independently (Christman, 1980).

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