

Catalogue of American Amphibians and Reptiles.

FITCH, HENRY S. 1980 *Thamnophis sirtalis*.

***Thamnophis sirtalis* (Linnaeus)
Common garter snake**

Coluber sirtalis Linnaeus, 1758:22. Type-locality, "Canada." Holotype lost; species is to be interpreted "from the description and type-locality given for *Coluber sirtalis* by Richard Harlan, 1827 . . ." through ruling of International Commission on Zoological Nomenclature (Evans and China, 1966). Type-locality not designated by Harlan, except by inference: "Inhabits Pennsylvania."

Tropidonotus jauresi Duméril and Bibron, 1854:606. No type-locality or type specimen identified.

Eutaenia sirtalis: Baird and Girard, 1853:31.

Eutaenia ordinata: Baird and Girard, 1853:32.

Tropidonotus Kennicotti Jan, 1863:70. Type-locality, "North America." Type material not known to exist.

Thamnophis sirtalis: Garman, 1892:104.

Thamnophis ordinatus: Klauber, 1948:10.

• **CONTENT.** Twelve subspecies are recognized: *sirtalis*, *annectens*, *concinus*, *dorsalis*, *fitchi*, *infernalis*, *pallidula*, *parietalis*, *pickeringii*, *semifasciatus*, *similis* and *tetrataenia*.

• **DEFINITION.** This is a relatively large member of the genus (395–1,310 mm S–V) characterized by: keeled dorsal scales (except those of lowest row) in 19–19–17 rows, reduced by loss of 5th row at a point a little short of two-thirds distance from snout to vent; 7 supralabials, 3rd and 4th bordering orbit; 10 infralabials; one preocular; most often 3 postoculars; posterior genials much longer than anterior; 137 to 177 ventrals; 54 to 97 subcaudals; bright yellow vertebral stripe usually present on middle scale row and half of each adjacent row (narrower in some populations, totally lacking, or tan, gray, orange, green or blue in others); lateral stripes on 2nd and 3rd scale rows, usually duller than vertebral (whitish, yellowish, gray, tan, blue, or absent in some); dorsolateral area black, brown, or gray with two alternate series of round or squarish dark spots often discernible on each side; paler, sometimes crescentic, yellow, green, blue, buffy, or red flecks, mostly on skin between scales, partly enclosing dark dorsolateral spots; the pale flecks, usually in vertical series of three on the lower half of the dark dorsolateral area, alternate with series of somewhat smaller flecks in series of three or two on the upper half; belly usually pale, often bluish gray, often with black specks or spots, sometimes with red; tip of hemipenis *in situ* in live snake extending most typically to level of 10th subcaudal (8th to 13th). Males average about 83% of female length snout to vent and 55% of female weight, have tails about 24% of total length, or a little more (vs. about 21 or 22% in females), average more ventrals (typically by about 5) and more subcaudals (typically by about 8 pairs).

• **DESCRIPTIONS.** Ruthven (1908) thoroughly described the species. Wright and Wright (1957) summarized information on subspecies other than *annectens*, *dorsalis*, *semifasciatus*, and *similis*. See also Conant (1975), Van Denburgh and Slevin (1918), Fitch (1941), and Stebbins (1954, 1966).

• **ILLUSTRATIONS.** Many publications, including all those cited under DESCRIPTIONS, have drawings and/or photographs. There are color illustrations for *infernalis* (Stebbins, 1954), *sirtalis* (Conant, 1975), *semifasciatus* and *similis* (Conant, 1975), and *tetrataenia* (Stebbins, 1954; Schmidt and Inger, 1957; Leviton, 1972).

• **DISTRIBUTION.** The species occurs from southeastern Alaska east to Nova Scotia and south through the United States. It is absent from extensive areas in the Rocky Mountains, Great Basin and desert Southwest, with disjunct, isolated populations in Texas, New Mexico, and northwestern Mexico.

• **FOSSIL RECORD.** Holman (1977) recorded *Thamnophis sirtalis* from the Pleistocene (lower Kansan) of South Dakota, but most fossil *Thamnophis* cannot confidently be referred to species (Brattstrom, 1967).

• **PERTINENT LITERATURE.** There are revisionary studies by Ruthven (1908), Van Denburgh and Slevin (1918) and Fitch (1941). Some selected reports from the extensive ecological literature indicate that *T. sirtalis* can endure body temperature down to -2°C and survive the winter above frostline (Bailey, 1949); in Manitoba it may aggregate in thousands from distances up to 16 km to hibernate (Gregory, 1977); it preys chiefly on earthworms (i.e. young snakes), frogs, toads and fish, less regularly on slugs, snails, leeches, small mammals and birds, rarely on insects, spiders or small snakes (Fitch, 1965); males find females both by airborne scent (Gardner, 1955) and by trailing; sexual activity is most intense at the time of emergence from hibernation and up to 100 males may simultaneously court a female, forming a "snake ball" (Aleksiuk and Lavies, 1975); congealed semen in a copulatory plug may prevent early remating of the female but males may mate several times in a season (Blanchard and Blanchard, 1940); mean litter size varies from 13 to 18 in samples (Carpenter, 1952; Zehr, 1962; Fitch, 1965; Gregory, 1977) but litters with 80 or more are known (Martof, 1954).

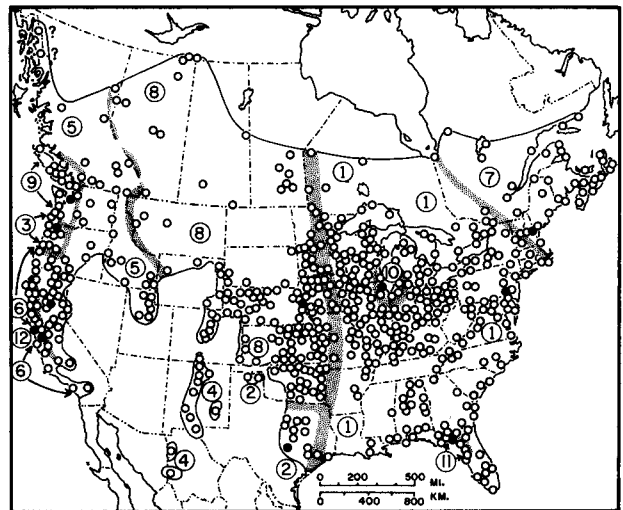
• **NOMENCLATRURAL HISTORY.** Klauber (1948) concluded that *Coluber sirtalis* Linnaeus was based on a specimen of *Thamnophis sauritus* of modern authors and substituted the later Linnaean name *ordinatus* for *sirtalis*. The ensuing confusion prompted appeals to and action by the International Commission on Zoological Nomenclature, the net result being that the name *sirtalis* continues to be used in the familiar sense for the common garter snake. Pertinent references for this convoluted case are: Inger (1946); Hemming (1956); Schmidt and Conant (1956); Cook (1964); Evans and China (1966).

• **ETYMOLOGY.** The specific name *sirtalis*, from new Latin, means "like a garter." The subspecific names are derived as follows: *annectens*, connecting (Latin), joining the neighboring subspecies; *concinus*, well made, neat (Latin), referring to the colorful pattern; *dorsalis*, of the dorsum (Latin), referring to the conspicuous dorsal stripe; *fitchi*, for H. S. Fitch; *infernalis*, of Hell, abominable (Latin); *pallidula*, pale (Latin); *parietalis*, of a wall (Latin) doubtless referring to the parietal scales; *pickeringii*, for Dr. Charles Pickering, collector; *semifasciatus*, half-banded (Latin), referring to the dark transverse marks on forebody; *similis*, like, resembling (Latin) referring to its likeness to sympatric *T. sauritus*; *tetrataenia*, four-striped (Greek), referring to the dorsal color areas.

1. *Thamnophis sirtalis sirtalis* (Linnaeus)

Coluber sirtalis Linnaeus, 1758:222. See species synonymy.

Coluber ordinatus Linnaeus, 1766:379. Type-locality, "Carolina," presumably in vicinity of Charleston, South Carolina (Klauber, 1948:5). Holotype lost.



MAP. Solid circles mark type-localities; open circles indicate other records. Assumed areas of intergradation are stippled.

Coluber taenia Schoepf, 1788:496. Type-locality presumed to be in New York. No type material indicated.

Coluber ibibe Daudin, 1803:181. Type-locality, "Carolina." No type material indicated.

Tropidonotus ordinatus: Boie, 1827:535.

Tropidonotus bipunctatus Schlegel, 1837:320. Type-locality, "Nashville, Tennessee." Type material unknown.

Tropidonotus taenia: DeKay, 1842:43.

Tropidonotus sirtalis: Holbrook, 1842:41.

Eutaenia sirtalis obscura Cope in Yarrow, 1875:546. Type-locality restricted to "Westport, [Essex County] New York" by Smith (1942). Syntypes (Cochran, 1961), U.S. Nat. Mus. 974 (5) from the restricted type-locality, collected by S. F. Baird (not examined by author). See Smith (1942) and Cope (1900) for other possible syntypes and localities.

Eutaenia sirtalis melanota Higley, 1889:163. Type-locality, "Walworth County, Wisconsin." Fate of holotype unknown.

Eutaenia sirtalis graminea Cope, 1889:163. Type-locality, "Brookville, Indiana." Holotype, U.S. Nat. Mus. 295, collected by A. W. Butler (not examined by author).

Tropidonotus ordinatus var. *sirtalis*: Boulenger, 1893:206.

Thamnophis sirtalis sirtalis: Stejneger and Barbour, 1917:103.

Matrix sirtalis sirtalis: Lazell, 1976:221.

• DEFINITION. This wide-ranging subspecies is highly variable; vertebral stripe is yellow (sometimes dull) or tan, usually on middle scale row and up to half of each adjacent row, but sometimes narrowed and sometimes totally absent; lateral stripe is dull yellow or pale gray; there is a melanistic phase, especially in the region of Lake Erie. Average ventral counts range from 143 to 157 in males and 137 to 154 in females; they are highest in the west (Illinois), a little lower in the northeastern states (Bleakney, 1959:55), still lower in peninsular Florida (Rossman, 1965:68), and lowest in other parts of the southeastern states; subcaudals vary less and average about 76 in males and 67 in females.

2. *Thamnophis sirtalis annectens* Brown

Thamnophis sirtalis annectens Brown, 1950:203. Type-locality, "a small branch of Boggy Creek, one mile east of Austin, Travis County, Texas." Holotype, Baylor Univ. Strecker Mus. 3038, adult male, collector Bryce C. Brown, 24 February 1946 (not examined by author).

• DEFINITION. This subspecies differs from the adjacent *sirtalis* chiefly in the orange color of the vertebral stripe occupying the median row and half of each adjacent row. The lateral stripes are pale gray; dorsolateral areas are olive, each with two alternating rows of distinct dark spots; ventrals and subcaudals average about 155 and 86 in males, 149 and 77 in females.

3. *Thamnophis sirtalis concinnus* (Hallowell)

Tropidonotus concinnus Hallowell, 1852:182. Type-locality, "Oregon," probably in lower Willamette Valley near Oregon City (Fitch, 1941:580). Holotype, Acad. Natur. Sci. Philadelphia 6324, adult female, collector Dr. F. B. Shumard (not examined by author).

Eutaenia sirtalis concinna: Cope, 1892:664.

Thamnophis sirtalis concinnus: Ruthven, 1908:173.

• DEFINITION. The vertebral stripe is bright yellow, occupying the median row and half of each adjacent row; lateral stripe is pale gray, covering parts of second and third scale row, but narrowed by encroaching black areas; dorsolateral area velvety black, with, on its lower half, small crimson crescentic markings, mainly confined to skin between the scales; top and sides of head red; and the ventral surface ivory white anteriorly, becoming bluish posteriorly, with more or less extensive black areas bordering the lateral stripe and sometimes extending to mid-belly. Ventrals and subcaudals average about 165 and 84 in males and 159 and 74 in females.

4. *Thamnophis sirtalis dorsalis* (Baird and Girard)

Eutaenia dorsalis Baird and Girard, 1853:31. Type-locality, "between Monclova, Coahuila, Mexico and the Rio Grande," perhaps in error for Rio Grande Valley in New Mexico. Ho-

lotype, U.S. Nat. Mus., number not known, adult male, collector General S. Churchill, specimen evidently lost according to Doris M. Cochran (pers. comm., 1950).

Eutaenia ornata Baird, 1859:16. Type-locality, "El Paso, Texas."

Holotype, U.S. Nat. Mus. 960, collector Colonel J. D. Graham (not examined by author).

Eutaenia sirtalis dorsalis: Cope, 1900:1076.

Thamnophis sirtalis ornata: Fitch and Maslin, 1961:297.

Thamnophis sirtalis dorsalis: Webb, 1966:55.

• DEFINITION. The dorsal stripe is bright yellow, occupying the median row and half of each adjacent row; lateral stripe is dull, grayish; dorsolateral area dark olive with a single (lower) row of superimposed black spots, whereas a second (upper) row of spots found in other subspecies is here fused into a continuous black area bordering dorsal stripe, this black area irregular along its lateral edge.

• REMARKS. Application of the name *dorsalis* to a population of *T. sirtalis* in the Rio Grande Valley of New Mexico (Webb, 1966) must be considered somewhat tentative. The original description of *dorsalis* fits *T. sirtalis* poorly in some respects and the stated type-locality is far outside the known range of the species *sirtalis*.

5. *Thamnophis sirtalis fitchi* Fox

Eutaenia infernalis: Girard, 1858:148 (in part).

Tropidonotus ordinatus var. *infernalis*: Boulenger, 1893:207 (in part).

Thamnophis sirtalis tetrataenia: Fitch, 1941:581.

Thamnophis sirtalis fitchi Fox, 1951:264. Type-locality, "Gray-lodge Refuge, 9 mi W of Gridley, Butte Co., California." Holotype, Univ. California, Mus. Vert. Zool. 51778, collected by John Cowan (not examined by author).

• DEFINITION. The vertebral stripe is bright yellow, occupying the middle row and half of each adjacent row; lateral stripe is pale grayish yellow; dorsolateral area is black or slaty with conspicuous red markings confined to its lower half; ventrals and subcaudals average about 163 and 86 in males, 158 and 79 in females.

6. *Thamnophis sirtalis infernalis* (Blainville)

Coluber infernalis Blainville, 1835:291. Type-locality, "California." Holotype, Mus. Nat. Hist. Natur. (Paris) 846, collector P. E. Botta (not examined by author).

Eutaenia infernalis: Baird and Girard, 1853:26.

Eutaenia infernalis: Bocourt, 1892:40.

Tropidonotus ordinatus var. *infernalis*: Boulenger, 1893:207 (in part).

Thamnophis sirtalis infernalis: Van Denburgh and Slevin, 1918:198.

• DEFINITION. The vertebral stripe is bright yellow, occupying the median scale row and more than half of each adjacent row; lateral stripe is pale grayish yellow; dorsolateral area olive gray, gray or slaty, with two alternating rows of black spots in a checkered pattern, and with red markings encroaching onto the edges of the scales but confined to its lower half; ventrals and subcaudals average about 161 and 90 in males, 156 and 82 in females.

7. *Thamnophis sirtalis pallidula* Allen

Thamnophis sirtalis pallidula Allen, 1899:63. Type-locality, "Intervale, New Hampshire." Syntypes, U.S. Nat. Mus. 26381-26383 (not seen by author).

Tropidonotus obalskii Mocquard, 1903:211. Type-locality, "Black Lake, Quebec." Holotype, Mus. Nat. Hist. Natur. (Paris) 1902-393, adult male, collected by Obalski (not seen by author).

Thamnophis sirtalis: Hemming, 1956:217. Type-locality, City of Quebec, Quebec Province, Canada. Neotype, Field Mus. Natur. Hist. 73660 (but set aside by Opinion 771, Evans and China, 1966).

• DEFINITION. The vertebral stripe is most often altogether lacking, or if present it is usually poorly developed, gray, tan or

dirty yellow; the lateral stripe is dull whitish, gray or tan, poorly defined, and merges into darker shade below with little or no contrast; the dorsolateral ground color is cinnamon brown, yellowish olive, or olive gray, with alternating rows of black spots in a checkered pattern; there are pale yellowish, bluish, or greenish flecks in loose skin between scales, setting off black spots; the ventral surface is whitish becoming dusky gray posteriorly; ventrals and subcaudals average about 148 and 67 respectively in males, 143 and 59 in females.

8. *Thamnophis sirtalis parietalis* (Say)

Coluber parietalis Say, 1823:181. Type-locality, "Stone quarry on west side of Missouri River three miles above mouth of Boyer's River," Washington County, Nebraska. Holotype, immature male, collected by Thomas Say in 1819, lost.

Tropidonotus parietalis: Boie, 1827:535.

Eutaenia parietalis: Cope, 1872:468.

Eutaenia sirtalis parietalis: Taylor, 1892:325.

Thamnophis parietalis: Van Denburgh, 1897:200.

Thamnophis sirtalis parietalis: Ruthven, 1908:166.

• DEFINITION. The vertebral stripe is yellow and is confined to the middle scale row and half (or a little more) of each adjacent row; lateral stripe is paler, dull grayish yellow; dorsolateral area is black, slaty, olive, gray, or brown, with two rows of alternate black spots (obscure in darker specimens), and with pale flecks mainly on skin between scales, but often encroaching onto scale edges; flecks typically are bright red, but may be ivory or tinted with yellow, green, blue or buff, especially those nearest dorsal stripe; head dark olive, paler anteriorly and on sides sometimes with reddish wash at corner of mouth; ventral surface ivory anteriorly, gradually graying posteriorly, tinted with yellowish or bluish; ventrals average about 163 in males and 162 in females, and subcaudals about 83 and 74 (in Manitoba; Bleakney, 1959:55).

9. *Thamnophis sirtalis pickeringii* (Baird and Girard)

Eutainia pickeringii Baird and Girard, 1853:27. Type-locality, "Puget Sound, Washington." Holotype, U.S. Nat. Mus. 936a, collected by U.S. Exploring Expedition (not seen by author).

Eutaenia pickeringii: Girard, 1858:150.

Eutaenia sirtalis trilineata Cope, 1892:665. Type-locality, "Port Townsend, Oregon" [=Washington]. Holotype, U.S. Nat. Mus. 5275 (not examined by author).

Eutaenia sirtalis pickeringii: Cope, 1892:665.

Thamnophis parietalis pickeringii: Van Denburgh and Slevin, 1918:204.

Thamnophis sirtalis pickeringii: Fitch, 1941:575.

• DEFINITION. In this melanistic northwestern subspecies stripes are narrowed by encroaching black areas; vertebral stripe is greenish yellow, normally confined to middle scale row; lateral stripe is pale green, narrow, with irregular borders where black pigment encroaches, discontinuous or altogether absent in some; dorsolateral ground color is velvety black, with small, well-separated crimson crescents on skin between scales on its lower half; continuous black area extends below lateral stripe; ventral surface white on chin, shading to bluish gray and finally to solid black posteriorly; ventrals and subcaudals average about 163 and 81 in males, 159 and 72 in females.

10. *Thamnophis sirtalis semifasciatus* (Cope)

Eutaenia sirtalis semifasciatus Cope, 1892:662. Type-locality, "Aux Plaines [=Des Plaines], Illinois." Syntypes (30), U.S. Nat. Mus. 8070, collector R. W. Kennicott (not examined by author).

Thamnophis sirtalis semifasciata: Smith, 1956:81.

• DEFINITION. This localized subspecies resembles surrounding *T. s. sirtalis* except in having black crossbars on forebody, formed from widening and fusion of the usual black spots. The bars divide the pale lateral stripe into segments, and break the continuity of vertebral stripe in some; ventrals and subcaudals average about 157 and 76 in males and 153 and 67 in females.

11. *Thamnophis sirtalis similis* Rossman

Thamnophis sirtalis similis Rossman, 1965:67. Type-locality, "4.5 miles west of Perry (near Hampton Springs), Taylor County, Florida." Holotype, Univ. Florida Collections, 15962, adult male, collector W. J. Riemer, 10 April 1960 (not examined by author).

• DEFINITION. The vertebral stripe is inconspicuous, dull tan, and the lateral stripe light blue or bluish white, brighter than vertebral; dorsolateral area dark chocolate brown; head dark brown paling to bluish green on supralabials; venter pale greenish. Ventrals average about 144 in males and 138 in females northwest of the Steinhatchee River (several scales more in the population southeast of that river); subcaudals average about 75 in males and 68 in females.

12. *Thamnophis sirtalis tetrataenia* (Cope)

Eutaenia sirtalis tetrataenia Cope in Yarrow, 1875:546. Type-locality, "Pitt [Pit] River, California" (Cope, 1875:41), but "undoubtedly came from the San Francisco Peninsula" (Fox, 1951:260). Lectotype, U.S. Nat. Mus. 21384 designated by Fitch (1941:585); 2 syntypes, U.S.N.M. 866, renumbered 21383, 21384.

Thamnophis sirtalis tetrataenia: Fox, 1951:264.

• DEFINITION. In this localized subspecies of the San Francisco Peninsula, dorsal colors are arranged in nine longitudinal bands; vertebral stripe pale green or blue green; lateral stripe dull, grayish yellow, irregularly tinted with red; dorsolateral area between with two black stripes bordering a bright red stripe. The head is red, paling on labials; venter ivory anteriorly, grading into grayish yellow posteriorly and darkening to slaty along edges of ventrals. Ventrals and subcaudals average about 167 and 90 in males, 162 and 82 in females.

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HENRY S. FITCH, THE UNIVERSITY OF KANSAS, LAWRENCE, KANSAS 66045.

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