

Catalogue of American Amphibians and Reptiles.

FITCH, HENRY S. 1983. *Thamnophis elegans*.*Thamnophis elegans* (Baird and Girard)
Western terrestrial garter snake

Eutainia elegans Baird and Girard, 1853:34. Type-locality, "El-dorado County, California." Holotype, Nat. Mus. Natur. Hist. 882, adult male, date of collection unknown, collector C. C. Boyle (not examined by author).

Tropidonotus tri-vittatus Hallowell, 1853:237. Type-locality not definitely stated, but assumed to be the Cosumnes River, California, from the statement "Very abundant about ponds and on the banks of the Cosumnes and other rivers in California." Holotype, originally in the Academy of Natural Sciences of Philadelphia, but not designated by a number and evidently lost; collector, A. L. Heermann.

• CONTENT. Six subspecies are recognized: *elegans*, *biscutatus*, *hueyi*, *nigrescens*, *terrestris*, and *vagrans*.

• DEFINITION. Adult length S-V usually 290 to 740 mm, dorsal scales keeled (except in lowermost row) in 21-23-19-17, 21-19-17 or 19-21-19-17 (rarely 19-17) rows, with reduction from maximum of 23 by loss, successively, of fifth, sixth, and fourth rows (counting upward from lowest row on each side); 8 supralabials, 4th and 5th bordering orbit; 6th and 7th supralabials relatively high with suture between them nearly vertical; one or less frequently two pairs of preoculars; usually 3 pairs of postoculars; posterior genials little if any longer than anterior; internasals broader than long, truncate anteriorly; 146-185 ventrals; 67-101 subcaudals; vertebral stripe bright yellow, orange-yellow or tan, 1-3 scales wide, its edges irregular; dorsal ground color pale tan to velvety black, revealing, when pale, 2 superimposed rows of alternating black spots on each side; lateral stripe dull yellow or tan on 3rd and 4th scale row; pale, creamy, yellow or green flecks mainly confined to skin between scales in dorsolateral areas, contrasting with dark spots; ventral surface dull white, yellow or gray, with pink suffusion posteriorly and on tail, heavily marked with black in some populations; *in situ* hemipenis extending to about level of 14th subcaudal. Males average about 83% of female S-V length, and 59% of female weight, have tails averaging a little more than 26% of total length (vs. about 24% in females), average more ventrals than females (often by about 5) and more subcaudals (often by about 11 pairs depending on the population); teeth number about 17 maxillaries, 10 palatines, and 19 pterygoids, but counts average slightly higher in males than females and higher in *biscutatus* and *vagrans* than in *elegans*, *hueyi* and *terrestris*.

• DESCRIPTIONS. Brief descriptions are given in Stebbins (1954, 1966), Wright and Wright (1957) and Behler and King (1979); more detailed and technical accounts are available in the revisionary studies listed under "Pertinent Literature."

• ILLUSTRATIONS. Photographs and drawings of various subspecies have been presented by Van Denburgh and Slevin (1918), Fitch (1940), and Stebbins (1954, 1966). Color plates have been presented by Stebbins (1966) for *terrestris*, Shaw and Campbell (1974) for *terrestris* (but mislabelled *T. couchii atratus*), and Behler and King (1979) for *vagrans*.

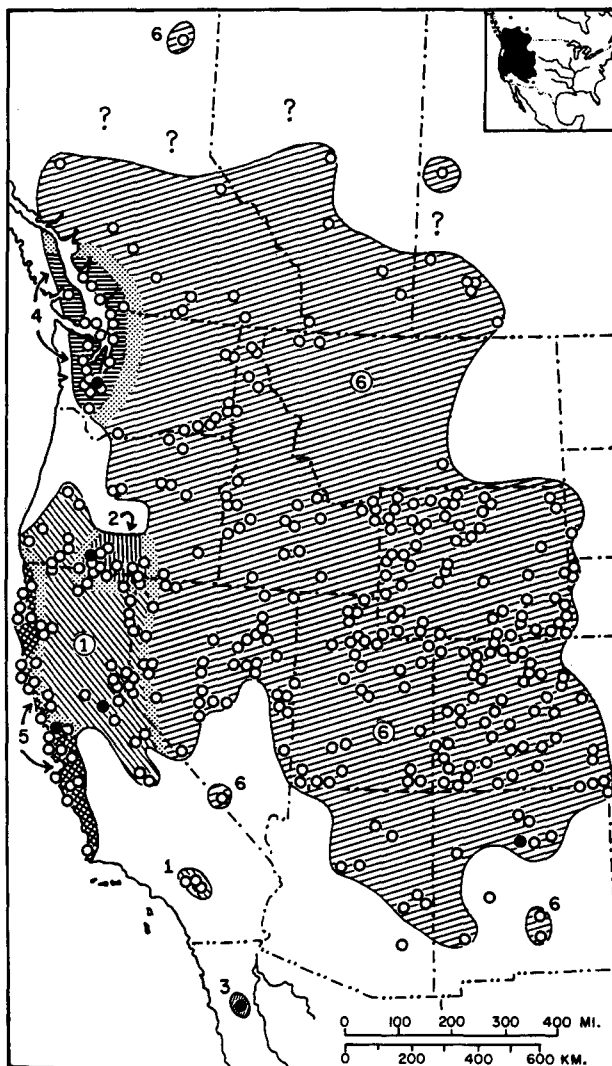
• DISTRIBUTION. The species is widely distributed in western North America, from east of the Continental Divide in south-central Saskatchewan, northwestern Nebraska and the tip of the Oklahoma panhandle, west to the Pacific Coast through most of the length of California, and in the Puget Sound region and the southern end of Vancouver Island (see map). Some populations are disjunct and isolated, including *elegans* in the San Bernardino Mountains of southern California and *hueyi* in the San Pedro Mártir Mountains, Baja California del Norte.

• FOSSIL RECORD. None.

• PERTINENT LITERATURE. Revisionary studies have been published by Ruthven (1908), Van Denburgh and Slevin (1918), Fitch (1940, 1948), Fox (1948a, 1951), Fox and Dessauer (1964), Rossman (1979) and Lawson and Dessauer (1979). Fitch (1940) showed that there is much variation in habitats and food habits

among local populations. Cunningham (1955) and White and Kolb (1974) also studied food habits in local populations of *elegans*, and Arnold (1977, 1981a, 1981b) studied the genetics of variation in prey preferences within and between populations. Fox (1956) studied sperm storage. Fox (1948b) and Fox, Gordon and Fox (1951) showed that scale characters in the young snakes are altered by the environmental temperatures during embryonic development.

• NOMENCLATURE HISTORY. Ruthven (1908) recognized the close relationships between various western garter snakes and allocated *elegans* as a subspecies of *Thamnophis ordinoides*, but synonymized *biscutatus* and *vagrans* under *elegans* along with various aquatic garter snakes now considered to belong to a separate species, *couchii*. Van Denburgh and Slevin (1918) described geographic variation and intergradation in the polytypic species "*ordinoides*" and recognized as subspecies *atratus*, *biscutatus*, *elegans*, *hueyi*, *vagrans*, *couchii*, and *hammondi*. Fitch (1940) accepted these subspecies and others, and recognized three conspecific ecologic groups that were widely sympatric: the mesic-terrestrial, slug-eating *ordinoides* and *atratus*; the relatively unspecialized, dry-terrestrial or aquatic series of *vagrans*, *biscutatus*, *elegans* and *hueyi*; and the aquatic series, *hydrophilus*, *couchii*, *gigas*, *hammondi* and *diguetti*. The polytypic species, *ordinoides*, as conceived by Ruthven (1908), Van Denburgh and Slevin (1918) and Fitch (1940) was subsequently dismembered. *T. ordinoides* was separated as a monotypic species on the basis



MAP. Solid circles mark type-localities; open circles indicate other records. Assumed areas of intergradation are stippled. Question marks indicate uncertain range boundary.

of evidence from the area of *ordinoides-terrestris* contact in the coastal region of northwestern California; certain characters of *terrestris* and *ordinoides* females were segregated in their offspring, with no overlapping (Fox, 1948a). *T. couchi*, along with other closely related aquatic subspecies, was later separated from *elegans* and its geographic representatives of terrestrial tendencies. This latter separation was first proposed by Mayr (1942) and Savage (1960) on philosophical and theoretical grounds, as an alternative for the arrangement recognizing broadly sympatric subspecies within the same species. Actual evidence of genetic discontinuity in the critical region of the Klamath River Canyon, justifying the separation of *elegans* and *couchi* as distinct species, was later presented by Fox and Dessauer (1964) and Lawson and Dessauer (1979) who demonstrated electrophoretic differences, and Rossman (1964, 1979) who showed differences in tooth counts in specimens from the same critical region. The combined evidence of the serological and dental characters provide a basis for separation of the species, even though *hydrophilus*, as a *couchi* representative, and *biscutatus*, as an *elegans* representative, occupy the same habitat, seem identical in behavior, and converge in size, color pattern and lepidosis to the degree that they are not readily separated in the field in the critical area where their ranges approach each other.

• ETYMOLOGY. The name *elegans* is Latin, elegant; *biscutatus* is Latin, two-scaled, referring to the horizontally divided preocular; *hueyi* is for L. M. Huey; *nigrescens* is Latin, blackened; *terrestris* is Latin, of the earth, terrestrial; *vagrans* is Latin, wandering.

1. *Thamnophis elegans elegans* (Baird and Girard) Mountain garter snake

Eutaenia elegans Baird and Girard, 1853:34. See species account. *Eutaenia elegans*: Yarrow and Henshaw, 1878:1638.

Eutaenia elegans lineolata Cope, 1892:655. Type-locality, "southern California." Holotype, Nat. Mus. Natur. Hist. 8587, adult male, collector H. W. Henshaw, August 1875 (not seen by author).

Thamnophis infernalis: Stejneger, 1893:210. (Misapplication, this name actually pertains to another species, *T. sirtalis*.)

Thamnophis elegans: Van Denburgh, 1897:207.

Thamnophis vagrans: McLain, 1899:12. (Misapplication through failure to recognize applicability and page priority of the specific name *elegans*.)

Eutaenia elegans elegans: Cope, 1900:1036.

Thamnophis ordinoides elegans: Ruthven, 1908:138.

• DEFINITION. Vertebral stripe bright yellow, covering vertebral scale row and adjacent half of each paravertebral row; dorsolateral area velvety black with yellow flecks; lateral stripes distinct, dull yellow; ventral surface pale, immaculate or nearly so; head short and broad, with enlarged posterior supralabials; internasals short and broadly truncate anteriorly; scale rows usually 21, of which the 5th on each side is confined to forebody, extending usually from $\frac{1}{10}$ to $\frac{1}{5}$ of total distance from snout to vent; 4th row also lacking on posterior part of body as it usually extends from $\frac{1}{2}$ to $\frac{3}{4}$ of total distance from snout to vent; ventrals number 151–184, subcaudals 72–101.

2. *Thamnophis elegans biscutatus* (Cope) Klamath garter snake

Eutaenia biscutata Cope, 1883:21. Type-locality, "Klamath Lake [Klamath County], Oregon." Syntypes, Acad. Natur. Sci. Philadelphia, 10748 male, 10749 sex undetermined, collector E. D. Cope (not seen by author).

Eutaenia elegans brunnea Cope, 1892:654. Type-locality, "Camp Bidwell" [=Fort Bidwell], Modoc County, California. Holotype, Nat. Mus. Natur. Hist. 10849, adult female, collector H. W. Henshaw, July 1878 (not seen by author).

Thamnophis vagrans biscutata: Van Denburgh, 1897:212.

Eutaenia elegans biscutata: Brown, 1903:291.

Thamnophis ordinoides elegans: Ruthven, 1908:138.

Thamnophis ordinoides biscutatus: Van Denburgh and Slevin, 1918:245.

Thamnophis elegans biscutatus: Fitch, 1948:125.

• DEFINITION. Vertebral stripe yellow, covering vertebral scale

row and adjacent half of each paravertebral row; dorsolateral area black, or very dark gray with superimposed black spots showing faintly; lateral stripe paler and duller than dorsal; stripes relatively bright anteriorly but becoming dull posteriorly; head moderately elongate with posterior supralabials not conspicuously enlarged, and internasals somewhat narrowed anteriorly; scale rows usually number 23 of which the 5th on each side centers on forebody and extends on average only about 10% of total distance from snout to vent. Ventrals number 160–179, subcaudals 70–96; snout–vent length often exceeds 700 mm.

3. *Thamnophis elegans hueyi* (Van Denburgh and Slevin) San Pedro Mártir garter snake

Thamnophis hammondii: Van Denburgh, 1896:1007. (Erroneous inclusion with the partially sympatric population of this taxon, before distinctive *hueyi* characters were recognized.)

Thamnophis ordinoides vagrans: Van Denburgh and Slevin, 1918:240.

Thamnophis ordinoides hueyi Van Denburgh and Slevin, 1923:2. Type-locality, "Arroyo Encantada between La Grulla and La Encantada," Sierra San Pedro Mártir, Baja California del Norte, Mexico. Holotype, California Acad. Sci. 56855, adult female, collector J. R. Slevin, 13 June 1923 (not seen by author).

Thamnophis elegans hueyi: Fitch, 1948:125.

• DEFINITION. Vertebral stripe bright yellow; dorsolateral area dark olive or dark gray with superimposed dark spots discernible; head short and broad with enlarged posterior supralabials and short, broadly truncate internasals; scale rows on forebody 21, ventrals 149–161, subcaudals 67–82.

4. *Thamnophis elegans nigrescens* Johnson Dusky garter snake

Eutaenia vagrans: Lord, 1866:306.

Eutaenia elegans vagrans: Cope, 1892:656.

Thamnophis vagrans biscutata: Van Denburgh, 1897:212.

Thamnophis ordinoides biscutatus: Van Denburgh and Slevin, 1918:245.

Thamnophis elegans nigrescens Johnson, 1947:161. Type-locality, "Tacoma, Pierce County, Washington." Holotype, College of Puget Sound 4471, adult female; collector M. L. Johnson, 15 July 1946 (not seen by author).

• DEFINITION. Dorsal stripe yellow, sometimes broader and brighter than in *vagrans*, less so than in other subspecies but almost suppressed in certain melanistic specimens; dorsolateral area dark brown to black with 2 alternating rows of black spots which are small, finely divided, and closely spaced; head short and narrow with a blunt snout; ventral surface heavily marked with black; preoculars usually divided; 21 scale rows on forebody, ventrals 155–174, subcaudals 67–91.

• REMARKS. *T. e. nigrescens* has not been consistently recognized as a valid subspecies, but has been regarded by some as a melanistic population of *vagrans*, to which it is obviously most closely related. However, additional differences (small size, low ventral counts, frequently divided preoculars, narrow head in *nigrescens*) and the zoogeographic distinctness of *nigrescens* range amply justify its recognition.

5. *Thamnophis elegans terrestris* Fox Coast garter snake

Eutaenia ordinoides Baird and Girard, 1853:33.

Eutaenia atrata: Kennicott, 1860:296.

Eutaenia elegans ordinoides: Cope, 1892:654.

Eutaenia infernalis infernalis: Cope, 1892:657.

Tropidonotus ordinatus var. *infernalis*: Boulenger, 1893:207.

Thamnophis elegans: Van Denburgh, 1897:207.

Eutaenia elegans elegans: Brown, 1903:288.

Eutaenia elegans infernalis: Ditmars, 1907:226.

Thamnophis ordinoides ordinoides: Ruthven, 1908:147.

Thamnophis ordinoides: Thompson, 1915:351.

Thamnophis ordinoides atratus: Van Denburgh and Slevin, 1918:224.

Thamnophis elegans terrestris Fox, 1951:499. Type-locality, "Strawberry Canyon, Berkeley, Alameda County, California." Holotype, Univ. California Mus. Vert. Zool. 48197, adult female, collector W. Fox, 23 June 1949 (not seen by author).

• DEFINITION. Dorsal stripe bright yellow, extending onto half of each paravertebral row; dorsolateral area reddish brown or olive to black, with two alternating rows of black spots, and often with red spots or reddish suffusion of skin areas between scales; lateral stripes dull olive yellow with varying amounts of red; body relatively stout; head narrow with snout short and blunt; usually 21 scale rows (maximum) on forebody, 5th row short, centering at point $\frac{1}{3}$ of distance from snout to vent; ventrals 149–178, subcaudals 61–90.

6. *Thamnophis elegans vagrans* (Baird and Girard) Wandering garter snake

Eutaenia vagrans Baird and Girard, 1853:35. Type-locality, "California" (=most probably Santa Fe, Santa Fe County, New Mexico, see Maslin et al., 1958, and Maslin, 1959). Lectotype, Nat. Mus. Natur. Hist. 908, adult female, collector W. Gambel, probably in 1841 (not seen by author).

Eutaenia vagrans vagrans: Yarrow, 1875:551.

Eutaenia vagrans plutonia Yarrow, 1883:152. Type-locality, "Arizona." Holotype, Nat. Mus. Natur. Hist. 8171, adult male, collector F. Bischoff, 1871 (not seen by author).

Eutaenia Henshawi Yarrow, 1883:152. Type-locality, "Fort Walla Walla, Washington." Holotype, Nat. Mus. Natur. Hist. 10912, adult female, June 1881, collector C. e. Bendire (not seen by author).

Eutaenia elegans lineolata Cope, 1892:655 (see *T. e. elegans* account).

Eutaenia elegans vagrans: Cope, 1892:656.

Eutaenia sirtalis vagrans: Taylor, 1892:325.

Tropidonotus vagrans: Boulenger, 1893:202.

Eutaenia elegans vagrans: Brown, 1903:290.

Thamnophis ordinoides elegans: Ruthven, 1908:138.

Thamnophis elegans: Cockerell, 1910:131.

Thamnophis ordinoides vagrans: Van Denburgh and Slevin, 1918:240.

Thamnophis ordinoides couchii: Erwin, 1925:7.

• DEFINITION. Dorsal stripe dull yellow, nearly confined to vertebral scale row; lateral stripes dull yellow; dorsolateral area light brown with two alternating rows of small, well separated black spots, uppermost invading vertebral stripe; venter often marked with extensive black areas; head short and broad, with internasals moderately short and truncated anteriorly; posterior supralabials somewhat enlarged; scale rows 21 on forebody; ventrals 149–184, subcaudals 68–98.

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