

Catalogue of American Amphibians and Reptiles.

Thompson, J.S., B.I. Crother, and A.H. Price. 1998. *Cnemidophorus hyperythrus*.

***Cnemidophorus hyperythrus* Cope**
Orangethroat Whiptail, Huico de Garganta-anaranjada

Cnemidophorus hyperythrus Cope 1863 [1864]:103. Type locality, "Cape St. Lucas [Baja California Sur, México]." Lectotype, National Museum of Natural History (USNM) 5299A, adult male, collected by John Xantus, collected May–September 1859 (Cochran 1961) (not examined by authors). See Remarks.

Verticaria hyperythrus: Cope 1869 [1871]:158.

C[nemidophorus]. hyperethra: Garman 1884:13.

Cnemidophorus sexlineatus: Mocquard 1899:315 (part).

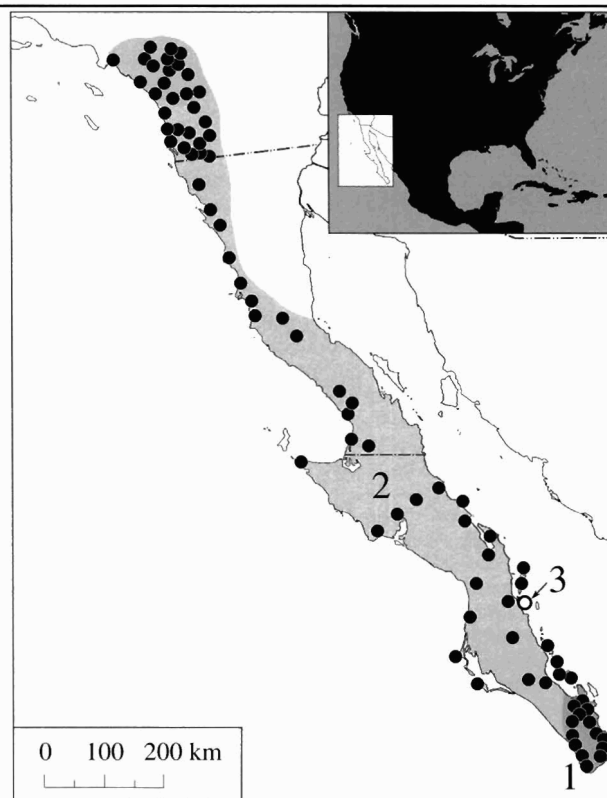
Cnemidophorus hyperthrus: Miller 1966:286. *Lapsus*.

• **Content.** Three subspecies, *hyperythrus*, *beldingi*, and *pictus*, are currently recognized (see Nomenclatural History).

• **Definition.** *Cnemidophorus hyperythrus* is a small (50–94 mm SVL) whiptail. Meristic characters exhibit clinal variation throughout the extended linear range of this species (Welsh 1988). Granular scales around midbody (GAB) number 66–92 (mean 72.8–81.0; N = 163), and 162–218 (mean 180.9–197.9; N = 131) granular scales are present from the interparietal scale to the base of the tail (GIPB) (Walker and Taylor 1968). The anterior nasal scales meet on top of the snout. The posterior nasals are in contact with the anterior nasals, first and second labials, and the loreal, prefrontal and frontonasal scales. The loreal is in contact with the second through fourth labials, preocular, first supraocular, first superciliary, prefrontal, and posterior nasal scales. The frontoparietal scale is single, and it is more than half as large as the frontal. Small occipital plates form a transverse row. The sublabials are separated from the infralabials by granular scales. Five supralabials and five infralabials extend posteriorly to a position below the middle of the eye. The ear opening is not denticulated. The mesoptychial scales are abruptly enlarged except in a few island populations. Femoral pores number 28–42 (mean 31.5–36.8; N = 158).

The ground color is gray, brown, or black, and the head is usually lighter in hue than the body. Four to seven pale yellow to tan dorsal longitudinal stripes may or may not extend onto the tail. The intervening dorsolateral fields lack spots. Ventral coloration is yellowish white except the belly, which may be bluish-gray on some individuals. Adults, especially breeding males, may have a red-orange wash on the throat and chest. The tail is bright blue in hatchlings and juveniles, fading to gray or bluish-gray in adults.

• **Diagnosis.** This species can be distinguished from all congeners except *Cnemidophorus ceralbensis* by the possession of a single, rather than paired, frontoparietal scale. *Cnemidophorus hyperythrus* can be distinguished from *C. ceralbensis* by having



Map. Distribution of *Cnemidophorus hyperythrus*. Dots represent localities for *C. h. hyperythrus* and *C. h. beldingi*. The circle represents the only known locality for *C. h. pictus*. Type localities are too imprecise to plot.

fewer GAB (85–107, mean 95.7 ± 0.9 , N = 36, in *C. ceralbensis*), fewer GIPB (191–230, mean 207.6 ± 1.6 , N = 37, in *C. ceralbensis*), and relatively smaller size (mean SVL ca. 20 mm less) (Walker and Taylor 1968).

• **Descriptions.** General descriptions of *C. hyperythrus* other than those listed in the synonymies include Bostic (1971), Brown (1974), Cope (1898 [1900]), Ditmars (1936), Leviton (1971), Lowe et al. (1966), Schmidt (1922), Shaw (1950a), Smith (1946), Stebbins (1966, 1972, 1985), Van Denburgh (1922), and Walker and Taylor (1968). Lowe et al. (1970) and Robinson (1973) described the karyotype (2N = 52, 28 submacrochromosomes + 24 microchromosomes).

• **Illustrations.** Color photographs of *Cnemidophorus hyperythrus* are in Behler and King (1979), Brown and Wright (1994), and Wright (1993); other color illustrations are in Brown

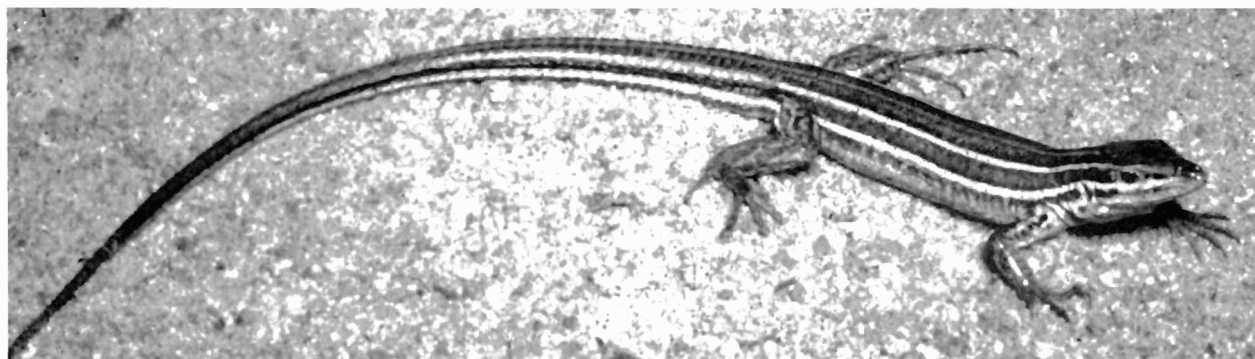


Figure. *Cnemidophorus hyperythrus* from San Marcos, San Diego County, California (photograph by J. Tazjain).

(1974) and Stebbins (1966, 1985). Black-and-white photographs are in Burt (1931), Lowe et al. (1966), Smith (1946), Van Denburgh (1922), Walker and Taylor (1968), and Wright (1994). Line drawings are in Van Denburgh (1895), Cope (1898 [1900]), and Stebbins (1954). Bostic (1966d) provided a black-and-white photograph of habitat. The karyotype was illustrated by Lowe et al. (1970) and Robinson (1973), and tongue structure by Presch (1971).

• **Distribution.** *Cnemidophorus hyperythrus* ranges from southern Orange and San Bernadino counties in southern California, west of the peninsular ranges, to the southern tip of Baja California del Sur, México. Populations occur on seven islands in the Gulf of California (Islas Carmen, Espíritu-Santo, Monserrate, Partida Coronados, San Francisco, San José, and San Marcos), and Isla Magdalena and Isla Santa Margarita off the Pacific coast. This species generally occupies open, xeric habitats with sandy or gravelly soils, such as desert grasslands, bajadas, arroyos, and river bottoms with mesquite, acacia, cactus, and shrubs. Jennings and Hayes (1994) estimate that 75% of formerly occupied habitat in the United States has been destroyed by development, and that the remaining U.S. population is highly fragmented.

• **Fossil Record.** None.

• **Pertinent Literature.** General accounts, ecological notes, and checklists which included *C. hyperythrus* are by Atsatt (1913), Belding (1887), Berrian and Banta (1979), Bostic (1971), Boulenger (1885, 1898 [1899]), A. Brown (1908), V. Brown (1974), Burt (1933), Camp (1916), Cochran (1961), Cochran and Goin (1970), Cope (1866 [1867], 1869 [1871], 1875, 1883), Garman (1884), Grinnell and Camp (1917), Jennings and Hayes (1994), Klauber (1928, 1930, 1934), Loomis et al. (1974), Maslin and Secoy (1986), Mocquard (1899), Mosauer (1936), Nelson (1921 [1922]), Pickwell (1972), Schmidt (1922, 1953), Shaw (1950a, b), Slevin (1926), Smith and Taylor (1950), Strong et al. (1993), Tevis (1944), Van Denburgh (1895, 1897, 1905, 1912), Van Denburgh and Slevin (1914, 1921a, b, c), Vance (1978, 1980), Walker (1966), and Yarrow (1882). More extensive ecological studies have included Alvarez et al. (1989), Asplund (1967), Blázquez and Ortega-Rubio (1996), Bostic (1964, 1965a, 1966a), Case (1975, 1979, 1983a), Christian and Waldschmidt (1984), Dunham et al. (1978), Karasov and Anderson (1984), Leviton and Banta (1964), Manly (1995), Regal (1983), and Romero-Schmidt et al. (1994). This species was included in biogeographic and phylogenetic studies by Case (1983b), Cope (1896), Dyrkacz (1972), Gadow (1906), Grismer (1993, 1994a, b), MacLean (1974), Murphy (1983a, b), Presch (1974a), Savage (1960), Soule and Sloan (1966), Tinkle (1969), Tinkle et al. (1970), Walker et al. (1966), Welsh (1988), and Wright (1993, 1994). Bostic (1966c), Dunham et al. (1988), and Fitch (1970) provided reproductive data. Behavioral studies have included Bostic (1966a, b), and thermoregulation was studied by Bostic (1966d), Brattstrom (1965), Grenot et al. (1995), Soule (1963), and Zweifel (1958). Morphological studies have included the reproductive system (Cuellar 1968, Lowe and Goldberg 1966), auditory system (Miller 1966), dentition (Presch 1974b), skeletal (Stokely 1950) and lingual anatomy (Presch 1971). Bostic (1965b) and Telford (1970) reported on parasites. Liner (1994) provided common names in Spanish.

• **Nomenclatural History.** Following his original description, Cope (1869 [1871]) erected the genus *Verticaria* for this species, based on the presence of an undivided frontoparietal scale. Subsequent workers (e.g., Garman 1884, Boulenger 1885, Gadow 1906) ignored this distinction and Burt (1929), finding this character insufficient to warrant generic distinction and to be highly variable, returned *hyperythrus* to the genus *Cnemidophorus*.

Seven populations were originally described as distinct specific or subspecific taxa (Stejneger 1894 [1895]; Van Denburgh 1895; Dickerson 1919; Van Denburgh and Slevin 1921a, b). Burt (1931) recognized only four subspecies, the nominotypical form throughout the mainland and three island forms (*caeruleus*,

danheimae [a substitute name for *Verticaria sericea* Van Denburgh 1895], and *pictus*). Linsdale (1932) resurrected a second mainland subspecies (*schmidtii*) and Murray (1955) a third (*beldingi*), an arrangement followed by Smith and Taylor (1950). Walker and Taylor (1968) resurrected two additional insular subspecies (*espiritensis* and *franciscensis*) for a total of eight subspecific taxa, an arrangement still followed by some workers (e.g., Liner 1994, Loomis et al. 1974, Maslin and Secoy 1986). However, Murphy (1983a, b, c), Murphy and Otley (1984), and Wright (1993, 1994) recognized only three subspecies, the arrangement we have chosen to follow here. Recently, Grismer (1998) discussed the phylogenetic relationships between *Cnemidophorus ceralbensis* and the six taxa he recognized as constituting the *C. hyperythrus* clade, and elevated the five island forms of the latter (*carmenensis*, *danheimae*, *espiritensis*, *franciscensis*, and *pictus*) to species rank.

• **Remarks.** Cope (1863 [1864]) listed USNM 5290 rather than the series of 13 specimens labeled USNM 5299 as the type material. This typographical error corrected by Burt (1931). Maslin and Secoy (1986) designated USNM 5299A as the lectotype.

• **Etymology.** The specific epithet *hyperythrus* is derived from the Greek prefix *hyp-*, meaning “beneath” or “under,” and the Latin word *erythros*, meaning “red,” presumably in reference to the distinctive ventral coloration of this taxon. The subspecific name *beldingi* is a patronym honoring Lyman Belding, the collector of the holotype. The subspecific name *pictus* (L., “false or unreal”) presumably refers to the loss and/or fading of the dorsal striped pattern in this form.

• **Acknowledgments.** We thank Jens Vindum (Department of Herpetology, California Academy of Sciences) and Bob Reynolds (Division of Reptiles and Amphibians, National Museum of Natural History) for answering our inquiries concerning specimen information.

1. *Cnemidophorus hyperythrus hyperythrus* Cope Cape Orangethroat Whiptail Huico Garganta-anaranjada del Cabo

Cnemidophorus hyperythrus Cope 1863:103. See species synonymy.

Verticaria hyperythrus: Cope 1869 [1871]:158. See species synonymy.

[*Cnemidophorus*], *hyperethra*: Garman 1884:13. See species synonymy.

Cnemidophorus sexlineatus: Mocquard 1899:315 (part). See species synonymy.

Verticaria hyperythra hyperythra: Stejneger and Barbour 1917:65. First use of trinomial.

Cnemidophorus hyperythrus hyperythrus: Burt 1929:154. First use of combination.

• **Definition.** This subspecies is characterized by relatively more GAB (69–92, mean 77.6 ± 0.6 , $N = 45$) and relatively widely spaced paravertebral stripes where present (granular scales separating them (PV) 0–13, mean 9.6 ± 0.3 , $N = 47$) (Walker and Taylor 1968). The second supraoculars are usually in complete contact with the frontal.

2. *Cnemidophorus hyperythrus beldingi* (Stejneger) Belding's Orangethroat Whiptail Huico de Belding

Verticaria beldingi Stejneger 1894 [1895]:17. Type locality, “Cerros Island, Lower California [Baja California Norte, México]” (see Remarks). Holotype, National Museum of Natural History (USNM) 11980, an adult male, collected by L. Belding sometime in 1878 (not examined by authors).

Verticaria hyperythra beldingi: Van Denburgh 1895:131. First use of trinomial.

Verticaria sericea Van Denburgh 1895:132. Type locality, “San Jose Island, Gulf of California, [Baja California Sur, México].”

Holotype, California Academy of Sciences (CAS) 435, a subadult of undetermined sex, collected by W.E. Bryant in April 1892 (destroyed by the San Francisco Fire of 1906; Slevin and Leviton 1956). Neotype, California Academy of Sciences (CAS) 52555, a subadult male, collected by J.R. Slevin on 28 May 1921 (not examined by authors).

Verticaria hyperythra beldingii: Cope 1898 [1900]:565.

Cnemidophorus sericeus: Ditmars 1907:186.

Cnemidophorus beldingi: Camp 1916:71.

Cnemidophorus hyperythrus beldingi: Grinnell and Camp 1917:175. First use of combination.

Verticaria caerulea Dickerson 1919:472. Type locality, "Carmen Island, Gulf of California, [Baja California Sur,] México." Holotype, National Museum of Natural History (USNM) 64251 (formerly American Museum of Natural History 5517), an adult female, collected by C.H. Townsend on 3 April 1911 (not examined by authors).

Verticaria espiritensis Van Denburgh and Slevin 1921b:397. Type locality, "Espiritu Santo Island, Gulf of California, [Baja California Sur,] Mexico." Holotype, California Academy of Sciences (CAS) 50511, an adult male, collected by J.R. Slevin on 1 June 1921 (not examined by authors).

Verticaria hyperythra schmidtii Van Denburgh and Slevin 1921b:397. Type locality, "San Marcos Island, Gulf of California, [Baja California Sur,] Mexico." Holotype, California Academy of Sciences (CAS) 50512, an adult male, collected by J.R. Slevin on 12 May 1921 (not examined by authors).

Verticaria franciscensis Van Denburgh and Slevin 1921b:397. Type locality, "San Francisco Island, Gulf of California, [Baja California Sur,] Mexico." Holotype, California Academy of Sciences (CAS) 50513, an adult male, collected by J.R. Slevin on 30 May 1921 (not examined by authors).

Cnemidophorus hyperythrus danheimae: Burt 1929:154. A substitute name for *Verticaria sericea* Van Denburgh 1895, preoccupied by *Cnemidophorus gularis sericeus* Cope 1892.

Cnemidophorus hyperythrus caeruleus: Burt 1931:240.

Cnemidophorus hyperythrus schmidtii: Linsdale 1932:373.

Cnemidophorus hyperythrus franciscensis: Walker and Taylor 1968:8.

Cnemidophorus hyperythrus espiritensis: Walker and Taylor 1968:13.

Cnemidophorus hyperythrus carmenensis: Maslin and Secoy 1986:21.

• **Definition.** This subspecies is characterized by relatively fewer GAB, averaging 72.8 ± 0.8 (66–79, $N = 17$) (Walker and Taylor 1968) and 75.2 ± 0.6 (66–83, $N = 54$) (Bostic 1971). Most island populations exhibit a single vertebral stripe; paravertebral stripes, where present, are relatively close together (PV 2–5, mean 4.0 ± 0.5 , $N = 9$) (Walker and Taylor 1968). Supraorbital semicircles usually separate the second supraoculars at least partially from the frontal.

• **Remarks.** The type locality listed in the original description resulted from a transcription error of specimen data for *Cnemidophorus labialis* and *Verticaria beldingi*, originally labeled from "Cerros Island and San Quintin Bay," into the National Museum of Natural History catalogue. The collector, Lyman Belding, visited both locations during the same trip, as they are within a one-day journey of each other. Neither species has been found on Isla Cedros before or since (Belding 1887, Burt 1931, Savage 1954). The correct type locality for this taxon should be "Bahia San Quintin, Baja California Norte, México."

3. *Cnemidophorus hyperythrus pictus* (Van Denburgh and Slevin) Monserate Island Whiptail Huico de la Isla Monserate

Verticaria picta Van Denburgh and Slevin 1921a:98. Type locality, "Monserate Island, Gulf of California, [Baja California Sur,] Mexico." Holotype, California Academy of Sciences (CAS) 49155, an adult male, collected by J.R. Slevin on 25 May 1921 (not examined by authors).

Cnemidophorus hyperythrus pictus: Burt 1931:242. First use of trinomial.

• **Definition.** This subspecies is characterized by a unicolored dorsum of dark brown or black (fading to gray or grayish-brown in preservative) and the virtual absence of longitudinal dorsal stripes (Walker and Taylor 1968). A middorsal stripe is absent and the lateral and dorsolateral stripes, if present, occur only on the head. Adults possess a lateral brick-red band.

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