

Catalogue of American Amphibians and Reptiles.

Ernst, C.H. 2008. *Storeria storerioides*.

***Storeria storerioides* (Cope)**
Mexican Brownsnake

Tropidoclonium storerioides Cope 1865:190. Type-locality, "Mexican Plateau between the eastern range and the Valley of Mexico," restricted to "Tres Cumbres," State of Morelos, Mexico, by Smith and Taylor (1950b:336). Syntypes, 4 specimens in alcohol, National Museum of Natural History (USNM) 24987 (female), USNM 24988 (male), 24989 (male), and 24990 (male), sent by Dr. Charles Sartorius, date of collection unknown, catalogued into the collection in 1898 (examined by author).

Ischnognathus occipitamaculatus: Fischer 1882:284 (part).

Storeria storerioides: Garman 1883:29. First use of present combination.

Hemigenius variabilis Dugès 1888:182. Type-locality, "la Barranca de Portillo (Guadalajara) et aussi a Guanajuato." Syntypes, two unnumbered alcoholic specimens, Alfredo Dugès Museo, Colegio del Estado de Guanajuato, Mexico (not examined by author) (see **Remarks**).

Natrix storerioides: Cope 1889:392.

Tropidoclonium storerioides: Yarrow 1893:18.

Ischnognathus storerioides: Boulenger 1893:288.

Tropidonotus storerioides: Bocourt 1893:750.

Tropidonotus variabilis: Günther 1894:133.

Ischnognathus storerioides: Werner 1929:38.

Thamnophis variabilis: Amaral 1929:21.

Tropidoclonium storerioides: Dunn 1931:163.

Ischnognathus occipito-maculatus: Trapido 1944:5.

Storeria storerioides: Davis and Smith 1953:137. *Ex errore*.

Storeria Storerioides: Anderson 1960:63. *Ex errore*.

Storeria storerioides: Lemo-Espinal, Smith, and Ballinger 1997:163. *Ex errore*.

Storeria storeioides: Ponce-Campos, Huerta-Ortega, Heinze-Yothers, and Smith 2003. *Ex errore*.

• **CONTENT.** *Storeria storerioides* is currently considered a monotypic species, but variation between eastern and western populations has not been adequately studied.

• **DEFINITION.** *Storeria storerioides* is a small, somewhat slender snake with a maximum TL of 34.0 cm (maximum female TL 34.0 cm; maximum male TL 32.8 cm); most individuals are 26–30 cm long. Neonates have not been described, but 5.6 cm and 8.5 cm juveniles have been described by Smith (1943) and Tanner and Robison (1960). Pitless, keeled body scales occur in 15–15–15 rows, first row smooth; scales on the tail lie in 6 rows. Ventrals 120–139, subcaudals 38–53 (in 2 rows), and the cloacal scute (= anal plate) is divided. Males with 120–133 (mean 128) ventrals, 41–53 (mean 45) subcaudals, and tail lengths 20–25% (mean 21.9%) of TL; females with

123–139 (mean 132) ventrals, 37–48 (mean 41) subcaudals, and tail lengths 19–21% (mean 20.2%) of TL. Head obtusely-shaped; 1 rostral, 2 internasals, 2 prefrontals, 1 medial frontal, 2 supraoculars, 2 parietals; 2 (occasionally 1) nasals (lateral naris situated at posterior edge of anterior nasal when 2 nasals are present), 1 loreal, (which may separate preoculars to enter orbit), 2 preoculars, 2–3 (usually 3) postoculars, 1 + 2–3 temporals, 7 (5–7) supralabials (third and fourth enter orbit), and 7 (5–7) infralabials (fifth largest); 1 small mental scale, 2 long anterior chin shields, and 2 shorter posterior chin shields separated posteriorly by small scales.

Dorsal body color varies from brown to olive-brown or reddish-brown (gray-brown to olive or dark brown in preservative). Anderson (1960) reported a melanistic individual. Fifth and sixth scale rows marked with a series of dark brown to black spots, which fuse to form 27–62 (normally more than 50) dark crossbars. Venter salmon to orange-red (grayish to olive in preservative), patterned with dark lateral speckles, sometimes forming a dark lateral stripe. Midventer unmarked, forming a light area about 1 mm wide. Head brown with small black speckles, which sometimes coalesce into larger spots on parietals. Labials marked with small dark marks. An elongated dark blotch extends rearward on each side of occipit.

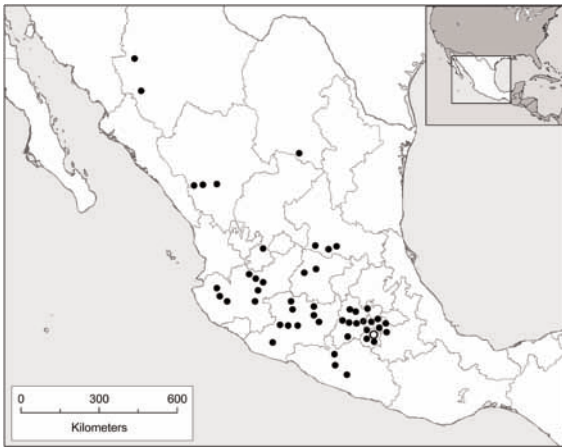
Short, single hemipenis with shallow medial sulcus spermaticus; retractor muscle inserts at level of 8th subcaudal; small distal spines present, which lengthen proximally; largest about 2 mm from organ's base; base lacks spines; spines on basal half of hemipenis larger than those of other species of *Storeria* (Trapido 1944). Maxilla with 13–19 (usually 14–16) teeth, posterior teeth enlarged; the last is largest of series and fang-like; dentary bears 10–11 teeth, which decrease in size posteriorly. The karyotype has not been described, but is probably like that of United States and Canadian species of *Storeria*; consisting of 36 chromosomes (34 macrochromosomes, 2 microchromosomes), females ZW and males ZZ (Hardy 1971).

• **DESCRIPTIONS.** General descriptions are given by Anderson (1960), Boulenger (1893, 1896), Cope (1865, 1900), Davis and Smith (1953), Duellman (1961), Dugès (1888, 1890), Dunn (1936), Günther (1894), Hardy and McDiarmid (1969), Schmidt and Shannon (1947), Smith (1943), Smith and Taylor (1950a, 1966), Tanner and Robison (1960), Taylor (1942), Taylor and Smith (1939), Trapido (1944), and Uribe-Peña (1999). Other descriptions are as follows: **dentition** (Günther 1894, Trapido 1944), **hemipenis** (Cope 1900, Trapido 1944), **lungs** (Wallach 1998), and **habitat** (Anderson 1960, Davis and Smith 1953, Hardy and McDiarmid 1969, Ponce-Campos et al 2003, Schmidt and Shannon 1947, Smith 1943, Taylor and Smith 1939, and Trapido 1944).

• **ILLUSTRATIONS.** The species is illustrated in color by Lemos Espinal and Smith (2007), Vázquez Díaz and Quintero Díaz (2005), and Uribe-Peña et al. (1999). Black and white photographs of the head and body scales are presented by Trapido (1944), and

other head illustrations are in Dugès (1888, 1890) and Taylor and Smith (1939). Tail scalation is illustrated in Dugès (1888, 1890), and Cope (1895, 1900) presents drawings of the hemipenis. A diagram of a hypothetical phylogeny of the taxa in *Storeria* can be found in Trapido (1944). Distributional maps are included in Trapido (1944), Anderson (1960), and Hardy and McDiarmid (1969).

• **DISTRIBUTION.** *Storeria storerioides* ranges across the highlands of Mexico from San Luis Potosí and Hidalgo in the east westward to the states of Jalisco, Michoacán, México and Morelos; and in the west from Chihuahua southward to Guerrero.



MAP. Distribution of *Storeria storerioides*. The circle marks the type locality; dots indicate other records.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** The best general accounts are by Trapido (1944), Uribe-Peña et al. (1999), Lemos Espinal and Smith (2007), and Vázquez Díaz and Quintero Díaz (2005). Other selected references by topic are as follows: **behavior** (Dugès 1888, 1890), **checklists and similar compendia** (Aguilar Benítez 1990; Casas-Andreu et al. 1996, 2004; Flores Villela 1993; Flores Villela and Muñoz Alonso 1993; Flores Villela et al. 1995; Liner 1994; Xóchitl Aguilar et al. 1997), **conservation** (Bojórquez-Tapia et al. 1995; Navarro Siguenza and Muñoz Alonso 1990; Sánchez Núñez 2006), **diet** (Uribe-Peña et al. 1999), **distribution** (Altamirano Alvarez et al. 2006; Alvarado-Díaz 2005; Anderson 1960; Blanco Zavala et al. 1981; Boulenger 1893, 1896; Casas-Andreu and Aguilar-Miguel 2005; Cope 1896; Davis and Smith 1953; Duellman 1961, 1965; Dunn 1936; Fernández et al. 2006; Flores-Villela et al. 1991; Günther 1894; Hardy and McDiarmid 1969; Lavín Murcio et al. 2002; Lemo-Espinal et al. 1997; McCranie and Wilson 1987; Ponce-Campos et al. 2003; Ramirez-Bautista et al. 1995; Smith 1944; Smith and Taylor 1950a, 1966; Tanner and Robison 1960; Taylor 1949, 1952; Taylor and Smith 1939; Webb 1982, 1984; Webb and Baker 1962; Wilson and McCranie 1979), **geographic variation** (Anderson 1960; Duellman 1961), **habitat** (Campbell and Murphy 1977; Castro-Franco and Bustos Zagal 1994; Duellman 1965), **pre-**

dition (Anderson 1960), **reproduction** (Alvarado-Díaz 2005; Anderson 1960; Ramirez-Bautista et al. 1995; Uribe-Peña et al. 1999), **systematics, taxonomy and evolution** (Alfaro and Arnold 2001; Amaral 1929; Cope 1865, 1889, 1895; Dugès 1888, 1890; Dunn 1931; Garman 1883; Schmidt 1943; Smith and Taylor 1950b; Taylor 1933; Trapido 1944; Werner 1929), and **type specimens** (Cochran 1961; Smith 1943; Smith and Taylor 1950a; Taylor 1933).

• **REMARKS.** Cope (1900:998) wrongly associated the numbers USNM 9055–9060 with the original type series of *Tropidoclonium storerioides* collected by Sartorius. These are not USNM numbers, but possibly are those of the Academy of Natural Science, Philadelphia (ANSP), with which Cope was also associated at that time. The correct numbers for the 4 USNM syntypes are 24987–24990, correctly listed by Cochran (1961:222).

Dugès (1888:182) did not designate type specimens when he described *Hemigenius variabilis*, but it is clear that the description was based on specimens from Barranca de Portillo, Guadalajara and Guanajuato. Taylor (1933) discovered these 2 specimens in the collection of the Alfredo Dugès Museo at the Colegio del Estado de Guanajuato and designated them syntypes. They were in a jar which Taylor was not allowed to open, and were apparently unnumbered, as neither Taylor (1933), Trapido (1944) or Smith and Taylor (1950a) mention specimen numbers for them.

• **ETYMOLOGY.** The name *storerioides* means “similar” or “like”, referring to the similarity of this species to other species of *Storeria*.

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