

Taxonomic summary of *Conopsis*, Günther, 1858 (Serpentes: Colubridae)

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Abstract

The colubrid snake genus *Conopsis* is distributed in mainland Mexico. The taxonomic history of this genus is complex and recently organisms under the genus *Toluca* have been synonymized with *Conopsis*. Here we present the nomenclatural history, morphological variation, distribution and a dichotomous key for the genus *Conopsis*. Species characterizations are based on a previous cladistic analysis of molecular and morphological characters. We recognize six valid species: *C. acuta* **n. comb.**, *C. amphisticha*, *C. biserialis*, *C. lineata*, *C. megalodon* and *C. nasus*.

Key words: Colubridae, *Conopsis*, distribution, Mexico, taxonomy, variation

Resumen

El género de serpientes colúbridas *Conopsis*, se distribuye a través del territorio mexicano. Su historia taxonómica ha sido compleja y recientemente los organismos del género *Toluca* se sinonimizaron con *Conopsis*. Se presenta la historia nomenclatural del género, la variación morfológica de éste, su distribución y una clave dicotómica para las especies válidas del género de acuerdo a un análisis cladístico previo realizado con caracteres morfológicos y moleculares. Se reconocen seis especies válidas: *C. acuta* **n. comb.**, *C. amphisticha*, *C. biserialis*, *C. lineata*, *C. megalodon* y *C. nasus*.

Palabras clave: Colubridae, *Conopsis*, distribución, México, taxonomía, variación

Introduction

Conopsis, Günther, 1858 is a genus of colubrid snakes distributed in mainland México. The taxonomic history of this genus is complex and has been reviewed by Goyenechea &

Flores-Villela (2000, 2002). The main conclusion of these authors is that all species and subspecies of the former genus *Toluca* must be synonymized under *Conopsis* due to the lack of a “diacritic” character that distinguishes both genera (Goyenechea & Flores-Villela, 2002). The character used to separate *Toluca* from *Conopsis* has been questioned several times (e.g., Bogert & Oliver, 1945). Taylor & Smith (1942) recognized both genera based on *Toluca* having a groove on the rear maxillary teeth, missing in *Conopsis*.

Here we present the taxonomic history, morphological variation, distribution and a dichotomous key for the species in the genus *Conopsis*. The species were defined by a cladistic analysis of 933 museum specimens from 14 museums (Appendix 1), representing all known taxa, several outgroups and a vast geographical range (19 Mexican states; Goyenechea & Flores-Villela, in prep.) This analysis was performed using a matrix of 1340 morphological and molecular characters on a heuristic search with 1000 replicates that led to the identification of valid taxa in *Conopsis* that correspond to terminal subclades including former subspecies in the genus. Molecular characters (1324 bp) include sequences of ND4 gene and 16S mtDNA. Morphological characters (16) follow Goyenechea (1995) and include presence and number of head scales, dorsal and ventral coloration, number of rows at midbody and standard measures. Therefore, we recognize six valid species: *C. acuta* **n. comb.**, *C. amphisticha*, *C. biserialis*, *C. lineata*, *C. megalodon* and *C. nasus*.

Historical summary for the genus

The genus *Conopsis* has been assigned to various other genera since it was described. Generic names include *Ficimia* and *Chionactis*, for example. A historical summary of these names is necessary.

Genus: *Conopsis* Günther, 1858

Conopsis Günther, 1858:6. Type species *Conopsis nasus*.

Toluca Kennicott, 1859. In Baird:23 Type species *Toluca lineata*.

Oxyrhina Jan, 1862:59–60. Type species *Oxyrhina varians*.

Achyrrhina Jan, 1862:61. Type species *Achyrrhina De Filippii*=*Toluca lineata* Kennicott (no separate generic description).

Exorhina Jan, 1862: 61. Type Species *Exorhina maculata* (no separate generic description).

Epirhina Jan, 1862:62–63. Type species *Epirhina tessellata* (no separate generic description).

Ogmios Cope, 1869:162. Type species *Ogmios varians* Jan. Proposed as substitute for *Oxyrhina* Jan, previously used.

Type species: *Conopsis nasus* (Günther, 1858) Holotype BMNH lost, type locality “California”.

Neotype: BMNH 83.4.16.38, Milpas Durango (Goyenechea and Flores-Villela, 2000).

Diagnosis: The genus *Conopsis* is comprised of viviparous snake species with burrowing habits. These snakes are relatively small, adults of all species ranging from 100 to 330 mm in snout-vent length SVL; and from 120 to 377 mm in total length TL; body subcylindrical; head short; snout pointed; pupil round; 17 rows of smooth scales at midbody; anal and caudal scales divided; 12 to 14 conic maxillary teeth, with a distinctive groove at least on the last tooth; two internasal scales; a preocular; two postoculars; a rostral ended in a tip; nasal scale pierced by the nostril; frontal scale hexagonal; temporal formula 1+2; 2.5 to 3 upper labials before eye; hemipenes subcylindrical, with reticulate ornamentation, and several large spines at the base. Prefrontals and internasals may be fused or divided; loreals may or may not be present (20% of sample examined); genial shields divided by a scale in 90% of specimens, but may be fused or divided by two scales. Upper labials 7, in 90% of the specimens (they vary from 5 to 7); lower labials 6 in 80% of the specimens (varying from 4 to 7). Ventral scales 120–127; subcaudals 29–39. Coloration and body markings vary considerably, both dorsal and ventral patterns. Dorsal pattern consists of dark spots, blotches or bands on a variable ground color, that goes from light brown, cinnamon, grayish, and olive green tones. Dorsal spots may be constituted from a series of hexagonal to elongated marks, a tessellated pattern, or lines along the body. Some snakes have no dorsal pattern of spots. There is less variation ventrally, generally the belly is yellowish, although it may be reddish or grayish. Ventral spots may be present in a series of central dots, large or small, medial, intercalated or paired, some *acuta* with black edged ventre.

The phylogenetic analysis (Goyenechea & Flores in prep.) suggests that *Chionactis* and *Gyalopion* may be the sister groups to *Conopsis*.

Chionactis differs from *Conopsis* in having a shovel-shaped snout with a deeply inserted lower jaw, genial shields separated by more than two scales, and 15 rows of scales at midbody.

Gyalopion differs from *Conopsis* in having a pentagonal frontal scale, the rostral upturned, dividing the internasals and prefrontals and contacting the frontal, and nasal partially fused with first upper labial.

Distribution: *Conopsis* is endemic to Mexico, ranging from Chihuahua to Oaxaca. Individuals occur mainly in pine and pine-oak forests, although they have also been collected in fir forests, xerophilous underbrush, submonte underbrush and caduciphilous forest, between 1700 and 3200 m.

Artificial key to the species of adult *Conopsis*

- 1 Divided prefrontal and internasal scale 2
- 1' Fused prefrontal and internasal scales 5
- 2 Vertebral line of elongated hexagonal spots; with tessellated sides, or two paravertebral dark lines (Fig. 1a); smaller than other species in the genus (100–225 mm SVL); 106–135 ventral scales; 28–42 subcaudal scales *C. acuta*
- 2' No hexagonal dorsal spot pattern 3
- 3 Two vertebral lines of dots or a tessellated spot pattern along dorsum 4
- 3' Dorsal spot pattern in three to five dark lines along body or without pattern (Fig. 1 b); 100–273 mm SVL; 100–140 ventrals; 20–49 subcaudals *C. lineata*
- 4 Two vertebral lines of dots on the anterior third AND a tessellated pattern of spots afterwards; venter with a paired row of dots (Fig. 1 c); 110–235 mm SVL; 116–132 ventral scales; 26–41 subcaudals; distributed in Oaxaca only *C. amphisticha*
- 4' Two series of dots along body OR a tessellated dorsal spot pattern; venter with a row of medial dots (Fig. 1 d); 110–330 mm SVL; 112–146 ventrals; 26–43 subcaudal scales; distributed in central Mexico *C. biserialis*
- 5 Vertebral line of hexagonal or elongated spots and tessellated sides over a reddish brown dorsum; venter with a paired row of dots (Fig. 1 e); 107–250 mm SVL; 118–135 ventrals; 29–49 subcaudals; distributed in Guerrero and Oaxaca *C. megalodon*
- 5' Hexagonal vertebral row of spots that may be bordered by two paravertebral rows of dots over a cinnamon dorsum (Fig. 1 e); largest species in the genus; 100–330 mm SVL; 116–138 ventrals; 20–43 caudals *C. nasus*

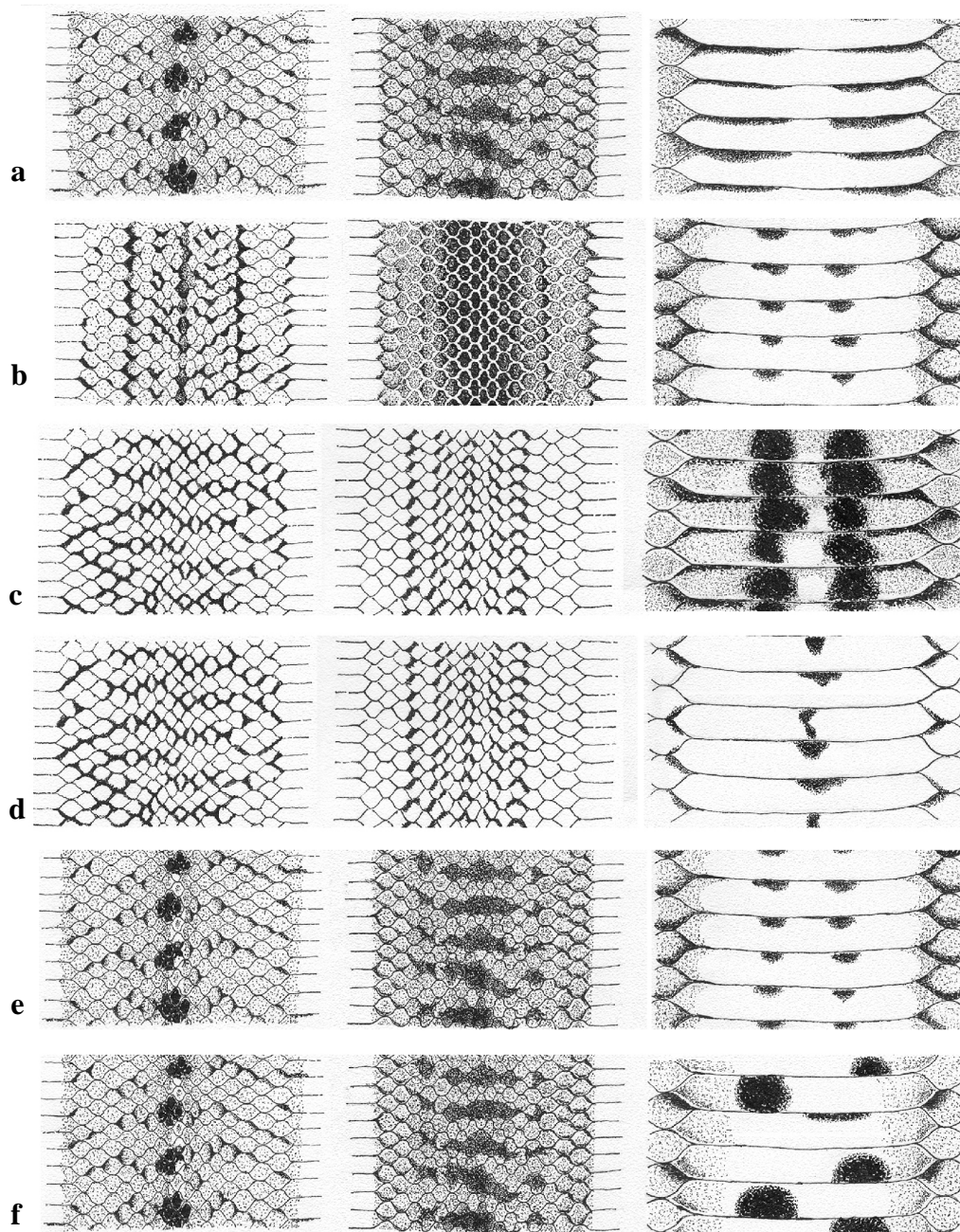


FIGURE 1. Dorsal and ventral marks on a. *Conopsis acuta*. b. *Conopsis lineata*. c. *Conopsis amphisticha*. d. *Conopsis biserialis*. e. *Conopsis megalodon*. f. *Conopsis nasus*.

***Conopsis acuta* (Cope, 1886) n. comb.**

Ogmios varians Cope (non Jan), 1869:162.

O(gmios) acutus Cope, 1886 in Ferrari-Perez:189.

Ogmios acutus Cope, 1887:82.

Toluca lineata acuta (Cope), 1886:346.

Chionactis diasii acutus Cope, 1898 (1900):943.

Toluca lineata wetmorei Smith, 1943:489. **nov. sin.**

Type specimen: USNM 30552.

Type locality: Juchitán, Oaxaca. This locality is obviously in error since is out of the known geographic and elevation ranges of the species.

We propose to restrict the type locality for *Conopsis acuta* to: 2 millas E Ixtlán de Juárez (AMNH 91054), since apparently Cope, 1886 made a mistake citing the locality for the specimen he described as from "...Tuchitan, on the Pacific side of the isthmus of Tehuatepec.". Latter Smith and Taylor (1950:p.338) pointed that the type locality for this taxon is Juchitán, Oaxaca. The type specimen was sent to the US National Museum by Sumichrast (Cope, 1886 in Ferrari-Perez:189). Our restriction is based on the statement of Sumichrast (1873) referring the species as inhabiting the temperate highlands of Mexico. This locality may have been within the sphere of Sumichrast activity and was probably readily accessible to him.

Diagnosis: This snake is characterized by the following combination of characters: divided internasals and prefrontals; brown dorsal coloration, or some individuals with a grayish dorsum and a vertebral line of elongated hexagonal spots; with tessellated sides, or two paravertebral dark lines. Ventrally it is yellowish or yellow-orange, with no spots or with a row of paired dots on each end of the ventral scales. It differs from *C. nasus* and *C. megalodon* by having divided prefrontals and internasals, scales fused in the latter two species. The dorsal spot pattern may be similar in the three. *Conopsis acuta* is a smaller snake (SVL 100–225 mm) compared to the other two species, *C. nasus* (SVL: 100–320 mm) and *C. megalodon* (SVL: 107–250 mm); *C. acuta* differs from *C. lineata* by lacking continuous lines along the dorsum and its smaller size (*C. lineata* SVL: 100–273 mm).

Description: A species with divided prefrontals and internasals; loreal scale on each side of head; a pointed rostral; nasal pierced by nostril on each side of head; a preocular and two postoculars; hexagonal frontal, contacting prefrontals; temporal formula 1+2; 7 upper and lower labials; 2.5 upper labials before eye; genial shields separated by one scale; a mean of 123 ventrals (106–135) and 31 subcaudals (28–42); 17 rows of smooth scales at midbody; dorsum brown, with vertebral line of elongated hexagonal spots; sides of body tessellated; venter yellowish, with no marks.

Measurements: Adult specimens of *Conopsis acuta* average 185.4 mm snout-vent length (120–225 mm), 222.0 mm in total length (153–270 mm), body diameter 7.2 mm.

Variation: This species generally shows a loreal scale on each side of head (68.8% of examined specimens), or loreal may be missing in some (31.2%). Upper labials usually

7–7 (86.2%), but some have 6–6 (10.4%); or 7–6 (3.4%). Upper labials before eye from 2.5 (69%) to 3 (31%). Lower labials from 7 (65.6%) to 6 (31.1%), one specimen had 5–7. First pair of genial shields separated by one (75.9%) or two scales (13.8%), or may be fused (10.3%). Dorsal coloration is brown (69%), gray (13.9%), cinnamon (10.3%), or beige (6.8%); with a vertebral row of hexagonal spots (79.3%), or a vertebral row of hexagonal spots and two paravertebral rows of spots, or a vertebral row of large hexagonal spots and three dorsal lines along body, but vertebral line more prominent and forming small hexagons (20.7%). Ventral coloration creamy (69%), yellow (27.6%), or yellowish-gray color (3.4%). The venter has a row of large or small-paired dots (37.9%), dots at the edge of the ventral scales (17.2%), intercalated dots through the whole belly (6.8%), or is immaculate (34.6%).

Distribution: *Conopsis acuta* is distributed in the highlands of south-central Mexico (fig. 2); it has been collected in the states of Oaxaca, Puebla, and Veracruz, from 1800 to 2600 m, in xerophilous underbrush, *Opuntia* (prickly pear), pine, pine-oak, and fir forests. It is usually under rocks or litter during most of the year, being more abundant in the months of August, September, and November.



FIGURE 2. *Conopsis acuta* distribution map.

Conopsis amphisticha (Smith and Lafe 1945)

Toluca amphisticha Smith and Lafe, 1945:5.

Type specimen: U.S.N.M. 120950.

Type locality: Xuimygopk, between Ayutla and Cacalotepec, Oaxaca.

Diagnosis: This species is characterized by the following combination of characters: divided internasals and prefrontals; dorsal coloration usually of two series of dots on the anterior third and a tessellated pattern of spots afterwards, or a tessellated pattern of spots along body over brown color. Venter is yellowish with paired black dots along the belly. *Conopsis amphisticha* shares its characteristic dorsal pattern of spots with *Conopsis*

biserialis, with which it can be confused, but their geographic ranges do not overlap.

Description: A species with divided prefrontals and internasals; loreal scale on each side of head; a pointed rostral; nasal pierced by nostril on each side of head; a preocular and two postoculars; hexagonal frontal, contacting prefrontals; temporal formula 1+2; 7 upper labials, 6 lower labials; 2.5 upper labials before eye; genial shields separated by one scale; a mean of 124.19 mm (116–132); and subcaudals 33.12 mm (26–41); 17 rows of smooth scales at midbody; dorsum brown, with two lines of dots along body, or a tessellated pattern of spots; venter yellowish with a series of paired dots.

Measurements: Adults of *Conopsis amphisticha* average 195.9 mm in snout-vent length (110–235 mm); 233.81 mm in total length (120–290 mm), diameter of body 7.7 mm.

Variation: Loreal scale may be present on both sides of head (65%), completely absent (5%), or may be present only one side of head (30%). Upper labials usually 7–7 (79.2%), but some have 7/6 (16.5%) or 7/5 (4.3%). Upper labials before eye from 2.5 (95.9%) to 3/2.5 (4.1%). Lower labials from 6 (79.2%), 7/6 (8.3%), 6/5 (8.3%) to 5 on each side of head (4.1%). First pair of genial shields separated by one or two scales (70.8%), or may be in contact (29.2%). Dorsal coloration is brown (62.5%), cinnamon (20.9%), or dark brown (16.6%), with a pattern of dorsal spots in two rows on the anterior third of the body, turning into a tessellated pattern afterwards (83.3%), or a tessellated pattern (10.2%), or two vertebral rows of spots along the body (6.5%). Ventral coloration creamy (87.3%) to yellow (12.7%), with ventral spots that may be in paired rows of dots (53.3%), dots along the edge of the ventral scale (16.6%), a row of intercalated dots (25.9%), or immaculate (4.2%).

Distribution: *Conopsis amphisticha* occurs in southern Mexico (fig. 3), in the state of Oaxaca between 1700 and 3080 m, in pine forest and oak forest, mainly, there are some records from montane cloud forest. It has been collected under rocks and logs during January, and from June to August.



FIGURE 3. *Conopsis amphisticha* distribution map

***Conopsis biserialis* Taylor and Smith, 1942**

Conopsis biserialis Taylor and Smith, 1942:333.

Type specimen: FMNH 100062.

Type locality: 10 miles W Villa Victoria, Estado de México.

Diagnosis: This species is characterized by the following combination of characters: divided internasals and prefrontals; brown-gray dorsal coloration, and two series of dots along body, or a tessellated pattern of dorsal spots. Ventrally it is yellowish with a series of black dots medially. *Conopsis biserialis* can be distinguished from other species in the genus by its characteristic dorsal spots pattern. *Conopsis biserialis* shares its characteristic dorsal pattern of spots with *Conopsis amphisticha*, with which it can be confused, but their geographic ranges do not overlap.

Description: A species with divided prefrontals and internasals; loreal scale on each side of head; a pointed rostral; nasal pierced by the nostril on each side of head; a preocular and two postoculars; hexagonal frontal, contacting prefrontals; temporal formula 1+2; 7 upper labials and 6 lower labials; 2.5 upper labials before eye; genial shields separated by one scale; a mean of 125.4 ventrals (112–146); and 34 subcaudals (26–43); 17 rows of smooth scales at midbody; dorsum brown-gray with two series of dots along body, or a tessellated pattern of spots; venter yellowish with a row of medial dots.

Measurements: Adult specimens of *Conopsis biserialis* average 200.3 mm in SVL (110–330 mm); 239.92 mm in total length (118–377 mm), body diameter 7.6 mm.

Variation: This species generally shows divided prefrontal and internasals (97%, of examined specimens), or fused (3%). Loreal may be present on both sides of head (60%), absent (22.4%), or it may be present only on one side of head (11.6%). Upper labials 7 (90.6%), 6 (2.9%), or 7/6 (6.5%). Upper labials before eye from 2.5 (82.2%) to 3 (17.8%). Lowerlabials 6 (69.1%), 7 (13.1%), 7/6 (1%), 6/5 (4.7%), or 5 (2.8%). First pair of genial shields separated by one or two scales (72%), or in contact (28%). Dorsal coloration is brown (60%), cinnamon (19%), beige (6.7%), dark brown (5.7%), or gray (.5%); with two vertebral rows of spots (37.5%), a tessellated pattern (34.6%), two rows of spots on anterior third of body, turning into a tessellated pattern afterwards (25.2%), or no pattern (9.3%). Ventral coloration creamy (80.4%) to yellow (19.6%). The venter has a paired row of dots (52.6%), a central row (39%), large dots that form a band on ventral scales (2.8%), or immaculate (8.4%).

Distribution: *Conopsis biserialis* is distributed in central and southern Mexico (fig. 4), in the states of: Distrito Federal, Guanajuato, Hidalgo, Jalisco, Estado de México, Michoacán, Morelos, and Puebla; from 1700 to 3080 m; in pine forest, oak forest, and montane cloud forest. It is usually under rocks and logs during January, from June to September and December.



FIGURE 4. *Conopsis biserialis* distribution map.

***Conopsis lineata* (Kennicott, 1859)**

Stenorhina de Filippii Jan, 1857:48 (“Messico”; nomen nudum).

Toluca lineata Kennicott, 1859:23–24.

Oxyrhina (Achirina) de Filippii, 1862:54,61,75.

Oxyrhina de Filippii Jan, 1863:41

Conopsis lineatus Bocourt, 1883:565–566.

Conopsis lineata Dugès, 1896:413.

Conopsis nasus Smith, 1939:32.

Toluca lineata varians Jan, 1862:54. **nov. sin.**

Stenorhina varians Jan, 1857:48 (nomen nudum).

Oxyrhina varians Jan, 1862:54, 60, 61, 75.

Ogmium varians Sumichrast, 1873:249.

Ogmium (*Oxyrhina*) *varians* Sumichrast, 1882:42.

Conopsis varians Bocourt, 1883:566.

Chionactis varians Cope, 1896:1021.

Chionactis diasii Cope in Ferrari-Perez, 1886:188–189.

Chionactis diasii diasii Cope, 1898:943.

Chionactis nasus Ruthven, 1912:231.

Type specimen: USNM 2103.

Type locality: Valley of Mexico.

Diagnosis: This species is characterized by the following combination of characters: divided internasals and prefrontals; brown dorsal coloration and three to five dark lines along body. Ventrally it is yellowish with no spots. This taxon is the smallest in the genus mean SVL 176.1 mm. It differs from other members of the genus by its characteristic dorsal pattern.

Description: A species with divided internasals and prefrontals; no loreal; pointed rostral; nasal pierced by nostril on each side of head; a preocular and two postoculars;

hexagonal frontal, contacting prefrontals; temporal formula 1+2; 7 upper labials and 6 lower labials; 2.5 upper labials before eye; genial shields separated by one scale; a mean of 126 ventrals (100–140) and 33.3 subcaudals (20–49); 17 rows of smooth scales at midbody; dorsum brown, with three to five dark lines; venter yellowish with no spots, but few specimens show rows of small-paired dots.

Measurements: Adults specimens of *Conopsis lineata* average 176.1 mm in snout-vent length (100–273 mm), 215.2 in total length (120–320 mm), body diameter 6.7 mm.

Variation: Loreal present (34.4%), absent (51.7%), or it may be present only on one side of head (19.2%). Postoculars from 2 (98.5%) to 1 (1.5%). Upper labials 7 (82.6%), 7/6 (5.4%), or 6 (12%). Upper labials before eye from 2.5 (63%) to 3 (27.2%), 2 (2%), 3.5 (0.8%) or 3/2.5 (5%). Lower labials from 7 (67.6%), to 6 (27%), 7/6 (8%), 7/5 (1%), 6/5 (0.8%), or 6/4 (0.8%). First pair of genial shields separated by one (84.7%), two scales (12%), or in contact (3.3%). Dorsal coloration is brown (55.7%), cinnamon (18.4%), beige (17.5%), olive green (4.5%), or gray (3.9%), with 3 to 5 dark lines along body (61.5%), a vertebral dark line and tessellated below (33.5%), tessellated (5%). Ventral coloration creamy (83%), yellow (14.4%), yellowish-gray (1.3%), or brown (1.3%). The venter has a series row of paired dots (41%), black dots intercalated along venter (18%), or immaculate (41%).

Distribution: *Conopsis lineata* is distributed in central and southern Mexico (fig. 5); it has been collected in the states of Distrito Federal, Guanajuato, Guerrero, Hidalgo, Jalisco, Estado de Mexico, Michoacan, Morelos, Oaxaca, Puebla, Queretaro, San Luis Potosi, Tlaxcala and Veracruz, from 1750 to 3100 m, in xerophilous underbrush, cactus, pine, oak, pine-oak, fir forests, and montane cloud forest. It is usually under rocks, logs, litter, grass, and in holes during the whole year; being more abundant from July to September.



FIGURE 5. *Conopsis lineata* distribution map.

***Conopsis megalodon* (Taylor and Smith, 1942)**

Toluca megalodon Taylor and Smith, 1942:338.

Toluca conica Taylor and Smith, 1942:340–343. **nov. sin.**

Type specimen: EHT-HMS 23640.

Type locality: Cerro San Felipe, Oaxaca.

Diagnosis: This snake is characterized by the following combination of characters: fused prefrontals and internasals; 3 upper labials before eye; brown or reddish dorsal coloration with a vertebral line of hexagonal spots, and tessellated sides. Ventrally it is yellowish with no spots or marks. It differs from *C. nasus*, the only species with which it could be mistaken, by the reddish-brown dorsal coloration, its smaller body size (SVL: 107–250 mm in *C. megalodon*, and 100–320 mm in *C. nasus*), and by its distributional range, restricted to the highlands of the Sierra Madre del Sur in Guerrero and Oaxaca, which does not overlap with *C. nasus*.

Description: A species with fused prefrontals and internasals; loreal scale present or not; a pointed rostral; nasal pierced by nostril on each side of head; a preocular and two postoculars; hexagonal frontal, contacting internasals; temporal formula 1+2; 7 or 6 upper labials and 6 lower labials; 3 or 2.5 upper labials before eye; genial shields separated by one scale; or fused; a mean of 122.9 (118–135) and 33.9 subcaudals (29–49); 17 rows of smooth scales at midbody; dorsum reddish-brown, with vertebral line of hexagonal spots, sides of body tessellated; venter yellowish, with a series of paired dots on each ventral scale.

Measurements: Adult specimens of *Conopsis megalodon* average 192.6 mm snout-vent length (107–250 mm), 229.1 mm in total length (130–292 mm), body diameter 6.6 mm.

Variation: This species generally shows fused prefrontals and internasals (94.2% of examined specimens), or divided (5.8%). Loreal scale absent (66.2 %), or present (33.8 %). Upper labials 7 (56.4%), but some have 6 (32.1%), or 7/6 (11.5%). Upper labials before eye from 2.5 (54.4%) to 3 (45.6%). Lower labials from 6 (63.2%), 7 (16.2%), 6/5 (11.8%), to 5 (8.8%). First pair of genial shields in contact (47.2%) or separated by one (52.4%), or two scales (1.4%). Dorsal coloration is brown-reddish (77.9%), cinnamon (7.35%), beige (7.35%), gray (4.4%), or amielistic (2.45%), with a line of hexagonal vertebral spots (38.5%) or elongated hexagonal spots (33.8%) or any of these with sides of body tessellated (18.5%), or no pattern (1.5%). Ventral coloration creamy (69.2%), yellow (17%), yellow-orange (3%), whitish (7.7%), or gray (3.1%). The venter has a row of paired dots (58%), dots at edges of scales (24. %), a medial row of dots (6.4%), or immaculate (6.5%).

Distribution: *Conopsis megalodon* in the Sierra Madre del Sur (fig. 6); it has been collected in the states of Guerrero and Oaxaca from 1730 to 3200 m, in pine, oak forest and deciduous forest. It is usually under rocks, logs, stumps, and on dirt roads, from April

to December, being more abundant from July to August.



FIGURE 6. *Conopsis megalodon* distribution map.

***Conopsis nasus* Günther 1858.**

- Conopsis nasus* Günther, 1858:6–7.
Oxyrhina (Exorhina) maculata Jan, 1862 :54.
Oxyrhina maculata anomala Dugès, 1869:144.
Conopsis maculatus Cope, 1884:162.
Contia nasus Boulenger, 1894:268–269.
Conopsis [nasus nasus] Cuesta Terrón, 1930:176.
Conopsis nasus heliae Cuesta Terrón, 1930:175–176.
Conopsis nasus labialis Tanner, 1961:15. **nov. sin.**
Gyalopion atavus Leviton and Banta, 1961:2.

Type specimen: BMNH lost; neotype BMNH 83.4.16.38.

Type locality: Milpas, Durango.

Diagnosis: This snake is characterized by the following combination of characters: fused prefrontals and internasals; upper labials 7, 6 lower labials (some populations with reduced number of these scales); light cinnamon dorsal coloration; with a vertebral line of hexagonal spots that may be bordered by two paravertebral rows of spots. Ventrally it is yellowish, with intercalated black dots. It differs from *C. megalodon*, the only species with which it could be mistaken, by the light cinnamon dorsal coloration, its larger body size (SVL: 100–320 mm in *C. nasus* and 107–250 mm in *C. megalodon*), and by its distributional range in the Mesa Central, which does not overlap with *C. megalodon*.

Description: A species with fused prefrontals and internasals; a loreal; a pointed rostral; nasal pierced by nostril on each side of head; a preocular and two postoculars; hexagonal frontal, contacting internasals; temporal formula 1+2; 7 or 6 upper labials and 6 lower labials; 2 or 2.5 upper labials before eye; genial shields separated by one or two

scales; a mean of 123.3 ventrals (116–138), and 31.6 subcaudals (20–43); 17 rows of smooth scales at midbody; dorsum light cinnamon or beige, with vertebral line of hexagonal spots; venter yellowish, with intercalated black dots.

Measurements: Adult specimens of *Conopsis nasus* average 202.1 mm snout-vent length (100–320 mm), 238.1 mm in total length (120–385 mm), body diameter 7.6 mm.

Variation: Of all specimens examined only two had prefrontals and internasals divided. Loreals present on both sides of head (75.6%), absent (15.6%), or absent on one side of head (8.7%). Upper labials usually 7 (84.5%), 6 (8.6%), or less than 6 (6.9%). The latter percentage corresponds to a population in Chihuahua. Lower labials 7 (34.5%), 6 (48.3%), or less than 6 (17.2%). Upper labials before eye 3 (13.7%), 2.5 (75.8%) or 2 (10.3%). First pair of genial shields separated by one (51.6%) or two scales (48.4%). Dorsal coloration is cinnamon (44.8%), beige (21%), brown (25%), dark brown (7.7%), or olive green (1.7%); with a vertebral row of hexagonal spots bordered by two paravertebral rows of smaller dots (73.3%), a vertebral row of hexagonal spots on the first third of body and on the other two thirds a tessellated pattern (15.4%), or a vertebral row of hexagonal spots over a light vertebral band (12.9%, variation found in some juveniles). Ventral coloration creamy (87.9%), yellow (9.5%), whitish (1.8%) or gray (0.8%). The venter with dark scattered spots (60.3%), a row of paired dots (28.05%), large dots forming a band (1.6%), dots in half circle (2.5%), dots on the external edge of each ventral scale (3.3%), or immaculate (4.1%).

Distribution: *Conopsis nasus* is distributed in north-central Mexico (fig. 7); it has been collected in the states of Chihuahua, Aguascalientes, Distrito Federal, Durango, Guanajuato, Hidalgo, Jalisco, Estado de Mexico, Michoacan, Morelos, Puebla, Queretaro, San Luis Potosi, Sinaloa, Tlaxcala, Veracruz and Zacatecas, from 1515 to 2950 m, in xerophilous underbrush, oak, pine, and fir forest. It is usually under rocks or logs during every month of the year, being more abundant from June to September.



FIGURE 7. *Conopsis nasus* distribution map.

Acknowledgments

We thank the curators of the museums listed in appendix 1, who made possible our revision on the genus, D. Gernandt who improved the English version of the manuscript, Y. Nakasawa for the maps, M. A. Rosado Luna for the illustrations, H.M. Smith for invaluable information and comments to the manuscript and C. Ríos Muñoz for translating Sumichrast's manuscript. We also like to thank two anonymous reviewers for their helpful comments. Financial support was provided by grants of the Comisión Nacional para el Estudio y Conocimiento de la Biodiversidad CONABIO (H-127), Theodore Roosevelt Memorial Fund and Collections Grants (AMNH), CONACyT (Proyecto de Instalación 2001) and from PAU UAEH, and PII UAEH-CIB-AAB-039 to the senior author.

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Specimens examined

Abbreviated institutions are as follows: AMNH—American Museum of Natural History (New York). CAS—California Academy of Sciences (California). CUM—University of Colorado at Boulder (Colorado). FMNH—Field Museum of Natural History (Illinois). IBH—Instituto de Biología UNAM (México D.F.). KU—University of Kansas Museum of Natural History (Kansas). LACM—Los Angeles County Museum of Natural History (California). MLBM—Monte L. Bean Life Science Museum (Utah). MZFC—Museo de Zoología de la Facultad de Ciencias, UNAM (México D.F.). TCWC—Texas Cooperative Wildlife Collection (Texas). UAA—Universidad Autónoma de Aguascalientes (Aguascalientes). UMMZ—University of Michigan Museum of Zoology (Michigan). USNM—National Museum of Natural History (Washington). UTA—University of Texas at Arlington (Texas).

Conopsis acuta

Oaxaca. KM 156.5 AUTOPISTA TEHUACAN-OAXACA: MZFC 8302-06, 8308. 5.2 MILLAS NE SAN ANDRES CHICAHUAXTLA: AMNH 102923-24, 102926-32. 2 MILLAS E IXTLAN DE JUAREZ: AMNH 91054. SIERRA DE ALOAPANECA, 6.4 MILLAS NE SAN JUAN DEL ESTADO: AMNH 100868. 6 MILLAS NE SAN JUAN DEL ESTADO: AMNH 97906. CERRO DE SAN FELIPE, SAN FELIPE AGUA: AMNH 91058, 1008872.5 MILLAS NE MITLA: AMNH 91059-61.3 MILLAS NE MITLA: AMNH 97918. EL MORAL, 20 MILLAS N TELIXTLAHUACA: AMNH 94701, 94703-11. 1.5 MILLAS SE CIUDAD DE OAXACA: AMNH 97919. 0.5 MILLAS E AYUTLA: AMNH 97920. 1.7 MILLAS N EL MORAL: AMNH 97921-28. 3 MILLAS NW EL PALMAR: AMNH 100869-70. 3 MILLAS SE TLAXIACO: AMNH 102918-22. SAN ANDRES CHICAHUAXTLA: AMNH 99995-95. No locality: CUM 40003, 41208. **Puebla.** 8 KM NE CHAPULCO.: MZFC 8307, 8309-13, 8318-21. 1 MILLA SW PUERTO DEL AIRE, 0.5 MILLAS SW DE LA LINEA ESTATAL: AMNH 97934-58. 11.9 MILLAS SE PUEBLA POR LA 150 ENTRE AZUMBILLA Y ESPERANZA: CAS 165306. 1 MILLA N CACALOAPAN: TCWC 54891-96. 4KM E CHAPULCO: MZFC 3258. **Veracruz.** 2 KM W ACULTZINGO: MZFC 8314-17, 8324-25. PUERTO DEL AIRE: MZFC 8322-23.

Conopsis amphisticha

Oaxaca. 0.2 MILLAS W TOTONTEPEC, SIERRA MIXE: UTA 12487-98, 9245. 0.8 KM S TOTONTEPEC, SIERRA MIXE: UTA 14168-76.

Conopsis biserialis

Distrito Federal. LOMAS EL CRISTO: TCWC 46434. **Guanajuato.** 15 KM NE GUANAJUATO: IBUNAM 5038. **Hidalgo.** 5 KM SE PACHUCA: TCWC 64978-79.

Jalisco. 7 MILLAS E TAPALPA, A 2 MILLAS DE ATEMAJAC: AMNH 102514-15. EL RODEO, 6.3 MILLAS NE SAN ANDRES IXTLAN: CAS 144560-61. 6 KM BRECHA NE PUERTA ZAPATERO: IBUNAM 6095. CACAHUAPAN, LAS JOYAS: MZFC 5574. 3 MILLAS WSW MAZAMITLA: KU 42325. E NEVADO DE COLIMA: UMMZ 101930. **Estado de México.** 8 MILLAS N VALLE DE BRAVO: AMNH 118518-27. 6 MILLAS N VALLE DE BRAVO: AMNH 118516-17. 10 MILLAS N, 6 MILLAS E VALLE DE BRAVO: KU 50630-32 CALIXTLAHUACA, N DE TOLUCA: AMNH 89562-65. KM 27 CARRETERA CEMPOALA STA MARTHA CHALMA: IBUNAM 3249, 3252-54. SAN JUAN XOCHICA: IBUNAM 3314. CERRO GORDO: IBUNAM 4038. 5 KM SE SANTA MARIA PIPIOLTEPEC: MZFC 81-83. TENANGO DEL VALLE, CERRO DE TEOTENANGO: MZFC 84. KM 14 CARRETERA OCUILAN-CUERNAVACA: MZFC 5804. 10 MILLAS W VILLA VICTORIA: FMNH 126831. LE NGUA DE VACA, 5.5 MILLAS E PUERTO: TCWC 12595-96. 3 MILLAS S BOSE NCHEVE, REFUGIO SAN CAYETANO: UMMZ 112992. **Michoacán.** Sin localidad: AMNH 110402. OPOPEO: AMNH 118528. 7.2 MILLAS S PATZCUARO: AMNH 75873-79. 11 MILLAS S PATZCUARO: AMNH 75880. 15 MILLAS S CHARAPAN: CAS 84170. 7 MILLAS N URUAPAN: UMMZ 112547-485 MILLAS S PARACHO: LACM 65254-57. COLONIA IBARRA: IBUNAM 2396. LAGO ZIHUAREN, REGION NE: IBUNAM 4527. 1 KM E NARANJOS: MZFC 817. 15 MILLAS SE ZITACUARO: FMNH 126815,20,22,24,30,42. TANCITARO: FMNH 37091-113, 40815. URUAPAN: UMMZ 121537. 4 MILLAS E PATZCUARO: FMNH 126812. 7 MILLAS NW ZITACUARO: TCWC 33595-97. 6.7 MILLAS N URUAPAN: UMMZ 121538. 12 MILLAS NWN URUAPAN: TCWC 33598. 5 MILLAS N URUAPAN: LACM 58135. 2 MILLAS S SAN MARTIN: FMNH 126839, 8.5 MILLAS N URUAPAN: UMMZ 112549-50, 149706; KU 69111. 3.8 MILLAS S PARACHO: UMMZ 149707-11. CERRO SAN ANDRES W, 11 MILLAS WNW CIUDAD HIDALGO: UMMZ 101929. 41.15 MILLAS WSW CIUDAD HIDALGO: KU 42326. 1 MILLA W MACHO DE AGUA, 9 MILLAS E ZITACUARO: UMMZ 114542. 4.4 MILLAS S CAPACUARO: UMMZ 114543. MACHO DE AGUA: UMMZ 119458. **Morelos.** Sin localidad: CUM 9082-102. 48 KM S DE MEXICO, CAMINO A CUERNAVACA: MLBM 13185. KM 59-60 CARRETERA MEXICO CUERNAVACA: IBUNAM 530. 5 KM S TRES MARIAS: FMNH 126813-14, 126821,23,28,33-35; TCWC 7356; IBUNAM 76, 79. KM 63 TRES MARIAS (TRES CUMBRES): FMNH 126838. KM 58 ENTRE TRES MARIAS Y CUERNAVACA: FMNH 126817,19,32,37. KM 61 ENTRE TRES MARIAS Y CUERNAVACA: FMNH 126808-11, 16,25-27,36. TRES CUMBRES: FMNH 75801. 6 KM N CUERNAVACA: IBUNAM 5660. SOBRE DERRAME DEL VOLCAN CHICHINAUTZIN: MZFC 85. 2.5 KM SE DE HUITZILAC (A PARTIR DE LA IGLESIA): MZFC 793. HUITZILAC: IBUNAM 3255, 3255. ALREDEDORES DE HUITZILAC: UTA 12259. 1.5 MILLAS SW HUITZILAC: KU 61251-52; TCWC 7357-76. **Puebla.** TEOTALCO: FMNH 98539-41, 105178. 0.5 MILLAS W PUERTO DEL AIRE: AMNH 117980-83. CACALOAPAN:

Conopsis lineata

Distrito Federal. 1.5 MILLAS E SANTA LUCIA: AMNH 18754-55, 19722, 19751-53, 19756-57. CERCA DE CRUZ BLANCA, EN LINEA A LA VENTA: AMNH 19778. SAN JERONIMO, CALLE: AMNH 114573, 117884; IBUNAM 3299, 934. SOBRE COPILCO, ENTRE INSURGENTES Y CIUDAD UNIVERSITARIA: MZFC 503. PE DREGAL DE ROMERO DE TERREROS, AV. INSURGENTES SUR: IBUNAM 2679, 3670. CAMINO AL AJUSCO KM 4, PEDREGAL DE SAN ANGEL: IBUNAM 5492. SIERRA DEL AJUSCO, FALDA W DEL XITLE: IBUNAM 2912; MZFC 615, 75. CIUDAD DE MEXICO: MVZ 32251-52. TACUBAYA: MVZ 12039; UMMZ 99551. OLIVAR DE LOS PADRES, PARTE SW: IBUNAM 4188. SANTA CRUZ XOCHITEPEC: IBUNAM 4011. UNIDAD EL ROSARIO: IBUNAM 4941. COLONIA NOCHEBUENA: IBUNAM 5659. EJIDO SAN NICOLAS CONTRERAS: IBUNAM 1842. COLONIA MARTE (REFORMA-IZTACCIHUATL): IBUNAM 2910. BARRANCA DE L MUERTO: IBUNAM 3741. UNIDAD ARAGON: IBUNAM 3019-20. CAÑADA DE CONTRERAS: MZFC 2310, 2316, 2319; UMMZ 99794. SAN JUAN DE ARAGON: MZFC 77. UNIDAD MORELOS: MZFC 387. SAN ANDRES: USNM139382-83. SANTA ROSA: UMMZ 95178-81, 99898. 23.1 MILLAS NE CIUDAD MEXICO, 0.4 MILLAS W TEPEXCAN: UMMZ 99549. 5.8 MILLAS SW VILLA OBREGON: UMMZ 99550. TEQUIXQUIAC SE PUEBLO, A LO LARGO DEL CANAL: UMMZ 100214. **Guanajuato.** 10 MILLAS NE GUANAJUATO: TCWC 58018-22. 7 MILLAS NE GUANAJUATO: CAS 87176. GUANAJUATO: USNM 9913. 50 KM ENE SAN LUIS DE LA PAZ: IBUNAM 5024-26. 3.2 MILLAS NE SANTA ROSA: FMNH 102714; TCWC 41118-20. 20 MILLAS W XICHU: TCWC 41121-30. 2.8 MILLAS SW LAGUNA DE SERVIN: TCWC 53031-33. **Guerrero.** 2 KM ESE OMILTEME: MZFC 2899. CAMINO A LAS JOYAS, 500 M NW OMILTEME: MZFC 2900, 2902. **Hidalgo.** No locality: CUM 49860,61. COLINA W VICENTE GUERRERO: MLBM 41895-98. 8 MILLAS SE PACHUCA: AMNH 88811. CERCA DE PACHUCA: LACM 103742-43, 38490-91. 8 KM SE GUERRERO, POR CARRETERA 105: MVZ 114510, 137783-85, 144501-09, 144511-14. GUERRERO: UMMZ 17245-46; FMNH 99611. 0.7 MILLAS N EL CHICO, POR CARRETERA 105 : LACM 69076-78. EL CHICO: IBUNAM 1025; MVZ 109500, 128982, 164786. PUEBLO NUEVO, EL CHICO: MZFC 3329. 1 KM S SANTA MONICA EN CARRETERA 10: TCWC 54846. 1 MILLA S SANTA MONICA EN CARRETERA 10: LACM 127099-03. 1.7 MILLAS NE REAL DEL MONTE: FMNH 65348-54. SAN MIGUEL REGLA: IBUNAM 4280. PRESA OMILTEPEC, REGION SE: IBUNAM 4454. LAGO TECOCOMULCO: IBUNAM 4023, 4823. CERRO CUASASENGO, E SAN LORENZO: MZFC 3340. TULANCINGO: USNM 36271. MINAS VIEJAS: FMNH 99606, 99618, 99643. 18 KM SE ACTOPAN: KU 61237-38. TCWC 7340-44: 10 MILLAS N AGUA BLANCA. UMMZ 106438-39. 10 MILLAS S

APULCO: UMMZ 106440. 500 M NE TEJOCOTAL: MZFC 840. LAGO TE JOCOTOAL, 7 MILLAS E ACAXOCHITLAN: UMMZ118229. **Jalisco.** EL RODEO, 6.3 MILLAS NE SAN ANDRES IXTLAN: CAS 144574. RANCHO SAYULAPA, 16.2 MILLAS W CIUDAD GUZMAN: CAS 144566-69.10 MILLAS W TAPALPA, POR CARRETERA 33:LACM 67545. 6.5 MILLAS E TAPALPA: LACM 37354-70.11 KM S MAZAMITLA POR CARRETERA 110: MVZ 170783. 3 MILLAS WSW MAZAMITLA: KU 37603-04. 4 MILLAS W MAZAMITLA: KU 29506. **Estado de México.** 24 MILLAS W TOLUCA: MVZ 76360-61. 23.9 MILLAS NW TOLUCA: MVZ 71348-52.12 MILLAS SW TOLUCA; SE DEL YUCON: AMNH 91601-03. 12 MILLAS NW TOLUCA: UMMZ 105033. 20 KM NE TOLUCA: MZFC 3236. 15 KM W TOLUCA: USNM 110751-54. 9 MILLAS NW TOLUCA: FMNH 102695,99603, 99608, 99615, 99620, 99637.2.7 KM E CARRETERA TOLUCA ATLACOMULCO: IBUNAM 4021. 10 KM E EL ORO, CARRETERA ATLACOMULCO MARAVATIO: IBUNAM 4022. SAN JUAN TEOTIHUACAN, PIRAMIDES: FMNH 102716, 102735; UMMZ 128237; LACM 2546; AMNH 62261-63. SAN MARTIN DE LAS PIRAMIDES: MZFC 76. 2 MILLAS S SAN BARTOLO, CAMINO A VALLE DE BRAVO: AMNH 71383. EL TAJO DE TEQUIXQUIAC: MVZ 88873-75. 3 KM SW CAHUACAN, PUEBLO MIRANDA: IBUNAM 3822. CAHUACAN:IBUNAM 3615, 3644, 3648, 4940. PRESA LA CONCEPCION, 9 KM W CHAPA DE MOTA: IBUNAM 3823 PATHE: IBUNAM 4905. TECAMACHALCO: IBUNAM 5661.CERRO SAN LORENZO, ENTRE CHIMALHUACAN Y SAN ANDRES ATLAPU: IBUNAM 996. CHAPINGO: IBUNAM 2897. DOÑANA GUERRA: MZFC2311. AFUERA DE JOCOTITLAN: MZFC 78. IXTLAHUACA: MZFC 74.10 MILLAS W VILLA VICTORIA: USNM 110755.TIANGUISTENGO: FMNH 99638. CHALCO: FMNH 987.3 MILLAS NE LOS REYES: KU 39978. 1.2 MILLAS NW SAN BERNABE, S IXTLAHUACA: UMMZ 100213. **Michoacán.** 12 MILLAS S CHARAPAN: KU216076, 62519-25. 8 MILLAS SE CHARAPAN: KU 37606. 8 MILLAS E CHARAPAN: AMNH 93321-24. 6 MILLAS S DE CHARAPAN: MLBM 30800. 6.4 MILLAS N CHERAN: UMMZ 112546. 4.5 MILLAS NW CHERAN: UMMZ 114527. CHERAN: AMNH 64718. 6.7 MILLAS SW PARACHO DE VERDUZCO POR CARRETERA 37: LACM 130662-63. 3.8 MILLAS S PARACHO: UMMZ 112522, 114525; KU 69124. 2.4 MILLAS S PARACHO: UMMZ 114523-24. 15 MILLAS SE ZITACUARO: FMNH 102702, 179191. 17 MILLAS N URUAPAN: KU 62526. KM 9 CAMINO A URUAPAN: FMNH 102690, 102725, 102728, 102738, 102744. 5 MILLAS NNW URUAPAN: KU 37605. URUAPAN: FMNH 102729. 4 MILLAS E PATZCUARO: FMNH 99617,99621, 99625, 99629, 99632, 99642. 3 MILLAS E PATZCUARO: FMNH 99614,99622-23, 99634, 99641, 99647. 4.4 MILLAS N CAPACUARO: UMMZ 114526. **Morelos.** 8.6 MILLAS N SAN VICENTE: UTA 4177. 6.9 KM WNW TRES CUMBRES, ZEMPOALA: MVZ144498-500. ZEMPOALA: FMNH 102748; AMNH 65713-16. KM 63 TRES MARIAS (TRES CUMBRES): FMNH 102711, 102739, 102746, 99612. 21 KM NW CUAUTLA: TCWC 7345.12 MILLAS S

PUENTE DE IXTLA: FMNH 99626. **Oaxaca.** KM 156.5 AUTOPISTA TEHUACAN-OAXACA: MZFC 8326. CIUDAD DE OAXACA: FMNH 208161. 2 MILLAS E IXTLAN DE JUAREZ: AMNH 91055. 1.5 MILLA E IXTLAN DE JUAREZ, RANCHO VIVERO TEJA: MVZ 164295-58. CERRO SAN FELIPE: FMNH102692, 102742, 114653. EL MORAL, 20 MILLAS N TELIXTLAHUACA: FMNH 94702. 4 MILLAS SW SAN MARTIN HUAMELULPAN: AMNH 97929-30. 3 MILLAS NE SAN ANDRE S CHICAHUAXTLA: AMNH 97931-33.17 MILLAS NW TAMAZULAPAN, 1.5 MILLAS N CAMPO COCONAL:LACM 130664-66. 8.3 MILLAS N GUELATAO, CARRETERA 175: MVZ 164787. 10.4 MILLAS WSW SAN VICENTE LACHIXIO: MVZ 164788. 12 KM N INTERSECCION CAMINO A TLAXIACO: KU 1400080. TLAXIACO: MVZ 197171. 10 MILLAS E TAMAZULAPAN: TCWC 11589. 3 MILLAS W YANHUITLAN:TCWC 11590-95. 0.8 KM W TOTONTEPEC: KU 2009981-83. **Puebla.** 1.8 MILLAS WSW PUERTO DEL AIRE: LACM 59110-18.TEOTALCO: MNH 102737, 106209, 99604-05, 99607, 99609, 99613, 99616,99624, 99627-28,99630-31, 99633, 99635-36,99639-40, 99644, 99646, 99648-50. 8 KM NE CHAPULCO: LACM 103744; MZFC8327-29, 8334-35, 9340. 2 MILLAS N ZACATEPEC: AMNH 110428. 1 MILLA S TLATLAHUQUITEPEC: AMNH 93325. 3 MILLAS SE ATEMPAN: AMNH 93326. EL SECO:UMMZ 88701. LACM 121863-69. 1 MILLA W CACALOAPAN: UTA 4224-27, 4342-45, 4371, 4587, 6353-54. 1 MILLA N CACALOAPAN. LACM 127104. CACALOAPAN: FMNH 102700, 102707, 102741, 114651-52, 114555, 114657, 114660, 39632; .MZFC 3330. 12 KM N TLAXCO, 1.5 KM N LIMITE CON TLAXCALA: MVZ 131513. 5 MILLAS E RIO FRIO: MVZ 71353. RIO FRIO: UMMZ 89368. 5 KM SE FRANCISCO I MADERO, REGION N CITLALTEPETL: IBUNAM 4420-21.PIEDRAS ENCIMADAS: IBUNAM 4455. 0.5-1 KM W PUENTE ROJO: MZFC3217-18. AMOZOC: MZFC 3216. 21 KM S CHIGNAHUAPAN: USNM 304922. 11.5 KM S CHIGNAHUAPAN: USNM 304923-24. 10 KM S CHIGNAHUAPAN: MZFC 3532-34, 4798-4800. 8 KM E CHAPULCO: MZFC 5739. INTERSECCION CARRETERAS 140 Y 150: TCWC 54847. 1.6 KM N LIMITE PUEBLA-TLAXCALA POR CARRETERA 119: UTA 12501-31. 8 KM E AZUMBILLA: USNM 110756-59. 4 MILLAS NNE AZUMBILLA: UMMZ 114528. 4.5 KM NE AZUMBILLA POR CARRETERA 125: UTA 22850-57. ENTRE AZUMBILLA Y LAGUNA SAN BERNARDINO: FMNH 112514, 114654. PAJARO VERDE: USNM 110760. 35 KM N TEHUACAN: USNM 110761-62. 9.8 KM N TEHUACAN: KU 137674. TEHUACAN, CAMINO LA VIRGEN: UMMZ 88696-97. TEZIUTLAN: FMNH 112487,112490-94, 112498, 112500-01,112503, 112505, 112509-11,112515, 112518, 112520-21. 10 MILLAS W TEOTALCO: FMNH 102688-89,102691, 102693, 102696, 102698,102705-06,102710, 102712, 102715,102723-24, 102727, 102731, 102732, 102736,102745, 102747, 114658. 12 MILLAS N HUAUCHINANGO: KU 39644. 11 MILLAS W HUAUCHINANGO: TCWC 54852-54.15.6 KM N HUAUCHINANGO: KU 54053.10 MILLAS ESE HUAUCHINANGO: TCWC 22136-41. 7 KM W HUAUCHINANGO. TCWC 54848-51.

COACUALPAN: UMMZ 88703. SAN DIEGO: UMMZ 88704. **Querétaro.** 20 KM NW SAN JOAQUIN: TCWC 52440. 10.2 MILLAS WSW SAN JOAQUIN: TCWC 41039-43, 41072-77. 12.5 MILLAS W SAN JOAQUIN: TCWC41038, 41044-52. 2.3 MILLAS SE SAN JOAQUIN: TCWC 41078-117. 1 MILLA E SAN JOAQUIN: TCWC 41053-71. CAMPO ALEGRE, 1 KM N SAN JOAQUIN: MZFC 4285. SAN JOAQUIN: IBUNAM 3697-99. 6.1 MILLAS E PINAL DE AMOLES: TCWC32983-85. 2.1 MILLAS W PINAL DE AMOLES: TCWC 32946-81, 37725-26, 39282. 1.3 MILLAS S PINAL DE AMOLES: LACM 127094-98. 1.1 MILLAS W PINAL DE AMOLES: TCWC 57154-55. 1 MILLA N PINAL DE AMOLES: TCWC 38382. 1.5 KM S PINAL DE AMOLES: IBUNAM 4057. 0.5 MILLAS S PINAL DE AMOLES: TCWC 45558. PINAL DE AMOLES: TCWC 45548-58. PUERTA DEL CIELO: MZFC 6139. 3.4 MILLAS W VIZARRON: TCWC 57175-80. 2 KM S VIZARRON: MZFC 822. 1.4 MILLAS W VIZARRON: TCWC 57171, 57174. 8 MILLAS E CADEREYTA: TCWC 33085. 2.1 MILLAS SE AMEALCO: TCWC 41033-37. LAZARO VEGA, 7.5 MILLAS N: TCWC 53028. 0.7 MILLAS SW LAGUNA DE SERVIN: TCWC 53029-30. 9.6 MILLAS E NTRONQUE CARRETERA 120: TCWC 57214. 3 KM W ESPERANZA. UMMZ 143732-34. **San Luis Potosí.** 5 KM S SAN FRANCISCO, 44 KM E SLP, ARRIBA DE ALVAREZ: MVZ 186492. VALLE DE LOS FANTASMAS: UTA 16142-44. JESUS MARIA: USNM 46427. **Tlaxcala.** 17 MILLAS N SANTA ANA, 13 MILLAS S HUE YOTLIPAN: LACM 67178-82. 2 KM SW TLAXCO: IBUNAM 2920. 3 KM WNW APIZACO: IBUNAM 2919. TLAXCALA: IBUNAM 2921. TECAMACHALCO, 2.5-3 KM N PUEBLA: IBUNAM 2922. ATLIHETZIN: IBUNAM 2923. 3 MILLAS SW APIZACO: UMMZ 126537. **Veracruz.** AJUCHITLAN: IBUNAM 140-41; USNM110744-46. 6 MILLAS W LAS VIGAS: MVZ 171536. 4 KM E LAS VIGAS: KU 26562. 4 KM W LAS VIGAS POR CARRETERA 140, LADERA COFRE DE PEROTE: MVZ 106415-23, 106863-67, 114706-07, 137122, 166414. 3.4 MILLAS W LAS VIGAS: UMMZ 121534. 3 KM E LAS VIGAS: KU 24127-28. 3 MILLAS E LAS VIGAS: TCWC 38302; AMNH 81942-46. 2 MILLAS SE LAS VIGAS: UMMZ 112991. 2.2 MILLAS E LAS VIGAS: UMMZ 114529. 2.2 MILLAS W LAS VIGAS: UMMZ 101927-28. 2 KM E LAS VIGAS: KU 26510, 26533-36. 1 KM W LAS VIGAS: KU 26506-09. 26511-32. 0.5 MILLAS E LAS VIGAS: TCWC 54475. LAS VIGAS: FMNH 102704; MVZ 146878, 146976-77; KU 26488-505, 26537-49; USNM 266287. ENTRE LAS VIGAS Y LA JOYA. FMNH 112488, 112495, 112497, 112499, 112504, 112506-07, 112512-13, 112516-17. LA JOYA: MVZ 146974-75. 6 MILLAS SW ACULTZINGO: UMMZ 120235. 6 KM SE LAS VIGAS, EL NEGRO: IBUNAM 3844. 5 MILLAS W ACULTZINGO: USNM 110684-96. 3 KM W ACULTZINGO: KU 26559-61. 2-3 MILLAS SE ACULTZINGO: UMMZ 105032. 2 MILLAS ARRIBA DE ACULTZINGO POR CARRETERA 150: CAS 86041. 2 MILLAS S ACULTZINGO: MVZ 76362-64. 2 KM W ACULTZINGO: USNM 110708-25; MZFC 8331-33, 8336-37. 1.5 MILLAS W ACULTZINGO: FMNH 102697, 102721, 103814-15, 103818, 103828, 103833-34, 103844, 103852, 103854, 103862,

103870. 1.5 MILLAS SW ACULTZINGO: IBUNAM 139, 7; CAS 16204-05. LIMITE CON PUEBLA, W CUMBRE DE ACULTZINGO: KU105886-87. CUMBRES DE ACULTZINGO: FMNH 99602, 99610, 99619, 99645, 102694, 103827, 103830-31, 103837, 103842, 103857-58, 103868, 1038871, 105648, UMMZ 114530-31, 149712-13; KU 58137-39, 69122. ARRIBA ACULTZINGO: USNM 110697-707. ACULTZINGO: FMNH 98544-45, 102708, 102717, 102719-20, 103816, 103819-26, 103829, 103832, 103834-35, 103838-39, 103841, 103843, 103845, 103847-51, 103855-56, 103859-61, 103864-67, 103869, 103872; USNM 110583, 110671-82; IBUNAM 528-29; UMMZ 88699-700, 88702, 89369, 89371. PUERTO DEL AIRE: MZFC 8330, 8338-39; LACM 121870-93, 67183. 4 MILLAS S ALTOTONGA: AMNH 75871-72. ALTOTONGA: UMMZ 126158. 10 MILLAS N JALAPA: FMNH 39633. JALAPA: CAS 16202-03. 11 KM NNE PEROTE EN CAMINO A TEZIUTLAN: MVZ 14515-19. COFRE DE PE ROTE: CAS 135681-85. 25 MILLAS W ORIZABA POR CARRETERA 150: LACM 38492-97, 103745-46. ORIZABA: USNM 110957, 12441; FMNH 1462. SAN MARTIN DE ATLAHUILCO: LACM 121894-99. CRUZ BLANCA: FMNH 102699, 102703, 102709, 102713, 102722, 102726, 102740, 106213; USNM 110747. 1 KM DE PUENTE COLORADO: USNM 110748-50. EL LIMON: FMNH 102718, 102730, 102734, 102743, 106212, 105214-15; UMMZ 88698. CUAUTLAPAN: FMNH 103836. CAMINO ATE QUITLAN PAN DE OLLA: UMMZ 89370. **No state data.** No locality: FMNH 99601, 102701, 102733, 103817, 103840, 103846, 103853, 103863, 103873, 112489, 112496, 112502, 112508, 112519, 114659; UMMZ 128047-49; AMNH 19737-39, 19749, 19763-65; USNM 30551, 32379. CERCA DE MENDOZA, POR CARRETERA 150: MLBM 13183-84.

Conopsis megalodon

Guerrero. ALREDEDORES DE CHILPANCINGO: AMNH 72492-95. CERCA CHILPANCINGO: MVZ 45087. CHILPANCINGO: FMNH 38397; UMMZ 85703-10. PUERTO CHICO, CAMINO AL CERRO TOTOLTEPEC: CAS 134442-43. 7-9 MILLAS W MAZATLAN: LACM109206-208. CARRIZAL DE BRAVOS: LACM 109261; MVZ 110948. 0.6 MILLAS SW CARRIZAL DE BRAVOS: MVZ 110949. 1 KM W CARRIZAL DE BRAVOS, 5.8 KM W FILO DE CABALLO: MVZ 146979. 1 MILLA N MAZATLAN POR CARRETERA. 95, 13.9 MILLAS W POR CAMINO A ESTACION DE MICROONDAS: MVZ 112397-402, 146980, 172419-20. 38 KM NE TLACOAPA: IBUNAM 6470. SE DE TLACOAPA: IBUNAM 6471-72. 1 MILLA NW OMILTEME: USNM 148895-97. 1.3 KM E OMILTEME: MZFC 2904. OMILTEME: FMNH 100495-96; MZFC 2898, 2901, 2903; USNM 304845-47; UTA 4085-89, 4104, 4110-12, 4425-27, 4453-55, 4481-4495, 4497, 6242-44, 6344-6; KU 87745-46; TCWC 9553-69, 9571; IBUNAM 956. **Oaxaca.** CIUDAD DE OAXACA: AMNH 103127. 5 MILLAS S LLANO DE LAS FLORES, SIERRA DE JUAREZ: AMNH 89568, 89570. 15.4 KM N IXTLAN DE JUAREZ: KU 187312. 2 MILLAS E IXTLAN DE JUAREZ: AMNH 89566, 91056-

57, 93228.1.7 MILLAS E DE IXTLAN DE JUAREZ RANCHO TEJA: AMNH 102946-47, 104377-80, 110621-24, 94712, 97902-04, 97917; MVZ 173542-45. 1.5 MILLA E IXTLAN DE JUAREZ, RANCHO VIVERO TEJA: AMNH 100867. 2 KM E IXTLAN DE JUAREZ: KU 179745. LA CUMBRE: MZFC 8301. CERRO SAN FELIPE, E. BAJO LA CUMBRE DEL ESTUDIANTE: AMNH 89567; MVZ 144491. CERRO SAN FELIPE: AMNH 89569; KU 102531; LACM 109565. 3.3 MILLAS S CUMBRE DEL ESTUDIANTE: AMNH 91051-53. 5.2 MILLAS NE SAN ANDRES CHICAHUAXTLA: AMNH 102925. 2.6 MILLAS W SAN VICENTE LACHIXIO: AMNH 91062-63. 3 KM SW SAN VICENTE LACHIXIO: KU 101160-61; CAS 149945-46. 1 MILLA NW SAN VICENTE LACHIXIO: AMNH 9705, 97907-11. 0.7 MILLAS W SAN VICENTE LACHIXIO: AMNH 97912-13. 1 KM W SAN VICENTE LACHIXIO: AMNH 97914. 0.3 MILLAS NW SAN VICENTE LACHIXIO: AMNH 100864-65. RANCHO BENITO JUAREZ, ARRIBA DE TEOTITLAN DEL VALLE: AMNH 97893-94. EL PUNTO, SIERRA DE ALOAPANECA: AMNH 97895-01,102948-51; UTA 12500. 4 MILLAS N JALTIANGUIS: AMNH 102944-45. SIERRA DE CUATRO VENADOS, 2-5 MILLAS NW STA INES DEL MONTE, 14-17 MILLAS ZAACHILA: AMNH 99997-99. SIERRA ALOAPANECA, 13.1 MILLAS NE SAN JUAN DEL ESTADO: AMNH 100862-65. SIERRA DE CUATRO VENADOS, 6 MILLAS NW SANTA INES DEL MONTE: AMNH 102933-38. SIERRA DE CUATRO VENADOS, 4 MILLAS E OJO DE AGUA: AMNH 102939-42. SIERRA DE CUATRO VENADOS, 17.7 MILLAS W ZAACHILA:106566-68. 25 KM W ZAACHILA: MVZ 164712. LA COFRADIA: AMNH 97915-16,100866, 102943; UMMZ 126157,126833. 1.5 MILLAS S EL PUNTO, ABAJO DE LOMA GRANDE: AMNH 102952. 6.2 MILLAS NW ASUNCION MIXTEPEC: AMNH 103128-29. KM 421, 13 MILLAS N NOCHIXTLAN: LACM 103494.15.6 KM NE SAN JUAN DEL ESTADO: MVZ 144492. 3.1 MILLAS W MACHIN EN CAMINO A COMALTEPEC: MVZ 144493-97. 5.7 KM E LA CUMBRE, CAMINO A YUVILA: IBUNAM 6735, 6737. 21.1 KM W LA CUMBRE POR TERRACERIA; HUAYAPAN: IBUNAM 6736. 36.8 KM NE AYUTLA CARRETERA 179 AYUTLA-TOTONTEPEC: IBUNAM 6734. MONTE ALBAN: UTA 3344. VISTA HERMOSA, SIERRA DE JUAREZ: UTA 12671. SAN JUAN GUIVINI: FMNH120233. 10 KM NNE IXTLAN DE JUAREZ: KU 63893. 12 KM N INTERSECCION CAMINO A TLAXIACO: KU140079. No locality : CUM 40002, 04-07, 41199, 41209-10.

Conopsis nasus

Aguascalientes. 5 MILLAS NE AGUASCALIENTES: AMNH 117976. ENTRE VILLANUEVA Y AGUASCALIENTES: IBUAM 3312. AGUASCALIENTES: UAA 133, 180. UNIVERSIDAD AUTONOMA DE AGUASCALIENTES: UAA 25, 215. JESUS MARIA: UAA 178. LOS ALISOS: UAA 89-91. SAN JOSE GARCIA, 40 KM NW DE LA CONGOJA. UAA 131. SAN FRANCISCO DE LOS ROMO: UAA 191. EL TARAY: UAA 199. **Chihuahua.** 25 MILLAS S DE CREEL (CAMINO A LA BUFA):

CAS 104588; MLBM 16856-62, 17143. 22.5 MILLAS S DE CREEL (CAMINO A LA BUFA): MLBM 169522 MILLAS SE CREEL (CAMINO A LA BUFA): MLBM 14295-98. KM 28 CARRETERA CREEL LA BUFA: MZFC 8564-701 MILLA W LA LAJA (6 MILLAS E MOJARAVICH): MLBM 16854-55. NOROGACHI: AMNH 73753. MOJARACHIC: FMNH 102846. **Distrito Federal**. ESTE DE SANTA CRUZ: AMNH 19758-62. CERRO DEL CHIQUIHUIE: AMNH 19779; MZFC 86. CIUDAD DE MEXICO: UMMZ 466614. VILLA DE GUADALUPE, CERRO GUERRERO: IBUNAM 3313; MZFC 89-90,92. **Durango**. 65-70 KM SW CIUDAD DE DURANGO, HACIA LA FLOR: CAS 169786. 2.7 MILLAS N EL PALMITO: CAS 169792.9.4 MILLAS E LIMITE ESTATAL DGO-SIN POR CARRETERA 40: CAS 23795KM 203 CARRETERA A DURANGO A VILLANUEVA, SINALOA POR CARRETERA 40: MLBM 37225. 8-11 MILLAS NE EL PALMITO, POR CARRETERA 40: CAS 169770.32.5 MILLAS W DURANGO: MLBM 14284-86. 5 MILLAS E DEL SALTO: MLBM 14469. 6 MILLAS NE EL SALTO: AMNH 68367-69. 10 MILLAS E EL SALTO: AMNH 68365-66. OTINAPA: AMNH 68381.1.8 MILLAS NE EL PALMITO: AMNH 106565.16 MILLAS N ESTACION COYOTES: CAS 1697752. 8.8 MILLAS W LA FRAGUITA: LACM 50835-37. 2 MILLAS N NAVAJAS, 42 MILLAS W CIUDAD DE DURANGO: LACM 121315-18. 2 MILLAS E LLANO GRANDE: LACM 125320. EL MADROÑO: LACM 136907. LA MICHILIA: IBUNAM 1827, 2807. EJIDO SAN JUAN DE NUCHIS: IBUNAM 27887. CAMINO A EL MIL DIEZ: MZFC 8560-63. LLANO GRANDE: UTA 7025-26. LAGUNA EL PROGRESO: UMMZ 113624. No locality: CUM 49236. **Guanajuato**. SAN MIGUEL DE ALLENDE: LACM 67261. 2.3 MILLAS SW SAN MIGUEL ALLENDE: TCWC 58029. TABOADA, 6 MILLAS NW SAN MIGUEL ALLENDE: FMNH 70746.12 MILLAS N SAN MIGUEL ALLENDE: UMMZ 125642, 128143. 11 MILLAS N SAN MIGUEL DE ALLENDE: AMNH 93410-11. MONTE CUBILETE: AMNH 93412.10 MILLAS E JERECUARO, PUEBLO DE CORONEO: CAS 169837-40. CERCA SANTA ROSA: UMMZ 63941. 4.5 KM SW SANTA ROSA POR CARRETERA 110: UTA 17136. 3.5 KM NE SANTA ROSA POR CARRETERA 110: UTA 17137, 19. 9.3 KM NE SANTA ROSA POR CARRETERA 110: UTA 17138, 40-44. 4.7 MILLAS NE SANTA ROSA: TCWC 40998. GUANAJUATO: USNM 10246, 110663-65. 2.2 MILLAS E SAN JOSE ITURBIDE: TCWC 58030. 13.3 MILLAS E SAN LUIS DE LA PAZ: UMMZ 120222. 3 KM E CORONEO: UMMZ 143722. MARFIL: UAA 192. No locality: CAS 4411. **Hidalgo**. AJACUBA: MZFC 3341. RUINAS TULA: MZFC 2154; AMNH 96618. 2 MILLAS SW TLAHUELILPAN: AMNH 96619. 4 MILLAS E YURIRIA: AMNH 96620. GUERRERO: UMMZ 149714, 47800. SAN MIGUEL: UMMZ 47801. VELASCO: UMMZ 56485. XOCHITLAN DE LAS FLORES: IBUNAM 5658. 5 KM ADELANTE DE JASSO: MZFC 617. 2 MILLAS N TEPE APULCO: UTA 4352. 1.7 MILLAS N MEZQUITITILAN: TCWC 40991-94. **Jalisco**. 10 MILLAS S LAGOS DE MORENO: AMNH 82022. 2.4 KM NW TAPALPA: UTA 12263-68. 1.8 MILLAS SE ENTRONQUE CARRETERAS 45 Y 80: TCWC 58024-28.

ATOTONILCO EL ALTO: KU 106287. 6 MILLAS NE MAZAMITLA: KU 29498. 3.2 KM W ARANDAS: KU 102962. TEOCALTICHE: UAA 188. **Estado de México.** 4 MILLAS SW ACULCO: AMNH 117977. SIERRA DE GUADALUPE TLAYACAMPA: IBUNAM 3640. SAN FRANCISCO, ADELANTE DE JILOTEPEC: IBUNAM 3771. 15 KM DE TEPOZOTLAN: MZFC 87-88. 22 MILLAS N ACAMBAY: UTA7921. **Michoacán.** ERONGARICUARO, MARGEN ESTE DEL LAGO PAZCUARO: AMNH 70572. CERCA DE PATZCUARO: FMNH 102844,49-51. CARRETERA 15, LADO N LAGO PAZCUARO, 4 MILLAS W QUIROGA: AMNH 81963. 3 KM E PATZCUARO: UAA 101, 103. 3 MILLAS NE PATZCUARO: AMNH 99142. ORILLA LAGO PATZCUARO: MZFC 2162. PATZCUARO: UMMZ 101926, 99152; MZFC 91. 5 MILLAS E PATZCUARO: FMNH 102939-40, 42, 45, 47, 53, 179190. 20.6 KM W JIQUILPAN: UTA 12260-62. NAHUATZEN: USNM 46426. TACICUARO: FMNH 102852; USNM 110666-69. CERCA DE MORELIA: FMNH 102841. 6 MILLAS E MORELIA: TCWC 33603. 10 MILLAS E MORELIA: USNM 110670. 17 MILLAS E MORELIA: IBUNAM 4196. TANCITARO: FMNH 39042-57. 15 MILLAS SE ZITACUARO: FMNH 102848. 3 MILLAS E VISTA HERMOSA: TCWC 33599-01. 3 MILLAS NW ENTRONQUE CON LA CARRETERA ESTATAL 15 Y FEDERAL 15: TCWC 33602. CERCA COJUMATLAN: FMNH 102843. 4 MILLAS S MARAVATIO: KU 44999. 21.7 KM W JIQUILPAN: KU 182681-85. **Puebla.** 20 KM N TEHUACAN: UMMZ 90764. **Querétaro.** AJUCHITLAN: UMMZ 137561. 4.8 MILLAS S AMEALCO: LACM 109140. 12.5 MILLAS W SAN JOAQUIN: LACM 109141-42. 0.5 MILLAS E AMEALCO-MEXQUITITLAN, CAMINO A LA PIEDAD: LACM 127083. LOS ESPINOS, 5 MILLAS E CADEREYTA: TCWC 33084. KM 55 CARRETERA CADEREYTA-XILITLA: MZFC 6235. CADEREYTA: UMMZ 99795-96. 0.4 MILLAS SSE AMEALCO-MEZQUITITLAN: TCWC 53038-42. 3 MILLAS SSE AMEALCO: TCWC 38508-09,40989-90. 10.5 MILLAS NNE AMEALCO: TCWC 40995-972. 3 MILLAS SW PUERTA DE LA ALEGRIA: TCWC 53034-37. GALERAS: TCWC 53045-46. QUERETARO: UMMZ 128967, 175591. 0.5 MILLAS NE PINAL DE AMOLES : UMMZ128970. **San Luis Potosí.** LOS HOYOS, SIERRA DE ALVAREZ, A 30 MILLAS DE SAN LUIS POTOSI: AMNH 118529. ALVAREZ: UTA 6348-52, 7922. 20.5 MILLAS E SAN LUIS POTOSI: UMMZ 120234 91921-26. 22.3 MILLAS SW SAN LUIS POTOSI: UMMZ 99547. 2 MILLAS E PUERTO ALTAMIRA: LACM 109679-81. 3.8 MILLAS NE CIUDAD DEL MAIZ: LACM 109782. VALLE DE LOS FANTASMAS: UTA 12269-70,8307, 9246-49, 9424. SAN FRANCISCO, EN CAÑON SANTA CATARINA: USNM 224185. **Sinaloa.** 18 MILLAS W EL PALMITO (56 MILLAS E MAZATLAN): MLBM 39385-86. LOBERAS, POR CARRETERA 40 KM 1177, A 80 KM E VILLA UNION: AMNH 102516. 4 KM E LOBERAS, KM 1175, A 12 KM W EL PALMITO: AMNH 106564. 19.2 KM NE SANTA LUCIA. CARRETERA 40: KU 80872. **Veracruz.** ACULTZINGO: UMMZ 35339,85328-30,85332-36,85340-49. **Zacatecas.** 12 MILLAS SE ZACATECAS: CAS 89766, 89772. 8 MILLAS S

CHALCHUITES: CAS 95930-33. 35 MILLAS W DURANGO POR CARRETERA 15: CAS 110994. 15 MILLAS S VILLANUEVA: CAS 138876-138878. CERCA MALPASO, 1 MILLAS E ENTRONQUE CAMINO VILLANUEVA: UMMZ 123261. CHICOMOSTOC (QUEMADA) RUINAS CERCA DE VILLANUEVA: MLBM 41298. VILLANUEVA: MZFC8558-59. CERRO SAN MIGUEL, ARROYO COLORADO: IBUNAM 3195. COLONIA HIDALGO: IBUNAM 5129. SAN CRISTOBAL: MZFC 8555-56. 5 MILLAS E TRONCOSO: USNM 224442. TRONCOSO: MZFC 8557. PLATEADO: USNM 46418. 5.1 MILLAS S OJO CALIENTE: USNM 238333. 6 MILLAS S OJO CALIENTE: TCWC 58023. 3 MILLAS NE TEUL DE ORTEGA: UMMZ 118448. 2.3 MILLAS SW LAGUNA VALDERRAMA: UMMZ 118449. No locality: KU 85008. **No state data.** No locality: FMNH 102838; USNM 11371, 25362, 30553,31363-65; AMNH 19540, 19769,19772, 19776.