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TAXONOMIC SYNOPSIS OF *CONDALIA* (RHAMNACEAE) IN MEXICO AND THE USA

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ABSTRACT

A review of the taxonomy of *Condalia* in Mexico and the USA finds 18 species, including three previously undecribed and two raised from varietal rank — **Condalia cuencamensis** Nesom, **sp. nov.**, **Condalia suchilensis** Nesom, **sp. nov.**, **Condalia zamudioana** Nesom, **sp. nov.**, **Condalia kearneyana** (M.C. Johnston) Nesom, **comb. et stat. nov.**, and **Condalia petalifera** (M.C. Johnston) Nesom, **comb. et stat. nov.** The geographical range of each of the 7 species in the USA includes Mexico — *C. correllii*, *C. ericoides*, *C. globosa*, *C. hookeri*, *C. kearneyana*, *C. spathulata*, and *C. warnockii*. Provided are a key to species, details of typification, a detailed distribution map for each of the 18 species, diagnostic comparisons, and photos of representative specimens.

Condalia Cav. is an American genus of 25 species — 18 occur in Mexico and the USA, 7 others in South America. All are low shrubs with short internodes and thorn-tipped branches, abbreviated short shoots, small leaves with pinnate venation and entire margins (sometimes few-toothed distally in *C. hookeri* and *C. mirandana*, the teeth without glandular tips), flowers in fascicles or sometimes solitary, unbranched styles, and drupaceous fruits. Flowers are apetalous except in *C. ericoides*, *C. petalifera*, *C. sonorae*, and *C. velutina*, which have petals shorter than the sepals. The nectariferous disc is thickened near the cup rim or not at all, and the ovary base is constricted. Fruits drupes.

Condalia is closely related to *Rhamnidium*, *Rhamnella*, and *Karwinskia* (Bolmgren & Oxelman 2004; Richardson et al. 2004). The analysis by Hauenschild et al. (2016) places it in the same general alliance but as sister to the recently segregated North American genus *Pseudoziziphus*.

Johnston's revision of *Condalia* (1962) included 12 species for Mexico and the USA and 6 for South America. The South American species are listed here — see Fernández-Alonso (1997) for a key to 4 species from northern South America and Escalante et al. (1971) and Tortosa (1979, 1995, 2018) for taxonomy of Argentine species.

C. buxifolia Reiss. — Brazil, Paraguay, Uruguay, Argentina
C. henriquezii Bold. — Venezuela, with an outlyer in Curaçao
C. megacarpa A. Castell. — Argentina (Patagonia)
C. microphylla Cav. — Argentina (widespread), the type of the genus
C. montana A. Castell. — Argentina (Patagonia)
C. thomasiana Fernández-Alonso (1997) — Colombia
C. weberbauerii Perkins — Peru

Fernández Nava et al. (2013) followed Johnston in treating the same 12 species for Mexico and the USA, overlooking the recent description of *C. sonorae* Henrickson (2003). The present study finds 18 species in Mexico and the USA, including three previously undecribed and two raised from varietal rank. Each of the 7 species in the USA also occurs in Mexico. The present study is redundant in some respects but it provides an updated species key, details of typification and synonymy, a detailed distribution map for each species, and diagnostic photos of herbarium specimens.

Morphology

Short shoots are characteristic of *Condalia*, but in most species they are not at all elongate, evident only by the fascicles of leaves and flowers. Solitary leaves and flowers are commonly produced, however. Elongate short shoots are commonly produced, but inconsistently, in a few species, e.g., *C. globosa*, *C. hookeri*.

In some species, especially those with smaller leaves, the abaxial lateral veins are thickened and raised, usually without evident microvesiculate venation — *C. correllii*, *C. fasciculata*, *C. globosa*, *C. kearneyana*, *C. spathulata*, *C. warnockii* (e.g., Figs. 16, 34, 44, 49, 53, 54). The venation of arching laterals (eucamptodromous) is common to the whole genus; whether the raised veins might indicate an evolutionary relationship is not clear. Venation is not distinctly raised in *C. brandegeei*, *C. hookeri*, *C. mexicana*, *C. mirandana*, *C. petalifera*, *C. sonorae*, *C. suchilensis*, *C. velutina*, and *C. viridis*. Two species have sessile, linear leaves with revolute margins and without obvious venation except for the abaxial midrib: *C. ericoides* and *C. cuencamensis*.

Condalia fruits apparently occur as one or two shapes: prolate in *C. correllii*, *C. fasciculata*, *C. kearneyana*, *C. mexicana*, *C. petalifera*, *C. spathulata*, *C. suchilensis*, *C. velutina*, and *C. warnockii*; globose in *C. brandegeei*, *C. globosa*, *C. hookeri*, *C. mirandana*, *C. sonorae*, *C. velutina*, and *C. zamudioana*. Fruits are prolate (to subglobose in *C. henriquezii*) in the South American species (Johnston 1962; Fernández-Alonso 1997).

Identification

Perhaps the most effective way to identify a Mexican collection of *Condalia* is to compare its locality with the detailed maps, which will greatly narrow the possibilities, then use the key and illustrations. For USA species not mapped here, county-level distributions are provided by the PLANTS Database (USDA, NRCS 2023) and Kartesz (2015). Morphological descriptions for most species are found in Johnston (1962), Fernández Nava (2013), and Nesom (2016).

Key to *Condalia* species of Mexico and the USA

1. Leaves linear, sessile, without obvious venation except for the abaxial midrib, margins strongly revolute.
   2. Stems gray-brown, internodes mostly 1–3 mm long; leaves gray-green to silvery, mostly 2–6 mm long, in fascicles usually of 3–5; drupes 7–12 mm long, subcylindric to elliptic-ovate ..... **Condalia ericoides**
   2. Stems whitish, internodes mostly 3–5 mm long; leaves pastel green, 6–11 mm long, alternate or in fascicles of 2–3; drupes 3.5–4 mm long, subglobose ..... **Condalia cuencamensis**

1. Leaves narrowly oblanceolate or elliptic to obovate or spatulate, petiolate, pinnate venation evident, margins not revolute.
   3. Leaves narrowly oblanceolate to elliptic-oblanceolate, not fascicled ..... **Condalia zamudioana**
   3. Leaves elliptic to oblanceolate, obovate or spatulate, alternate or fascicled.
      4. Leaves 12–40 mm long, mostly 8–19 mm wide.
         5. Drupes broadly ellipsoid-ovate, 6–8 mm long ..... **Condalia brandegeei**
         5. Drupes globose, 4–6 mm long.
            6. Leaf blades broadly elliptic to nearly rotund, glabrous ..... **Condalia mirandana**
            6. Leaf blades broadly obovate, at least sparsely hispidulous ..... **Condalia hookeri**
      4. Leaves smaller, spatulate to elliptic

7. Fruiting pedicels 3–7 mm long, filiform; short shoots sometimes elongated up to 2 mm ..... **Condalia globosa**
7. Fruiting pedicels shorter, thicker; short shoots usually not elongated (presence indicated by leaf fascicles).

8. Petals present.

9. Trees or shrubs 3–6 m tall; leaves broadly obovate to subrotund, 6–10 mm long ..... **Condalia petalifera**
9. Shrubs 1–3(–5, in *C. velutina*) m high; leaves obovate to elliptic-obovate, mostly 8–20 mm long.

10. Leaves and fruits tomentose ..... **Condalia velutina**
10. Leaves and drupes glabrous ..... **Condalia sonorae**

8. Petals absent.

11. Leaves 0.5–3(–4) mm wide; flowers and fruits distinctly short-pedicellate.

12. Leaf surfaces glabrous.

13. Branches glabrous; abaxial leaf surface appearing as if molded in wax; pedicels (1.5–)2–3(–4 in fruit) mm long ..... **Condalia spathulata**
13. Branches hispidulous; abaxial leaf surface not "wax-molded"; pedicels 0.5–1 mm long ..... **Condalia fasciculata**

12. Leaf surfaces hispidulous-hirtellous.

14. Leaves 0.5–1.5(–2) mm wide; internodes 0.5–1 mm long **Condalia kearneyana**
14. Leaves 1–2.5(–4) mm wide; internodes 1–2(–3) mm long .. **Condalia warnockii**

11. Leaves (2.5–)4–7(–10) mm wide; flowers and fruits sessile to subsessile.

15. Leaves usually bicolor, brownish and darker adaxially; fruits elonate, 5–6 mm long

16. Leaves elliptic to broadly obovate**,** (1.5–)3–4(–6) mm wide .... **Condalia mexicana**
16. Leaves oblanceolate, 2–3.5 mm wide ..... **Condalia suchilensis**

15. Leaves pale green on both surfaces; fruits globose to subglobose, 4–6 mm long.

17. Branchlets glabrous to sparsely hirtellous; leaf blades glabrous to sparsely hispidulous on both surfaces, 4–8(–11) mm long, basally acute to abruptly attenuate or short-attenuate, lateral veins evident but not prominently raised, microvesiculate venation evident ..... **Condalia viridis**
17. Branchlets densely hirtellous; leaf blades densely hispidulous at least abaxially, 7–11(–16) mm long, basally long-attenuate, lateral veins prominently thickened and raised ..... **Condalia correllii**

1. CONDALIA BRANDEGEEI I.M. Johnston, Proc. Calif. Acad. Sci., ser. 4, 12: 1088. 1924. **LECTOTYPE** (Johnston 1962): **MEXICO**. **Baja California Sur**. [Mpio. Mulegé]: San Julio Canyon, 20 Apr 1889, *T.S. Brandegee s.n.* (CAS). Johnston (1962) noted that, fide Annetta Carter, the locality is "northish of San Ignacio, lat. ca. 27° 30' N." Figures 1-2.

A distinctive species in its Baja California geography and large leaves. It was hypothesized by Johnston (1962) to be closely related to *C. hookeri*, probably because of their large leaves often

brownish adaxially (he didn't give rationale for his hypothesis), but their drupes are of different shapes and sizes.

The collection from the northernmost and apparently disjunct locality is typical for the species: Sierra San Pedro Martír, under S bank of Arroyo el Cajón ca. 2 mi from mouth, 30° 51' N, 115° 16' W, shrub 5 m tall, 810 m, 28 Dec 1974, *Moran 21561* (LL, RSA, SD).

2. CONDALIA CORRELLII M.C. Johnston, Brittonia 14: 357. 1962. **TYPE**: **MEXICO**. **Chihuahua**. [Mpio. Jiménez]: 15 mi W of Jiménez on route 45, rocky limestone slopes, 27 Jul 1958, *D.S. Correll & I.M. Johnston 20253* (holotype: LL). For the species, Figures 18–26.

A collection from Saltillo was cited by Johnston (1962) as *Condalia correllii*: **Coahuila**. Saltillo and vicinity, May 1898, *E. Palmer 111* (US, Fig. 22) — this is identified here as *Condalia viridis*. Johnston also cited *Palmer 162* (US!) as *C. correllii* but the label has no data except for Coahuila, the collector and number, and "February to October 1880" — the specimen is fragmentary but probably also is *C. viridis*.

A collection from Coahuila was identified by Johnston (1962) as "a very peculiar *Condalia* probably related to *C. correllii*" — Sierra del Pino, Cañon de Ybarra, arroyo banks, 22-23 Sep 1941, *Stewart 1888* (GH, image!) — it matches other records for *C. correllii*. The other mapped Coahuila record for the species is this: Sierra Almagre, W of the old viñata above Rancho el Almagre, bush 4–9 ft tall, frequent along arroyos, 12 Sep 1940, *Johnston & Muller 1200* (GH, LL).

Durango records mapped here for *Condalia correllii* are these: Mpio. Cuencamé: Cercanias del Ejido La Fé, 24° 56' 39" N, 103° 51' 02" W, matorral mediano subespinoso, 1640 m, Jun 1997, *Martínez 642* (MEXU). Mpio. Santiago Papasquiaro: KM 5.5 carretera Santiago Papasquiaro-Los Altares, arbusto 3 m, bosque de *Juniperus erythrocarpa*, 1900 m, 6 Oct 1990, *Benítez 2767* (MEXU).

The treatment here for *Condalia correllii* leaves unresolved questions. There appear to be two geographical centers (see Map 4) and the distinction between *C. viridis* and *C. correllii* in Texas is not clear. I'll provide an update after an opportunity for a detailed restudy of these plants

3. CONDALIA CUENCAMENSIS Nesom, **sp. nov.** **TYPE**: **MEXICO**. **Durango**. Mpio. Peñon Blanco: Juarez-camino Peñon Blanco, 24° 48' 30" N, 104° 01' 27" W, matorral mediano subespinoso, 1690 m, 16 Mar 1995, *J.L. Martínez M. 563* (holotype: MEXU 111956; isotype: MEXU 1063629). Figures 79-86.

Similar to *Condalia ericoides* in its sessile, linear leaves with strongly revolute margins; different in its whitish stems (vs. gray-brown), longer internodes (3–5 mm vs. 1–3 mm), longer and pastel green leaves (6–11 mm vs. 2–6 mm long, vs. gray-green to silvery) fewer per fascicle (2–6 vs. 2–3), and subglobose, smaller fruits (vs. subcylindric to elliptic-ovate, 3.5–4 mm vs. 7–12 mm long).

Shrubs. **Stems** whitish, thorn-tipped, with numerous, needle-like, non-meristematic, lateral thorns 2–7 mm long, internodes mostly 3–5 mm long; short shoots not elongated but evident by leaf fascicles. **Leaves** alternate and solitary or in fascicles of 2–3(–4), blades pastel green, glabrous, 6–11 mm long, 1–1.5 mm wide, venation not evident except for the thick, abaxial midvein, margins entire and strongly revolute. **Flowers** apparently solitary, sessile or subsessile. **Fruits** subglobose, 3.5–4 mm long, red at maturity.

Additional collection. Mpio. Cuencamé: Cercanias del Ejido La Fé, 24° 56' 39" N, 103° 51' 02" W, matorral mediano subespinoso, 1640 m, Jun 1997, *Rangel 284* (MEXU-2 sheets). Both collections (*Martínez* and *Rangel*) were originally deposited in herbarium COCA (Mexico City), which was transferred to MEXU in 2003 (Index Herbariorum 2023), and it seems unlikely that there are further duplicates.

Although there are similarities between *Condalia cuencamensis* and *C. ericoides* (leaf morphology, numerous needle-like lateral thorns, sessile flowers/fruits), the difference in fruit morphology suggests that their degree of evolutionary relationship remains to be determined. Both collections of *C. cuencamensis* were originally identified as *Condalia lycioides* (= *Condaliopsis obtusifolia*) — if flowers were part of the collection, that would enable confirmation of the generic identity, and if petalous, they would provide further evidence of a close relationship with *C. ericoides*.

4. CONDALIA ERICOIDES (A. Gray) M.C. Johnston, Brittonia 14: 364. 1962. *Microrhamnus ericoides* A. Gray, Pl. Wright. 1 (Smithson. Contr. Knowl. 3, 5): 34. 1852. **LECTOTYPE**: (Johnston 1962): **USA**. **Texas**. Reeves Co.: Valley of the Pecos, 25 Oct 1849, *C. Wright 91* (GH 260414; isolectotype: GH 254041). For the species, Figures 75–78.

Condalia ericoides in Durango. Mpio. Poanas: N de San Atenógenes, matorral xerofilo en ladera, arbusto 35 cm, 7 Mar 1985, *Acevedo 190* (MEXU). Mpio. Nombre de Dios: Camino a San José de Acevedo, 23° 48' 48" N, 104° 15' 45" W, pastizal mediano arbosufrutescente, 1720 m, Oct 1994, *Aceval A. 536* (MEXU). Mpio. Guadalupe Victoria: Ejido Carrillo Puerto (near V. Guadalupe Victoria), 13 Mar 1945, *Hernández X. 576* (TEX). Mpio. Villa Unión: 3.5 km N de la Cieneguilla, matorral de *Condalia ericoides* en sustrato calichoso, 7 May 1981, *Herrera 79* (MEXU). Mpio. Hidalgo: S de la Zarca, pastizal mediano abierto, 1955 m, *Ochoa G. 45* (MEXU). Mpio. Cuencamé: Yerbaniz, 1900 m, Feb 1977, *Ochoa-Martinez 110* (MEXU). Mpio. Súchil: San Luis del Conde, matorral bajo subespinoso, Dec 1976, *Ochoa-Martínez 141* (MEXU).

5. CONDALIA FASCICULATA I.M. Johnston, J. Arnold Arb. 22: 146. 1941. **TYPE**: **MEXICO**. **San Luis Potosí**. [Mpio. Cedral]: 2 mi S of Cedral, road from Matehuala N to San Miguel on the state-boundary, bush 3-5 ft tall, about sink-holes on gypsum plain, 11 Sep 1938, *I.M. Johnston 7593* (holotype: GH). For the species, Figures 40–47.

The record for **Aguascalientes**: Mpio. Tepezalá: 2 km al SW de Tepezalá, arbusto 2 m, matorral desertico microfilo, 2035 m, 27 Aug 2010, *Martínez Ramírez 1797* (MEXU).

Records for **Guanajuato**. Mpio. San Miguel de Allende: Camino al Balneario El Chote, Río Lajas, arbustito 1.5 m, lado del camino, chaparral espinoso, 1900 m, 16 Apr 1978, *Hernández M. 1019* (MEXU); cerca de los banos de Taboada, lado del camino, por todas partes, chaparral espinoso, arbusto 1.5 m, 5 Jul 1979, *Ramos M. 1276* (MEXU); Taboada, cerca del balneario, subiendo desde el camino afuera del balneario, 1900 m, arbusto 1.5 m muy envuelto con *Bursera*, 16 Sep 1982, *Ramos M. 1945* (MEXU). Mpio. Dolores Hidalgo: Predio "El Cortijo" 16 km NE de la ciudad de Dolores Hidalgo sobre la carr. a San Luis de la Paz, 21° 13' 08" N, 100° 47' 54" W, arbusto 1-3 m, 1906 m, 23 Dec 1996, *Ocampo 187* (MEXU).

Records for **Oaxaca** and **Puebla. Oaxaca**. 3 mi NE of Tamazulapam by the road towards Tepelmeme de Morelos, 30 Dec 1986, *Dorado R. 1645* (TEX). **Puebla**. 2 mi SW of Zapotitlan, 30 Aug 1965, *Johnston 7273* (LL, TEX); 2 mi N of El Riego (near Tehuacán), 31 Aug 1965, *Johnston 7274* (TEX); 3 mi SW of the Puebla-Veracruz border on 150 Libre to Tehuacan, rocky hillside, small shrub to 1 m, common, scrub vegetation with *Beaucarnia*, *Opuntia*, *Salvia*, 2070 m, 25 May 1986, *Luckow 3174* (MEXU).

Condalia fasciculata is similar to *C. mexicana* in its densely hirtellous stems, leaves with a brownish adaxial surface, and subcylindric to elliptic-ovate fruits, and the two are sympatric over much of their ranges. They differ strongly in leaf size, however, and usually can be distinguished with little difficulty. Judging from herbarium specimens, the stems of *C. fasciculata* are more intricately branched and more zig-zag, which gives the plants a distinctive appearance.

a. Leaves (2–)3–7(–9) mm long, (0.5–)1–2 mm wide ..... **Condalia fasciculata**
a. Leaves (4–)7–11 mm long, (1.5–)3–4(–6) mm wide ..... **Condalia mexicana**

6. CONDALIA GLOBOSA I.M. Johnston, Proc. Calif. Acad. Sci., ser. 4, 12: 1086. 1924. **TYPE**: **MEXICO**. **Baja California Sur**. [Mpio. La Paz]: La Paz, gravelly bench near sea, shrub 8 ft high, 11 Apr 1921, *I.M. Johnston 3028* (holotype: CAS; isotypes: GH, K, US).

Condalia globosa var. *pubescens* I.M. Johnst., Proc. Calif. Acad. Sci., ser. 4, 12: 1087. 1924. *Condalia globosa* subsp. *pubescens* (I.M. Johnst.) Murray, Kalmia 13: 5. 1983. **TYPE**: **MEXICO**. **Sonora**. [Mpio. Hermosillo]: San Esteban Island, infrequent shrub 4-5 ft high, sandy wash, 19 Apr 1921, *I.M. Johnston 3201* (holotype: CAS; isotypes: GH, K, UC, US).
For the species, Figures 14–17.

Christie et al. (2006), Sawyer (1993), and Rebman et al. (2016) recognized var. *pubescens* as occurring in Arizona, California, and Baja California, respectively, but there appears to be no clear pattern to its distribution in the USA in Mexico, although Sawyer, recognized only var. *pubescens* for California. Johnston (1962) recognized var. *pubescens*, observing that the varieties "seem to show some amount of geographic separation, the glabrous plants occurring in the extreme southern portion of the distributional area, and the pubescent ones in the northern portion, but both apparently occurring in a broad intermediate zone in Sonora and Baja California." Other species of *Condalia* also show variability in vestiture.

Plants of *Condalia globosa* with a single fruit (vs. in fascicles) are distinct in appearance, but there appears to be no consistent geographic pattern to their distribution.

7. CONDALIA HOOKERI M.C. Johnston, Brittonia 14: 362. 1962 [nom. nov.]. *Condalia obovata* Hook., Ic. Pl. t. 287. 1840 (not *Condalia obovata* R. & P. 1794). **TYPE**: **USA**. **Texas**. No other collection data, 1835, *T. Drummond 459* (holotype: K; isotypes: GH, NY).

Condalia obovata var. *edwardsiana* Cory, Madrono 9: 128. 1947. *Condalia hookeri* var. *edwardsiana* (Cory) M.C. Johnston, Brittonia 14: 364. 1962. **TYPE**: **USA**. **Texas**. Edwards Co.: 29 air mi NW of Rocksprings, Pasture G, Substation No. 14, ca. 2400 ft, 27 May 1943, *V.L. Cory 41784* (holotype: GH; isotypes: NY, TEX).

For the species, Figures 4-11.

Johnston (1962) distinguished var. *edwardsiana* by the contrast below, noting that "the merits of maintaining the two will have to be the subject of further studies, and pending these I am simply following Cory." He later (1970) continued to recognized both varieties.

a. Leaf blade 1–2.5 times as long as broad var. **hookeri**
a. Leaf blade 2.5–3 times as long as broad var. **edwardsiana**

Cory made numerous collections of var. *edwardsiana* besides the type at the Edwards County locality, noting that the morph was "known only from an isolated thicket" and that there was "one thicket only of this plant."

22 Aug 1940 *35245* (GH-6 sheets), and *35243*, *35244*, *25246* (as cited by Johnston 1962)
27 May 1943 *41873* (NY), *41874* (GH, NY,TEX — the type collection)
12 Jul 1943 *42710* (GH), *42708* (TAES, TEX), *42709* (TEX)
11 Sep 1943 *43269* (GH, TEX)
25 May 1944 *44339* (SMU), 44343 (TEX)
8 Sep 1944 *45540* (SMU)

Leaves at the type locality are consistently narrow (Figs. 7-9) but variation toward typical *Condalia hookeri* morphology exists within the single population, as shown in Cory's own collections. Collections from other localities show narrow leaves similar to "edwardsiana" (Dimmit Co., Texas–Fig 10; Reynosa, Mexico–Fig. 11), and similar variability occurs within other species (e.g., *C. correllii*, *C. warnockii*). *Condalia hookeri* is treated here as a single entity.

8. CONDALIA KEARNEYANA (M.C. Johnston) Nesom, **comb. et stat. nov.** *Condalia warnockii* var. *kearneyana* M.C. Johnston, Brittonia 14: 354. 1962. **TYPE**: **USA**. **Arizona**. Pima Co.: Foothills of the Santa Catalina Mountains, 27 Jul 1881, *C.G. Pringle s.n.* (holotype: GH; isotypes: A, CM, F, G-2 sheets, P, US, VT). For the species, Figures 39–44.

This entity has previously been regarded as part of *Condalia warnockii* — the rationale for this has been unstated (e.g., Johnston 1962; Fernández Nava et al. 2006; Christie et al. 2013). The two species are allopatric, however, and consistent differences in morphology support recognition of "kearneyana" at specific rank.

Collections of *Condalia globosa* in Arizona are sometimes confused with *C. kearneyana* — in *C. globosa*, branches tend to be straighter and longer and with longer internodes and short but prominent short shoots. And if flowers or fruits are evident, the much long pedicels of *C. globosa* are diagnostic.

9. CONDALIA MEXICANA Schlecht., Linnaea 15: 471. 1841. **LECTOTYPE** (Standley 1923): **MEXICO**. **Hidalgo**. [Mpio. Zimapán]: Prope Zimapán, 30 Jun 1830, *C.J.W. Schiede s.n.* (HAL). Schlechtendahl cited two collections — the one by Schiede noted by Standley as the "type," regarded here as the lectotype. The other collection is the same species: **Hidalgo**. Barranca de Acholoya, Sep 1837, *C. Ehrenberg 820* (HAL). For the species, Figures 65–73.

Collections from the northern range. **Nuevo León**. Mpio. Mier y Noriega: 4 km E de El Fraile (S de Nuevo Leon en los limites con SLP), arbusto con abundante fruto, matorral xerófito crasicaule con *Agave lecheguilla*, *Hechtia*, *Prosopis*, manchones de *Larrea* y en algunas laderas *Helietta parvifolia*, alterada por el ganado caprino, 19 May 1982, *Sánchez Silva 17* (MEXU) and *Sánchez Silva 19* (MEXU). **Tamaulipas.** Mpio. Bustamante: 3 km al W de Bustamante, encinar achaparrado, 2000 m, 28 May 1976, *González Medrano 9230* (MEXU). Mpio. Palmillas: Las Huertas, 10 km NE de Palmillas, arbusto de 90 cm, matorral alto subinerme, 1590 m, 13 Jul 1984, *Hiriart et al. 254* (MEXU); 3 km W de Nahola de Sta. Ana, arbusto, matorral alto subinerme, 1500 m, 30 Jun 1985, *Hiriart 743* (MEXU-2 sheets). Mpio. Tula: 32 km SW de Tula, cerca del limite de estados (SLP y Tamps.), arbusto de 3 m, matorral alto espinoso, *Yucca*, muy pastoreados por caprinos, profundo arcilloso gris-pardo, 1900 m, 9 Aug 1972, *González Medrano 4359* (MEXU-2 sheets); 5-6 km SW del Capulín, arbusto 1.5 m, matorral alto subinerme primario, 10 Aug 1972, *González Medrano et al. 4470* (MEXU); 2 km al N de La Verdolaga, cerca de Las Antonias, crasirosulifolios espinosos, 1300 m, 12 Aug 1972, *González Medrano 4604* (MEXU); 8 km E de Alvaro Obregón y unos 20 km al N de Tula, arbusto 50 cm, chaparral, 11 Jul 1983, *González Medrano et al. 13235* (MEXU); 11 mi S of Palmillas on road to Tula, transition between lower piedmont shrub and desert shrub, dry western slopes, large shrubs, fruit oblong, 18 Sep 1960, *M.C. Johnston 5624* (MEXU, TEX) and *5625* (MEXU). Mpio Tula: Cerca del limite de Tamps con SLP, arbusto 80 km, en valles, 1900 m, G.M. 4348 (MO).

10. CONDALIA MIRANDANA M.C. Johnston, Brittonia 14: 361. 1962. **TYPE**: **MEXICO**. **Tamaulipas**. [Mpio. Aldama]: 13 mi N of Aldama on road to Soto la Marina, dense brush on creek terrace, 25 Sep 1960, *M.C. Johnston 5710* (holotype: TEX; isotype: MEXU). Figure 3.

A distinct species, recognized by its large, elliptic leaves and Tamaulipan geography.

11. CONDALIA PETALIFERA (M.C. Johnston) Nesom, **comb. et stat. nov.** *Condalia mexicana* var. *petalifera* M.C. Johnston, Madroño 17: 280. 1964. **TYPE**: **MEXICO**. **Zacatecas**. [Mpio. Valparaíso]: Road to Huejuquilla el Alto, Jalisco, 1 mi W of road-jct 18 mi S of Valparaíso on road to Mezquitic, 22° 38' N, 103° 48' W, one plant near summit of pass, treelike with drooping branches, 6 m high, trunk 20 cm diam, stream valley and nearby rocky oak-covered mountainsides, 2100 m, 4-5 Sep 1958, *R. McVaugh 17675* (holotype: MICH). Figures 69 and 70.

Leaves mostly alternate, sometimes fascicled, blades broadly obovate to subrotund, 6–10 mm long, 5–12 mm wide, petiole 0.5–2 mm long, apex usually retuse, surfaces bicolor (darker adaxially).

Additional collection. **Jalisco**. Mpio. Huejuquilla el Alto: Rancho Viejo, 20 km NE de Huejuquilla, bosque de encino, perturbado con *Dodonea*, *Ipomoea*, 1800 m, arbusto de 2-3 m, frecuente, 3 Aug 1990, *Flores M. 1919* (MEXU — and IBUG, IEB, as cited by Fernandez-Nava 2013). Figure 70.

Johnston's protologue noted the similarity of var. *petalifera* to typical *Condalia mexicana*, but the tendency for an aboreal habit, broader leaves, longer petioles, presence of minute petals, and the long-disjunct locality in a different habitat provide a rationale for treating it at specific rank. He noted that *Palmer 608* from Durango might be the same species, but that collection is identified here as the type collection of *Condalia suchilensis*.

a. Trees or shrubs 2–6 m high; leaf blades broadly obovate to subrotund, 5–12 mm wide; petals present ..... **Condalia petalifera**
a. Shrubs 1–3 m high; leaf blades obovate to elliptic-obovate, (1.5–)3–4(–6) mm wide; petals absent ..... **Condalia mexicana**

12. CONDALIA SONORAE Henrickson, Lundellia 6: 141. 2003. **TYPE**: **MEXICO**. **Sonora**. [Mpio. Cucurpe]: 7 mi W of [Rancho] Agua Fria, 30° 22' N, 110° 38' W, shrub 2 m, desert scrub with *Coursetia glandulosa*, *Fouquieria macdougalii*, saguaro, et al. on steep slopes, ca. 3000 ft, 21 Mar 1976, *G.L. Webster 21456* (holotype: TEX; isotypes: DAV, MEXU, MO). Figure 32 (holotype).

In segregating *Condalia sonorae* from *C. correllii*, Henrickson (2003) noted their morphological and geographic distinction. They appear to be partially sympatric in Sonora, and it is not clear that they are each other's closest relative.

a. Leaves bicolor (darker adaxially), sparsely to moderately hirtellous on both surfaces, lateral veins not thickened and raised; flowers with petals ..... **Condalia sonorae**
a. Leaves green on both surfaces, abaxially glabrous, lateral veins thickened and raised; flowers apetalous ..... **Condalia correllii**

The collection from **Chihuahua**: [Mpio. Batopilas]: Ca. 3.5 mi N of La Bufa on the road to Creel, 1/3-1/2 way up S-facing slope, 7 Jul 1969, *Soule 616* (MO).

13. CONDALIA SPATHULATA A. Gray, Pl. Wright. 1 (Smithson. Contr. Knowl. 3, 5): 32. 1852. **LECTOTYPE** (Johnston 1962): **USA**. **Texas**. Original label: Oct 1849, *C. Wright 88a* (GH; isolectotypes: K, NY, UC, US). Field #661: "9 July, prairies on the San Felipe, much branched shrub 3-5 ft high, fl. greenish-white." The collection was made in Val Verde County.

Leaves of *Condalia spathulata* are 4–12(–14) mm long, 1.5–3 mm wide, glabrous and often wrinkled when dry. The arching lateral veins are raised, broad and thickened, with the "whole undersurface appearing as if molded in wax" (Johnston 1962).

14. CONDALIA SUCHILENSIS Nesom, **sp. nov.** **TYPE**: **MEXICO**. **Durango**. Mpio. Durango: City of Durango and vicinity, Apr-Nov 1896, *E. Palmer 608* (holotype: US: isotypes [as cited by Johnston 1962]: F, GH, MO, UC). Figure 76 (holotype); for the species, Figures 76–79.

Similar to *Condalia mexicana* in its small, fascicled leaves with bicolor surfaces, subsessile flowers and fruits, and prolate drupes; different in its narrower (2–3.5 mm vs. 3–4(–6) mm), oblanceolate leaves (vs. elliptic to broadly obovave) and disjunct western geography.

Shrubs, intricately branched, short shoots slightly elongate, with numerous, short thorns and thorn-tipped branches, youngest stems sparsely hispidulous. **Leaves** congested, alternate or mostly in

fascicles from short shoots, pastel or silvery green, often brownish and darker adaxially, both surfaces micro-wrinkled, blades oblanceolate to narrowly obovate, 5–9 mm long, 2–3.5 mm wide, apex acute to obtuse or sometimes slightly apiculate, base attenuate to a petiole 0.5–1 mm long, margins entire, venation visible only along the midvein of both surfaces, margins and abaxial surface sparsely hirtellous. **Flowers** solitary, axillary, subsessile; hypanthium and calyx persistently villous; petals absent. **Fruit** oblong-ovoid, 5–6 mm long, 2–3.5 mm wide, black at maturity.

Additional collections. **Durango**. Mpio. Nombre de Dios: ca. 4 km W de La Parrilla, arbusto escaso, matorral de *Juniperus* con *Rhus*, *Prosopis*, y *Condalia* en las partes bajas, ca. 2050 m, 25 Oct 1983, *S. González 2753* (MEXU, TEX); camino Guadiana-Tuitán, pastizal mediano, arbo sufrutescente, 1840 m, Jul 1993, *Martínez M. 492* (MEXU). Mpio. Súchil: Sierra de Michis, Cienega de La Taza, Cerro Blanco, 52 km [32 mi] SW of Cd. Vicente Guerrero, pino-encino, 2420 m, 28 Sep 1975, *Maury Hernandez. et al. 63* (MEXU). **Zacatecas**. Mpio. Jimenez del Teul: 2 km SE de la ciudad de Jimenez del Teul, por la terraceria a Milpillas de la Sierra, 23° 14' 54" N, 103° 46' 48" W, arbusto 1.5 m, bosque de *Juniperus* con *Quercus*, *Acacia*, *Agave*, *Dasylirion*, *Arctostaphylus*, *Yucca*, 2155 m, 25 Sep 2003, *Balleza C. 17130* (MEXU).

15. CONDALIA VELUTINA I.M. Johnston, J. Arnold Arb. 20: 236. 1939. *Condaliopsis velutina* (I.M. Johnston) Suesseng., Nat. Pflanzenfam. ed. 2, 20d: 135. 1953. **TYPE**: **MEXICO**. **Guanajuato**. [Mpio. Guanajuato]: Ville de Guanajuato, Campo Santo de San Sebastián, Dec 1897, *A.A.D. Duges s.n* (holotype: GH). For the species, Figures 61–64.

Fernández-Nava (1983) noted that few collections had existed of this species and added a number of relatively new ones from ENCB. More have accumulated since 1983, but the overall range remains similar to that mapped by Fernández-Nava. It is similar to *Condalia mexicana* in leaf morphology (slightly larger in *C. velutina* — 7–19 mm long, 5–10 mm wide vs. (4–)7–11 mm long, (1.5–)3–4(–6) mm wide) but the petaliferous flowers and distinctive vestiture of stems and leaves make this an easily identified species.

16. CONDALIA VIRIDIS I.M. Johnston, J. Arnold Arb. 20: 236. 1939. **TYPE**: **MEXICO**. **Coahuila**. [Mpio. Allende]: 1 mi S of Allende, on road from Piedras Negras S to Monclova, shrub 3-5 ft high, under *Acacia* in wash, 23 Aug 1938, *I.M. Johnston 7015* (holotype: GH; isotype: US).

Condalia viridis var. *reedii* Cory, Madroño 9: 129. 1947. **TYPE**: **USA. Texas**. Uvalde Co.: Garner State Park, NE or E brow of hills along the Frio River, 1500-1600 ft, 4 Jun 1944, *V.L. Cory 44496* (holotype: A, as cited in the protologue, not located).

For the species, Figures 19–22.

In Mexico, most of the populations are in Coahuila — outlyers in Chihuahua and Nuevo León are these: **Chihuahua**. Fern Canyon, side canyon of Sta. Elena Canyon of the Rio Grande, S side of the river, ca. 3 mi W of Sta. Elena Picnic Area of Big Bend National Park, Texas, 29° 09' N, 103° 39' W, 24 Nov 1973, *Fryxell & Lott 98* (LL). **Nuevo León**. Near Casa Blanca, 12 Sep 1946, *Barkley 16013* (TEX); N of Bustamante, matorral de *Prosopis*, *Lantana*, *Karwinskia*, *Celtis*, 3 Aug 1975, *M.S. González s.n.* (TEX).

17. CONDALIA WARNOCKII M.C. Johnston, Brittonia 14: 352. 1962. **TYPE**. **USA**. **Texas**. Brewster Co.: Big Bend Natl Park, between Alamo Spring and Burro Spring, infrequent shrub, limestone soil, 2700 ft, 21 May 1955, *B.H. Warnock 12228* (holotype: LL; isotypes as cited in the protologue: SRSC, TAES). For the species, Figures 33–38.

The collection from northeastern Durango is this: Mpio. Hidalgo: 21.5 km NE of Villa Hidalgo on the raod to Buen Día and Ceballos, ca. 7 km E of Cerro Gordo, 26° 20' 20" N, 104° 44' W, limestone gravel hills, matorral con espinas laterales, *Acacia neovernicosa*, *Celtis pallida*, *Condalia*, 1550 m, 1 Nov 1972, *Wendt et al. 10007* (MEXU, TEX).

Johnston (1962) noted that he identified a set of specimens as *Condalia warnockii* "because of their leaf pubescence and venation, but which approach *C. fasciculata* in the indistinctness of the venation and the wrinkling of the lower surfaces of the leaves. The leaves in these four are very small, 2–4(–6) mm long and 0.8–1.5(–2) mm broad: **Coahuila**. 11 km NE of Jimulco, 2100 m, 28 Jun 1941, *Stanford et al. 85* (GH); 3 km SW of Fraile, 2100 m, 11 Jul 1941, *Stanford et al. 333* (DS, GH). **Zacatecas**. Cedros, arroyos, Jul 1908, *Lloyd 153* (US); Cedros, Jun 1907, *Lloyd & Kirkwood 51* (GH). I have identified them as *C. warnockii* — leaves are slightly larger than characteristic for most of the species, but venation of *C. warnockii* differs little if at all from that of *C. fasciculata*.

Johnston also included another Zacatecas collection among these but noted its much larger leaves with hispidulous surfaces: Near Gruñidora, edge of Lagunita de Calzones, 14 Jan 1908, *Lloyd 31* (F, US). This plant is identified here as *C. correllii* (Fig. 29), out of place in *C. warnockii*, where he suggested it might belong.

A collection from northeastern Durango is one of the earliest for *Condalia warnockii*: Valley between Mapimi and Guajoquila, 18 Apr 1847, *Gregg 481* (MO). A collection from southern Chihuahua probably is *Condalia warnockii* (and in its geographical range), but the leaves are glabrous, more like *C. fasciculata*: 5 mi E of Allende turnoff on Hwy 159 from Parral to Camargo, low dense shrub, damp and sandy locations near river on flat, thorn-scrub desert, 5200 ft, 30 Jul 1949, *Freytag & Baxter 66* (MO).

18. CONDALIA ZAMUDIOANA Nesom, **sp. nov. TYPE**: **MEXICO**. **Querétaro**. Mpio. Cadereyta de Montes ["Mpio. Peñamiller" on label]: 1 km SW de Higuerillas, arbusto 1.5 m de alto, abundante, matorral submontano con *Lemaireocereus*, 1400 m, 12 Aug 1989, *S. Zamudio 3703* (MEXU). Figures 57–60.

Identified originally as *Condalia mexicana* but different from that species in its short, needle-like, non-meristematic lateral thorns, longer and narrowly oblanceolate to elliptic-oblanceolate leaves (9–15 mm long, 2–4 mm wide) not in fascicles, prominently pedicellate flowers (pedicels 2–3 mm long) apparently produced only at branch tips, and smaller fruits.

Shrubs ca. 1.5 m high with thorn-tipped branches and numerous, needle-like, non-meristematic lateral thorns 4–8(–12) mm long, seemingly without evident short shoots (leaves not fasciculate). **Leaves** alternate, narrowly oblanceolate to elliptic-oblanceolate, 9–15 mm long, 2–4 mm wide, green on both surfaces, margins entire, venation pinnate with secondary veins not evidently raised. **Flowers** solitary, produced only near young branch tips; pedicels ca. 2–3 mm long; petals absent. **Fruits** globose, ca. 4 mm long (perhaps immature).

The epithet recognizes Dr. Sergio Zamudio, Instituto de Ecología, A.C.–Centro Regional del Bajío and Curator of herbarium IEB. He is a specialist in the taxonomy of *Pinguicula*, *Salvia*, Myrtaceae, Agavaceae, and others and has made significant general collections from many parts of Mexico.

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Condalia zamudioana is known only from the type collection but is easily distinctive in the genus. Higuerillas is about 7 miles south of the southern boundary of the Sierra Gorda Biosphere Reserve of Querétaro (designated in 2001) — this area is home to numerous endemic species of animals and plants, especially xerophyllous shrubs (UNESCO 2018; Rico-Sanchez et al. 2020; Grupo Ecológico Sierra Gorda 2023).

ACKNOWLEDGEMENTS

I'm grateful to herbaria TEX-LL, MO, and PH for hospitality while studying there and to Dave Boufford (GH) for images of critical GH collections cited in Johnston's revision. Much of the distributional data here is derived from study of online images available through the Portal de Datos

Abiertos UNAM (Universidad Nacional Autónoma de Mexico, <https://datosabiertos.unam.mx/>) and USA herbaria via various consortium databases.

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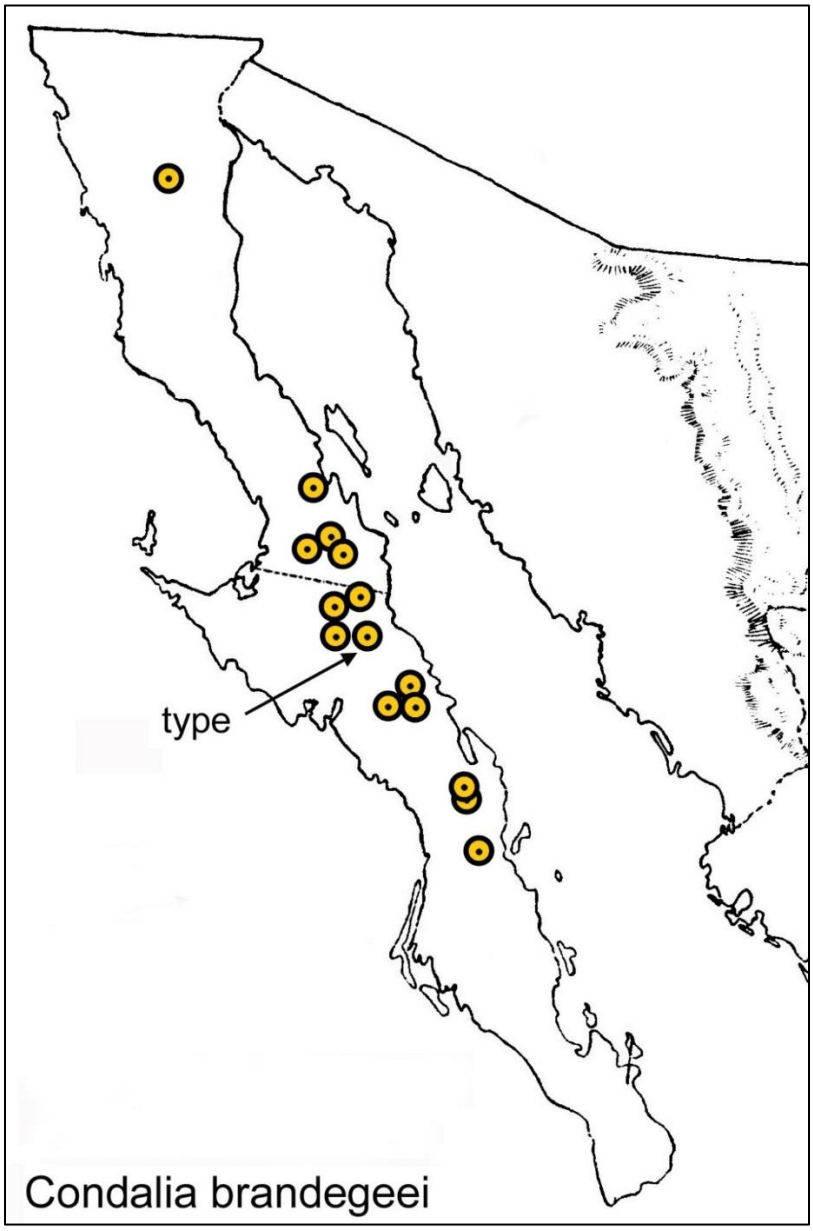
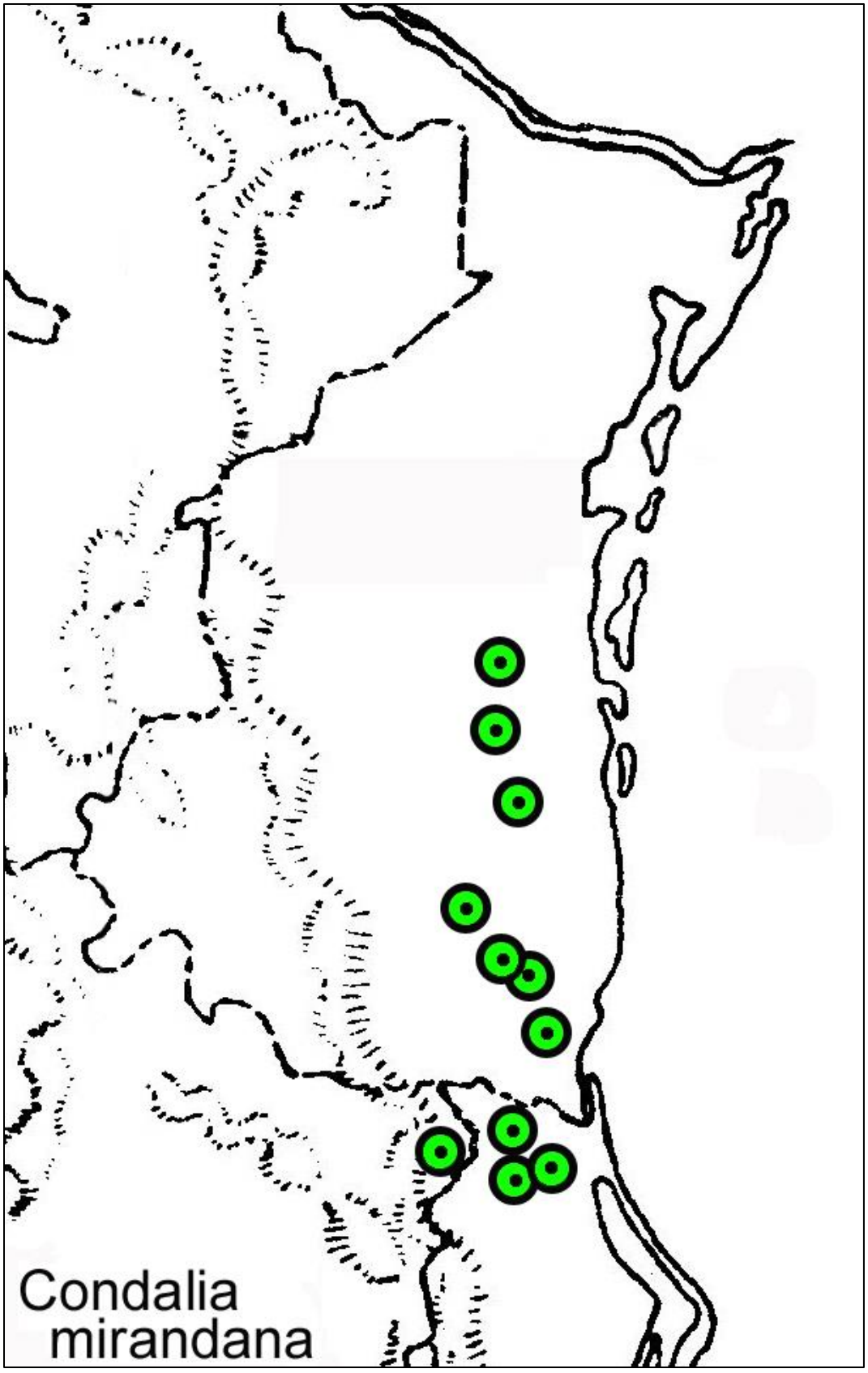
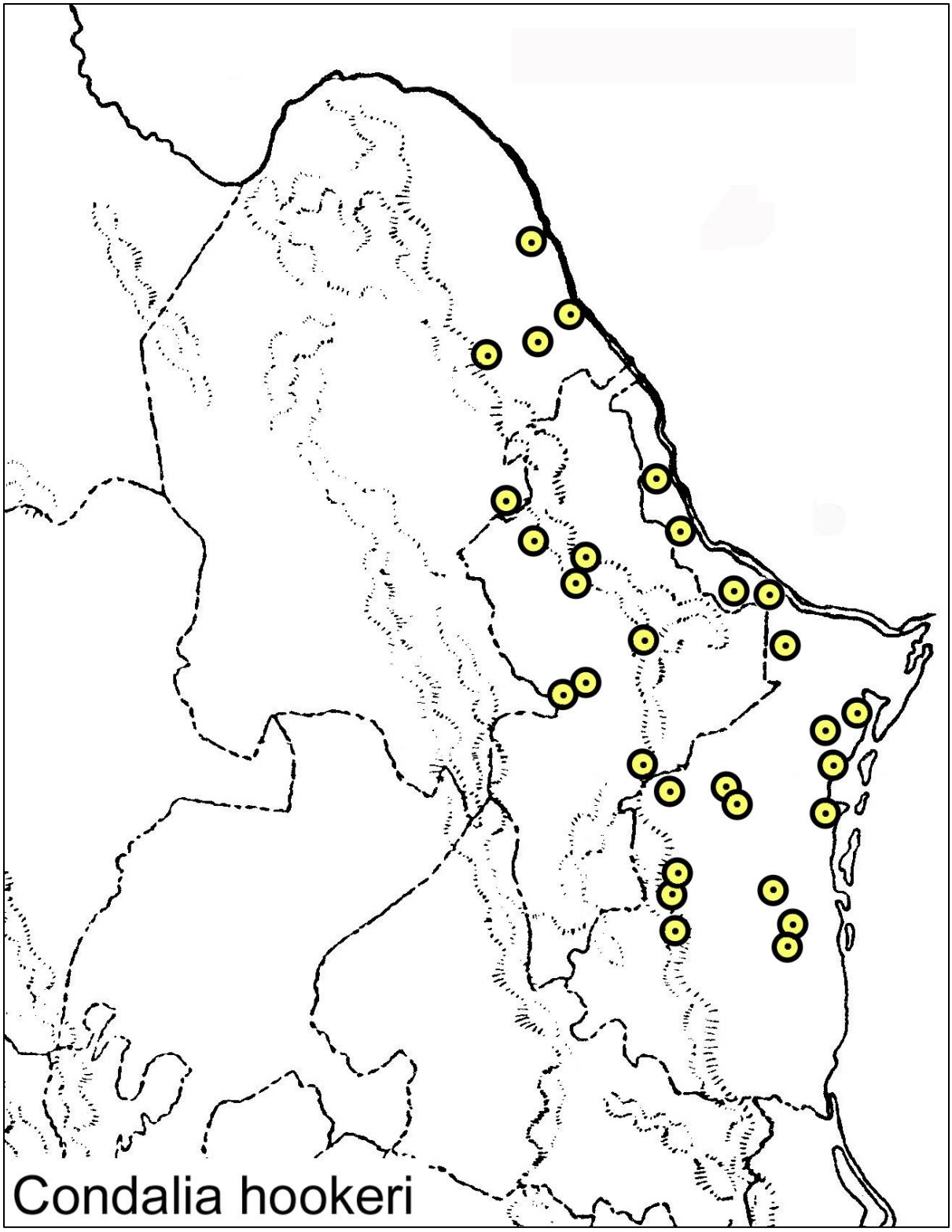


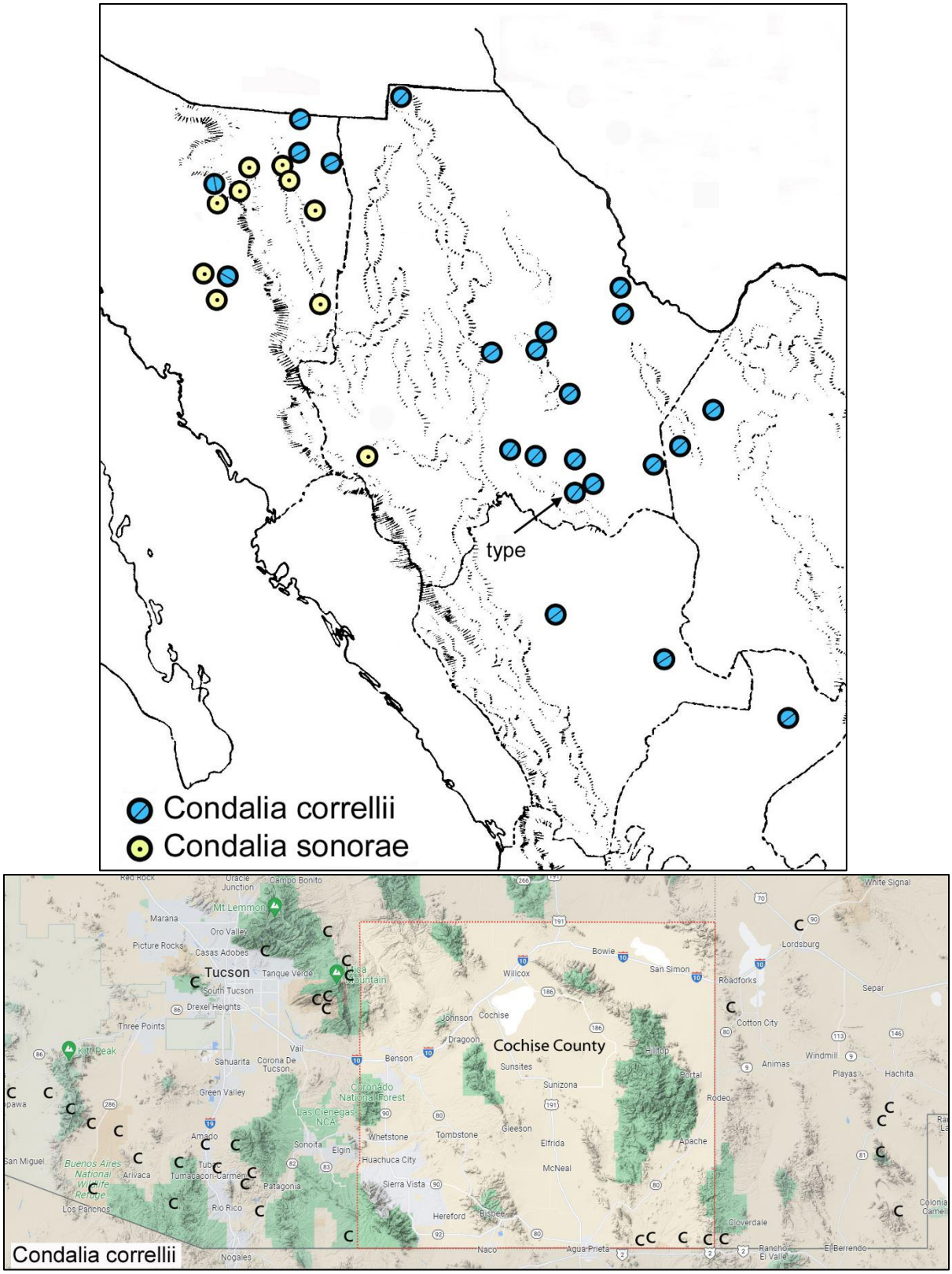
Map 1. Distribution of *Condalia brandegeeii*. Arrow points to the type locality. The northern collection is cited in the text.



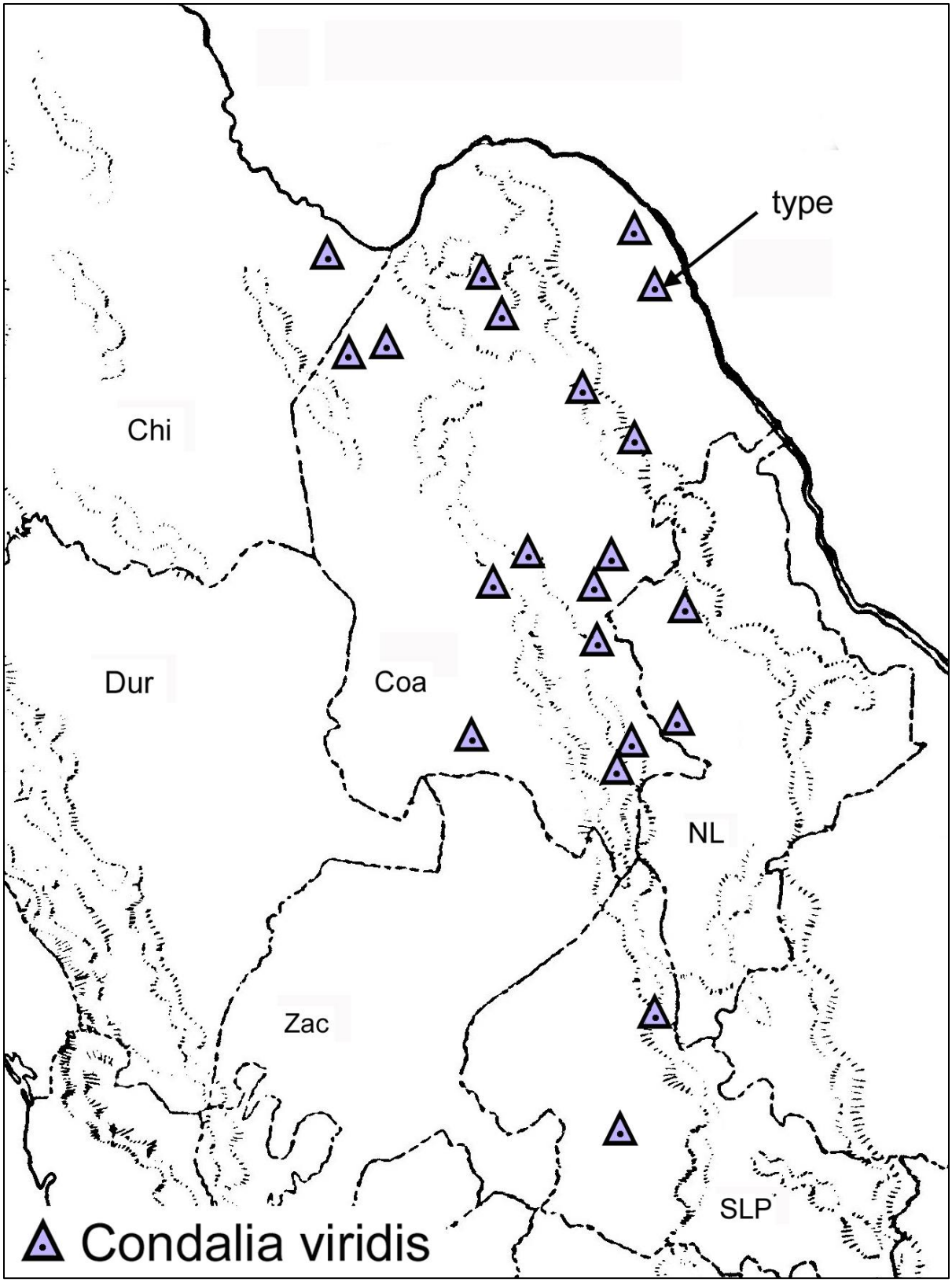
Map 2. Distribution of *Condalia mirandana*.



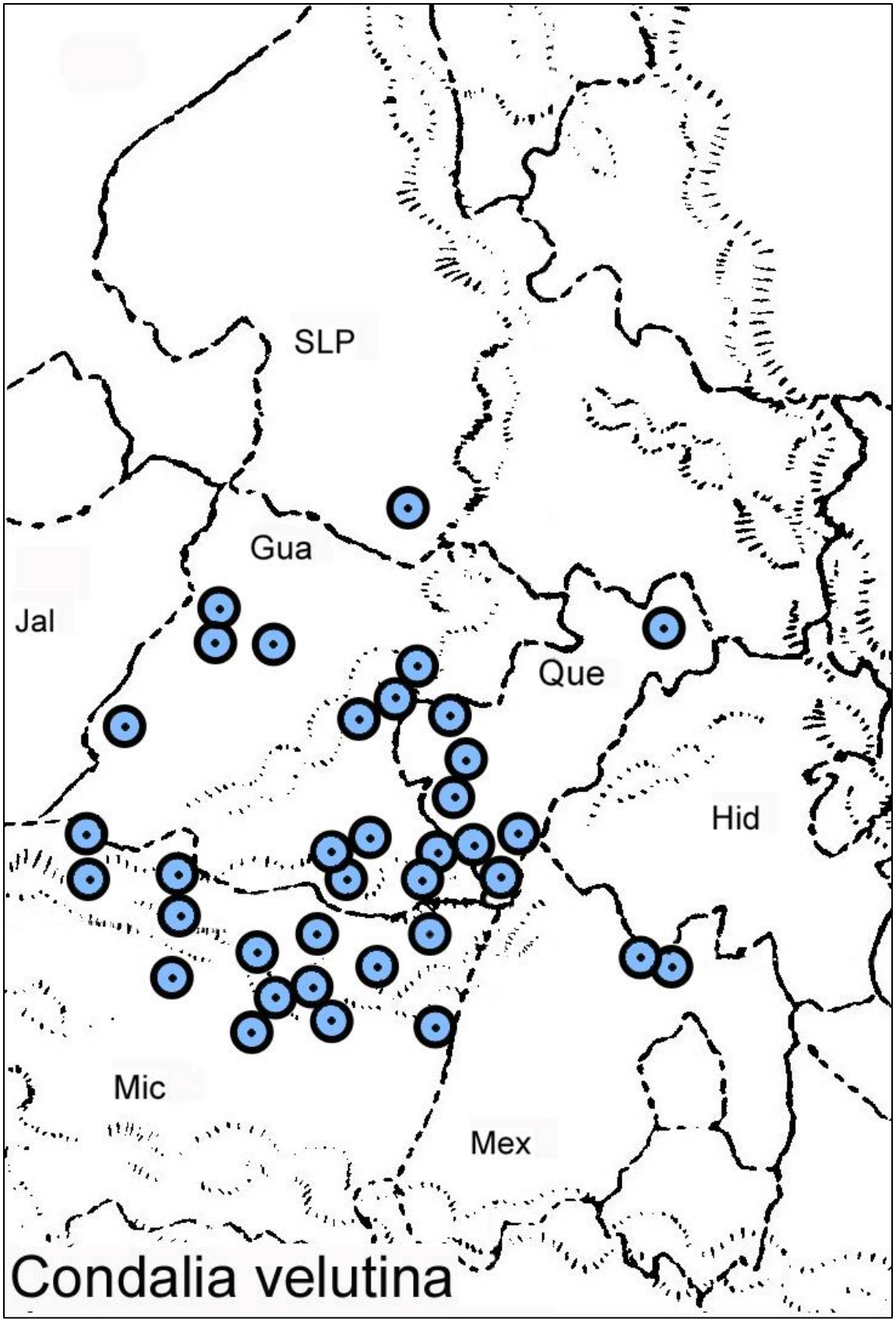
Map 3. Distribution of *Condalia hookeri* in Mexico. The type locality is in Texas.



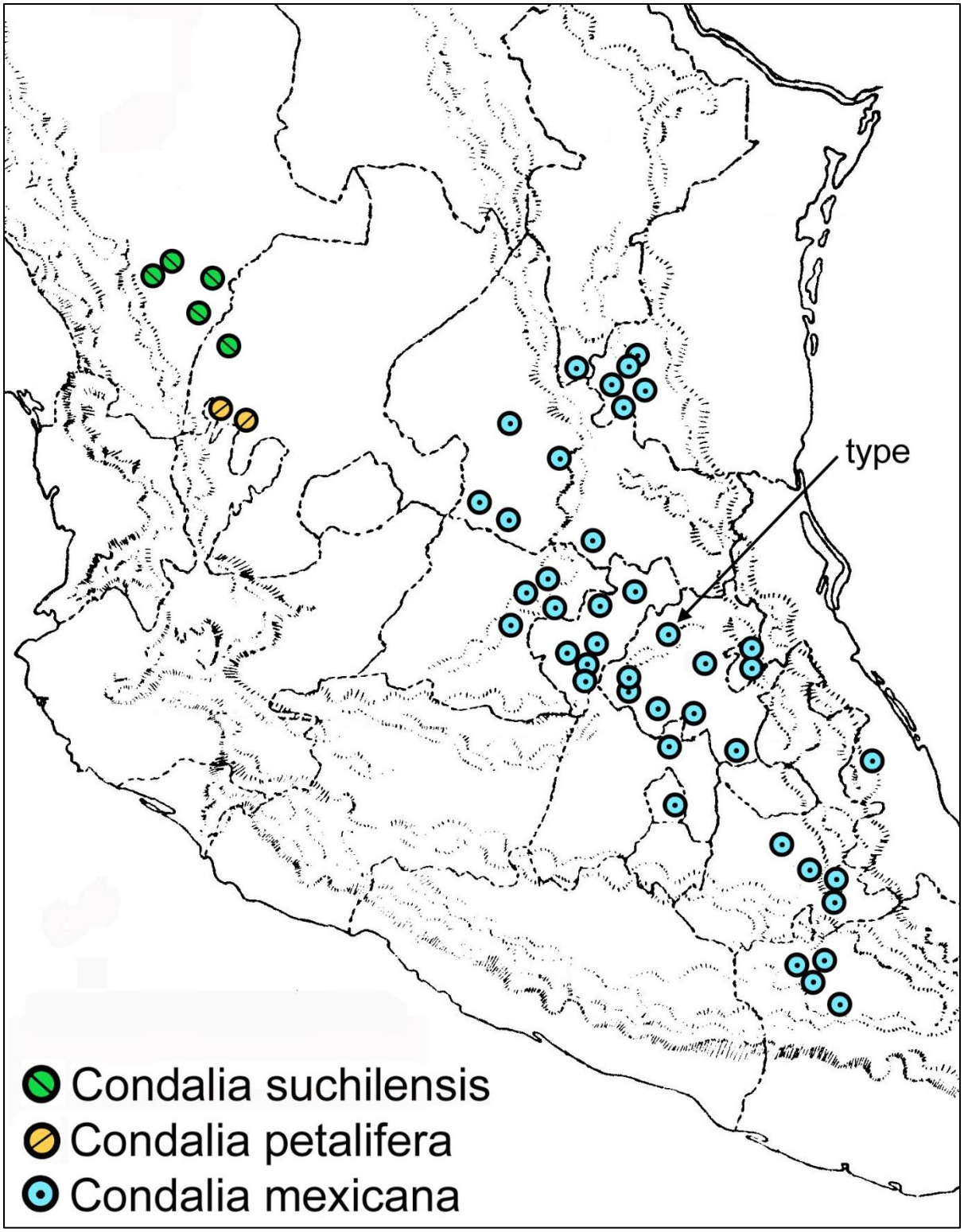
Map 4. Distribution of *Condalia correllii* and *C. sonorae*. The population system of *C. correllii* in Chihuahua and Durango appears to be disjunct from the more northern system in Arizona and New Mexico. Arrow points to the type locality of *C. correllii*.



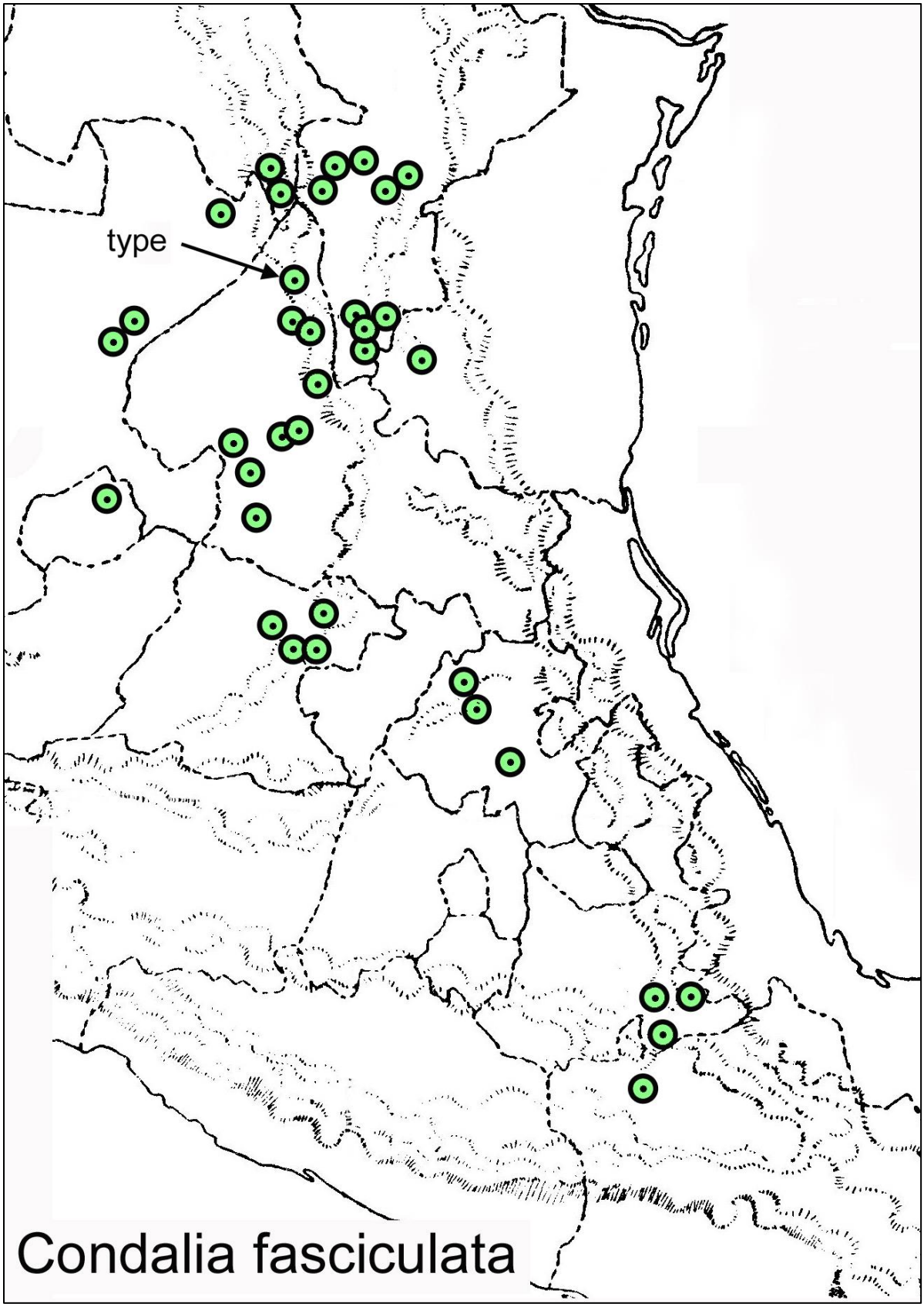
Map 5. Distribution of *Condalia viridis* in Mexico. Arrow points to the type locality.



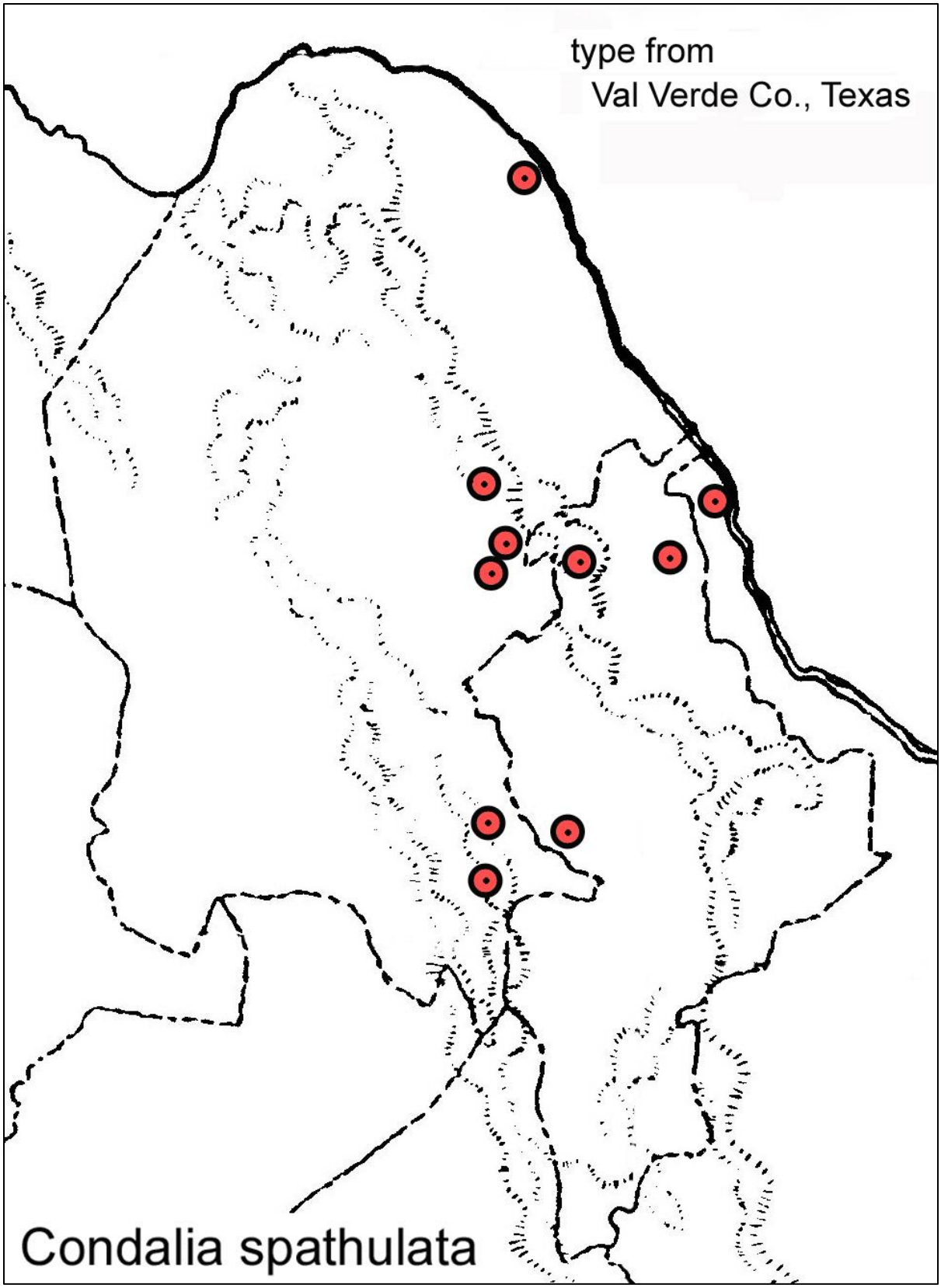
Map 6. Distribution of *Condalia velutina*.



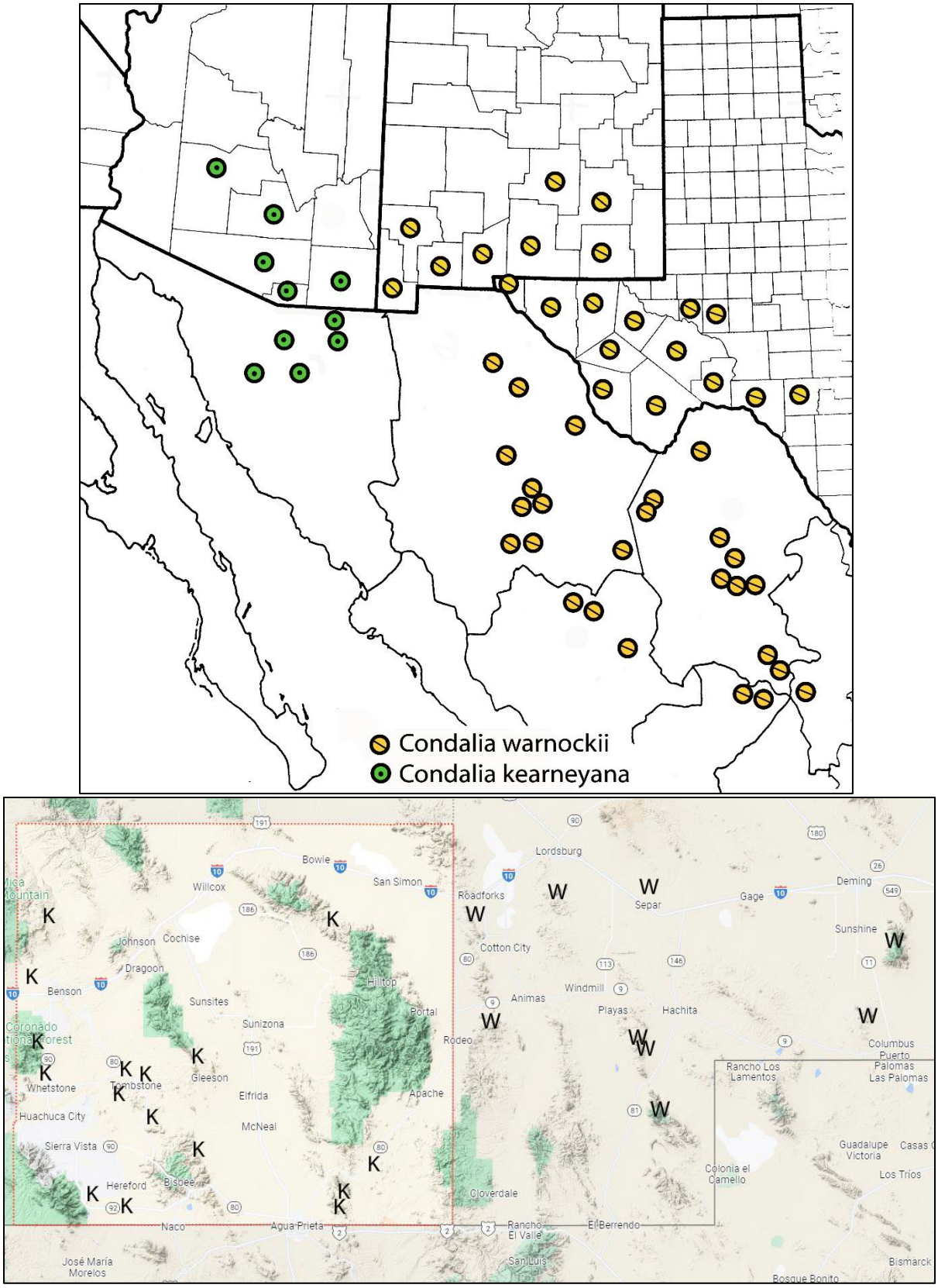
Map 7. Distribution of *Condalia mexicana*, *C. petalifera,* and *C. suchilensis*. Arrow points to the type locality of *C. mexicana*.



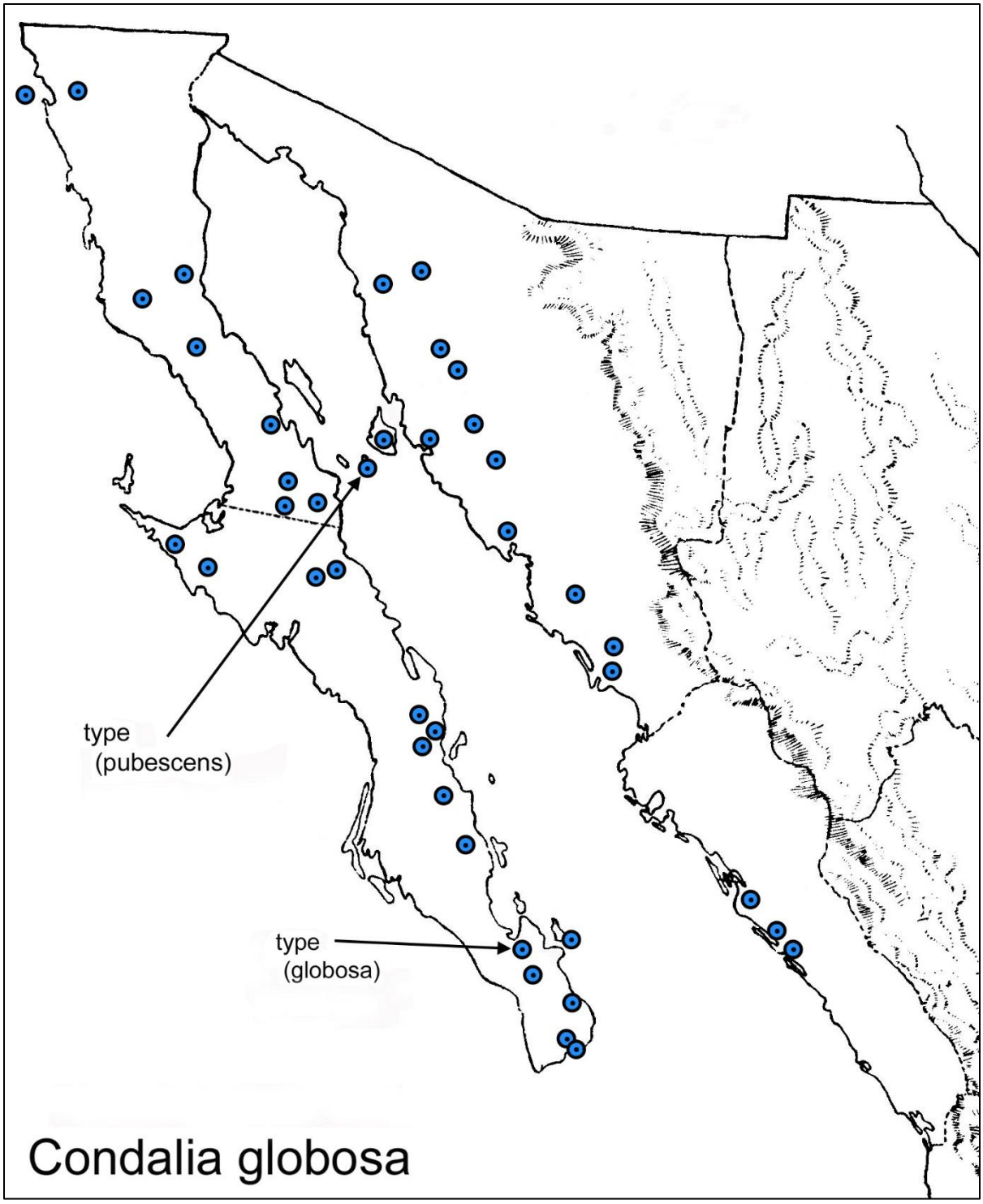
Map 8. Distribution of *Condalia fasciculata*. Collections from Puebla and Oaxaca are cited in the text.



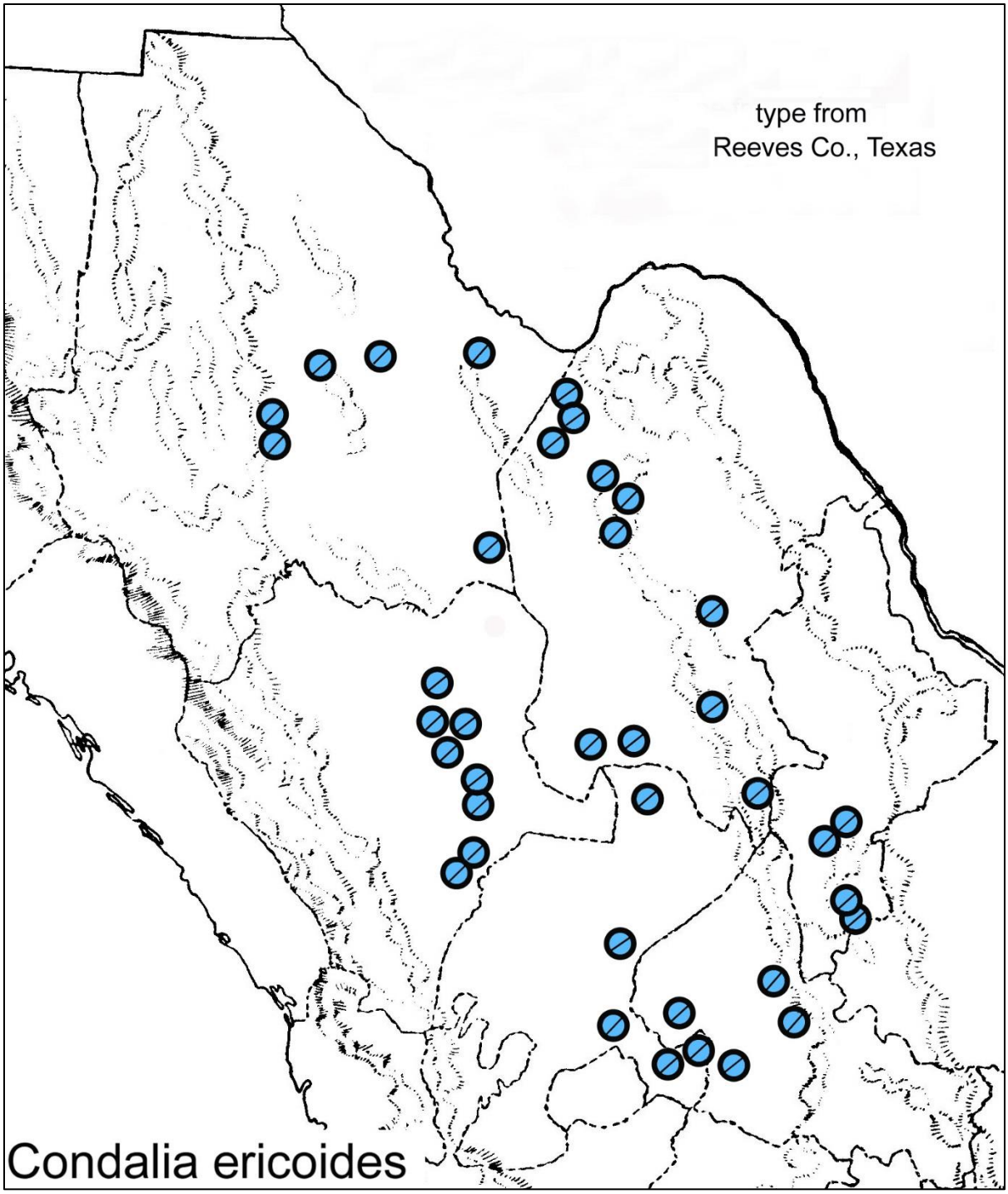
Map 9. Distribution of *Condalia spathulata* in Mexico.



Map 10. Distribution of *Condalia warnockii* and *C. kearneyana*. The Arizona-New Mexico state line might appear to be an artificial border but the two species indeed are distributed that way.



Map 11. Distribution of *Condalia globosa* in Mexico. Arrows point to type localities of typical *C. globosa* and *C. globosa* var. *pubescens*. The species also occurs in California and Arizona.



Map 12. Distribution of *Condalia ericoides* in Mexico. See Map 13 for detailed distribution in Durango, where sympatric with *C. cuencamensis*.

Map 13. Distribution of *Condalia cuencamensis* and *C. suchilensis* — vouchers are cited in the text. Distribution of *C. ericoides* in Durango — see Map 12 for *C. ericoides* in Mexico.

Figure 1. *Condalia brandegeei*. Baja California, *Moran 11734* (SD).

Figure 2. *Condalia brandegeei*. Baja California, *Moran 21561* (SD).

Figure 3. *Condalia mirandana*. Tamaulipas, *Johnston 5710* (TEX, holotype).

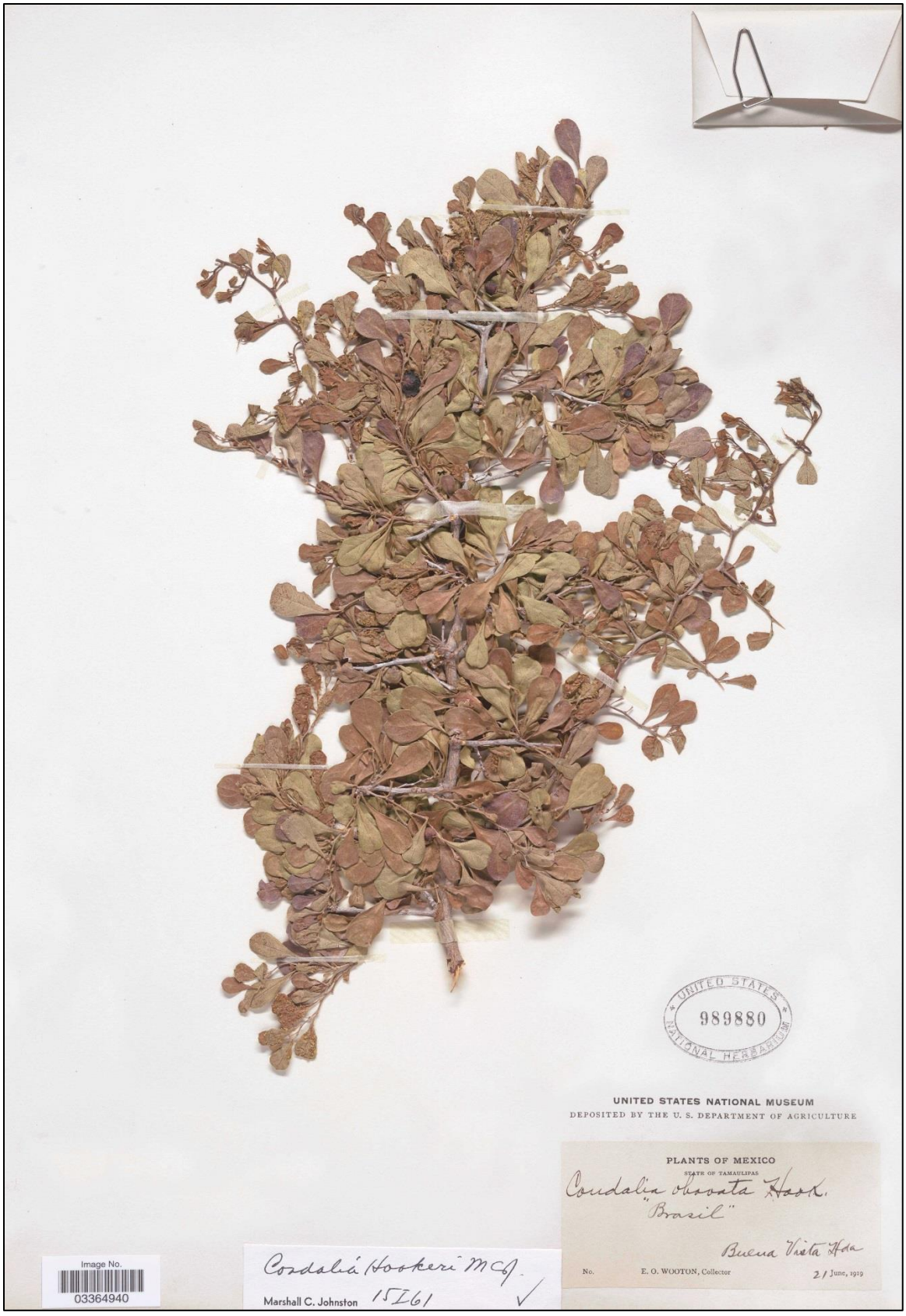


Figure 4. *Condalia hookeri*. Tamaulipas, *Wooton s.n.* (US).

Figure 5. *Condalia hookeri*. Tamaulipas, detail from *Palmer 223* (US).

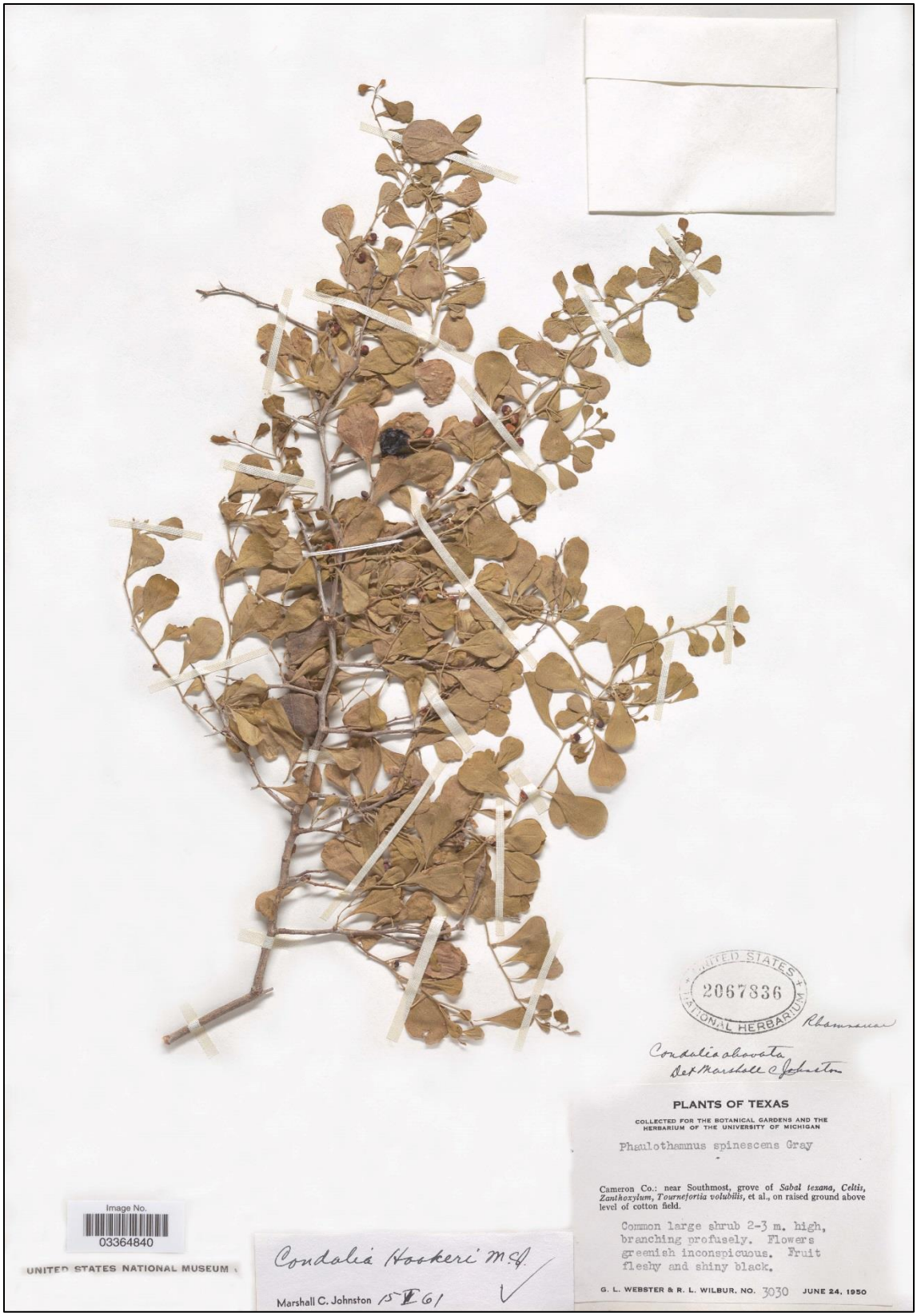


Figure 6. *Condalia hookeri*. Cameron Co., Texas, *Webster & Wilbur 3030* (US).

Figure 7. *Condalia hookeri*. Cameron Co., Texas, type locality of *C. hookeri* var. *edwardsensis*, *Cory 35245* (GH).

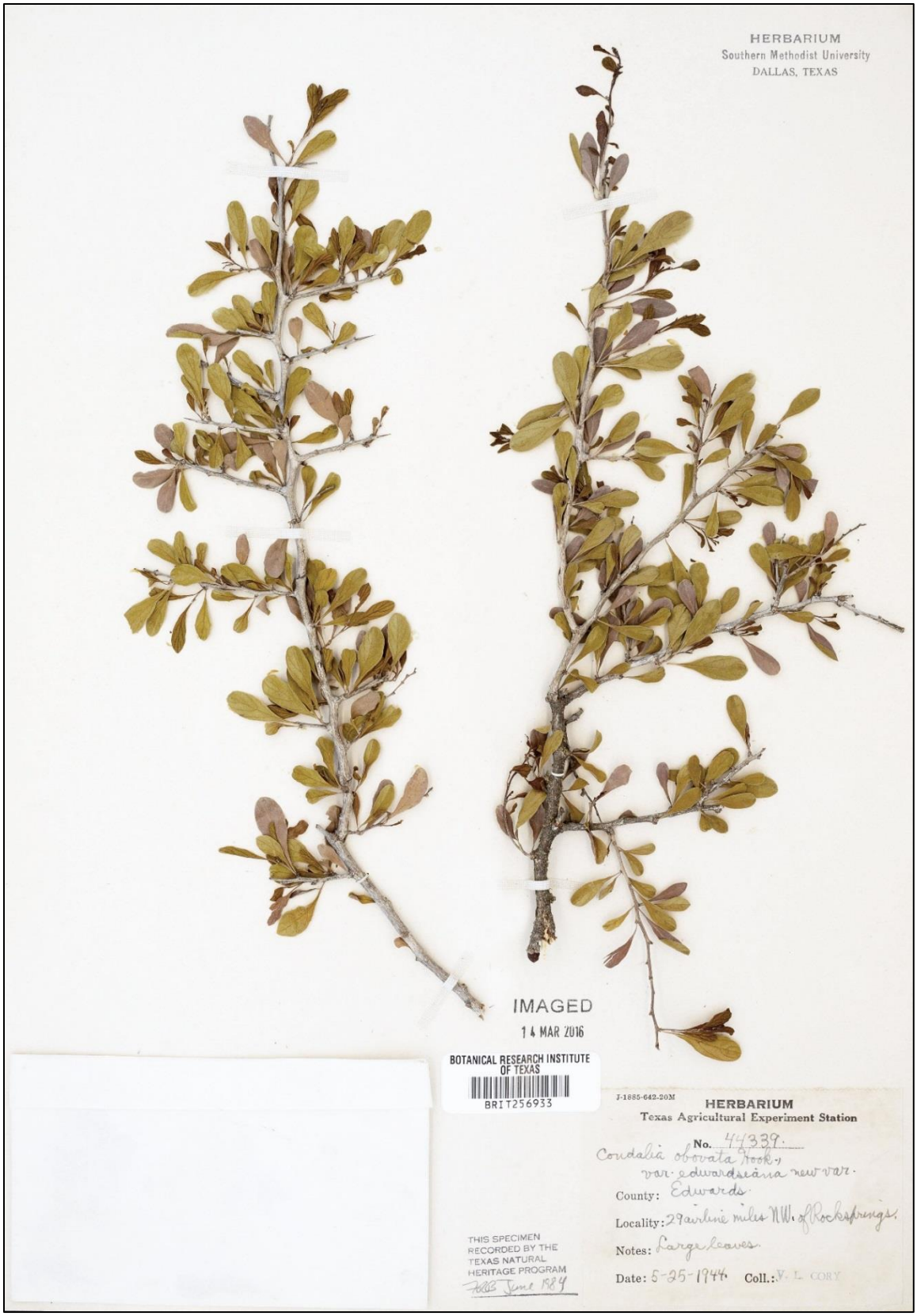


Figure 8. *Condalia hookeri*. Cameron Co., Texas, Cameron Co., type locality of *C. hookeri* var. *edwardsensis*, *Cory 44339* (SMU).

Figure 9. *Condalia hookeri*. Cameron Co., Texas, type locality of *C. hookeri* var. *edwardsensis*, *Cory 43269* (TEX).

Figure 10. *Condalia hookeri*. Dimmit Co., Texas, *Cory 43805* (GH).

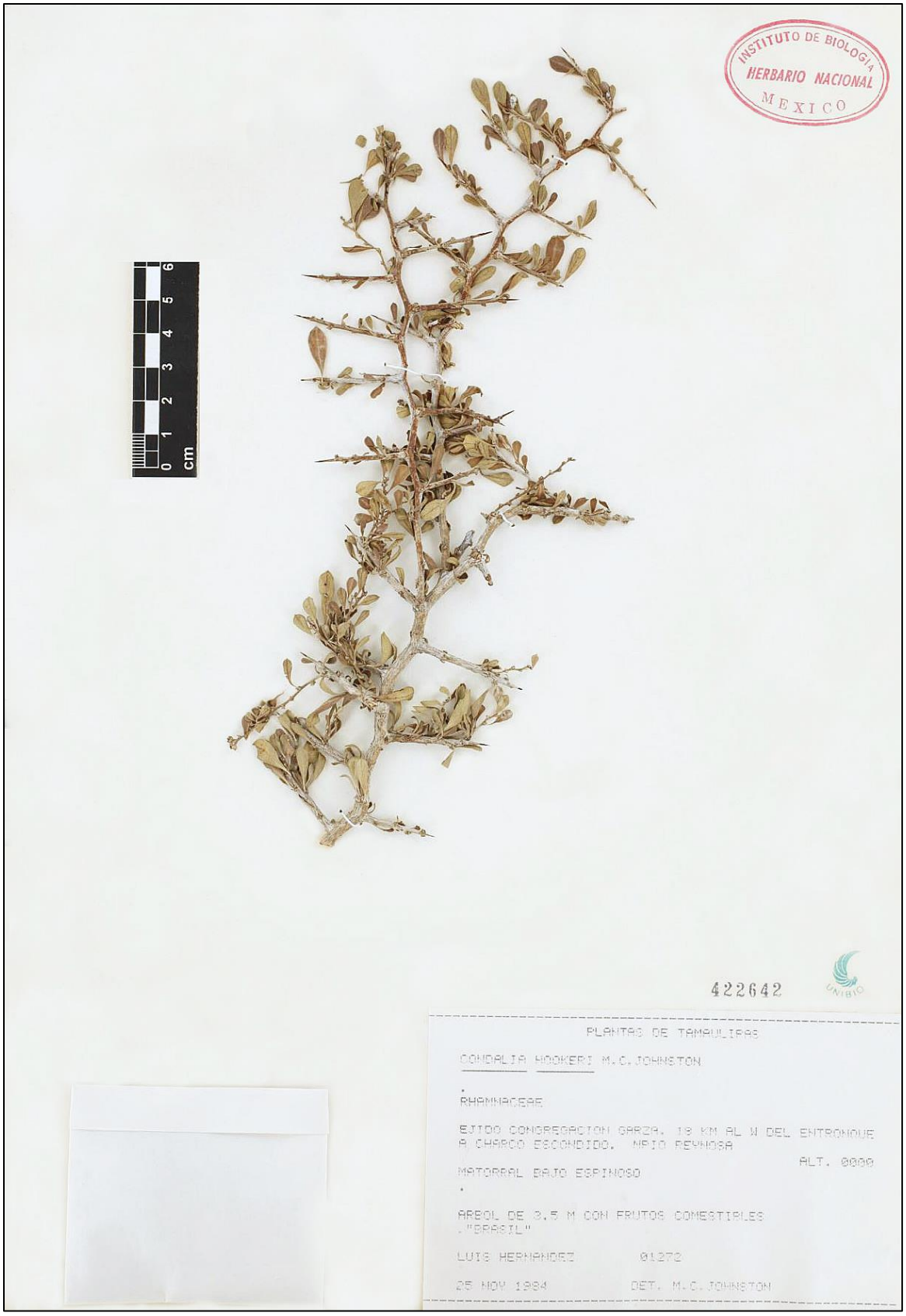


Figure 11. *Condalia hookeri*. Mpio. Reynosa, Tamaulipas, *Hernandez 1272* (MEXU).

Figure 12. *Condaliopsis lloydii*. Zacatecas, *Engard 700* (ASU). This species, with its solitary flowers and fruit, is sometimes mistaken for *Condalia*, but compare the leaf venation (Fig. 13) with that of *C. hookeri* (Fig. 5).

Figure 13. *Condaliopsis lloydii*. Detail from Figure 12. Lateral veins emerging from the blade base and much elongated short shoots are not characteristic features of *Condalia*.

Figure 14. *Condalia globosa*. Sonora, *Felger 12360* (ASU).

Figure 15. *Condalia globosa*. Maricopa Co., Arizona, *Landrum 9422* (SD).

Figure 16. *Condalia globosa*. Baja California, *Johnson 86-75* (ASC). Detail.

Figure 17. *Condalia globosa*. Baja California, detail from *Rebman 17203* (SD).

Figure 18 . *Condalia globosa*. Details. Upper: *Rebman 110279* (SD) Lower: *Johnson 101-75* (ASC).

Figure 19. *Condalia viridis*. Coahuila, *Shreve 6406* (US).

Figure 20. *Condalia viridis*. Castanos, Coahuila, *M. González 2698-a* (MEXU).

Figure 21. *Condalia viridis*. Monclova, Coahuila, *Henrickson 11735* (MEXU).

Figure 22. *Condalia viridis*. Saltillo, Coahuila, *Palmer 111* (US).

Figure 23. *Condalia correllii*. Cochise Co., Arizona, *Johnson 61-75* (ASC).

Figure 24. *Condalia correllii*. Pima Co., Arizona, *Hodgson H-208* (DES).

Figure 25. *Condalia correllii*. Cochise Co., Arizona, *Christie 298* (DES).

Figure 26. *Condalia correllii*. Cochise Co., Arizona, *Thorne 59295* (ASU).

Figure 27. *Condalia correllii*. Cochise Co., Arizona, *Thorne 59295* (DES). Fruits here are prolate, but globose fruits also occur in the species — also see Fig. 26. Johnston (1962, p. 353, suggested that such a difference might be developmental in *C. warnockii/kearneyana*.

Figure 28. *Condalia correllii*. Sonora, *Gentry & McClure 23437* (US). This is the southwesternmost locality mapped here for the species. The fruits apparently are globose and relatively small, which is atypical for *C. correllii* but characteristic of *C. sonorae*. Leaf morphology is typical for *C. correllii*.

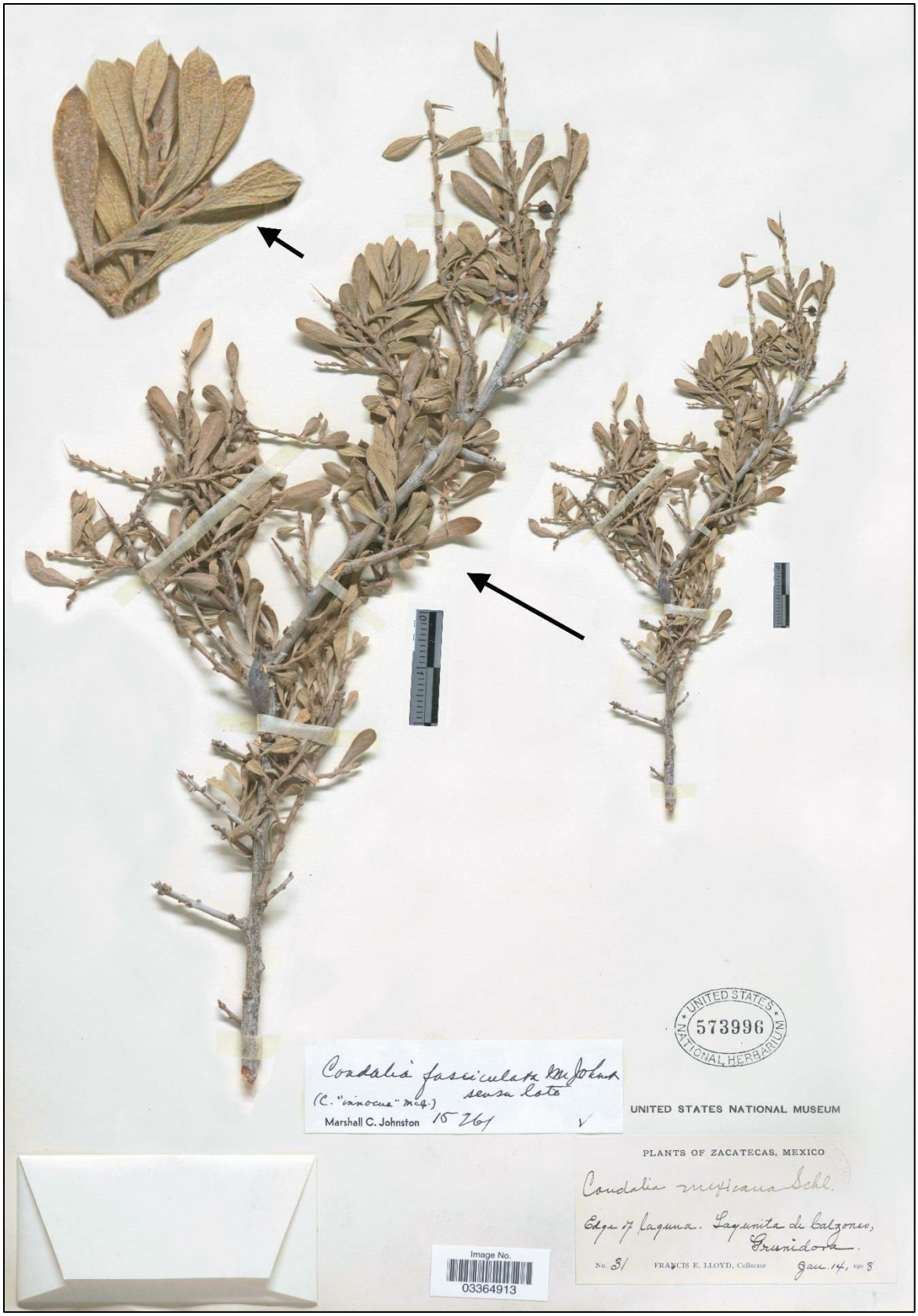


Figure 29. *Condalia correllii*. Gruñidora, Zacatecas, *Lloyd 31* (US).

Figure 30. *Condalia correllii*. Zacatecas, *Johnston et al. 11589* (MEXU).

Figure 31. *Condalia correllii*. Zacatecas, *Johnston et al. 11589* (MEXU). Detail from Fig 30.

Figure 32. *Condalia sonorae*. Sonora, *Webster 21456* (TEX, holotype).

Figure 33. *Condalia warnockii*. Chihuahua, *Johnston & Mueller 91* (USF).

Figure 34. *Condalia warnockii*. Brewster Co., Texas, *Bacon 410* (UTEP).

Figure 35. *Condalia warnockii*. Presidio Co., Texas, *Lott 4738* (TEX).

Figure 36. *Condalia warnockii*. Luna Co., New Mexico, *Castetter 7388* (UNM).

Figure 37. *Condalia warnockii*. Chihuahua, *Henrickson 5866c* (MEXU).

Figure 38. *Condalia warnockii*. Durango, *Wendt et al. 10007* (MEXU).

Figure 39. *Condalia kearneyana*. Pima Co., Arizona, *Christie 288* (ASC).

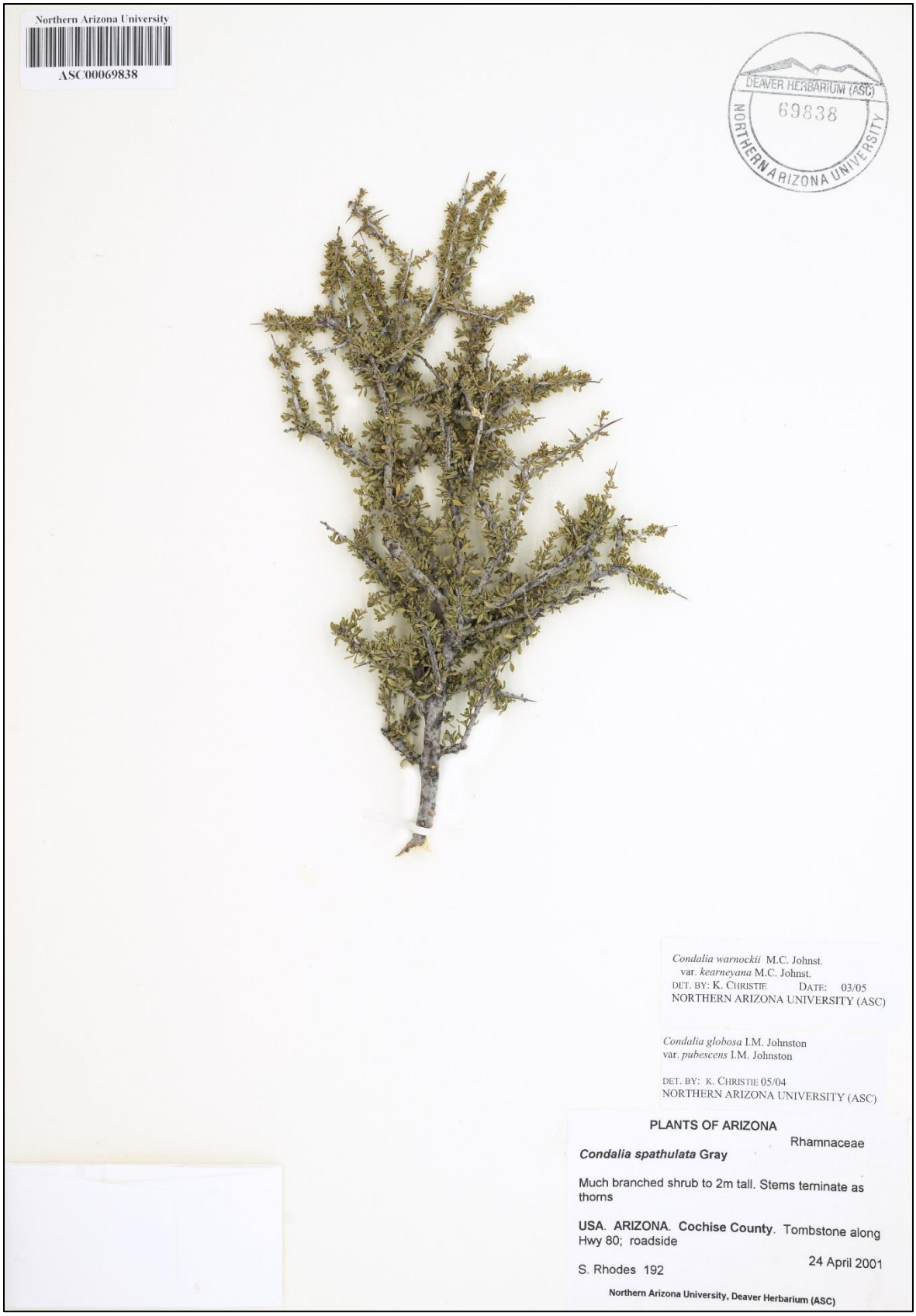


Figure 40. *Condalia kearneyana*. Pima Co., Arizona, *Rhodes 192* (ASC).

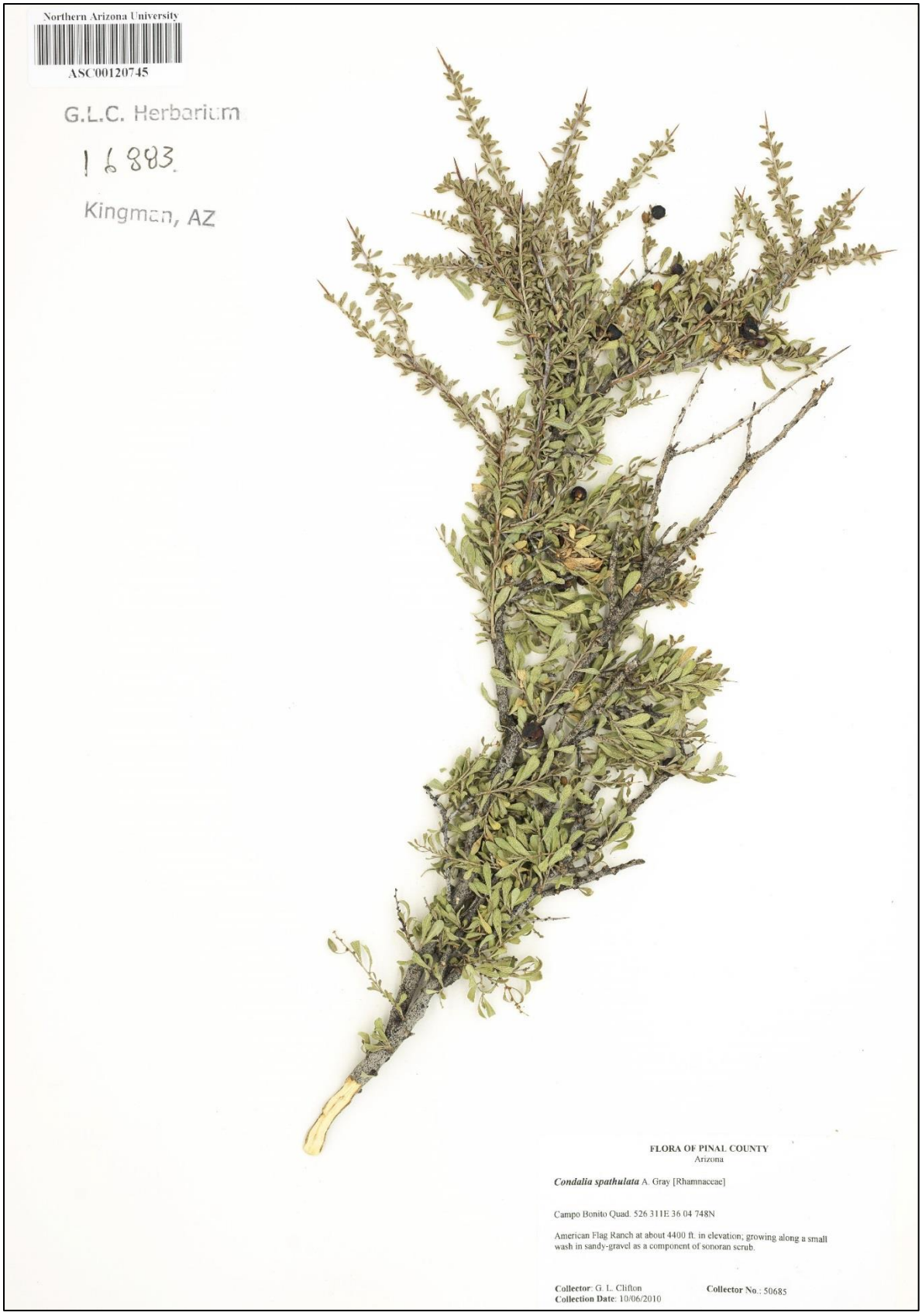


Figure 41. *Condalia kearneyana*. Pinal Co., Arizona, *Clifton 50685* (ASC).

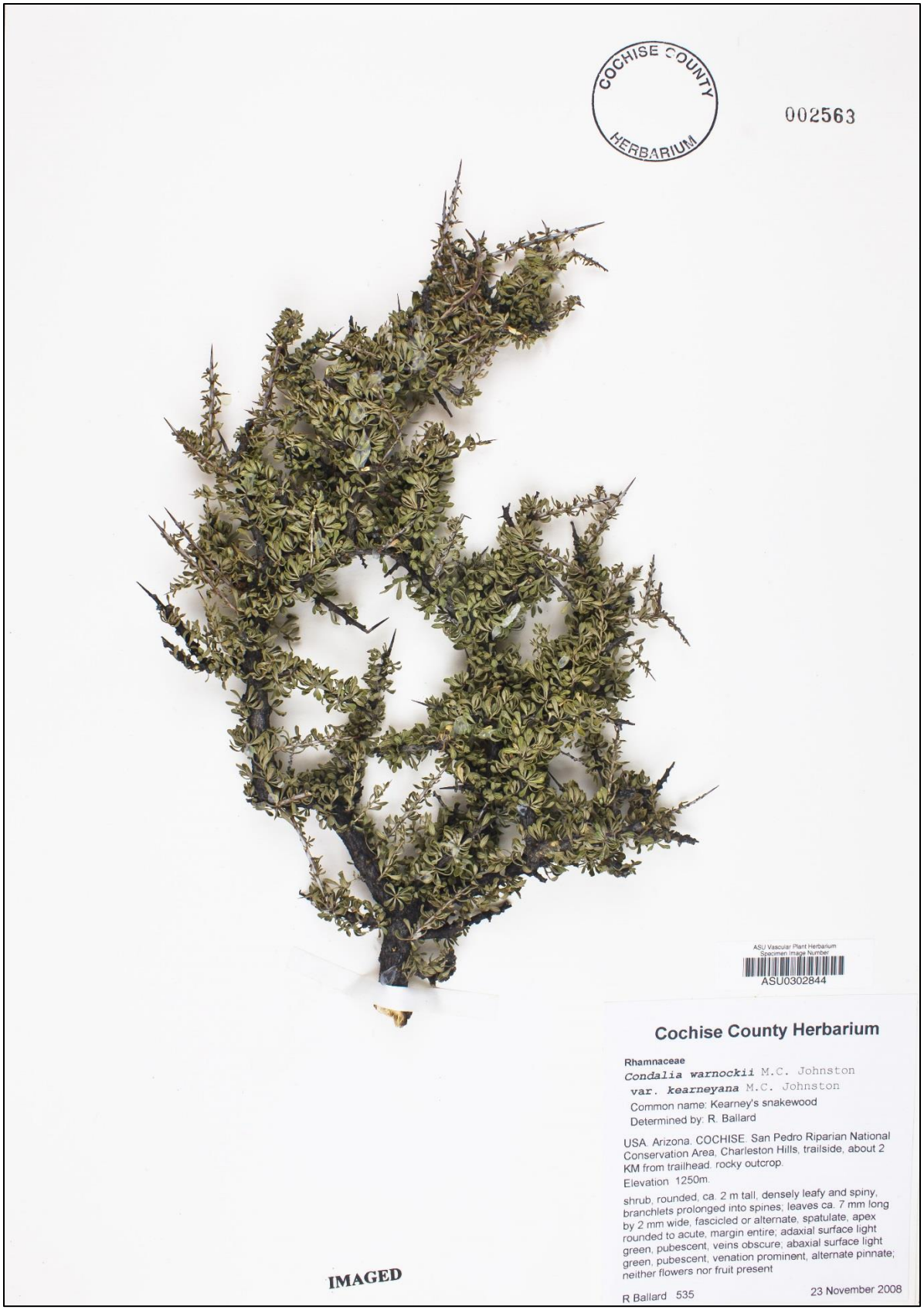


Figure 42. *Condalia kearneyana*. Cochise Co., Arizona, *Ballard 535* (ASU).

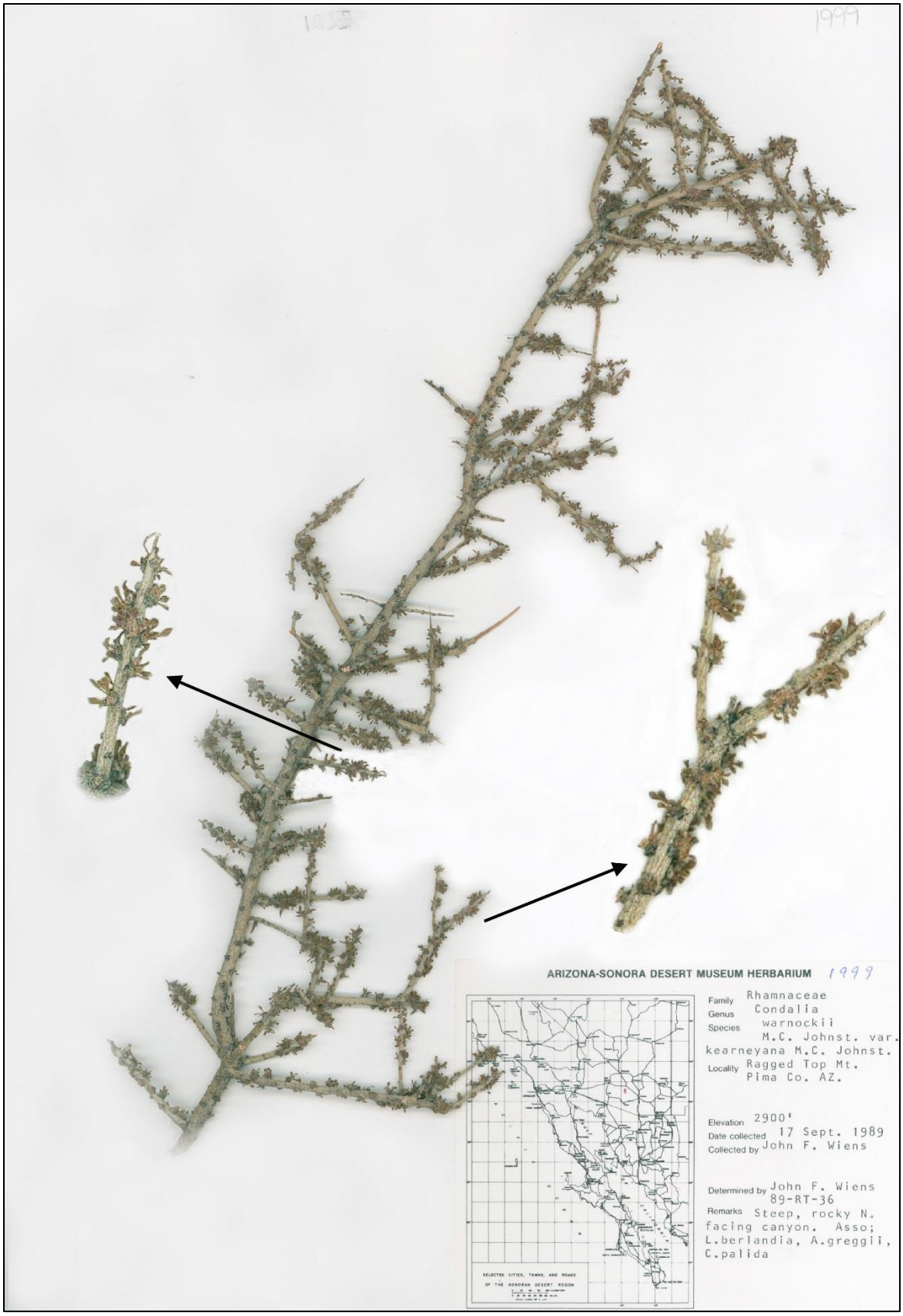


Figure 43. *Condalia kearneyana*. Pima Co., Arizona, *Wiens 89-RT-36* (ASDM).

Figure 44. *Condalia kearneyana*. Santa Cruz Co., Arizona, *Carnahan 1892* (ARIZ). Photo by Sue Carnahan.

Figure 45. *Condalia fasciculata*. San Luis Potosi, *Templeton 871* (RSA).

Figure 46. *Condalia fasciculata*. Puebla, *Johnston 7273* (SD).

Figure 47. *Condalia fasciculata*. Guadalcazar, San Luis Potosí, *Torres C. 14755* (MEXU).

Figure 48. *Condalia fasciculata*. San Luis Potosí, *Johnston 7593* (GH).

Figure 49. *Condalia fasciculata*. Zacatecas, *Lloyd 153* (US).

Figure 50. *Condalia fasciculata*. Mpio. Dr. Arroyo, Nuevo León, *Medrano 4954* (MEXU).

Figure 51. *Condalia fasciculata*. Mpio. Dr. Arroyo, Nuevo León, *Sánchez S. 32* (MEXU).

Figure 52. *Condalia fasciculata*. Tropic of Cancer, Zacatecas, *Schaffner s.n.* (MEXU).

Figure 53. *Condalia spathulata*. Mpio. Hidalgo, Tamaulipas, *González Medrano 13007* (MEXU).

Figure 54. *Condalia spathulata*. Kimble Co., Texas, *Majure 3432* (FLAS). Short shoots slightly elongate.

Figure 55. *Condalia spathulata*. McMullen Co., Texas, *Carr 34524* (TEX).

Figure 56. *Condalia spathulata*. Top: Starr Co., *Carr 29261* (TEX). Bottom: Val Verde Co,., *Lewton s.n.* (TEX).

Figure 57. *Condalia zamudioana*. Mpio. Peñamiller, Queretaro, *Zamudio 3703* (MEXU). Holotype.

Figure 58. *Condalia zamudioana*. Detail of holotype.

Figure 59. *Condalia zamudioana*. Detail of holotype.

Figure 60. *Condalia zamudioana*. Details of holotype.

Figure 61. *Condalia velutina*. Mpio. Yuriria, Guanajuato, *Martínez 23* (MEXU).

Figure 62. *Condalia velutina*. La Huerta, Guanajuato, *Fernández Nava 723* (MEXU).

Figure 63. *Condalia velutina*. Michoacan, *Bautista Rodríguez* 86 (MEXU).

Figure 64. *Condalia velutina*. Acambaro, Guanajuato, *García M. 4116* (MEXU).

Figure 65. *Condalia mexicana*. Querétaro, *Pringle 6353* (US).

Figure 66. *Condalia mexicana*. Querétaro, *Rose 9665* (US).

Figure 67. *Condalia mexicana*. Querétaro, *Rose 9833* (US). Detail.

Figure 68. *Condalia mexicana*. Guanajuato, *Rzedowski 39671* (MEXU).

Figure 69. *Condalia mexicana*. Hidalgo, *Vilchis1431* (MEXU). Detail.

Figure 70. *Condalia mexicana*. Guanajuato, *Ventura & López 6834* (MEXU). Detail.

Figure 71. *Condalia mexicana*. Querétaro, *Sanchez ES255* (MEXU). Detail.

Figure 72. *Condalia mexicana*. Vizarron, Querétaro. *Tenorio 265* (MEXU). Detail.

Figure 73. *Condalia mexicana*. Guanajuato, *Ventura & López 8320* (MEXU). Detail.

Figure 74. *Condalia petalifera*. Zacatecas, *McVaugh 17675* (MICH). Holotype.

Figure 75. *Condalia petalifera.* Zacatecas, *Flores M. 1919* (MEXU).

Figure 76. *Condalia suchilensis*. Durango, City of Durango, *Palmer 608* (US). Holotype.

Figure 77. *Condalia suchilensis*. Mpio. Jimenez del Teul, Zacatecas, *Balleza 17130* (MEXU).

Figure 78. *Condalia suchilensis*. Zacatecas, *Balleza 17130* (MEXU). Detail.

Figure 79. *Condalia suchilensis*. Mpio. Nombre de Dios, Durango, *S. Gonzalez & Acevedo 2753* (MEXU).

Figure 80. *Condalia ericoides*. Zacatecas, *Chiang 7882* (MEXU).

Figure 81. *Condalia ericoides*. Charcas, San Luis Potosí, *Lundell 5308* (US).

Figure 82. *Condalia ericoides*. Durango.

Figure 83. *Condalia ericoides*. Mpio. Cuencame, Durango.

Figure 84. *Condalia cuencamensis*. Durango, *Martínez 563* (MEXU, holotype).

Figure 85. *Condalia cuencamensis*. Detail from *Martínez 563* (MEXU, holotype).

Figure 86. *Condalia cuencamensis*. Detail from *Martínez 563* (MEXU, isotype).

Figure 87. *Condalia cuencamensis*. Durango, *Rangel 284* (MEXU).

Figure 88. *Condalia cuencamensis*. Detail from *Rangel 284* (MEXU).

Figure 89. *Condalia cuencamensis*. Detail from *Rangel 284* (MEXU).

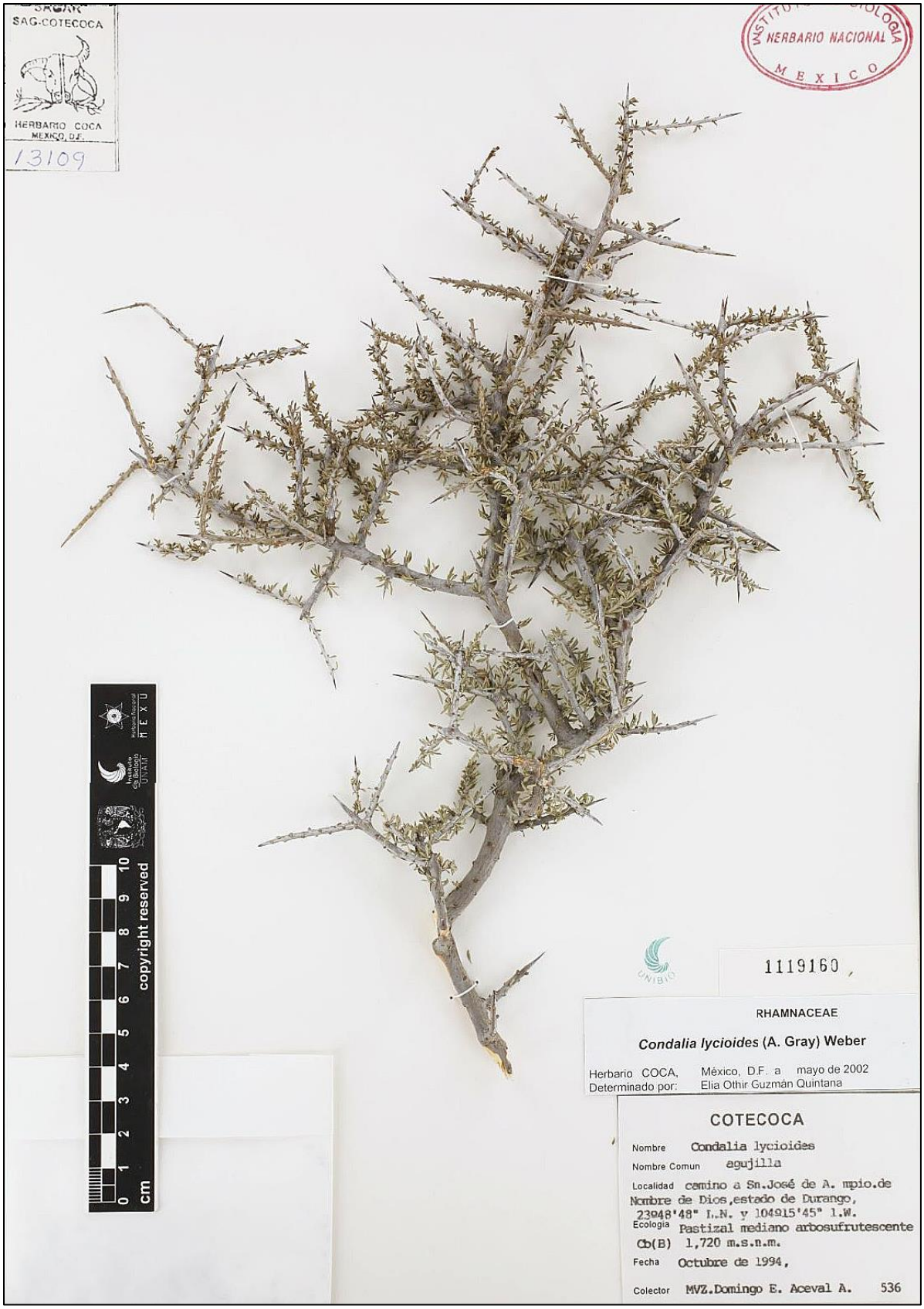


Figure 90. *Condalia cuencamensis*. Mpio. Nombre de Dios, Durango, *Aceval 536* (MEXU).

Figure 91. *Condalia cuencamensis*. Detail from *Aceval 536* (MEXU).