

Cnidoscolorum notulæ:
C. tehuacanensis
Breckon (1979)

Francisco Javier FERNÁNDEZ CASAS

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EDITORES ADJUNTOS

Sonja MALDÍ RESTREPO. Textos latinos

Cnidoscolorum notulæ: *C. tehuacanensis* Breckon (1979)

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Abstract. Description, illustration and distribution of *Cnidoscolus tehuacanensis* Breckon (1979), *Euphorbiaceæ*, México (Oaxaca, Puebla).

Zusammenfassung. Beschreibungen, Abbildungen und geographische Verbreitung von *Cnidoscolus tehuacanensis* Breckon (1979), *Euphorbiaceæ*, México (Oaxaca, Puebla).

Résumé. Description, illustrations et distribution géographique du *Cnidoscolus tehuacanensis* Breckon (1979), *Euphorbiaceæ*, México (Oaxaca, Puebla).

Resumo. Descrição, ilustrações e distribuição geográfica de *Cnidoscolus tehuacanensis* Breckon (1979), *Euphorbiaceæ*, México (Oaxaca, Puebla).

Resumen. Descripción, ilustraciones y distribución de *Cnidoscolus tehuacanensis* Breckon (1979), *Euphorbiaceæ*, México (Oaxaca, Puebla).

***Cnidoscolus tehuacanensis* Breckon, Brittonia 31(1): 140-144, n° 3; tab. 5, pag. 141 (1979)**

INDICATIO LOCOTYPICA: «Mexico: Puebla: Tehuacán Valley, limestone hills, 1.4 mi NE of Coapan and 9 mi SE of Tehuacán on hwy. 125 between Tehuacán and Huajapam de León, alt. ca. 1700 m»

TYPUS: «Tehuacán valley, limestone hills 1.4 mi NE (by road) of Coapan and 9 mi SE (by road) of Tehuacán on hwy. 125 to Huajuapán de León, 18°26'N, 097°24'W, 1700 m. Stunted matorral desértico; in ravines. Shrubs 1.5 m, woody; stems to 3 cm ø at base, new twigs ad 1 cm ø; bark reddish brown to red gray, smooth except for the persistent spine pedicels; flowers white; anthers creamy», G. J. Breckon 1309 & M. E. Breckon, 26-VI-1972 (DAV 84226, holo-; ENCB s/n; F 1865292; IEB [ex NY 246400, photo-]; MEXU 262950; MICH s/n[2]; MICH 272013 [photo G. J. Breckon n° 62, ex DAV, NY]; MO 2725028; NY 246400; US 2856508 [imag. n° 96491])

- Sect. *Calyptosolen* (Mueller argov. ex Pax) Pax & K. Hoffm., Natürl. Pflanzenfam., ed. 2, 19c: 165 (1931), em. R. McVaugh, Bull. Torrey Bot. Club 71(5): 465, n° 3 (1944)

BIBLIOGR.: G. J. BRECKON (1975: 419-422, tab. 46, map. 9).

ICONOGR.: G. J. BRECKON (1975: pag. 423a, lam. 47, fig. a-i; pag. 424a, lam. 48, fig. a-h); G. J. BRECKON (1979: lam. 5, fig. a-q, pag. 141). Laminæ nostræ i, figæ. a-d, pag. 12; lam. ii, figæ. a-e, pag. 13; lam. iii, figæ. a-d, pag. 14; lam. iv, pag. 15; lam. v, figæ. a-c, pag. 16; lam. vi, pag. 17; lam. vii, pag. 18; lam. viii, pag. 19; lam. ix, pag. 20; lam. x, pag. 21; lam. xi, pag. 22; lam. xii, pag. 23; lam. xiii, pag. 24; lam. xiv, pag. 25; lam. xv, pag. 26; lam. xvi, pag. 27; lam. xvii, pag. 28; lam. xviii, pag. 29; lam. xix, pag. 30; lam. xx, pag. 31; lam. xxi, pag. 32; lam. xxii, pag. 33; lam. xxiii, pag. 34; lam. xxiv, pag. 35; lam. xxv, pag. 36; lam. xxvi, pag. 37; lam. xxvii, pag. 38; lam. xxviii, pag. 39; lam. xxix, pag. 40; lam. xxx, pag. 41; lam. xxxi, pag. 42; lam. xxxii, pag. 43; lam. xxxiii, pag. 44; lam. xxxiv, pag. 45; lam. xxxv, pag. 46; lam. xxxvi, pag. 47; lam. xxxvii, pag. 48.

DISTR. GEOGR. *America borealis*: MÉXICO (Oaxaca, Puebla). G. J. BRECKON (1975: 422a, tab. 9). G. J. BRECKON (1979: 127, fig. 1). Tabulæ nostræ 1, pag. 5; tab. 2, pag. 9.

ORIGEN Y PROSODIA del restrictivo específico

Tehuacanensis es el adjetivo gentilicio latinizado para Tehuacán, la patria del endemismo en cuestión. Es voz llana, la segunda y tercera vocales forman diptongo, se pronuncia te-hua-ca-nén-sis.

DESCRIPTIO, G. J. BRECKON (1975: 425s)

HABIT. Drought-deciduous shrubs, 0.5-3.5 m, typically multistemmed from the base, varying from low, spreading and open to rigid, upright and much-branched, stems up to 3-4 cm ø at the base; bark silver-grey, somewhat lustrous, smooth or with persistent, whitish spine pedicels. Latex white, gummy.

STEMS. Monomorphic; branches of the present year 4.5-10 mm ø, terete, pale yellow-green to green at first, soon developing a tan to orange-brown bark, glabrous; stinging hairs abundant in irregularly scattered patches, yellowish, (5)8.5-14.0(16.5) mm, at first thin-walled and non-pedicellate, often collapsed when pressed, in age becoming thick-walled, rigid, persisting for c. 2 years and developing a swollen, tan-colored, sub-cylindric to turbinate pedicel, 0.5-1.0 × 1.5 mm. Second year bark vinaceous. Pith well-developed, lamellate.

LEAVES. Stipules thin, not persistent, 1.25-3.00 × 1-2 mm, deltoid with long, filiform, non-glandular apex, margins glandular-dentate; adaxial face papillate-glandular; abaxial face smooth, glabrous. Petiole terete, costate when dried, (2.5)4.0-9.5(14.5) cm × (1.5)1.5-3.0(4.0) mm, glabrous; stinging hairs scattered to sparse, 5.5-7.5 mm. Petiolar glands typically present, sessile, solitary, depressed-ellipsoid to obovate, apex shallowly to deeply cordate, 1.25-3.50 × 1.5-3.5 × up to 0.8 mm, reddish-brown when fresh. Lamina chartaceous, palmately 3(5)-lobed, the sinuses shallow, broad, at times obscure, primary veins 5 or 7; (5)6.5-12.0(15) × (5.5)7-12(15.0) cm, ovate approaching orbicular, rarely obovate, W/L= (0.90)0.95-1.15(1.40); lobe apices short, abruptly acuminate, typically aristate by a pallid bristle, occasionally aristulate. Apical lobe extending for (0.00)0.20-0.40(0.55) of the lamina length, (0.0)2-4(5.5) cm, basal width (2.0)2.5-5.5(6.5) cm, maximum width (2.5)3.0-5.5(6.5) cm, hemiovate to oblong, at times approaching rectangular, rarely ovate, maximum W/L= (0.80)0.90-1.90(2.75); margins remotely dentate distally, teeth 2-8 in number, small. Distal lateral lobes (0)1.0-2.5(3) cm, ovate to asymmetrically ovate, often approaching deltoid, margins entire to dentate. Base cordate, sinus 1-5 cm deep, extending for (0.15)0.15-0.35(0.40) of the lamina length, typically narrow-deltoid to closed by overlapping lobes. Margins plane or weakly undulate in the sinuses, remotely dentate to dentate, teeth (10)15-24(27) in number, (2)3-5(11) mm, deltoid, aristate or aristulate; lamina edge plane, stimulose-ciliate by slender, hyaline, erect to ascending hairs 3-4 mm, often collapsed or lost and only the low, flat, reddish pedicel remaining. Adaxial leaf surface dark green, glabrous, stinging hairs scattered along the primary and secondary veins, 4.0-6.5 mm; abaxial leaf surface paler green than adaxial, glabrous, stinging hairs as above.

INFLORESCENCE. A simple dichasium 4-12 × 1.5-5.5 cm wide across the apex, peduncle 3.0-9.5 cm × 1.25-3.00 mm, (1)3-4 times dichotomized, basal branches 2 to 4, opposite or whorled, sparsely to moderately floriferous; pedicels of pistillate flowers 2.0-4.5 mm, stout, terete; pedicels of staminate flowers 0.0-0.5 mm, slender; peduncle and branches glabrous; stinging hairs 5.0-9.5 mm, abundant throughout. Bracts 0.50-1.25 mm, abruptly deltoid above the narrow, clasping base, margins entire; bracteoles small, oblong to deltoid, greenish.

STAMINATE FLOWERS. Perianth white, glabrous, stimulose or not, infundibuliform to rotate-infundibuliform, 13-18 mm, syntepalous for 0.35-0.50 of its length; tube 3.0-5.5 m wide at the throat, conic, slightly swollen in the region of the disc; lobes 5.5-8.0 mm wide, ovate to oblong to obovate with obtuse to truncate apices; bud broadly and evenly clavate. Stamens 10, the two whorls of unequal length, anthers dorsifixed, 2.0-2.8 mm, those of the upper whorl exerted, their filaments 8.5-10.5 mm, connate for 0.75-0.80

of their length; anthers of the lower whorl partially exerted to exerted, their filaments 4-7 mm, connate for 0.7-0.8 of their length. Pubescent zone c. 1.5 mm, puberulent to villous, not extending to the disc; extrastaminal disc 1.5×1.5 mm, entire; sterile processes 3, 1.5-3.0 mm, filiform.

PISTILLATE FLOWERS. Tubular-rotate, 13-19 mm. Receptacle green, glabrous, 2.5-3.0 mm ϕ , pelviform. Perianth white, glabrous, stimulose on the lobes, 10-17 mm, syntepalous for 0.35-0.65 of its length, tube subcylindric, slightly constricted to the throat; lobes 4-6 mm wide, varying from ovate to oblong to obovate to subcircular with obtuse to truncate apices, spreading at anthesis, becoming reflexed to appressed-reflexed with enrolled to contorted margins, falling as a unit. Ovary cylindrical to long-ellipsoid, $3-4 \times 1.5-2.5$ mm, typically rostrate, rostrum 0.5-1.5 mm, cylindric; sericeous of upward appressed hairs, the indumentum often limited to the rostrum; not stimulose. Styles exerted, 3.0-5.5 mm, connate for 0.25-0.45 of their length, 2-3 times dichotomized; stigmatic tips entire to bifid, flattened or enrolled-cylindric, apices attenuate. Disc $0.50-0.80 \times 1.70-2.25$ mm, shallowly lobed; staminodia very small, deltoid, fleshy.

REGMA immature broadly ovoid to obovate, dark green, with sharp, yellowish, pubescent beak c. 1.5 mm high formed by the connate style bases; mature fruit ellipsoid to slightly ovoid, 9-12 mm, the peak typically persistent; irregularly rugose-punctulate, pale yellow-green, glabrous overall or hirtellous on the beak, stinging hairs sparse to abundant; outer pericarp separating from the inner, 0.3-0.6 mm thick, brittle; inner pericarp bony, $(0.5)0.6-0.7(0.8)$ mm thick; columella 9-10 mm.

SEEDS elliptic in outline, $8.3-11.4 \times 4.4-6.2 \times 3.3-4.2$ mm, W/L = 0.53-0.70, H/L 0.37-0.48, convex dorsally; apex acuminat-apiculate, apiculus sharp; base truncate to broadly obtuse, shallowly cordate; surface reddish-brown with abundant darker mottling, appearing black to the naked eye. Caruncle yellow-brown, depressed-ovate; apex rounded, entire, exceeding the testa by ca. 1 mm; base cordate around and exceeding the micropyle.

DESCRIPTIO, G. J. BRECKON (1979: 140-144, tab. 5)

Affinis *Cnidoscolus Liebmannii* Mueller argov., a quo differt foliis subintegris vel vadose lobatis et non undulatis, glandulis summipetiolariibus sessilibus, inflorescentia glabra, et ovario cylindrico ad cylindrico-ellipsoideo apice rostrato.

Drought-deciduous shrubs, 0.5-3.5 m tall, typically multi-stemmed from the base, varying from open, low and spreading to densely branched and strict, the basal stems to 3-4 cm in diam., the bark silver-grey, semi-lustrous, smooth or with persistent spine pedicels; latex white. BRANCHES mostly monomorphic, the tubercle-like short-shoots very rarely present; twigs 4.5-10 m in diam., terete, pale yellow-green to green, glabrous, the new bark tan to orange-brown, vinaceous in the second season; stinging hairs abundant in scattered patches, (5.0) 8.5-14.0 (16.5) mm longi, yellowish, pedicellate when mature, persisting for ca. 2-3 seasons, mature pedicels subconic to turbinate, persisting for 4-6 years; pith well developed, lamellate.

STIPULES thin, fugacious, $1.25-3.00 \times 1-2$ mm, deltoid, the apex filiform, the margins and adaxial surface glandular-papillate. PETIOLE terete, costate when dried, \pm equaling the lamina, slender, glabrous, sparsely stimulose. SUMIPETIOLAR GLAND mostly present, sessile of low-mounted, solitary, depressed-ellipsoid to obovate, cordate, low-mammiform. LAMINA chartaceous, (5.0) 6.5-12.0 (15.0) \times (5.5) 7.0-12.0 (15.0) cm, ovate to suborbicular, rarely obovate, W/L = (0.90) 0.95-1.15 (1.40), palmately 3-(5)-lobed, the lobing shallow to median, at times obscure, the primary veins 5 or 7; lobe apices short, abruptly acuminate, aristulate to aristate; basal sinus narrow to closed by overlapping lobes; apical lobe extending for (0.0) 0.20-0.40 (0.55) of the lamina length, the basal width (2.0) 2.5-5.5 (6.5) cm, maximum width (2.5) 3.0-5.5 (6.5) cm, hemiovate to oblong, rarely obovate, maximum W/L = (0.80) 0.90-1.90 (2.75), remotely dentate distally; lateral lobes \pm ovate; margins plane, subentire to dentate or dentate-lobate, the teeth deltoid, aristulate; lamina edge plane, stimulose-ciliated, the hyaline stinging hairs often lost and only the flat, reddish pedicels persistent; lamina surfaces glabrous, scattered-stimulose, green to dark green, paler below, the stomates absent to very rare above.

DICHASium 4-12 cm long, the peduncle $3.00-9.50 \times 1.25-3.00$ mm, the primary branches 2 to

4, opposite or whorled, dichotomized (1) 3-4 times, sparsely to moderately floriferous, glabrous, strongly stimulose; pistillate flower pedicels 2.0-4.5 mm, stout, terete; staminate flower pedicels obscure, peg-like; bracts 0.50-1.25 mm, deltoid above the clasping base; bracteoles small, oblong to deltoid.

STAMINATE FLOWERS salverform, white, 13-18 mm; perianth segments connate for 0.35-0.50 of their length, the tube conic and slightly swollen in the region of the disc, glabrous, stimulose or not; bud broadly and evenly clavate; stamens 10, monadelphous in 2 whorls of unequal length; anthers dorsifixed, the upper whorl exerted, its filaments 8.5-10.5 mm, connate for 0.75-0.80 of their length; anthers of lower whorl partially exerted to exerted, the filaments 4-7 mm long, connate for 0.7-0.8 mm; pubescent zone ca. 1.5 mm, puberulent to villous, not extending to the glabrous, discoid gland; sterile processes 3, 1.5-3.0 mm, filiform.

PISTILLATE FLOWERS salverform, white, 13-19 mm; perianth segments glabrous, \pm sparsely stimulose, 10-17 mm, connate for 0.35-0.65 of their length, the tube subcylindric, tapering slightly upwards, not expanding and obcampanulate in age; receptacle green, glabrous, the rim low, entire; ovary 3-4 \times 1.5-2.5 mm, cylindric to oblong-ellipsoid, typically with a cylindric rostrum at the apex, sericeous with upward-appressed hairs, the indumentum often limited to the rostrum, not stimulose; styles 3-5.5 mm, basally connate for 0.25-0.45 of their length, dichotomized 2-3 times, exerted; gland 1.5-2.2 mm in diam., flat, shallowly lobed; staminodia obscure, deltoid, fleshy.

CAPSULES 9-12 mm, ellipsoid to slightly ovoid, the apex with a sharp, yellowish beak formed by the indurate style bases; surface irregularly rugulose-pusticulate, pale yellow-green, glabrous overall or hirtellous at the apex, the stinging hairs sparse to abundant; outer pericarp separating from the inner, 0.3-0.6 mm thick, brittle; inner pericarp bony, (0.5) 0.6-0.7 (0.8) mm thick, the columela 9-10 mm long.

SEEDS elliptic in outline, 8.5-11.5 \times 4.5-6.0 mm, W/L= 0.55-0.70, convex dorsally, 3.5-4.0 mm high, H/L= 0.35-0.50; apex acuminate-apiculate, the apiculus sharp; base truncate to broadly obtuse, shallowly cordate, the surface reddish-brown with abundant darker mottling, appearing black to the naked eye; caruncle fleshy, yellow-brown, depressed-ovate, the apex rounded and exceeding the testa by ca. 1 mm, the base cordate around and exceeding the micropyle.

OBSERVATIONS, G. J. BRECKON (1979: 143-144)

Cnidoscolus tehuacanensis can be recognized by the combination of the shrubby habit, general absence of stimulose short shoots, shallowly lobed, glabrous leaves and sessile petiolar glands. The flowers are glabrous; the pistillate flower is syntetalous with a cylindric-rostrate ovary, while the staminate flower has a partially to completely exerted lower anther whorl.

The shrubby habit, swollen spine pedicels, vinaceous bark, cordate, sessile petiolar glands, syn- tepalous pistillate perianth, beaked fruit, and range indicate clear affinities with the *Cnidoscolus tubulosus* alliance. Within the alliance the species is most similar to *C. Liebmannii*, which occurs in the northeastern foothills of the valley. That species has very deeply lobed, strongly undulate, dentate-lobate foliage with a stalked petiolar gland, an ovoid, non-rostrated ovary, and a pubescent inflorescence. Both *C. tubulosus* and *C. rostratus* subsp. *rostratus*, which occur on the southern and western edges of the species range respectively, have stimulose short-shoots, pubescent flowers, and more deeply lobed leaves with narrower lobes.

Cnidoscolus tehuacanensis varies from a low, open, spreading plant to a rigidly upright arborescent shrub. The majority of the populations of *C. tehuacanensis* consist of shrubby plants 2 to 2.5 m tall, which spread 1.5-2.0 m and tend to have an upright branching habit irrespective of the soil type on which they are found. Plants in dense, undisturbed vegetation are more open in growth habit than are those in sparsely vegetated, abandoned fields. In contrast, the plants on the limestone in the hills west of Tehuacán are only 0.5 to 1.5 m tall and tend to be spreading and sparsely branched. At the other extreme, the population on the sandstone outcrop near Tilapa in the southern end of the valley are rigidly branched, strict shrubs 3.0 to 3.5 m tall.

The differences in habit between those two extreme populations are probably due in part to phenotypic response. The vegetation on the limestone hills west of Tehuacán is in general low, sparse and spiny with few trees present. C. E. SMITH (1965) attributes the absence of larger plants to the poor water-retaining capacity or the limestone. More probably, however, the soil has been depleted from severe overuse by farming and grazing. Except for different growth habit, these plants are similar to the more widespread shrubby form of the species.

The tall, strict shrubs of the Tilapa population are limited to a sandstone outcrop that supports a low thorn-forest dominated by *Bursera submoniliformis* Eng., *Fouquieria formosa* HBK and



Lemaireocereus stellatus (Pfeiffer) B. & R. with *Jatropha dioica* common in understory. These dominant species occur throughout the valley, but there they form a more open, taller vegetation than on the adjacent soil types. Whether this difference in physiognomy is due to a greater water uptake by the more porous sandstone soil or by an absence of severe agricultural disturbance on the sandstone is not evident. However, the Tilapa population of *Cnidoscolus tehuacanensis* diverges from the outer populations or the species not only in its growth habit but also by its densely strigose ovary and longer apical lobe of the leaves. Whether these differences represent genetic divergences remains to be elucidated.

DISCUSSION, G. J. BRECKON (1979: 143s)

Cnidoscolus tehuacanensis can be recognized by the combination of the shrubby habit, general absence of stimulos short-shoots, shallowly lobed, glabrous leaves and sessile summipetolar glands. The flowers are glabrous; the pistillate flower is syntepalous with a cylindrical-rostrate ovary, while the staminate flower has a partially to completely exerted lower anther whorl.

The shrubby habit, swollen spine pedicels, vinaceous bark, cordate, sessile petiolar glands, syntepalous pistillate perianth, beaked fruit, and range indicate clear affinities with the *Cnidoscolus tubulosus* alliance. Within the alliance the species is most similar to *C. Liebmannii*, which occurs in the northeastern foothills of the valley. That species has very deeply lobed, strongly undulate, dentate-lobate foliage with a stalked summipetolar gland, an ovoid, non-rostrated ovary, and a pubescent inflorescence. Both *C. tubulosus* and *C. rostratus* subsp. *rostratus*, which occur on the southern and western edges of the species range respectively, have stimulos short-shoots, pubescent flowers, and more deeply lobed leaves with narrower lobes.

Cnidoscolus tehuacanensis varies from a low, open, spreading plant to a rigidly upright arborescent shrub. The majority of the populations of *C. tehuacanensis* consist of shrubby plants 2.0 to 2.5 m tall, which spread 1.5-2.0 m and tend to have an upright branching habit irrespective of the soil type on which they are found. Plants in dense, undisturbed vegetation are more open in growth habit than are those in sparsely vegetated, abandoned fields. In contrast, the plants in the limestone in the hills west of Tehuacán are only 0.5 to 1.5 m tall and tend to be spreading and

sparingly branched. At the other extreme the population on the sandstone outcrop near Tilapa in the Southern end of valley are rigidly branched, strict shrubs 3.0 to 3.5 m tall.

The differences in habit between those two extreme populations are probably due in part to phenotypic response. The vegetation on the limestone hills west of Tehuacán is in general low, sparse and spiny with few trees present. C. E. SMITH (1965) attributes the absence of larger plants to the poor water-retaining capacity of the limestone. More probably, however, the soil has been depleted from severe overuse by farming and grazing. Except for different growth habit, these plants are similar to the more widespread shrubby form of the species.

The tall, strict shrubs of the Tilapa population are limited to a sandstone outcrop that supports a low thorn-forest dominated by *Bursera submoniliformis* Engler, *Fouquieria dioica* H. B. K. and *Lemaireocereus stellatus* (Pfeiffer) B. & R. with *Jatropha dioica* common in the understory. These dominant species occur throughout the valley, but there they form a more open, taller vegetation than on the adjacent soil types. Whether this difference in physiognomy is due to a greater water uptake by the more porous sandstone soil or by an absence of a severe agricultural disturbance on the sandstone is not evident. However, the Tilapa population of *Cnidoscolus tehuacanus* diverges from the other populations of the species not only in its growth habit but also by its densely strigose ovary and longer apical lobe on the leaves. Whether these differences represent genetic divergences remains to be elucidated.

DESCRIPTIO, *G. J. Breckon 2251* (WIS s/n), México, Puebla, 14QPF63

Demensa semina [n= 2, mm]: 08,2 × 4,8 × 3,3; 08,5 × 4,6 × 3,3.

DESCRIPTIO, *F. Chiang Cabrera 2349* (TEX 91889), México, Puebla, 14QPF64

Demensa semina [n= 4, mm]: 08,3 × 5,1 × 3,7; 08,4 × 4,7 × 3,2; 08,4 × 4,8 × 3,6; 08,5 × 5,3 × 3,7; L= (08,3-) 08,35-08,45 (-08,5), \bar{x} = 08,40, σ : 0,08; l= (4,7-) 4,75-5,20 (-5,3), \bar{x} = 4,98, σ : 0,28; p= (3,2-) 3,4-3,7 (-3,7), \bar{x} = 3,55, σ : 0,24.

DESCRIPTIO, *A. J. García Mendoza 3471* (F 2148820), México, Oaxaca, 14QPF90

Demensa semina [n= 3, mm]: 08,0 × 5,3 × 3,4; 08,5 × 5,1 × 3,4; 08,5 × 5,4 × 3,7.

DESCRIPTIO, *D. A. Kolterman 10A, 10B* (WIS s/n), México, Puebla, 14QPF83

Demensa semina [n= 3, mm]: 07,8 × 5,1 × 2,9; 08,8 × 5,5 × 3,5; 08,9 × 5,3 × 3,7.

DESCRIPTIO, *D. A. Kolterman 11A* (WIS s/n), México, Puebla, 14QQF01

Demensa semina [n= 2, mm]: 08,6 × 4,7 × 3,0; 11,0 × 5,6 × 2,9.

DESCRIPTIO, *A. Salinas Tovar 7553* (MICH 366789), México, Puebla, 14QPF61

Demensa semina [n= 1, mm]: 07,4 × 4,8 × 3,3.

DESCRIPTIO, *C. E. Smith Jr. 3642* (US 2397682),

Demensa semina [n= 2, mm]: 09,4 × 5,0 × 3,5; 09,8 × 5,0 × 3,8.

DESCRIPTIO, *V. W. Steinmann 1390* (DAV 145740; NY s/n; SP 346116), México, Puebla, 14QPF64

Demensa semina [n= 19, mm]: 08,9 × 4,4 × 3,5; 08,9 × 4,6 × 3,1; 09,7 × 4,9 × 3,6; 10,1 × 5,4 × 4,1; 10,2 × 5,0 × 3,8; 10,2 × 5,2 × 3,7; 10,2 × 5,2 × 4,0; 10,3 × 5,5 × 4,0; 10,4 × 4,8 × 3,7; 10,5 × 4,8 × 2,5; 10,6 × 5,4 × 4,0; 10,7 × 5,3 × 3,9; 11,0 × 5,0 × 3,9; 11,2 × 5,4 × 3,9; 11,3 × 5,2 × 3,9; 11,4 × 5,1 × 3,8; 11,7 × 5,4 × 4,1; 11,9 × 5,4 × 3,8; 12,0 × 5,5 × 4,0; L= (08,9-) 10,20-11,30 (-12,0), \bar{x} = 10,59, σ : 0,88; l= (4,4-) 4,9-5,4 (-5,5), \bar{x} = 5,13, σ : 0,32; p= (2,5-) 3,7-4,0 (-4,1), \bar{x} = 3,75, σ : 0,38.

DESCRIPTIO, *I. L. Wiggins 13235* (DS 405667), México, Puebla, 14QPF63

Demensa semina [n= 1, mm]: 14,0 × 8,3 × 4,7.

DESCRIPCIÓN sumaria

Semillas medidas [n= 37, mm]. L= (07,4-) 08,5-10,7 (-14,0), \bar{x} = 09,79, σ : 1,46; l= (4,4-) 4,8-5,4 (-8,3), \bar{x} = 5,19, σ : 0,61; p= (2,5-) 3,4-3,9 (-4,7), \bar{x} = 3,62, σ : 0,42.

MATERIAL EXAMINADO Y CITAS BIBLIOGRÁFICAS

MÉXICO, (20) **OAXACA**:

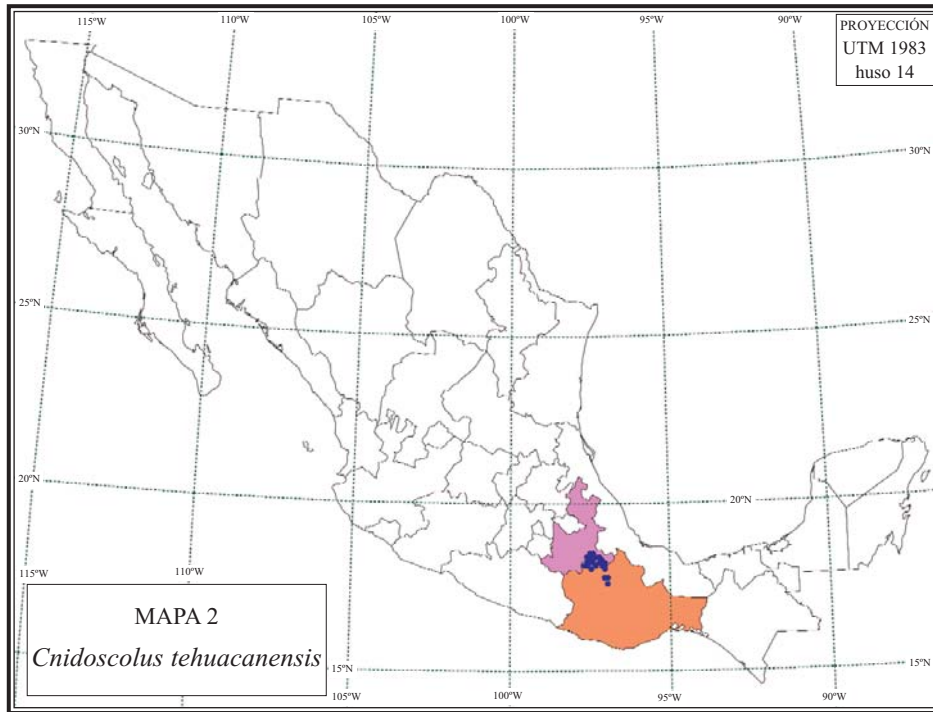
14QPE79 18.04°, -097.50°; «(munic. Concepción Buenavista) autopista Tehuacán - Oaxaca: a

- 4 km en la terracería del km 109, 18°00'53,5"N, 097°22'15"W, 1942 m. Arbusto 2 m; látex blanco; fruto verde», *O. Téllez Valdés 17147 & al.*, 06-IX-2004 (FCME 96324).
- 14QPF30** 18.14°, -097.72°; «(munic. Santiago Chazumba) 1,7 km ql W de la entrada del km 66,9 de la carretera Tehuacán- Huajapam hacia Lunatitlán, 18°10'27,2"N, 097°41'59"W, 1813 m. Bosque tropical caducifolio. Árbol 3,5 m; botones blancos», *M. Ayala Robledo 326 & al.*, 21-VI-2006 (FCME 104873).
- 14QPF40** 18.14°, -097.63°; «(munic. Tequistepec) Huapanapán: 8 km SE hacia Guadalupe Membrillos, 18°06'12,2"N, 097°37'26"W, 1996 m. Arbusto 2 m; látex semilechoso; fruto verde», *O. Téllez Valdés 16960 & al.*, 12-VIII-2004 (FCME 16960). El fruto es apiculado, y el pericarpio interno cartilaginoso.
- 14QPF70** 18.14°, -097.35°; «(distr. Coixtlahuaca; munic. Villa Tepelmeme de Morelos) Cerro Paraje Ladrón: Barranca Copalillo, km 90 de la carretera Coacnopalán – Oaxaca, 18°07'N, 097°18'W, 1535 m. Selva baja caducifolia. Herbácea 1-2 m; látex blanco», *E. L. Cruz Pacheco & A. Salinas Tovar 7822*, 14-IX-1994 (MEXU 669818).
- 14QPF90** 18.13°, -097.15°; San Gabriel Casa Blanca (ppl), 18°09'N, 097°08'W, «(distr. Teotitlán) cerro Nahualtepec: 8 km NW de San Gabriel Casa Blanca», *A. J. García Mendoza 3471*, *E. M. Martínez Salas & A. Salinas Tovar*, 01-VII-1987 (F 2148820; MEXU 540714).
- 14QPF90** «(distr. Coixtlahuaca; munic. Villa Tepelmeme de Morelos) Cerro Verde: El Paraje, 18°06'N, 097°12'W, 935 m. Selva baja caducifolia, en la barranca. Arbusto 1,8 m; flores blancas. "Mala mujer"», *L. Kelly & P. Tenorio Lezama 20155*, 27-V-2001 (MEXU 1208790).
- 14QPF90** «(munic. Coxcatlán) San José Tilapa: al N, km 56,5 de la carretera Tehuacán - Cuicatlán, 18°10'08"N, 097°07'09,2"W, 910 m. Arbusto 1-2 m; látex semilechoso; flores blancas; fruto verde», *O. Téllez Valdés 15668 & al.*, 01-VI-2004 (FCME 101163).
- 14QPF91** 18.22°, -097.16°; «(munic. Coxcatlán) Guadalupe Victoria: al S, km 50 de la carretera Tehuacán - Cuicatlán, 18°11'58,1"N, 097°09'27,2"W, 921 m. Hierba perenne, suculenta, 1-1,5 m; látex semilechoso; flores blancas; fruto verde», *O. Téllez Valdés 15654 & al.*, 01-VI-2004 (FCME 105959).
- 14QPF92** 18.31°, -097.16°; «(munic. Zinacantepec) Coxcatlán: 3 km SW, 18°17'00,1"N, 097°11'57"W, 1026 m. Arbusto 2,5 m; látex semilechoso; flores blancas; fruto verde», *O. Téllez Valdés 15857 & al.*, 28-VI-2004 (FCME 100833).
- 14QQE06** 17.77°, -097.07°; «(munic. San Pedro Jocotipac) San Pedro Jocotipac: 7 km SE hacia Cuicatlán, 17°47'05,8"N, 097°03'18,7"W, 1892 m. Arbusto 0,7 m; látex blanco», *O. Téllez Valdés 16714 & al.*, 13-VIII-2004 (FCME 105968).
- 14QQE06** «(munic. Valerio Trujano) San Pedro Jocotipac: 17 km SE en el camino a Cuicatlán, 17°48'14,8"N, 097°01'36,9"W, 1133 m. Arbusto 1 m; látex blanco; fruto verde», *O. Téllez Valdés 16773 & al.*, 13-VIII-2004 (FCME 105970).
- 14QQE09** 18.04°, -097.06°; «(Teotitlán del Camino) San Juan Los Cuez: 8 km S de Teotitlán del Camino, 18°03'N, 097°03'W, 750 m. Matorral xerófilo. Arbusto 2 m, muy urticante; flores blancas», *J. Rzedowski Rotter 25573*, 31-III-1968 (ENCB s/n); G. J. BRECKON (1975: 433); G. J. BRECKON (1979: 144, n° 3).
- 14QQE09** «(munic. San Martín Toxpalán) San Juan de los Cues: 2 km N, 18°03'43,3"N, 097°04'20,6"W, 866 m. Arbusto 2 m, suculento; látex semilechoso; flores blancas; fruto verde», *O. Téllez Valdés 15677 & al.*, 01-VI-2004 (FCME 100832; FCME 100836).
- 14QQE14** 17.59°, -096.98°; «(lower Tehuacán valley) arid hills along hwy 135 between Oaxaca and Tehuacán, 21.6 km by road of southern most bridge over río Grande, 17°37'30"N, 096°56'30"W, 1000 m», *G. J. Breckon 2247 & M. E. Breckon*, 03-VIII-1976 (DAV 84059; MEXU, non vidi; MICH, non vidi; WIS s/n); G. J. BRECKON (1979: 144, n° 3).
- 14QQE16** 17.77°, -096.97°; «(distr. Cuicatlán; munic. San Pedro Jalpetetongo) estación de tren Tomellín: 3 km SSW, brecha a San Pedro Jalpetetongo, 17°44'44"N, 096°58'29"W, 650 m. Matorral con selva baja caducifolia. Arbusto 1-2 m; látex blanco; sin hojas», *E. Martínez Correa & A. Salinas Tovar 8084*, 25-I-1995 (MEXU 669827).
- 14QQE16** «(munic. San Juan Bautista Cuicatlán) entronque de Puente Grande hacia

Tutepetongo: a 5,7 km, 17°43'40,8"N, 096°56'06,4"W, 654 m. Arbusto 2 m; látex blanco; flores blancas; fruto verde», *I. Rosas R. 1115 & al.*, 18-VII-2006 (FCME 106891).

MÉXICO, (21) PUEBLA:

- 14QPF41** 18.22°, -097.63°; «(munic. Caltepec) Caltepec: al SE, Cerro el Gavilán, 1880-2320 m. Matorral espinoso; suelo somero discontinuo, migajón arenoso, negro. Arbusto 1 m; flores blancas. "Mala mujer"», *C. Romero de Tenorio, P. Tenorio Lezama 3749 & R. Torres Colín*, 05-V-1983 (IEB 157711; MEXU 561344).
- 14QPF41 «(munic. Caltepec) Caltepec: al SE, Cerro el Gavilán, 1880-2320 m. Matorral espinoso; suelo somero discontinuo. Arbusto 80 cm; flores blancas; fruto inmaduro», *P. Tenorio Lezama 5762*, 10-IV-1984 (MEXU 494389).
- 14QPF43** 18.40°, -097.63°; Santa Ana Teloxtoc (atlas), 18°22'38,40"N, 097°34'53,75"W, PF4932, «(munic. Tehuacán) Santa Ana Teloxtoc: barranca Nopale. Ladera S; pendiente suave; suelo poco profundo. Arbusto pequeño, urticante; hojas y tallos espinosos; con látex; tallo craso», *D. Robledo Márquez 13*, 08-X-1999 (MEXU 1061412).
- 14QPF43 Santa Ana Teloxtoc (atlas), 18°22'38,40"N, 097°34'53,75"W, PF4932, «(munic. Tehuacán) ejido Santa Ana Teloxtoc: paraje la Sotolinera, 1800 m. Lomerío con suelos profundos y pedregosos; agostadero de cabras. Arbusto urticante, son espinas en toda la planta», *D. Robledo Márquez 31*, 08-X-1999 (MEXU 1047131).
- 14QPF51** 18.22°, -097.53°; «(Tehuacán valley) Acatepec: 5 miles ENE (by road) on hwy 125 between Tehuacán and Huajuapán de León, 18°14'N, 097°34'W, 1580 m. Grazed and cut matorral on rocky hills. Shrub to 1.5 m, highly branched, stimulose, without short shoots; bark silver grey, smooth; fruit stimulose», *G. J. Breckon 1337 & M. E. Breckon*, 09-VII-1972 (DAV 83238; MEXU, non vidi); *G. J. BRECKON (1975: 434); G. J. BRECKON (1979: 144, n° 3)*.
- 14QPF52** 18.31°, -097.53°; «(munic. Zapotitlán Salinas) San Juan Raya: km 4 de la desviación, 18°18'42,7"N, 097°33'07,6"W, 1625 m. Arbusto 2 m. "Mala mujer"», *Brigada Colonia San Martín 1409*, 13-VI-2006 (FCME 105415).
- 14QPF52 «(munic. Zapotitlán Salinas) Colonia San Martín: 2,75 km SW, 18°16'28,4"N, 097°33'17,7"W, 1709 m. Árbol; flores blancas. "Mala mujer"», *Brigada Colonia San Martín 1015*, 30-I-2006 (FCME 101289).
- 14QPF52 «(munic. Zapotitlán Salinas) Colonia San Martín: 3,4 km SW, al pie del cerro de la Hierba, 18°16'19,4"N, 097°33'43,5"W, 1855 m. Árbol 1-2 m. "Mala mujer"», *Brigada Colonia San Martín 518*, 10-XII-2005 (FCME 101371).
- 14QPF52 «(munic. Zapotitlán Salinas) Jardín Botánico "Helia Bravo": a un lado, en el camino real, 18°17'33,5"N, 097°29'58,1"W, 1574 m. Tetechera. Hierba 80 cm; látex blanco», *O. Téllez Valdés 19040 & al.*, 19-VII-2005 (FCME 98830).
- 14QPF52 «(munic. Zapotitlán Salinas) San Martín: 0,8 km E, 18°16'55,9"N, 097°33'09,8"W, 1710 m. Arbusto 60-65 cm. "Mala mujer"», *D. M. Barragán R., S. A. Barragán G., A. Pérez C., M. Pérez C. & F. Victorino H. 227*, 02-XI-2005 (FCME 90481).
- 14QPF52 «(munic. Zapotitlán Salinas) San Martín: 1,1 km E, 18°16'50,9"N, 097°33'23,9"W, 1723 m. Arbusto 0,5 m. "Mala mujer"», *D. M. Barragán R., S. A. Barragán G., A. Pérez C., M. Pérez C. & F. Victorino H. 171*, 30-X-2005 (FCME 90524).
- 14QPF52 «(munic. Zapotitlán Salinas) San Martín: 1,5 km E, 18°16'55,1"N, 097°33'30,7"W, 1701 m. Arbusto 1-2 m. "Mala mujer"», *D. M. Barragán R., S. A. Barragán G., A. Pérez C., M. Pérez C. & F. Victorino H. 87*, 30-X-2005 (FCME 100512).
- 14QPF52 «(munic. Zapotitlán Salinas) terracería a San Juan Raya: km 4,5, 200 m al W, 18°18'56"N, 097°33'20,9"W, 1646 m. Arbusto 1,2-1,5 m. "Mala mujer"», *Brigada Colonia San Martín 1400*, 13-VI-2006 (FCME 105398).
- 14QPF52 «(munic. Zapotitlán Salinas) terracería a San Juan Raya: km 5,1, 18°19'15"N, 097°33'31,1"W, 1650 m. Arbusto 1,2-2 m. "Mala mujer"», *Brigada Colonia San Martín 1390*, 13-VI-2006 (FCME 105389).
- 14QPF52 «(munic. Zapotitlán Salinas) Zapotitlán Salinas: 2 km SW, Ranchería El Tablón, 1550 m. Matorral rosetófilo; substrato calizo. Arbusto 50 m, con látex, urticante; flores blancas», *A. Casas, R. Medina, A. Valiente Banuet 521 & J. L. Viveros*, 19-XI-1991 (MEXU 576020).



- 14QPF54** 18.50°, -097.53°; «San Bartolo Teontotepec: 3 km al W, valle de Tehuacán - Cuicatlán, 18°29'N, 097°31'W, 2000 m», *A. Salinas Tovar 3629 & Á. Campos Villanueva*, 25-XI-1986 (MEXU, non vidi; TEX 91886).
- 14QPF54** «(munic. Tehuacán) San Bartolo Teontotepec: 2 km W, 18°28'57,1"N, 097°32'15,2"W, 1859 m. Vegetación secundaria. Hierba perenne, 0,5 m; látex blanco; fruto verde», *O. Téllez Valdés 19068 & al.*, 07-IX-2005 (FCME 99140).
- 14QPF61** 18.22°, -097.44°; San Luis Atolotitlán (ppl), 18°12'N, 097°25'W, «(munic. Caltepec) San Luis Atolotitlán: al S, cerro Coatepec, 18°09'N, 097°27'W, 2115 m. Matorral calcícola mixto», *A. Ocampo, A. Ramírez Roa & A. Salinas Tovar 7553*, 09-IX-1993 (MEXU 669817; MICH 366789).
- 14QPF61** San Luis Atolotitlán (ppl), 18°12'N, 097°25'W, «San Luis Atolotitlán: a 5 km por la desviación de la carretera Tehuacán - Huajuapam de León. Formación de cactus columnares. Arbusto 80 cm; látex blanco; flores blancas», *F. Chiang Cabrera 2287 & M. Á. Martínez Alfaro*, 23-III-1982 (MO 3649313; NY s/n).
- 14QPF62** 18.32°, -097.44°; 18°16'N, 097°24'W, «Tehuacán area: near Coxcatlán on cerro Agujereado and in the adjacent valley, 1000-1800 m», *C. E. Smith Jr. 3642, F. A. Peterson & N. Tejeda*, VII-1961 (F 1555694; US 2397682); *G. J. BRECKON* (1975: 434); *G. J. BRECKON* (1979: 144, n° 3).
- 14QPF62** «(munic. Zapotitlán Salinas) Barranca de Miahuatepec: 18°19'00,4"N, 097°26'26"W, 1476 m. Arbusto 1 m; flores blancas», *M. Ayala Robledo 71 & I. Rosas R.*, 08-VII-2004 (FCME 101152).
- 14QPF62** «(munic. Zapotitlan) camino a San Juan Raya: 18°20'N, 097°26'W, 1600 m. Matorral xerófilo primario; suelo calizo. Arbusto 1,5 m; flores blancas. "Mala mujer"», *J. A. Zavala H. 63*, 03-IV-1979 (XAL 42383).
- 14QPF63** 18.40°, -097.44°; «Tehuacán valley, limestone hills 1.4 miles NE (by road) of Coapan and 9 miles SE (by road) of Tehuacán on hwy 125 to Huajuapán de León, 18°26'N, 097°24'W, 1700 m. Stunted matorral desértico; in ravines. Shrubs 1.5 m, woody; stems to 3 cm ø at base, new twigs ad 1 cm ø; bark reddish brown to red

- gray, smooth except for the persistent spine pedicels; flowers white; anthers creamy», *G. J. Breckon 1309 & M. E. Breckon*, 26-VI-1972 (DAV 84226, holo-; ENCB s/n; F 1890845 [ex DAV, NY phot. n° WIS 62]; IEB [ex NY 246400, photo-]; MICH s/n[2]; MICH 272013 [photo G. J. Breckon n° 62, ex DAV, NY]; MO 2725028; NY 246400; US 2856508 [imag. n° 96491]; XAL 42386; typus *Cnidocolus tehuacanensis*); (MEXU 262950; typus *C. tehuacanensis*), G. J. BRECKON (1975: 425, 434).
- 14QPF63 Tehuacán (ppl), 18°22'N, 097°24'W, «Tehuacán - Zapotitlán Salinas, 1200-1500 m», *C. Troll 649*, 21-III-1954 (M 67044).
- 14QPF63 Tehuacán (ppl), 18°22'N, 097°24'W, ««Cerro Viejo: 2050 m. Chaparral-matorral xerófilo; suelos superficiales derivados de calizas. Arbusto 75 cm, con látex, urticante; flores blancas», *G. Godines, H. Godines, N. Hinke, C. Montaña & A. Valiente Banuet 888*, 06-VI-1991 (MEXU 539205).
- 14QPF63 Tehuacán (ppl), 18°22'N, 097°24'W, «Tehuacán: 5 km rumbo a Zapotitlán, 2100 m. Matorral xerófito; orillas del camino; suelo calizo. Hierba, 20 cm», *M. J. Cházaro Basáñez & H. Oliva Rivera 763*, 25-XI-1990 (CORU, non vidi; WIS s/n).
- 14QPF63 «(Tehuacán dessert) Tehuacán: 13 km S, 3.7 km S of San Antonio de Texcala, low gravelly hills and river valley on E side of hwy. Mex-125 (Tehuacán - Huahuapan de León road) accessible by dirt mining road at km 19, 18°22'N, 097°26'W, 1600 m. Shrub to 0.5 m, spreading», *G. J. Breckon 2237.1[2]; 2337.3[2] & D. A. Kolterman*, 06/07-VII-1978 (WIS s/n[2]).
- 14QPF63 Tehuacán (ppl), 18°22'N, 097°24'W, «Tehuacán: 5,6 miles S on road to Zapotitlán de Salinas, 6000 ft», *I. L. Wiggins 13235*, (DS 405667); G. J. BRECKON (1975: 434); G. J. BRECKON (1979: 144, n° 3).
- 14QPF63 «Tehuacán: ca. 8 km SSW of the city on hwy 125. Low limestone hills, 18°22'N, 097°24'W, ad 1500 m. Shrub 0.5-1 m», *G. J. Breckon 881*, 05-VI-1969 (ENCB s/n; WIS s/n); (DAV, non vidi; MEXU, non vidi; NY, non vidi), G. J. BRECKON (1975: 434); G. J. BRECKON (1979: 144, n° 3).
- 14QPF63 «Tehuacán valley, next to hwy 125, ca. 8 km by road SSW of the city Tehuacán, 18°22'N, 097°24'W. Low arid limestone hills. Shrub 0.5-1 m», *G. J. Breckon 881*, 05-VI-1969 (DAV 84008; F 1864420; WIS s/n, non vidi, fr).
- 14QPF63 «Tehuacán valley, low barren limestone hills SW of Tehuacán along hwy 125 to Huajapam de León, ca. 5 km by road from Tehuacán, 18°24'N, 097°24'W, 1750 m. Degraded low matorral crassicaule», *G. J. Breckon 2251 & M. E. Breckon*, 04-VIII-1976 (DAV 84061; F 1865264; WIS s/n[2], fr).
- 14QPF63 «Tehuacán», *T. S. Brandegee 3439*, 11-V-1908 (UC 136615); G. J. BRECKON (1975: 434); G. J. BRECKON (1979: 144, n° 3).
- 14QPF63 «Tehuacán: ad viam versus Huajuapam de León ducentem, 18°25,180'N, 097°25,298'W, 5679 hx. Cortex atro griseus; flores albi; cauli 10-15 cm ø; folia nullibi semipedata, limbus patens; regmata hispida», *F. J. Fernández Casas Ff_2008-030*, 09-VII-2008 (herb. FJFC).
- 14QPF64 18.50°, -097.44°; PF6443, «(munic. Tehuacán) Tehuacán: W, meseta San Lorenzo, level plain on top of the mesa, 18°28'20"N, 097°26'15"W, ad 1800 m. Rocky calcareous soil, xerophytic thornshrub. Much branched shrub to 1 m», *A. Cervantes Maldonado, P. I. Moscota C. & V. W. Steinmann 1390*, 31-X-1998 (DAV 145740; NY s/n; IEB 188722[2]; RSA, non vidi; SP 346116).
- 14QPF64 «(munic. Tehuacán) Tehuacán: 2,5 km, meseta de San Lorenzo, 1650 m», *A. Salinas Tovar 3162 & al.*, 22-II-1986 (MEXU, non vidi; TEX 91888).
- 14QPF64 «Tehuacán: 2 km W, 18°28'N, 097°26'W. Matorral mediano subcaducifolio, con rosetófilos; ladera caliza; suelo somero. Arbusto 80 cm; látex blanco; flores blancas», *F. Chiang Cabrera 4 & al.*, 23-VII-1979 (MEXU 507061).
- 14QPF64 «(munic. Tehuacán) meseta de San Lorenzo: 18°28'N, 097°26'W, 1720 m. Matorral bajo espinoso. Arbusto 50 cm; látex blanco; flores blancas; fruto con setas urticantes», *F. Chiang Cabrera 2349 & al.*, 28-VII-1983 (MEXU 502104; TEX 91889).
- 14QPF73 18.40°, -097.34°; Tehuacán (ppl), 18°22'N, 097°24'W, «munic. Tehuacán) Tehuacán: 8 km W camino a Tecamachalco, Meseta de San Lorenzo, 1700 m. Selva baja caducifolia. Hierba 50 cm; látex blanco; flores blancas», *A. J. García Mendoza, E. M. Martínez Salas 21691 & A. Salinas Tovar*, 27-VI-1987 (MEXU 569028).
- 14QPF73 «Tehuacán valley, 9.8 miles S of Tehuacán by road, on N edge of San Pablo

- Tepetzingo, next to Tehuacán - Teotitlán road, 18°25'N, 097°19'W, 1150 m. In abandoned fields; on limestone. Much branched, 1-2.5 m, stems to 4 cm ø at base; new twigs 1-2 cm ø; bark reddish grey on twigs, grey and smooth in trunks; stinging hairs pale yellowish; flowers white; stamens exserted; fruit green», *G. J. Breckon 1335 & M. E. Breckon*, 09-VII-1972 (DAV 84060; ENCB s/n; F 1865265; MICH s/n[2]; WIS s/n, fr); *G. J. BRECKON* (1975: 434); *G. J. BRECKON* (1979: 144, n° 3).
- 14QPF81** 18.22°, -097.25°; 18°15'N, 097°13'W, «Tehuacán: 21 miles SE, along road to Teotitlán. On rocky slope. Strictly branched shrub; flowers white», *J. Argüelles, A. S. Barclay & A. H. Gentry 20240A*, 05/22-VIII-1963 (US 2451049); *G. J. BRECKON* (1975: 434); *G. J. BRECKON* (1979: 144, n° 3).
- 14QPF81** «(munic. Cocaxtlán) Cocaxtlán: 4 km S, Tancho el Aguaje, 18°14'N, 097°13'W, 1220 m. Selva baja caducifolia. Arbusto 1,5 m. Semillas comestibles, en crudo o hervidas; las cataplasmas de hojas asadas calman el escalofrío y los dolores reumáticos. "Mala mujer"», *A. Casas, A. Valiente Banuet 34 & J. L. Viveros*, 30-X-1991 (MEXU 578866).
- 14QPF83** 18.40°, -097.25°; «Tehuacán: 13.9 km by road S of S city limits, 3.9 km by road N of Ajalpan, 18°24'N, 097°17'W, 1300 m. Shrub 0.5-1.5 m. Leaves said to be eaten by goats, and seeds, when dry, eaten raw by human in Oaxaca area (fide local landlord)», *B. A. Cochrane, T. S. Cochrane, C. M. Corcoran, G. M. Diggs & D. A. Kolterman 10A; 10B*, 07-VII-1978 (WIS s/n).
- 14QPF90** 18.13°, -097.15°; «(munic. Coxcatlán) San Rafael: 2 km SE, 18°10'N, 097°08'W, 900 m. Matorral; suelos yesosos. Arbusto 1,7 m; látex blanco; flores blancas», *A. Salinas Tovar 6764*, 25-V-1992 (CAS 884028; MEXU 572658).
- 14QPF91** 18.22°, -097.15°; «(munic. San José Miahuatlán) Axusco: alrededores del lado W, 1050 m», *F. Chiang Cabrera 2473 & al.*, 04-VI-1985 (MEXU, non vidi; TEX 91887).
- 14QPF91** «(munic. San José de Miahuatlán) Axusco: 6 km W, 1300 m. Selva baja caducifolia con crasas y rosetófilos; suelo litosol sobre calizas. Arbusto 2 m; flores blancas; fruto verde», *A. J. García Mendoza 3317, E. M. Martínez Salas & A. Salinas Tovar*, 28-VI-1987 (MEXU 533888).
- 14QPF92** 18.31°, -097.16°; PF9520; Coxcatlán (atlas): 18°15'51"N, 097°09'09"W, «Coxcatlán: 1100 m. Planta 4 m», *L. W. Boege 798*, 23-V-1968 (DUKE 268594; MEXU, non vidi).
- 14QQE09** 18.04°, -097.06°; «(munic. San Martín Toxpalán) hacienda Ayotla: a un lado, en el camino real, 18°04'13,5"N, 097°05'27,4"W, 811 m. Arbusto 2 m; látex blanco», *O. Téllez Valdés 17454 & al.*, 08-IX-2004 (FCME 96345).
- 14QQF00** 18.13°, -097.06°; «Tilapa: 2 miles N (by road) on Tehuacán - Teotitlán road, 11.6 miles S of Calipa, Tehuacán valley, 18°10'N, 097°06'W, 790 m. Selva baja caducifolia. Shrub 3-3.5 m», *G. J. Breckon 1313 & M. E. Breckon*, 07-VII-1972 (DAV 84062; MICH s/n[2]; US 2988831; US 2988860; WIS s/n; XAL 42387; paratypi *C. tehuacanensis*); (MEXU, non vidi) *G. J. BRECKON* (1975: 434); *G. J. BRECKON* (1979: 144, n° 3).
- 14QQF01** 18.22°, -097.06°; «Tehuacán: 52.5 km S (by road), both sides of hwy. Mex-131 to Oaxaca, 9.7 km by road N of road to Teotitlán del Camino & Huautla de Jiménez, 18°12'N, 097°06'W, 1500 m. Deciduous low thorn forest; gypsum and mica-containing clay. Tree to 3 m; latex white», *B. A. Cochrane, T. S. Cochrane, C. M. Corcoran, G. M. Diggs & D. A. Kolterman 11A; 11B*, 07-VII-1978 (WIS s/n).

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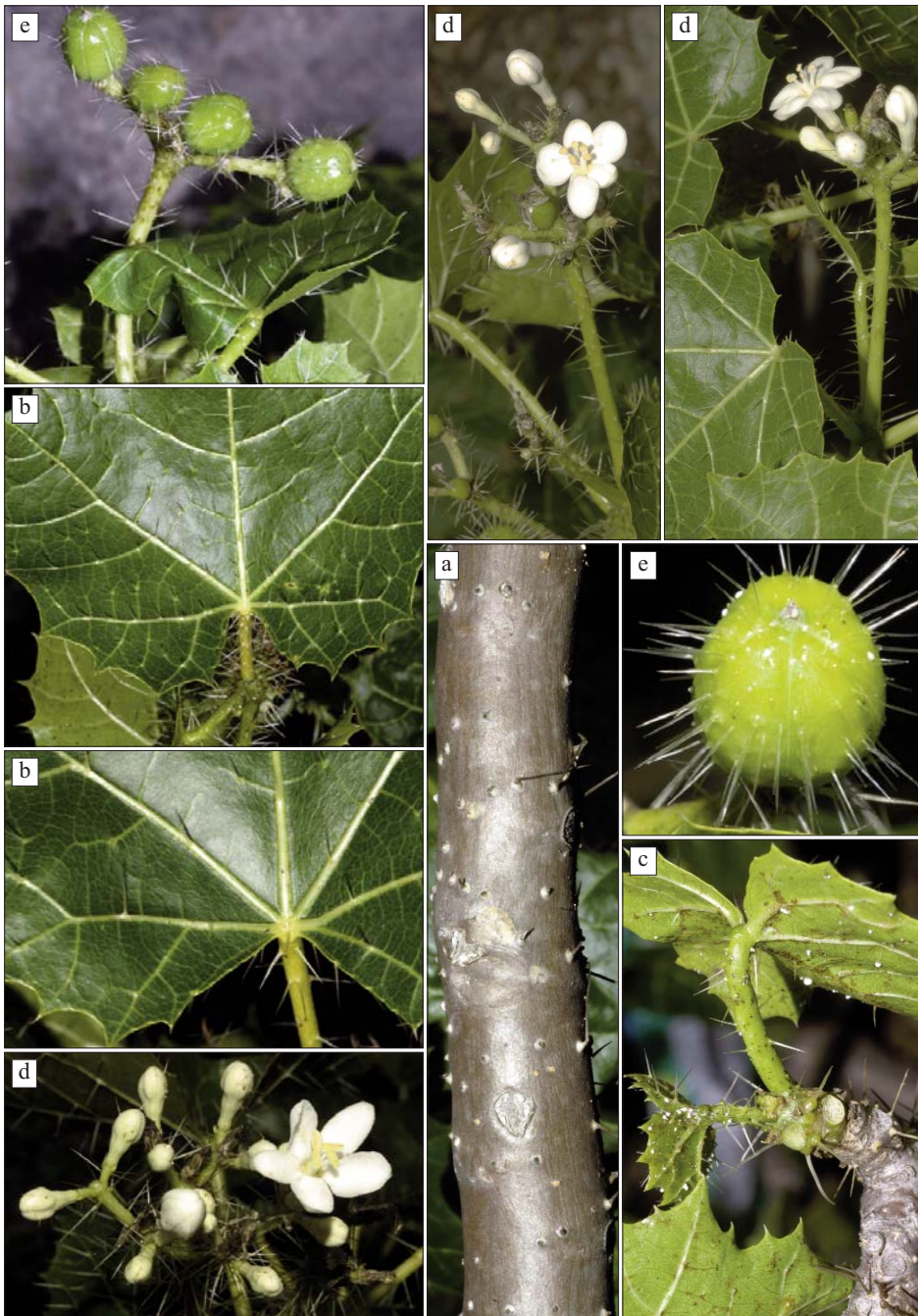


LÁMINA I. *Cnidoscolus tehuacanensis* Breckon (1979); F. J. Fernández Casas Ff_2008-030 (herb. FJFC). a) Tallo. b) Hojas adultas. c) Pecíolo con glándulas sumipeciolares. d) Flores masculinas y sus botones. e) Regmas casi maduros.

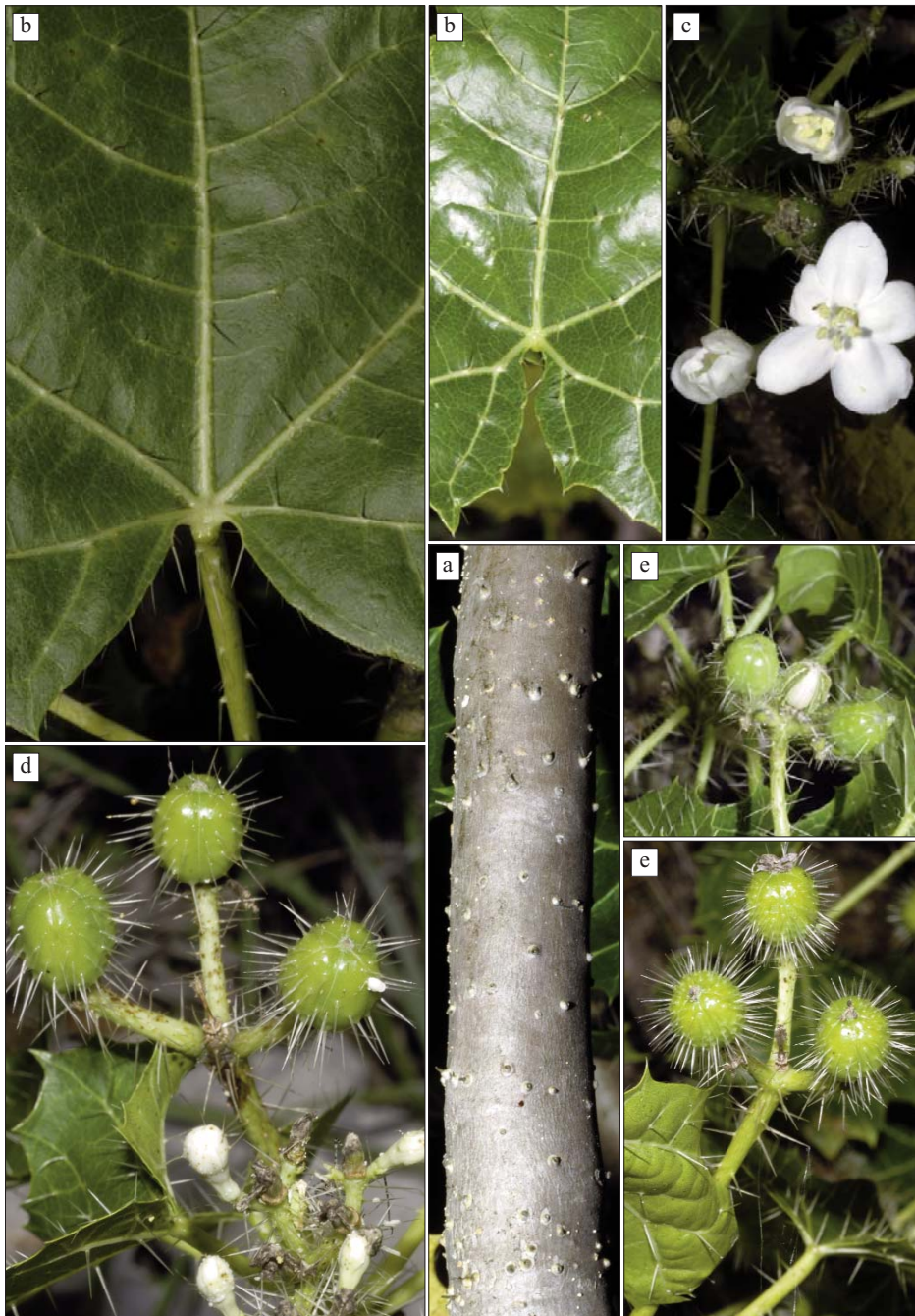


LÁMINA II. *Cnidoscolus tehuacanensis* Breckon (1979); F. J. Fernández Casas Ff_2008-030 (herb. FJFC). a) Tallo. b) Hojas adultas. c) Flores masculinas. d) Botones masculinos y remas. e) Regmas (uno casi maduro, arriba).

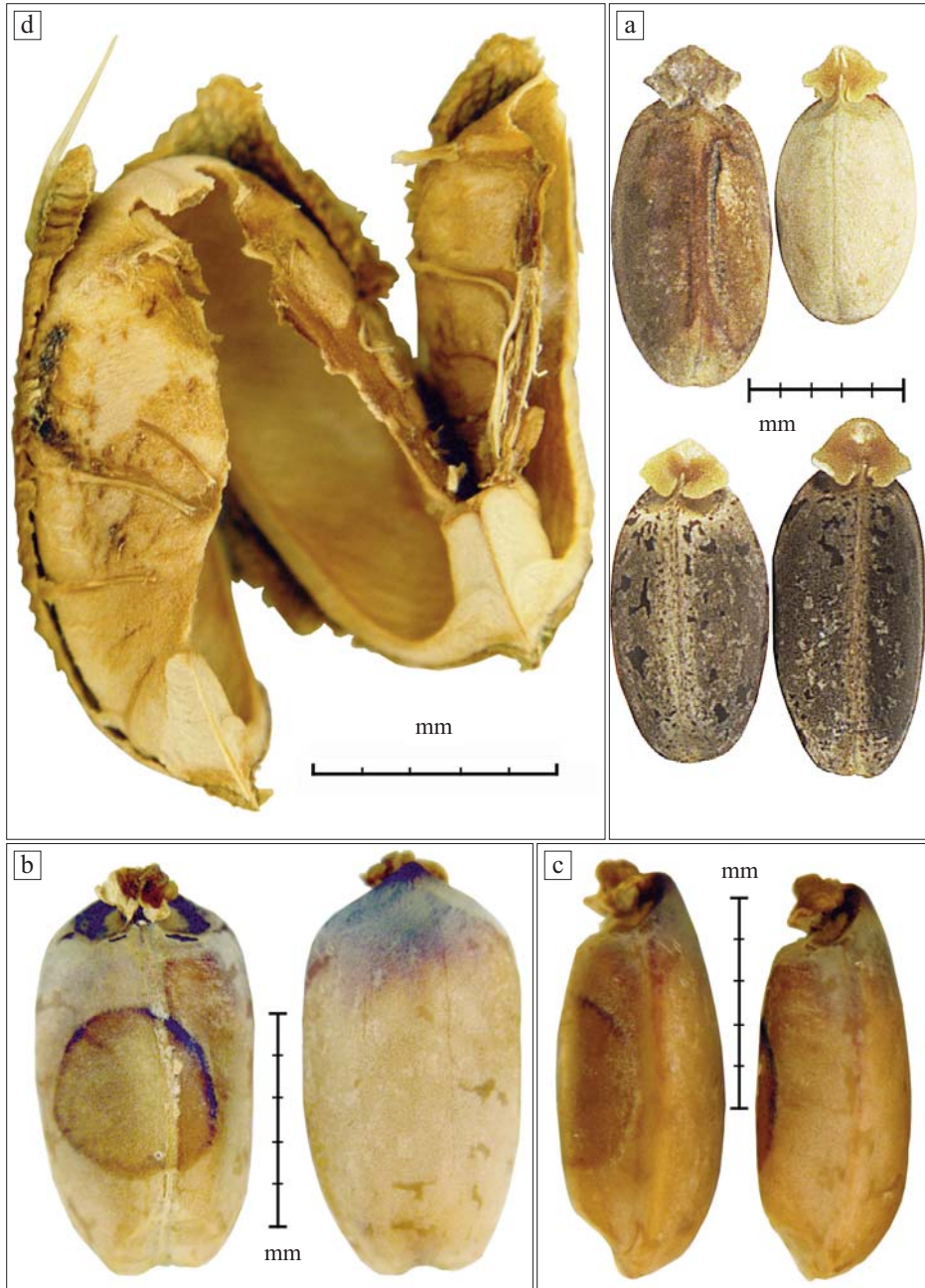


LÁMINA III. *Cnidoscolus tehuacanensis* Breckon (1979). a) Semillas en vista ventral. b) Semillas en vista ventral. c) Semillas en vista lateral. d) Folículo abierto; ha expulsado la semilla y deja ver el esporocébolo, arriba a la izquierda. a) Colección *V. W. Steinmann 1390 & al.* (SP 346116). b-d) Colección *C. E. Smith 3642* (US 2397682).



LÁMINA IV. *Cnidoscolus tehuacanensis* Breckon (1979); colección V. W. Steinmann 1390 & al. (NY s/n). a) Trece semillas obtenidas de pliegos, todas ellas en vista dorsal.

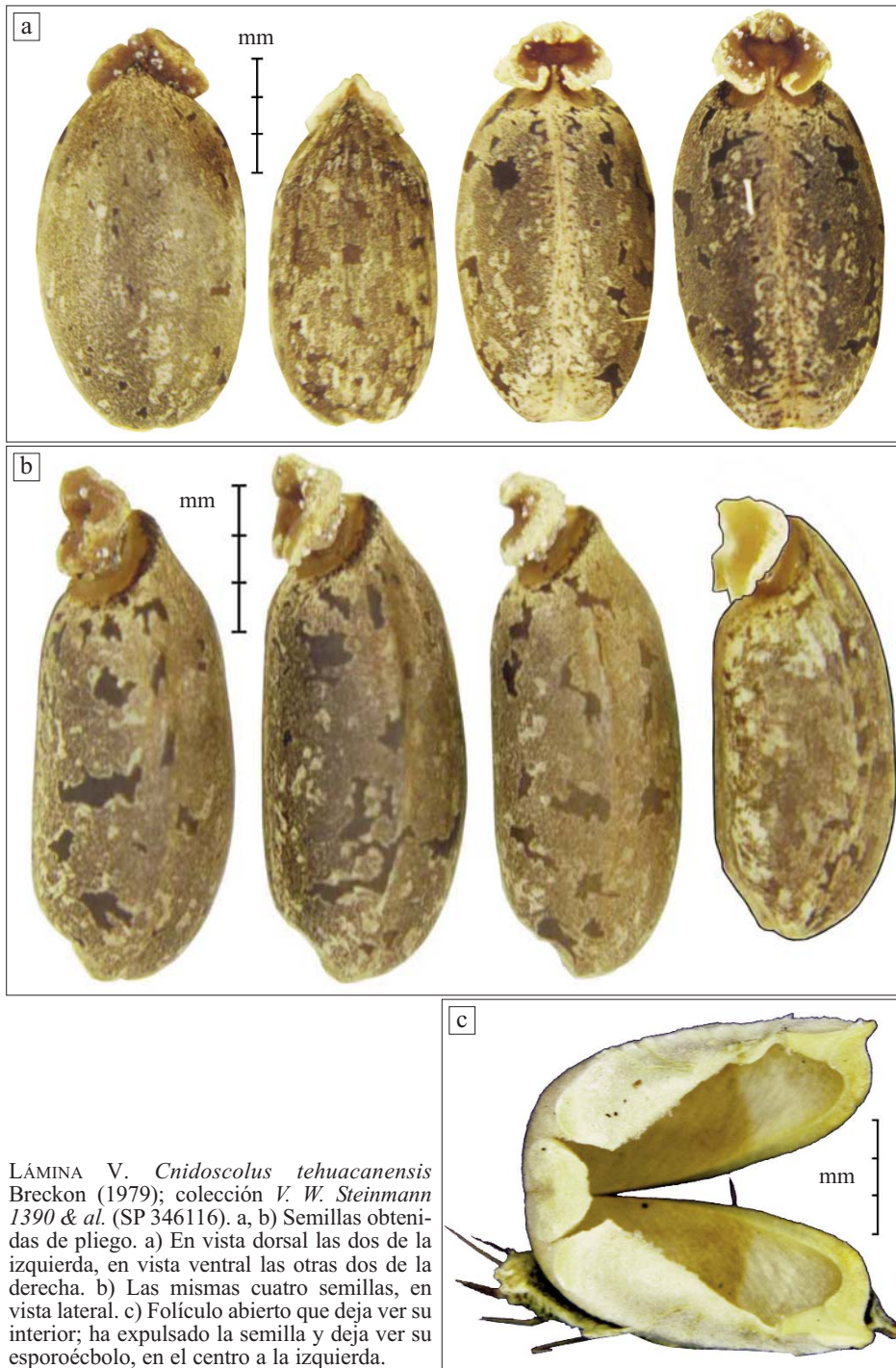


LÁMINA V. *Cnidoscopus tehuacanensis* Breckon (1979); colección V. W. Steinmann 1390 & al. (SP 346116). a, b) Semillas obtenidas de pliego. a) En vista dorsal las dos de la izquierda, en vista ventral las otras dos de la derecha. b) Las mismas cuatro semillas, en vista lateral. c) Folículo abierto que deja ver su interior; ha expulsado la semilla y deja ver su esporoócbolo, en el centro a la izquierda.

LÁMINA VI. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (MO 2725028).

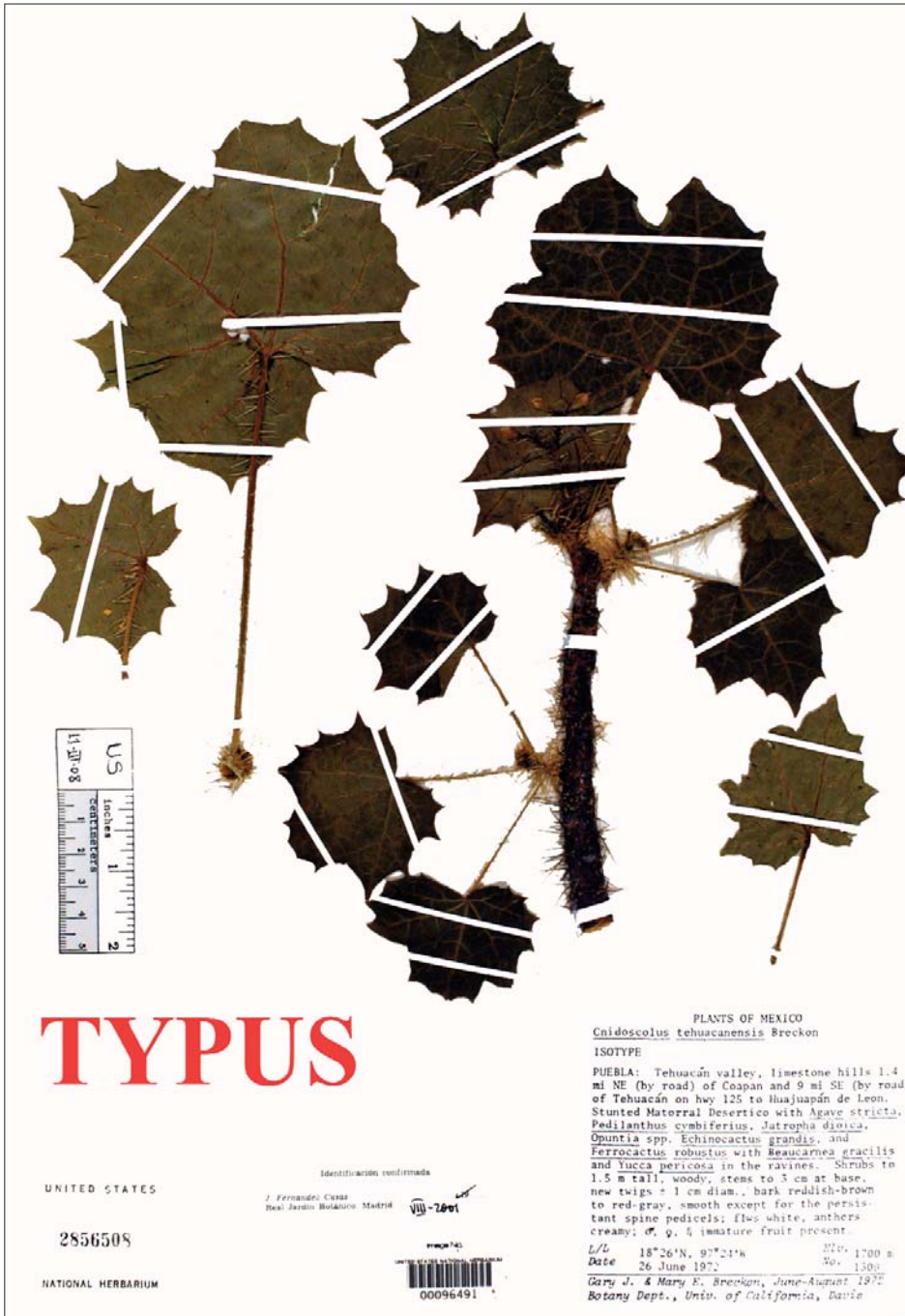


LÁMINA VII. *Cnidoscolus tehucanensis* Breckon (1979); colección G. J. Breckon 1309 (US 2856508 [imag. n° 96491]).

LÁMINA VIII. *Cnidoscopus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (MEXU 262950).



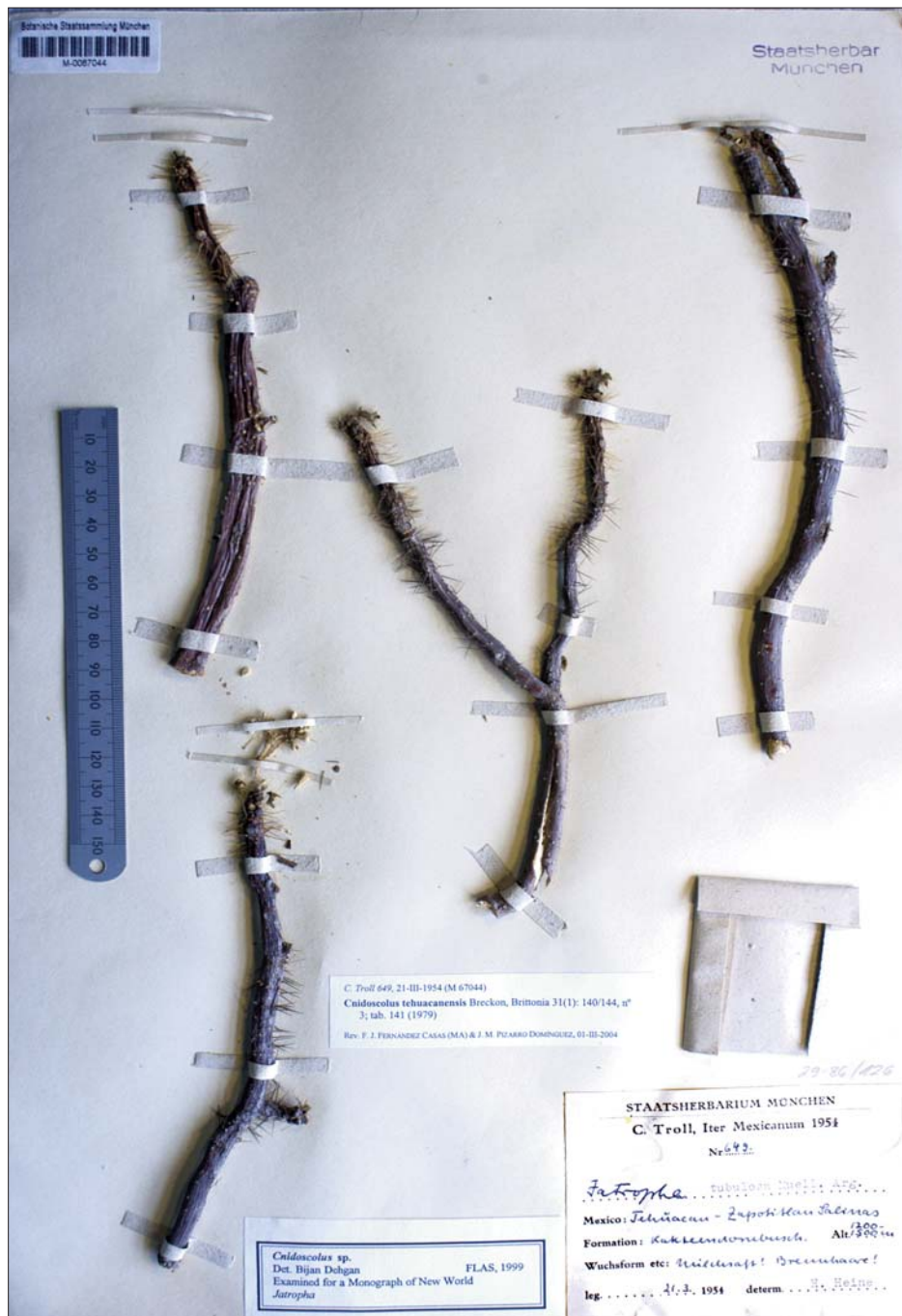
LÁMINA IX. *Cnidoscolus tehuacanensis* Breckon (1979); colección P. Tenorio Lezama 3749 (IEB 157711).

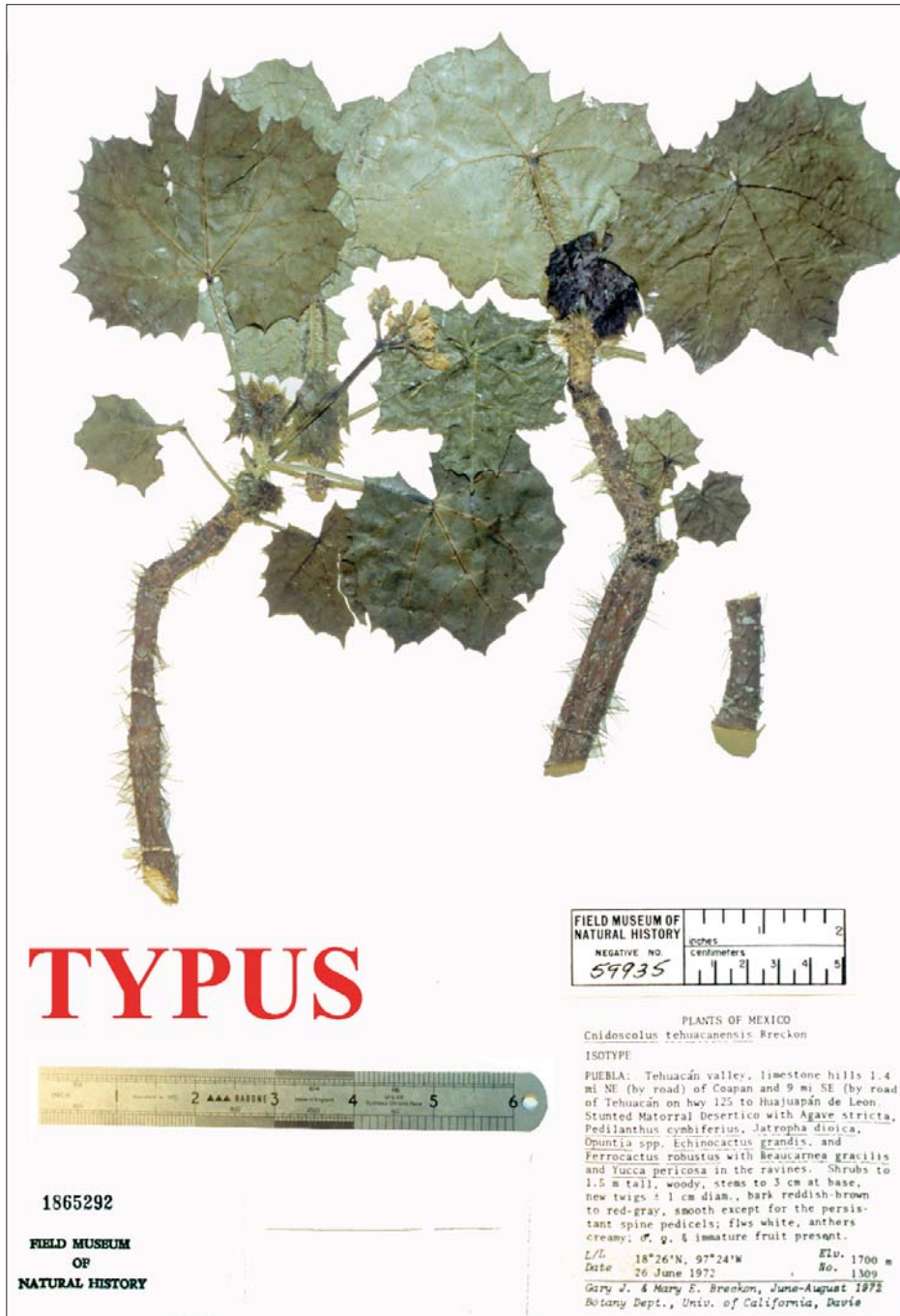


LÁMINA X. *Cnidoscolus tehuacanensis* Breckon (1979); colección V. W. Steinmann 1390 (IEB 188722a).



LÁMINA XI. *Cnidoscolus tehuacanensis* Breckon (1979); colección colección V. W. Steinmann 1390 (IEB 188722b).

LÁMINA XII. *Cnidoscolus tehuacanensis* Breckon (1979); colección C. Troll 649 (M 67044).

LÁMINA XIII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (F 59935).

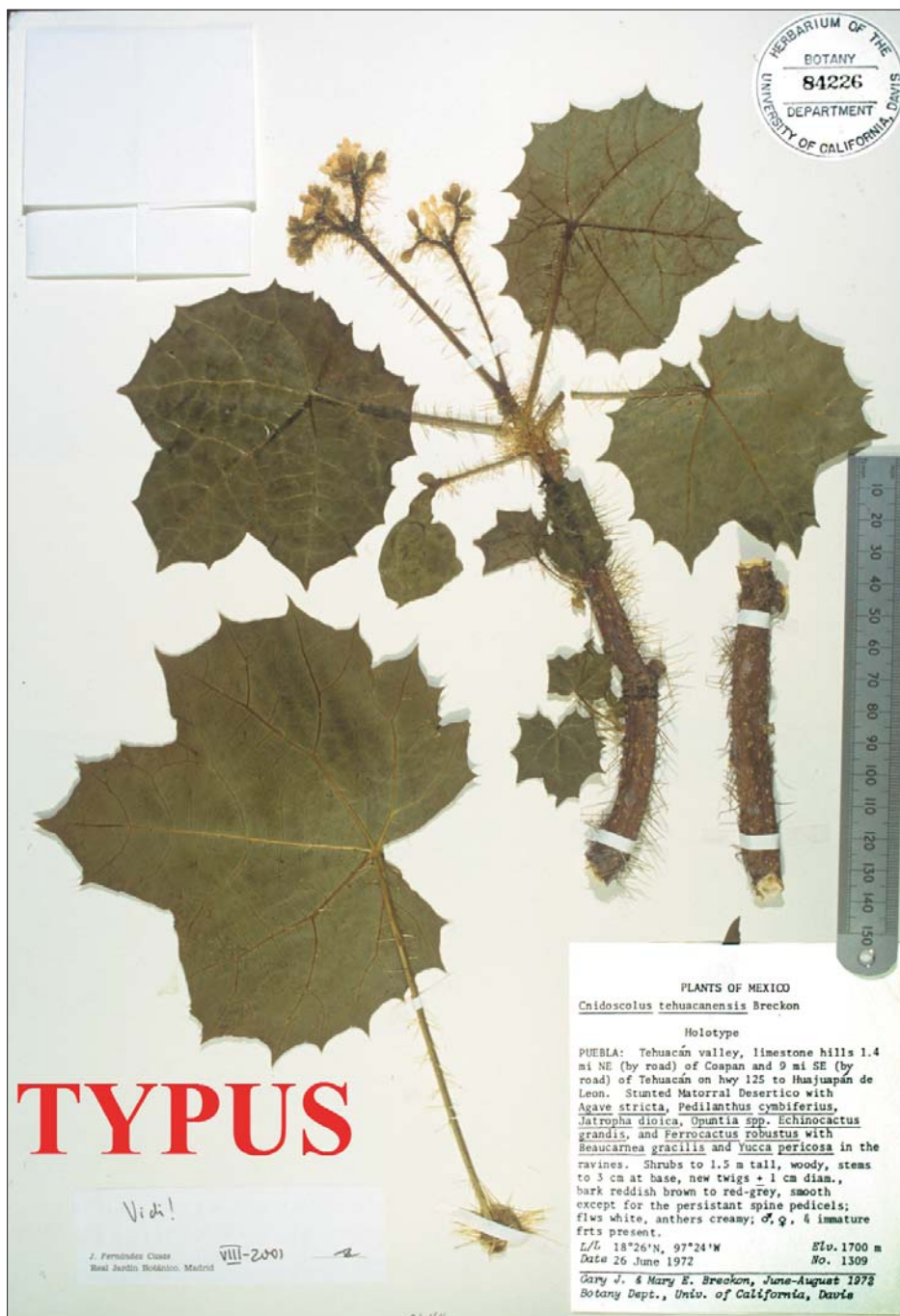
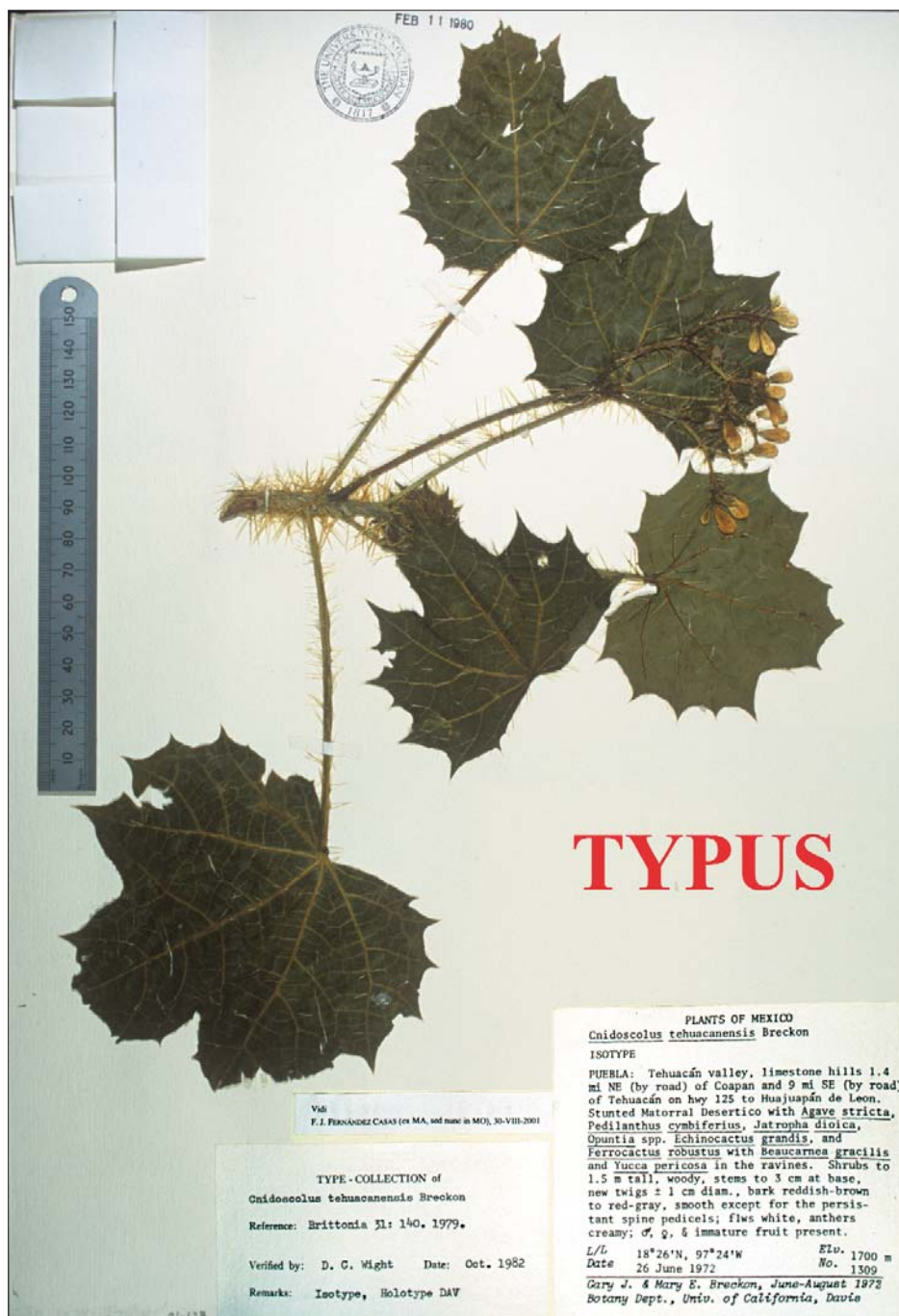


LÁMINA XIV. *Cnidoscopus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (DAV 84226).



LÁMINA XV. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (US 2856508, imag. 9649).

LÁMINA XVI. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1309 (MICH s/n).

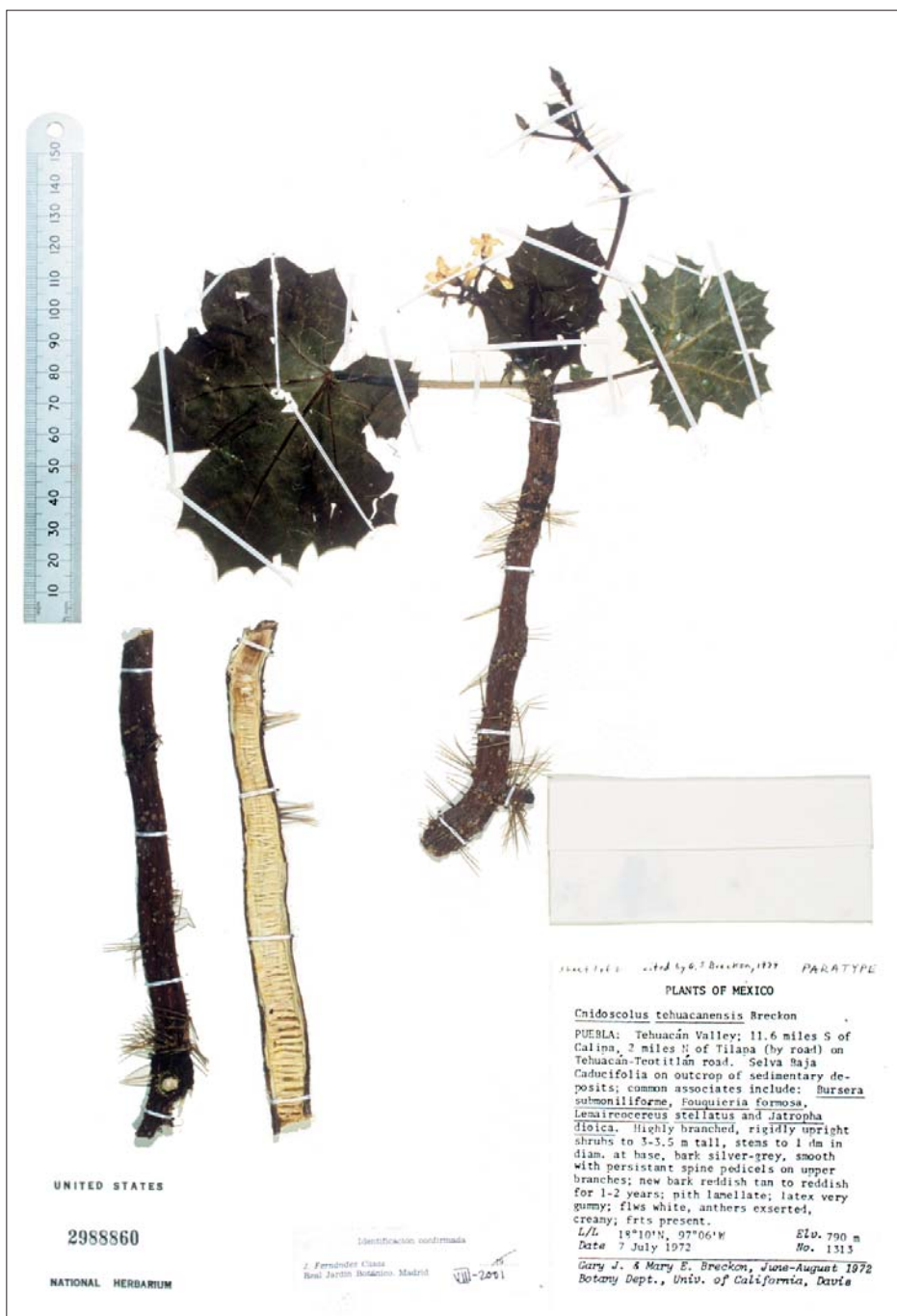


LÁMINA XVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1313 (US 2988860).

LÁMINA XVIII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1313 (MICH s/n).

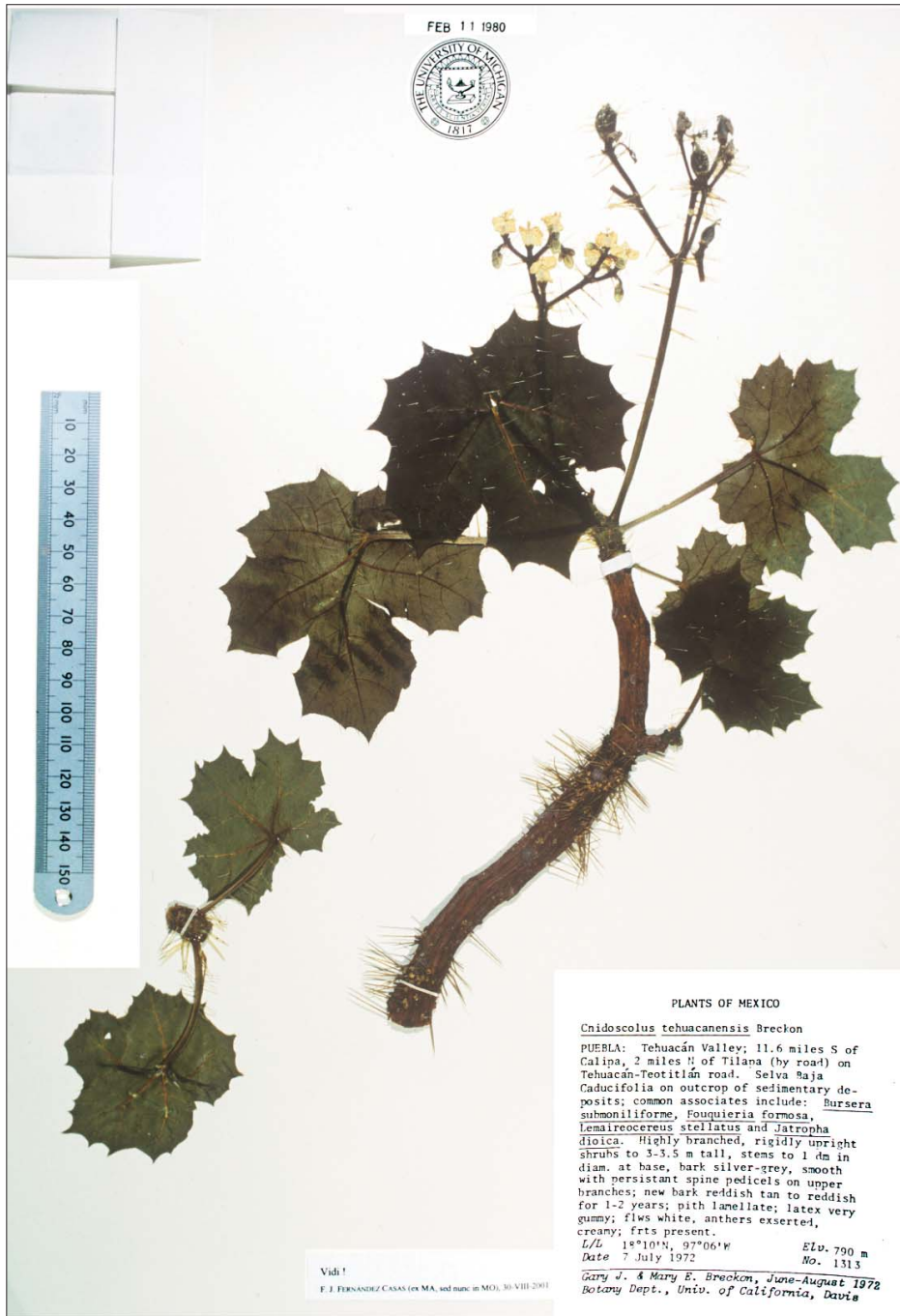


LÁMINA XXX. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1313 (MICH s/n).



LÁMINA XX. *Cnidoscolus tehuacanensis* Breckon (1979); colección V. W. Steinmann 1390 (NY s/n).



LÁMINA XXI. *Cnidoscolus tehuacanensis* Breckon (1979); colección F. Chiang Cabrera 2287 (NY s/n).



LÁMINA XXII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 881 (F 1864420).

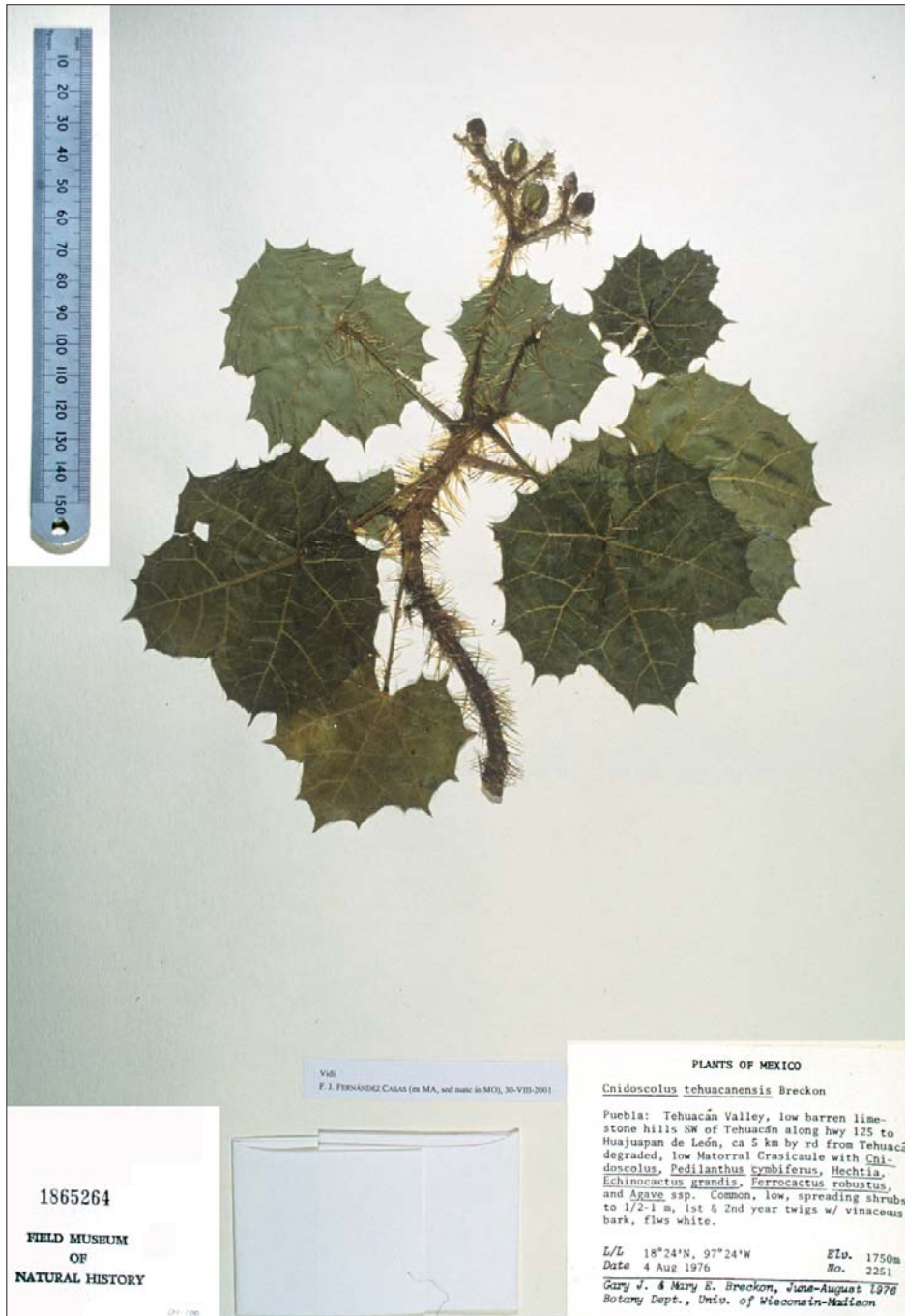


LÁMINA XXIII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 2251 (F 1865264).

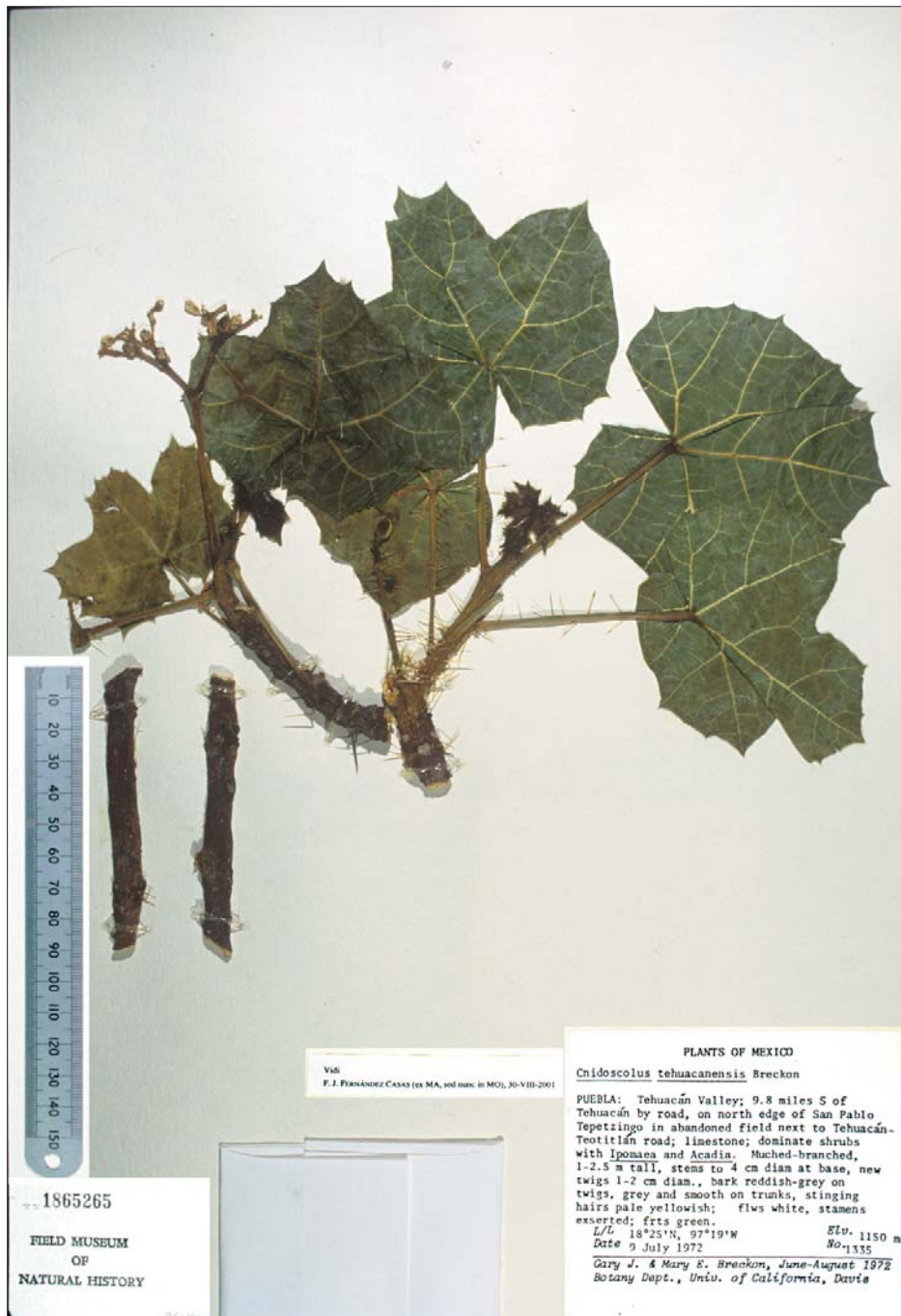


LÁMINA XXIV. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 1335 (F 1865265).

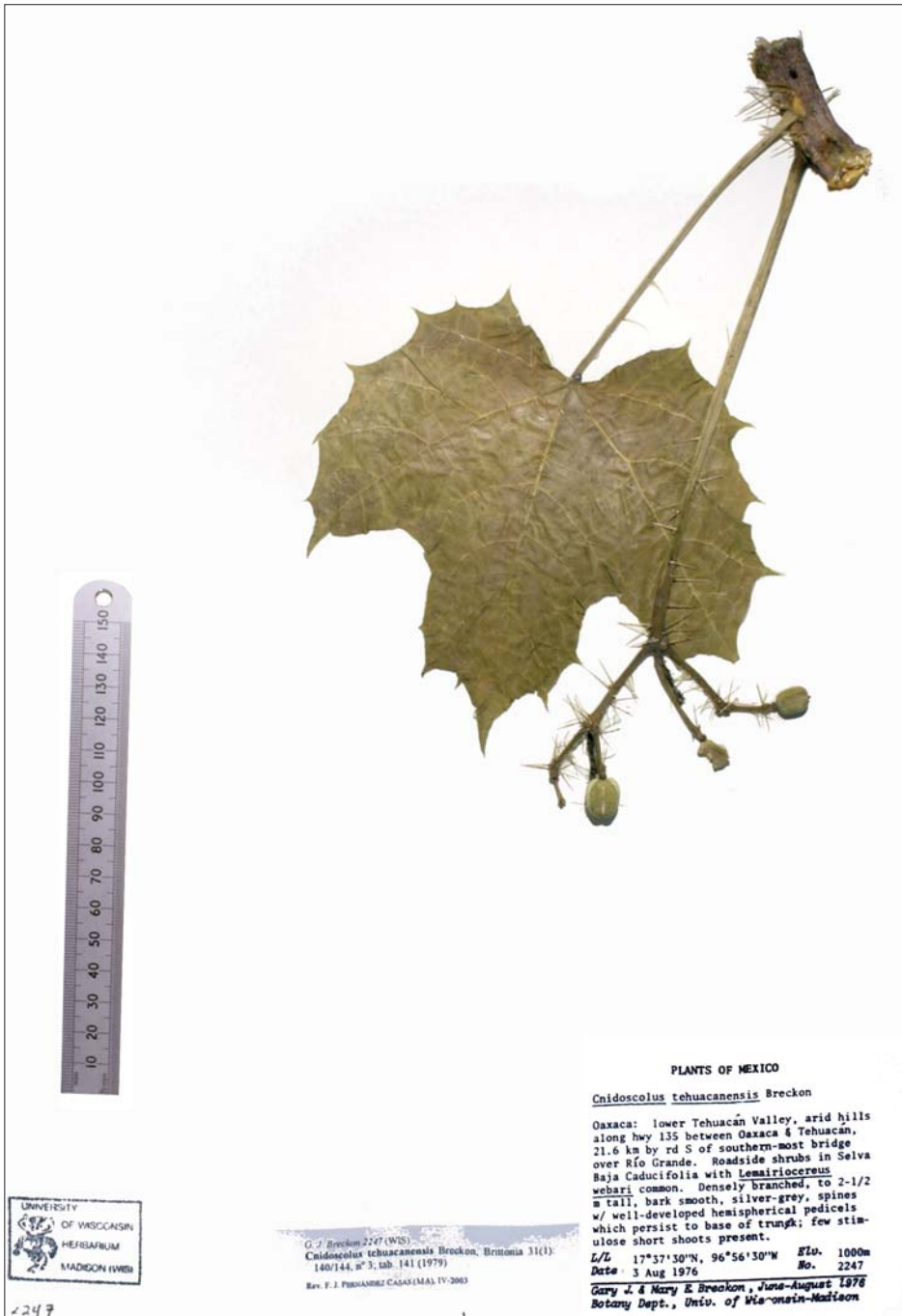


LÁMINA XXV. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 2247 (WIS s/n).

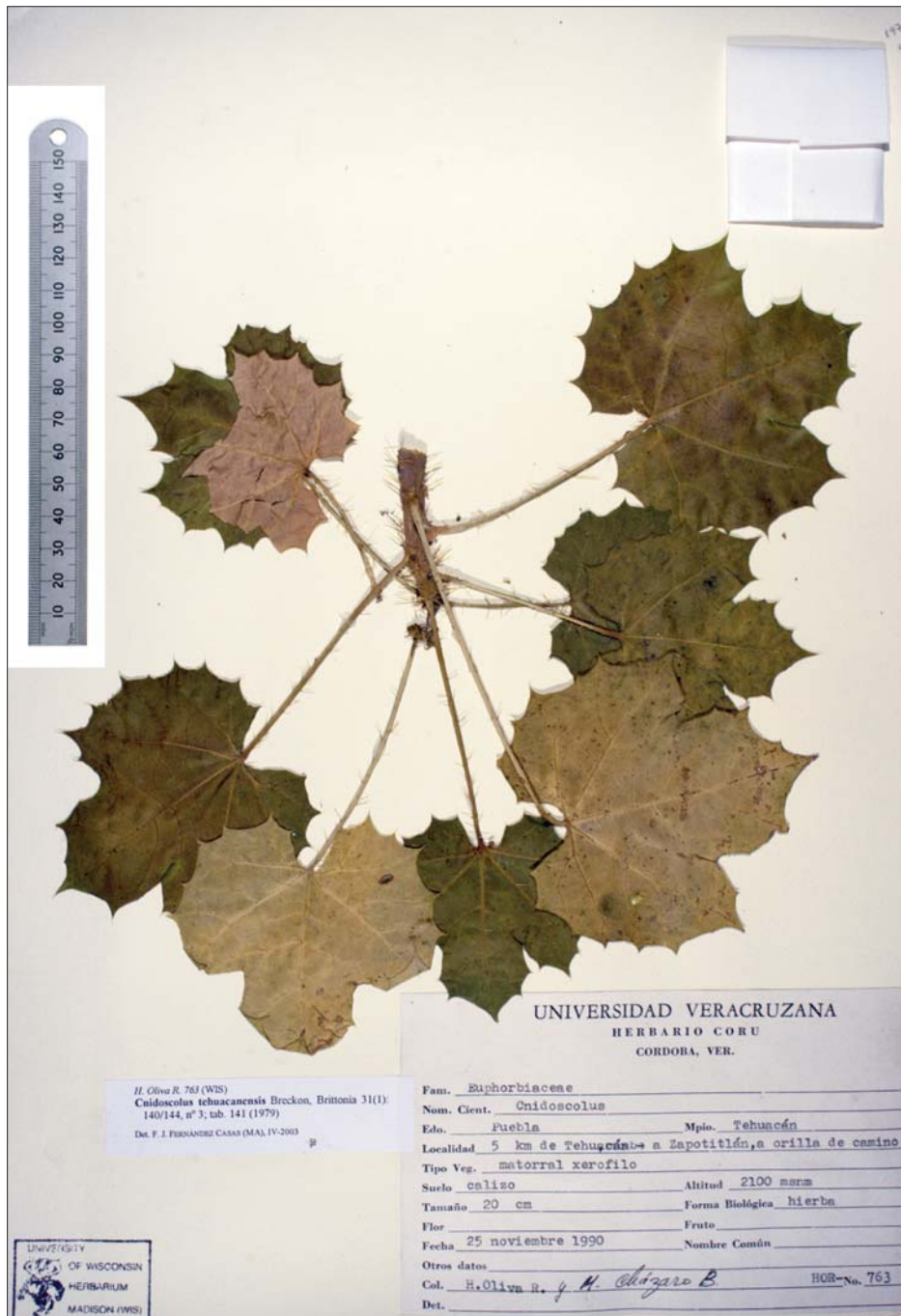
LÁMINA XXVI. *Cnidoscopus tehuacanensis* Breckon (1979); colección H. Oliva Rivera 763, 25-XI-1990 (WIS s/n).



LÁMINA XXVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección D. A. Kolterman 11B (WIS s/n).

LÁMINA XXVII. *Cnidoscopus tehuacanensis* Breckon (1979); colección G. J. Breckon 2337.1 (WIS/s/n).



LÁMINA XXVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 2337.3 (WIS s/n).

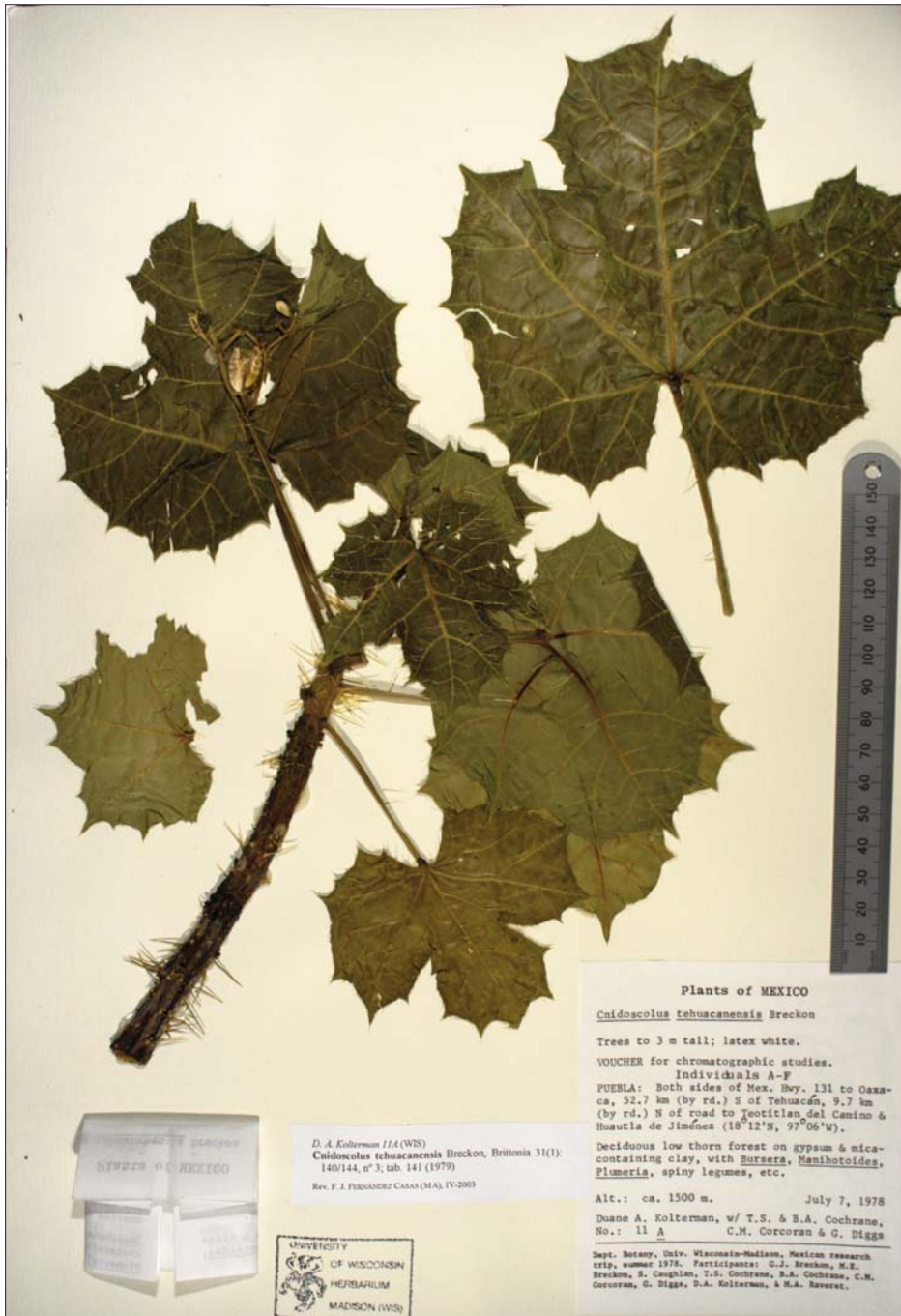


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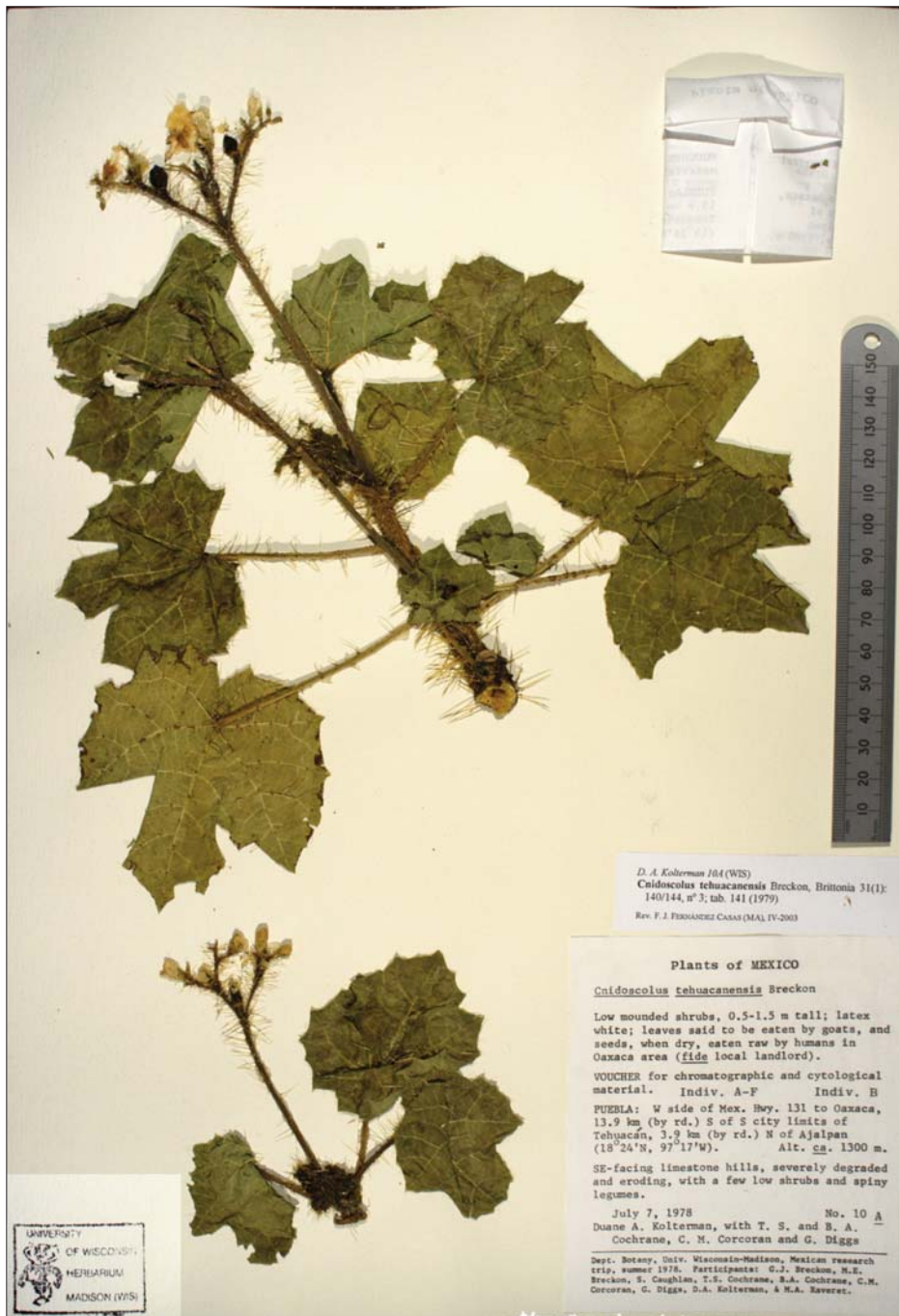


LÁMINA XXVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección D. A. Kolterman 10A (WIS s/n).

LÁMINA XXVII. *Cnidoscopus tehuacanensis* Breckon (1979); colección D. A. Kolterman 10B (WIS s/n).



LÁMINA XXVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 2251 (WIS s/n).



LÁMINA XXVII. *Cnidoscopus tehuacanensis* Breckon (1979); colección G. J. Breckon 1313 (WIS s/n).

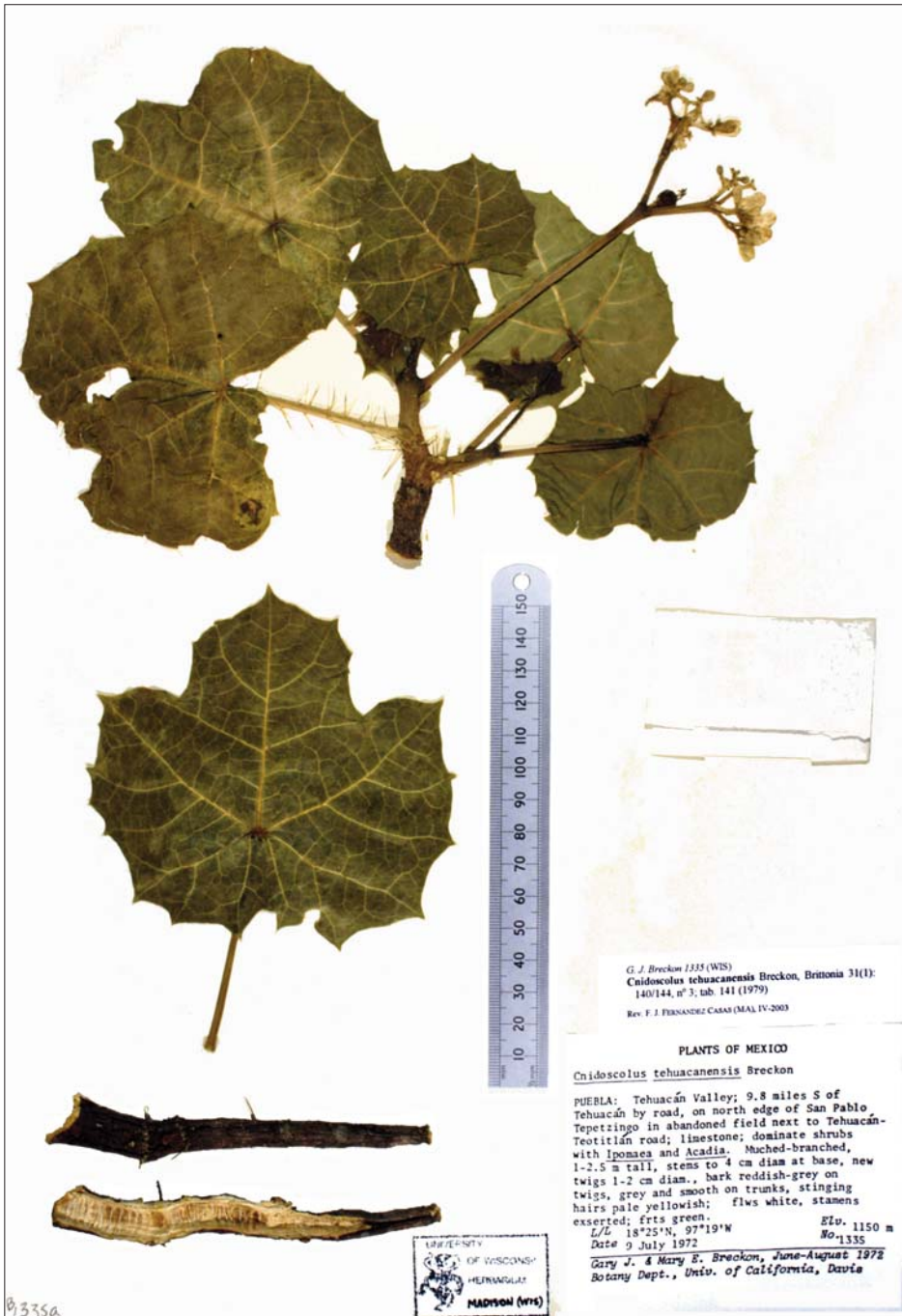


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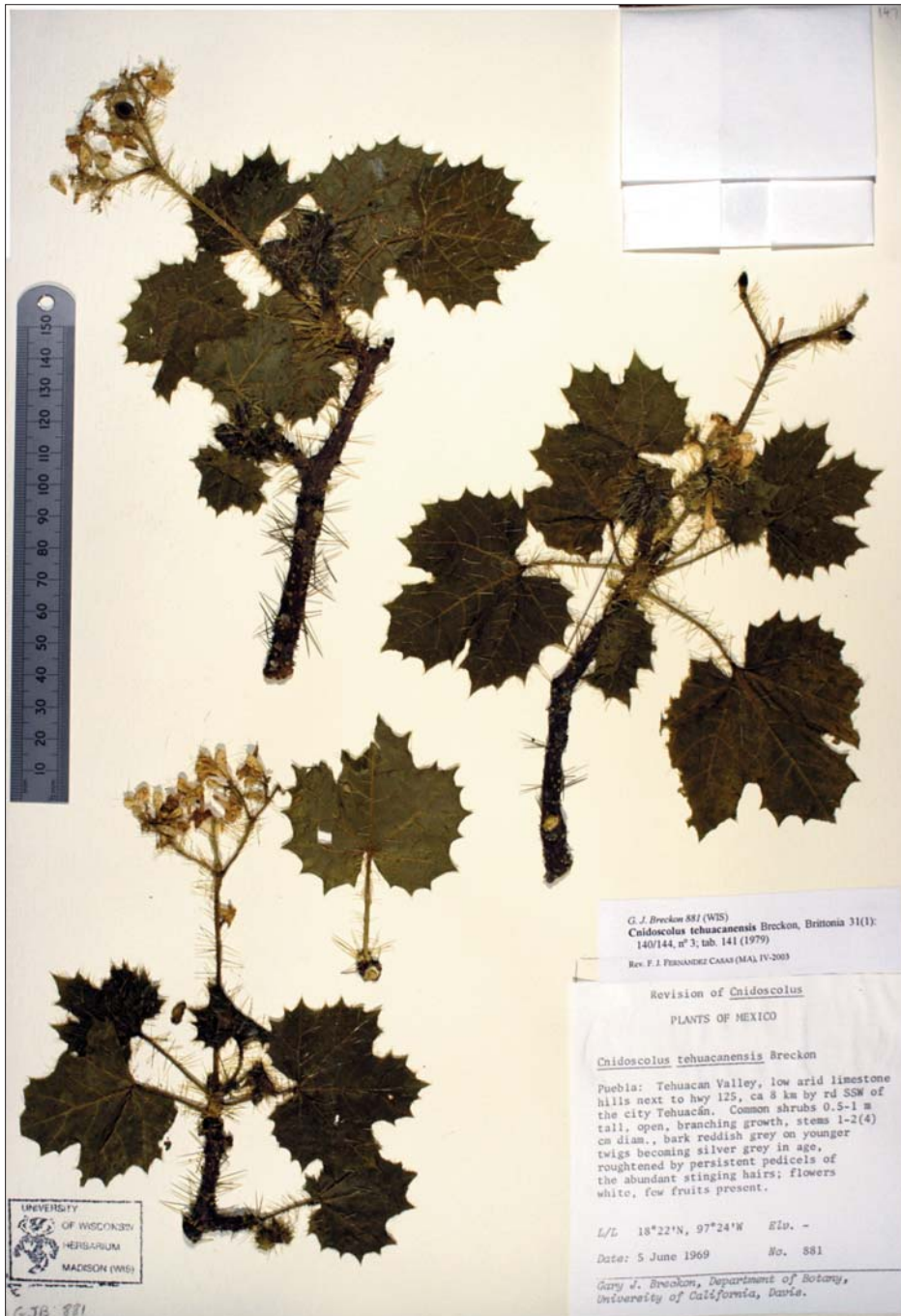


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LÁMINA XXVII. *Cnidoscolus tehuacanensis* Breckon (1979); colección G. J. Breckon 2251 (WIS s/n).