

**TAXONOMIC REVISION OF *CIRSIUM* SECT. *ERYTHROLAENA*
(ASTERACEAE: CARDUEAE)**

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ABSTRACT

Cirsium sect. *Erythrolaena* includes 15 species, all from Mexico, except *C. subcoriaceum*, which also extends into Guatemala: *C. bicentenariale*, *C. conspicuum* (including *C. anartiolepis*), *C. ehrenbergii*, *C. faucium*, *C. subcoriaceum* (including *C. pinnatisectum*), and ten species described here, ***C. bocoyense* Nesom, sp. nov.**, ***C. canoasense* Nesom, sp. nov.**, ***C. eorythros* Nesom, sp. nov.**, ***C. jaliscoense* Nesom, sp. nov.**, ***C. michiliense* Nesom, sp. nov.**, ***C. mimbresense* Nesom, sp. nov.**, ***C. rupinarum* Nesom, sp. nov.**, ***C. tancitaroense* Nesom, sp. nov.**, ***E. tepehuanense* Nesom, sp. nov.**, and ***C. vergelense* Nesom, sp. nov.** Brief descriptions, illustrations, and distribution maps, and a species key are provided. Lectotypes are designated for *C. anartiolepis*, *C. conspicuum*, and *Carduus heterolepis* Greene. Epitypes are designated for *C. ehrenbergii* and *C. subcoriaceum*. *Cirsium conspicuum*, *C. subcoriaceum*, and *C. ehrenbergii* are widespread and variable and in need of further study; the others have narrower distributions and a narrower range of morphology.

Plants of *Cirsium* sect. *Erythrolaena* are diagnostically characterized by their short stigmatic branches (1–3 mm) and corolla lobes usually longer than the corolla throat. The inner phyllaries are relatively broad, erect, entire, unkeeled, red to carmine, and extend above the outer ones ("heterolepis" has twice been used as a specific epithet). A chromosome number of $2n = 34$ (the ancestral/base number for the genus — Keil 2006; Ackerman et al. 2020a) has been reported for *C. conspicuum* and *C. subcoriaceum*. All of the species are endemic to Mexico, except for *C. subcoriaceum*, which extends southward through Central America into Panama.

Molecular data show *Cirsium conspicuum* (incl. *C. anartiolepis*) and *C. subcoriaceum* (of sect. *Erythrolaena*) as monophyletic (Ackerfield et al. 2020b), without a resolved close relationship to other American species. *Cirsium faucium* and *C. michiliense* are sisters in the molecular analysis of Kelch & Baldwin (2003) within a larger clade including (for example) *C. neomexicanum*, *C. muticum*, *C. occidentale*, *C. raphilepis*, and *C. rydbergii*.

DNA VOUCHERS (Ackerfield et al. 2020b)

Cirsium subcoriaceum [identified as "*C. ehrenbergii*"] **Oaxaca**. Mpio. San Mateo Rio Hondo, 3 Aug 2011, *Martinez 433* (MEXU)

Cirsium conspicuum [identified as "*C. anartiolepis*"] **Edo. Mexico**. Mpio. Donato Guerra, 20 Mar 2005, *Tenorio 994* (MEXU)

Cirsium conspicuum [identified as "*C. subcoriaceum*"] **Edo. Mexico**. Mpio. Valle de Bravo, 19 Mar 2011, *Corral 1560* (MEXU)

DNA VOUCHERS (Kelch & Baldwin 2003)

Cirsium faucium [as identified] **Edo. Mexico**. Mpio. Sultepec, 17 Mar 1973, *Rzedowski 30328* (UC)

Cirsium michiliense [identified as "*C. ehrenbergii*"] **Durango**. Mpio. Mezquital, 26 Jul 1990, *Spellenberg 10355* (UC)

"Section" is used as the taxonomic rank for this group (as established by Petrak 1917) but without a guiding taxonomic pattern related to the larger phylogenetic structure of the genus (analyses by Kelch & Baldwin 2003 and Ackerfield et al. 2020a indicate large-scale structure). These species at least appear to comprise a natural group (with caveats as noted in the text).

Species of the *Cirsium arizonicum* group are similar to those of sect. *Erythrolaena* in their dimorphic phyllaries, the inner series red, erect, and extending above the outer, but this morphology has been independently derived (fide phylogenetic topology of Ackerfield et al. 2020b). *Cirsium novoleonense* (Nesom & Garcia-Mor. 2021), *C. andersonii*, and *C. turneri* are other examples of American species with independently derived red involucres.

Cirsium sect. **Erythrolaena** (Sweet) Petrak, Beih. Bot. Centralbl. 35 (Abt. 2): 269. 1917. *Erythrolaena* Sweet, Brit. Fl. Gard. [Sweet] 2: pl. 134. 1825. **TYPE:** *Erythrolaena conspicua* Sweet

Cirsium subsect. *Conspicua* Petrak, Beih. Bot. Centralbl. 35 (Abt. 2): 271. 1917. **LECTOTYPE** (designated here): *Cirsium conspicuum* (Sweet) Sch.Bip. Petrak included *C. anartiolepis*, *C. conspicuum*, *C. subcoriaceum*, and *C. pinnatisectum* in the group but, other than his choice of the subsection name, did not point to one of the species as the type.

Petrak's sect. *Erythrolaena* subsect. *Subcoriacea* (Beih. Bot. Centralbl. 35 (Abt. 2): 269. 1917) included the red-involucred *C. arizonicum*, *C. pulchellum*, *C. rothrockii*, and *C. andersonii* — molecular data indicate that the *C. arizonicum* group is not closely related to *C. andersonii* or *C. conspicuum*.

Key to the species of sect. *Erythrolaena*

1. Phyllary margins without spines or with a few, inconspicuous ones.
 2. Plants of the Trans-Mexican Volcanic Belt; involucres 6–10 cm wide, persistently and usually densely cottony 8. **Cirsium ehrenbergii**
 2. Plants of Chihuahua, Sonora, and Durango; involucres 2.5–5 cm wide, glabrous to glabrate.
 3. Chihuahua and Sonora.
 4. Abaxial leaf surface glabrous or glabrate, adaxial surface with multicellular hairs; corolla tube 5–9 mm long; s Chihuahua 13. **Cirsium vergelense**
 4. Abaxial leaf surface persistently tomentose, adaxial surface without multicellular hairs; corolla tube 11–17 mm long.
 5. Stems villous with long, spreading, multicellular hairs; leaf bases not decurrent, adaxial midvein sparsely villous with long, multicellular hairs; heads immediately subtended by spiny-margined bracts; outer phyllaries with a reflexing, adaxially concave-caniculate, spine-like apex; stigmatic branches 3–3.8 mm long 14. **Cirsium rupinarum**
 5. Stems lightly sericeous, glabrescent, without multicellular hairs; leaf bases decurrent, adaxial midvein without multicellular hairs; heads without immediately subtending bracts; outer phyllaries with an erect, flattened spine-like apex; stigmatic branches 2 mm long 15. **Cirsium bocoyense**
3. Durango.
 6. Heads immediately subtended by a pair of large, foliaceous bracts 9. **Cirsium mimbresense**
 6. Heads without immediately subtending bracts or with only small ones grading into the phyllaries.
 7. Leaves decurrent 12. **Cirsium tepehuanense**
 7. Leaves not decurrent.

8. Stems villous with multicellular hairs; phyllaries not keeled or weakly so; corollas 36–37 mm long, lobes 26–27 mm; pappus bristles longer than the corollas, apically dilated 10. **Cirsium michiliense**
8. Stems without multicellular hairs; phyllaries prominently keeled; corollas 44–47 mm long, lobes 12–13 mm; pappus bristles equalling or slightly shorter than the corolla length, apically acute 11. **Cirsium canoasense**

1. Phyllary margins prominent spiny; plants of southwestern Durango, Nayarit, Jalisco and eastward and southward.

9. Involucres persistently and densely tomentose.

10. Stems 1–3(–4) m tall; leaves persistently whitish-tomentose abaxially; corolla throat 1–1.5 mm long; s-centr Mexico to Central America 6. **Cirsium subcoriaceum**

10. Stems 0.8–1.5 m tall; leaves green on both surfaces; corolla throat 13–16 mm long; ne Querétaro, sw San Luis Potosí 7. **Cirsium bicentenariale**

9. Involucres glabrous, glabrate, or distinctly glabrescent.

11. At least the upper stems densely invested with long, vitreous, multicellular hairs; corolla tubes 20–22 mm long; inner phyllaries with apices curling-twisting or with dilated (nearly petaloid), erose distal margins.

12. Involucres 5–6 cm wide; all phyllaries with glossy, minutely tuberculate lateral areas, outer with 6–10 spines per margin, inner with slightly dilated and curling-twisting, irregularly serrulate distal margins 4. **Cirsium jaliscoense**

12. Involucres 8 cm wide; only the outermost phyllaries with glossy, minutely tuberculate lateral areas, outer densely spiny with 15–25 spines per margin, inner strongly dilated (nearly petaloid), erose distal margins 5. **Cirsium tancitaroense**

11. Stems without a prominent vestiture of multicellular hairs; corolla tubes 6.5–17 mm long; inner phyllaries without distorted apices or dilated-erose distal margins.

13. West-central Tamaulipas 3. **Cirsium eorythros**

13. Veracruz westward to Pacific states.

14. Heads terminal, solitary; involucres (3.5–)6–11 cm wide; marginal spines of the phyllaries 1–4 mm long; corollas (33–)37–50 mm long 1. **Cirsium conspicuum**

14. Heads in a loosely racemoid arrangement; involucres 3–4.5 cm wide; marginal spines of the phyllaries 5–12 mm long (at least some of them 10 mm long); corollas 25–30 mm long 2. **Cirsium faucium**



Figure 1. *Erythrolaena conspicuum* Sweet, from the British Flower Garden, 1825.



Figure 2. *Erythrolaena conspicua*. Lectotype (K), from a plant grown in "Hort. Barclay."



Figure 3. *Erythrolaena conspicuum*. Detail from the lectotype (Fig. 2).

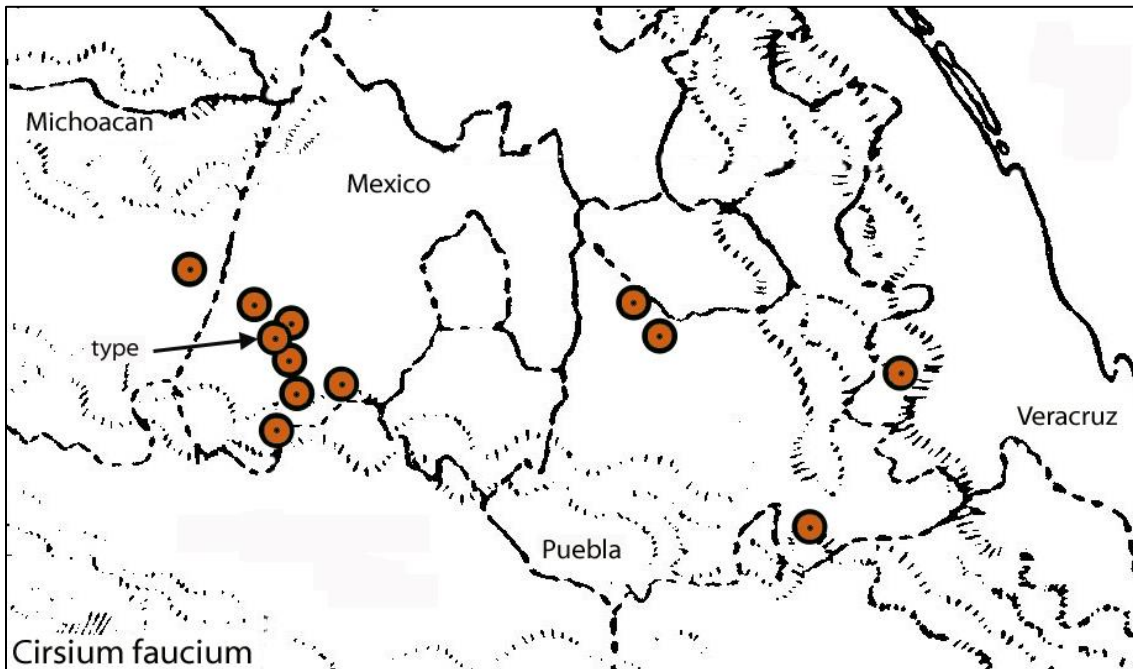
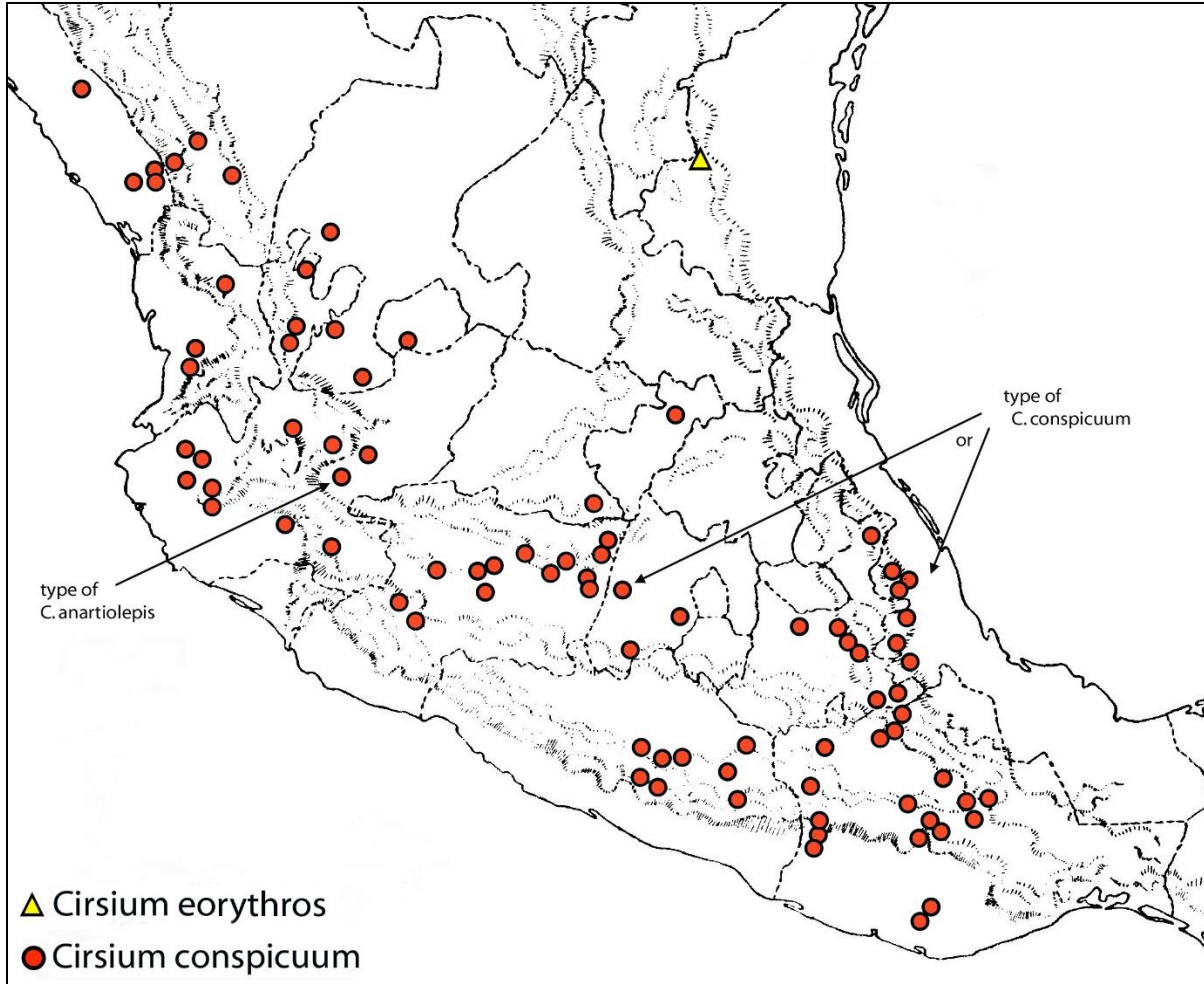


Figure 4. Distribution of *Cirsium eorythros*, *C. conspicuum*, and *C. faucium*. The type locality of *C. conspicuum* is uncertain (see comments in text).

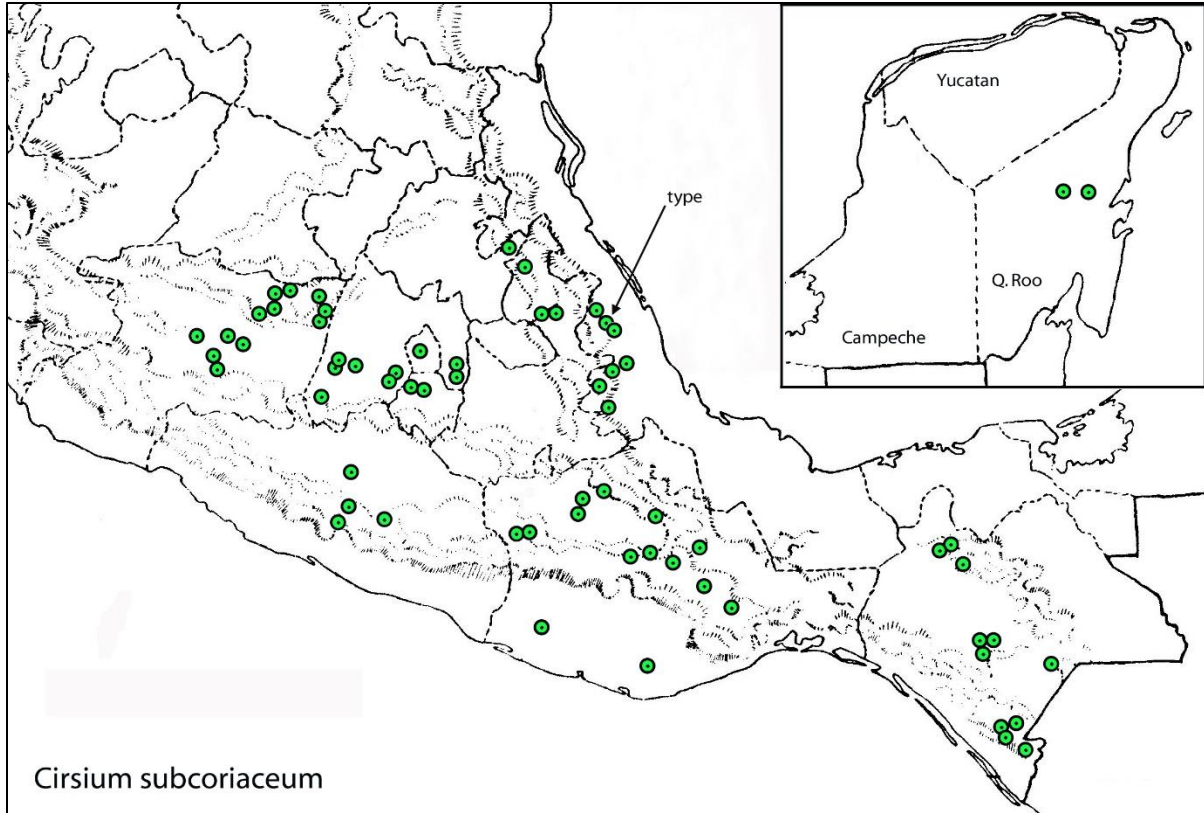


Figure 5. Distribution of *Cirsium subcoriaceum* in Mexico. The range continues through Central America into Panama.

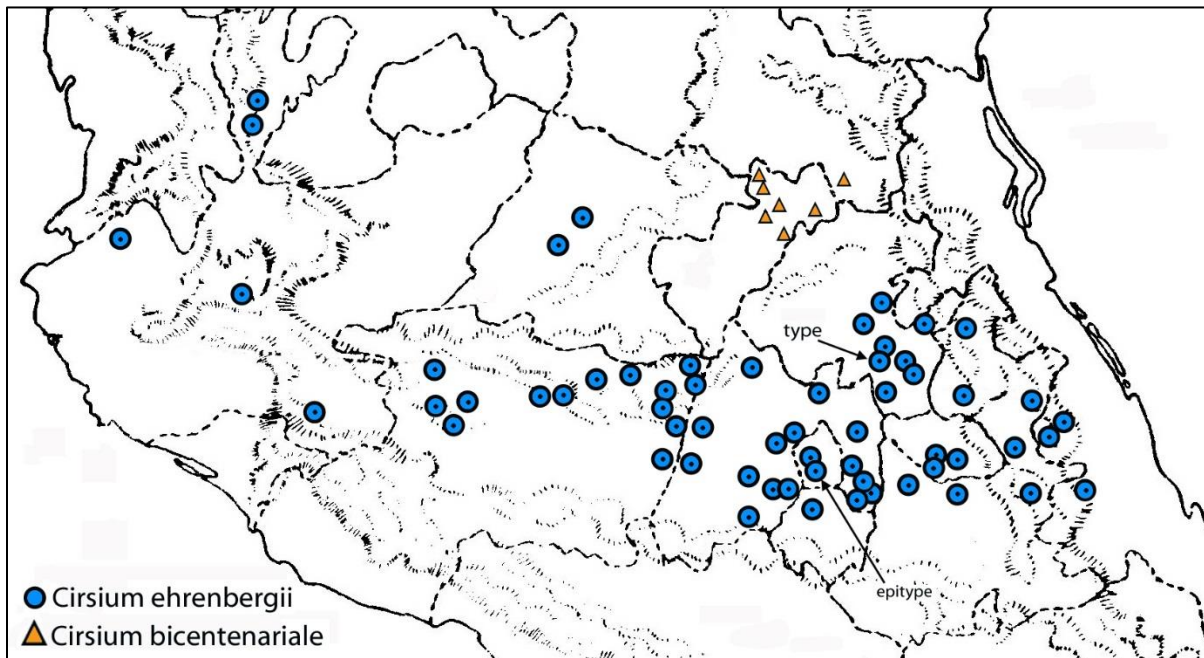


Figure 6. Distribution of *Cirsium ehrenbergii* and *C. bicentenariale*.

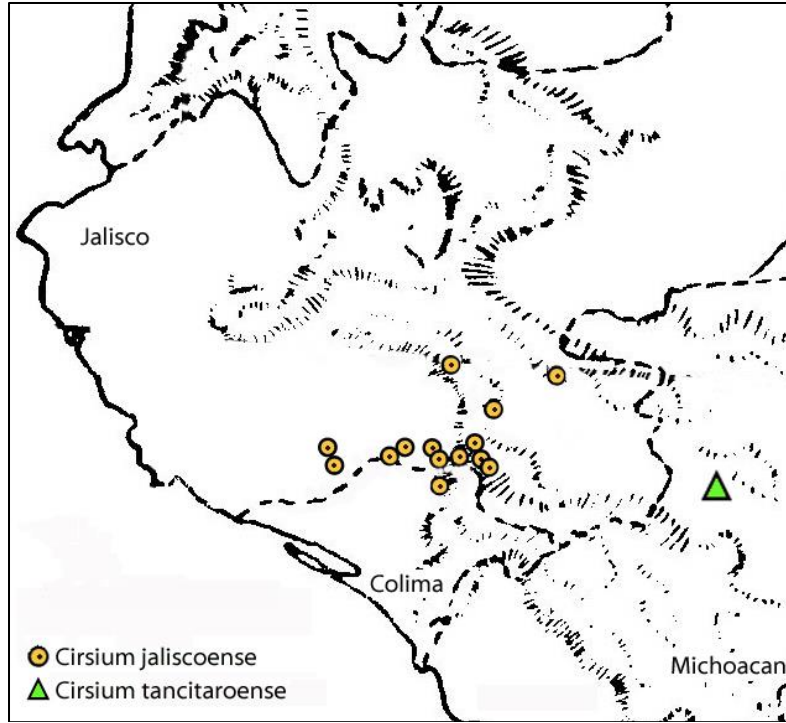


Figure 7. Distribution of *Cirsium jaliscoense* and *C. tancitaroense*.

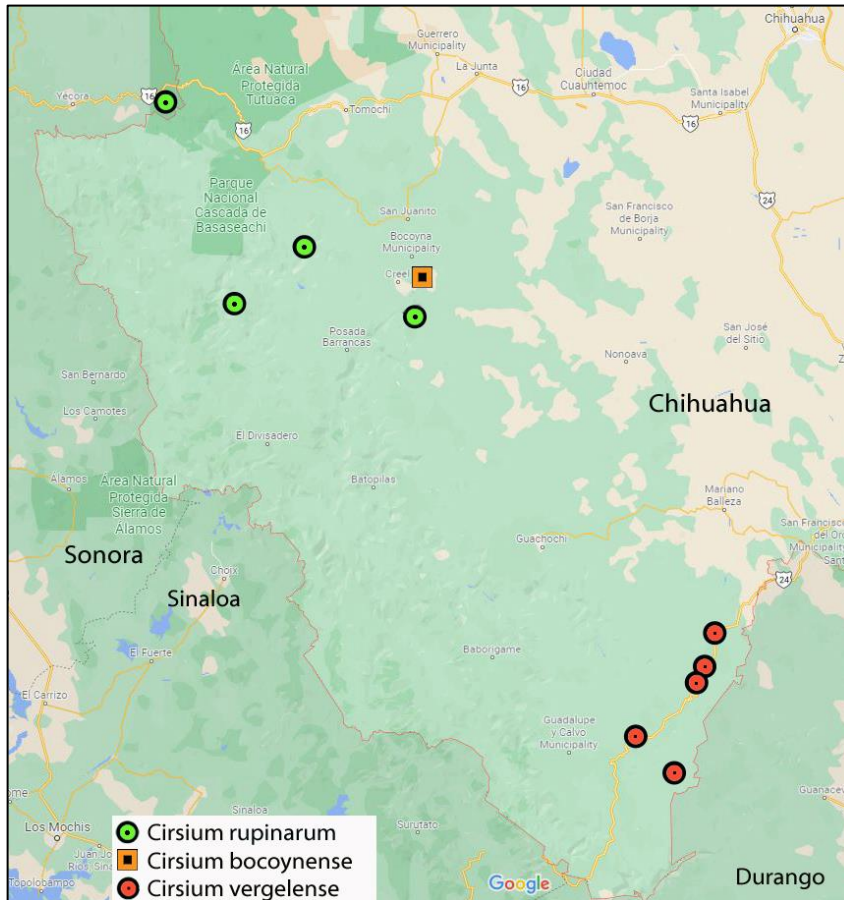


Figure 8. Distribution of *Cirsium rupinarum*, *C. bocoynense*, and *C. vergelense*. Also see Fig. 9.

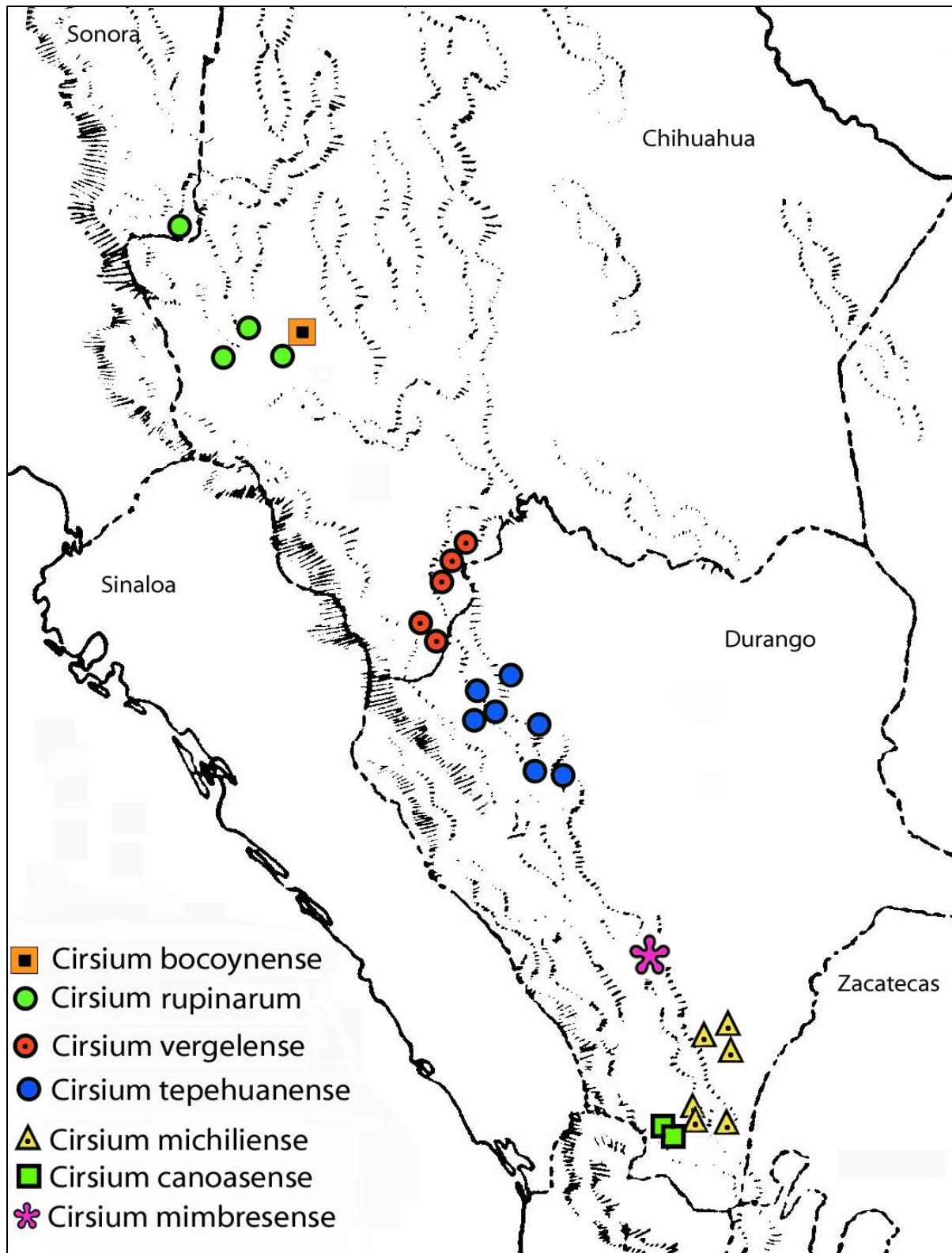


Figure 9. Distribution of *Cirsium bocoynense*, *C. rupinarum*, *C. vergelense*, *C. tepehuanense*, *C. michiliense*, *C. canoasense*, and *C. mimbresense*. A more detailed map for the localities in Chihuahua and Sonora is shown in Fig. 8; for localities in southeastern Durango see Fig. 10.

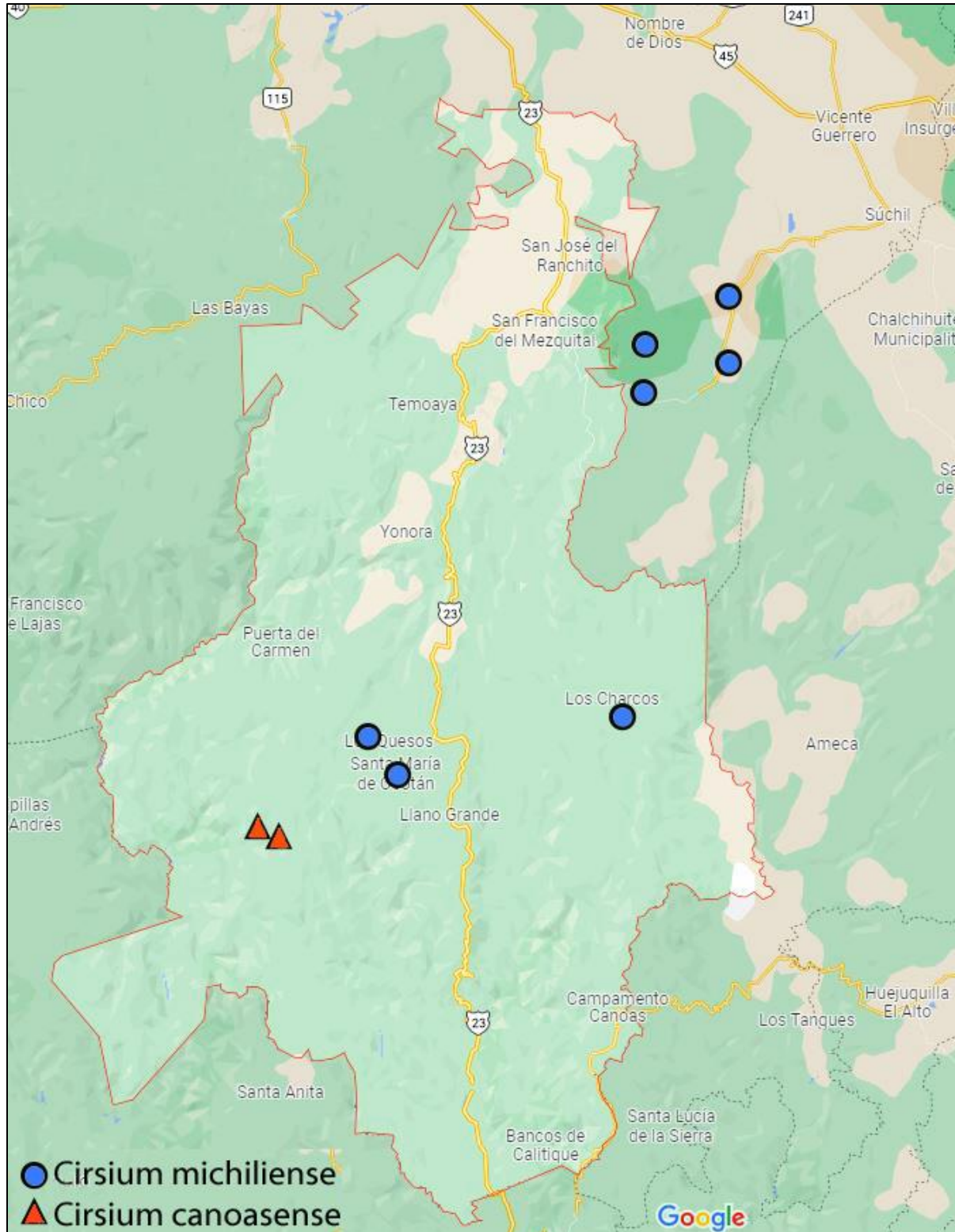


Figure 10. Distribution of *Cirsium michiliense* and *C. canoasense* — southeastern Durango. Mpio. Mezquital is outlined in red. The upper four localities for *C. michiliense* are in Mpio. Sunchil.

1. **CIRSIUM CONSPICUUM** (Sweet) Sch.Bip., Bot. Voy. Herald [Seemann] 7: 312. 1856. *Erythrolaena conspicua* Sweet, Brit. Fl. Gard. [Sweet] 2: pl. 134 (Fig. 1). 1825. **TYPE: MEXICO.** Probably Veracruz or in the western part of Edo. Mexico. Sweet noted that it was described and "drawn from a plant grown from seeds collected in Mexico by Mr. Bullock." Protologue: "For the opportunity of giving a figure of this new and grand plant, we are indebted to the liberality of Robert Barclay, Esq. who sent us fine flowering specimens in October last, that were blown [sic, = grown] in the open border of his garden at Bury Hill, and, we believe, for the first time in Europe. Mr. Barclay had received the plant from the Nursery of Mr. Tate, in Sloan Street, who raised it from seeds brought from Mexico, by Mr. Bullock, under the name of the Scarlet Thistle." A plant grown in "Hort. Barclay" (K-527794, Fig. 2) apparently was collected from this cultivation — it seems close enough to original material that it is designated here as the **lectotype** (although lectotypification does not resolve the provenance of the collection, which might be critical should differentiation be found within the species as broadly identified here).

The collection was made by William Bullock (1773-1849) on a short trip to Mexico — he arrived at Veracruz in late February 1822 and had returned to London by November 1823 (Costeloe 2006). He traveled to Jalapa and Mexico City and around the city at least as far west as Temascaltepec, making collections of birds, fish, and other animals, as well as various cultural items. His botanical specimens were sold or given to James Tate, who owned a nursery and garden on Sloane Street in London, where Bullock lived.

- Carduus pyrochros* Less., Linnaea 5: 130. 1830. **TYPE: MEXICO. Veracruz.** Protologue: "In dumetis pr. Jalapam, Aug." No specimen cited, but in a footnote Lessing seems to be saying that he saw similar garden plants identified as *Erythrolaena conspicuum*. His description refers to reflexing, spiny-margined phyllaries.

- Carduus heterolepis* Greene, Proc. Acad. Nat. Sci. Philadelphia 44: 363. 1892 [1893] (not *Cirsium heterolepis* Benth. = *Cirsium subcoriaceum* from Guatemala). **LECTOTYPE** (designated here): **MEXICO. Jalisco.** Rich canyons of mountains near Lake Chapala, 13 Dec 1889, *C.G. Pringle 2435* (US 116097; isoelectotypes: BR, CM, F, GH, M, MEXU, MO, MSC, OH, PUL, US, VT, W). The only collection cited by Greene was *Pringle 2435* but he did not cite a particular sheet and one cannot be located that suggests that it was the one he studied. There is no sheet of *Pringle 2435* at NDG (fide Barbara Hellenthal 2021).

- Cirsium anartiolepis* Petrak, Bot. Tidsskr. 31. 65. 1911. **LECTOTYPE** (designated here): **MEXICO. Jalisco.** Rich canyons of mountains near Lake Chapala, 13 Dec 1889, *C.G. Pringle 2435* (W?; isoelectotypes: BR-3 sheets, CM-Fig. 11, F, GH, M, MEXU, MO, MSC-Fig. 12, OH, PUL, US-2 sheets, VT).

Petrak cited two specimens: "Herb. Bot. Inst. Univ. Wien! [W] — Herb. Boissier! [presumably G]." He discussed Greene's earlier and homotypic *Carduus heterolepis* and though he did not specifically say it, his new species apparently was intended to function as a replacement name.

Stems 1–3 m tall, cottony but quickly glabrescent, often remaining pubescent just under the heads but otherwise glabrous or glabrate, with or without multicellular hairs. **Leaves** (mid-cauline) mostly 20–80 cm long, shallowly to deeply lobed, with lanceolate lobes cut halfway to the midrib and marginal spines 4–7 mm long, slightly or not at all clasping, not decurrent, green and glabrescent to glabrate above, usually densely and permanently and cottony beneath, sparse to abundant multicellular hairs on both surfaces, sometimes only the trichome bases present. **Heads** solitary, without immediately subtending bracts. **Involucres** mostly 6–11 cm wide (pressed); phyllaries in 10–15 series, indurate, with broad, yellowish, lateral areas and a darker central area, outer ovate-lanceolate, 5–6 mm broad at the base, glabrous to sparsely cottony but glabrescent, eglandular, the outer 2–3 series widely spreading to reflexed, the reflexed portion triangular to lanceolate, margins spiny on the distal 1/2–2/3 with spines 1–4 mm long, attenuate to a spinescent tip 3–5 mm long, inner

4–6 series orange-red, narrowly lanceolate, erect, mostly entire-margined, 37–65 mm long, extending (20–)30–45 mm above the spinose ones. **Corollas** (33–)37–50 mm long, tube 9–18 mm long, throat 14–19 mm long, lobes 15–22 mm long, lobe:throat ratio ca. 1.0; anthers 12–14 mm long, including the apical appendages 3.5–4 mm long, filaments glandular; stigmatic branches 1.5–2.5(–4) mm long, red, connate. **Achenes** (mature) not observed; pappus bristles 33–38 mm long. **Chromosome number**, $2n = 34$.

Aguascalientes, Durango, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca, Puebla, Sinaloa, Veracruz, Zacatecas. Oak, pine-oak, pine, pine-alder, semitropical mixed pine-hardwood, pine-oak-fir cloud forest, natural or disturbed; 1300–2500 m. Flowering June–March (–November).

Representative collections. MEXICO. Aguascalientes. Sierra del Laurel, *McVaugh* (MICH, as cited by *McVaugh* 1984). **Durango. Mpio. Pueblo Nuevo:** Mex Hwy 40, 1 mi E of El Palmito, ca. 47 m E of Concordia, dry slope with *Quercus laxa*, 6800 ft, 30 Dec 1962, *Breedlove* 4252 (DUKE, MICH); Predio Las Bayas de la UJED, Arroyo La Tecolota, bosque de coníferas y encino, en ladera rocosa, *Pseudotsuga*, *Cupressus*, *Pinus durangensis*, *P. ayacahui*, 2560 m, 16 May 1991, *García & Acevedo* 957 (MEXU); Mpio. Pueblo Nuevo, 9.5 km al NW de San Jeronimo, brecha a La Libertad, 23° 51' N, 105° 37' W, pino-encino, 2330 m, 9 Mar 1985, *Tenorio* L. 8159 (MEXU). **Guanajuato. Mpio. Jerécuaro:** Terrenos pertenecientes a El Tejocote, próximos a Polvillas, bosque de pino y encino, 2550 m, 29 Oct 1990, *Rzedowski* 50553 (MEXU). **Guerrero. Mpio. Chichihualco,** ca. 10 km W of Camotla, ca. 40 km W of Chilpancingo, *Feddema* 2808 (DUKE); Mpio. Atlixac, 24 km E of Chilapa on the hwy to Tlapa, *Koch et al.* 79149 (TEX); Cerro Alquitran, near Mazatlán, 6 Dec 1966, *Rzedowski* 23642 (MEXU); W of Chilpancingo, *Sharp* 441472 (MEXU); Mpio. Chichihualco, Las Pastillas, a 5.5 km de El Carrizal de los Bravo, por el camino que va de Filo de Caballos a Chichihualco, bosque mesófilo de montaña, 2380 m, 20 Feb 1981, *Torres* P. 450 (MEXU). **Jalisco.** ca. 8–10 km SE of El Mortero, near Mezquitic, on the Zacatecas–Jalisco border, road to Monte Escobedo, Zac., *Feddema* 2442 (DUKE, TEX); San Sebastian, Canon El Ranchito, *Mexia* 1464 (F, US); mountains near Talpa, *Nelson* 4025 (GH). **Mexico.** Hwy between Toluca and Temascaltepec, *Matuda* 38259 (MEXU). **Michoacan.** Cerro Santa Maria, 8–10 km SW of Jiquilpan and ca. 5 km NE of Quitupan, Jal., *Feddema* 250 (DUKE, TEX); Uruapan, *Hernandez* X. 546 (LL); Sierra Torrecillas, Distr. Coalcoman, *Hinton et al.* 12796 (GH, LL); Distr. Coalcoman, Pto. Zarzamora, *Hinton et al.* 13874 (F, GH, LL); ca. 12 km N of Zitacuaro, *Iltis & Iltis* 334 (WIS); ca. 18 mi E of Morelia, *King & Soderstrom* 5130 (TEX); NW of Aguillilla, ca. 6–7 mi S of Aserradero Dos Aguas, *McVaugh* 22715 (DUKE, LL, MO). **Nayarit.** Ca. 5.5 mi SW of Jalisco on road to El Malinal, *McVaugh & Koelz* 658 (DUKE, LL); Tepic, *Palmer* 1856 (F, OH, US-2 sheets). **Oaxaca.** Sierra de Ixtlán, *Conzatti* 1566 (F); Distr. Teotitlán, Alturas San Bernardino, *Conzatti* 2089 (F-2 sheets, MEXU); Cerro San Felipe, Distrito del Centro, *Conzatti* 2256 (F-2 sheets) and *Conzatti* 2293 (LL); Dist. Cuicatlán, La Loma, Cuyamacalco, *Conzatti* 3467 (MEXU); 32 km N of Putla, 55 km SW of Tlaxiaco, *Cronquist* 10857 (MEXU); ca. 24 mi NW of ETLA on route 190, *King* 2514 (TEX); near Reyes, *Nelson* 1816 (GH); 13 km from Miahuatlán on road to Puerto Angel, *Ortega & Ortiz* 1717 (TEX); Cuauhtlilla-Chuilitongo, *Seler* 1488 (GH); mts., Joyacatlán, *Smith* 213 (GH). **Puebla.** Boca del Monte, *Arsene* 2076 (MEXU); Los Molinos near Atlixco, *Hernandez* X. 665 (LL); 14 mi from the "Y" at Tehuacan on the road to Orizaba, *Johnston* 4773A (TEX); ca. 16 mi N of Tehuacán on route 150, *King* 2651 (TEX); Amozoc, *Pringle* 9629 (GH); Esperanza, *Purpus* 5622 (F, GH); above Serdan Cabecero, *Sharp* 441036 (GH, MEXU). **Queretaro.** Mpio. Pinal de Amoles, ca. 4 km al N de Pinal de Amoles, bosque de pino-encino, ladera de cerro, 2200 m, 13 Aug 1993, *Carranza* 4680 (MEXU-2 sheets). **Sinaloa. Mpio. Concordia:** Sierra de Chabarría [Chavarría], 1921, *Ortega* 4045 (US); Rte 40, Forestry Station just 1 mi W Mazatlán side of El Palmito and Durango state line, canyon with pine-oak-fir-epiphytes, ca. 6200 ft, 19 Mar 1975, *Pinkava et al.* 12899 (ASU); 3 air mi SW of El Palmito, 2.8 mi W of Hwy 40 by a dirt road that joins the hwy opposite a restaurant 1.5 mi S of El Palmito, pine-oak woodland on S and W-facing slopes of a ridge above a deep barranca, 7022 ft, 29 Dec 1983, *Sanders* 4434 (COLO,

UCR); nw Mexico, *Seemann s.n.* (OH); carretera Mazatlán-Durango, km 209, cerca de El Carrizal, bosque de pino-encino, ladera SE, ca. 1800 m, 14 enero 2000, *Vega Aviña 10479* (MEXU); Hwy 40, 7.5 road mi SW of El Palmito, and 8.2 road mi SW of Durango-Sinaloa state line, mixed pine-hardwood semi-tropical forest, 6560 ft, 6 Jan 1983, *Worthington 9293* (COLO, NY, TEX, UCR, UTEP). **Mpio. San Ignacio:** San Juan, Los Gusanos, Mar 1931, *J.G. Ortega 6907* (F). **Veracruz.** La Laguna on the carr. Puerto del Aire, *Calzada & Delgado 4186* (F): ca. 20 mi N of Tehuacán on route 150, *King 2326* (TEX); 39 km S of Jalapa on Rte 140, *Long & Burch 3225* (F); La Joya, 2 km from Jalapa, *Lot 501* (F, OH, MEXU); Cumbres de Acultzingo, near the Puebla border, *Lot 765* (F, GH); 9.5 km W of Escola, *Nee 23193* (F, TEX); 3.5 km E of Puebla border on Hwy 150 from Puebla to Orizaba, *Nee & Schatz 19689* (F); Cumbres de Maltrata, *Nevling & Gomez-Pompa 607* (F); Loma de Tablas, *Ortega. et al. 162* (F, MEXU); 1 km N of Acajete on route 140, *Pankhurst 76/121* (F); Mt. Orizaba, *Seaton 222* (F, GH). **Zacatecas.** Mpio. Nochistlán, carretera Jalpa-Tlachichila, bosque de *Quercus*, 2475 m, 18 Oct 1997, *Balleza 7590* (MEXU); Mpio. Nochistlán, Km 18, carretera Tlachichila-Nochistlán, bosque de encino, 2262 m, 16 Sep 1998, *Balleza 9034* (MEXU); Mpio. Valparaiso, brecha a Santa Lucia, 500 m al N de Santa Lucía, bosque de pino, 2250 m, 9 Oct 1998, *Balleza 9418* (MEXU); ca. 20 km W from Tlaltenango from the road-junction S of Jalpa, *McVaugh 25641* (DUKE, LL).

I initially attempted to distinguish between *Cirsium conspicuum* and *C. anartiolepis* but found that morphological extremes and intermediates apparently occur in sympatry essentially across the geographic range. Probably by tradition, collections from Veracruz and Puebla have been identified mostly as *C. conspicuum*. Similarly, McVaugh (1984) and García & Koch (1995) recognized only *C. anartiolepis* but included collections of typical *conspicuum*-morphology among citations for the species. Pruski (2018) also noted that perhaps only a single species was represented by the two names.

Petrak saw *Cirsium anartiolepis* as having only the outermost phyllaries spiny-margined, *C. conspicuum* with the outer and middle phyllaries spiny-margined, but across many populations, this is variable. I attempted to sort by phyllary shape and keel prominence, degree and distribution (along the phyllary margin) of spininess, and corolla size but could not find a consistent pattern that would suggest the presence of more than one evolutionary entity. Variation occurs in involucre size, phyllary shape, the degree of spininess of phyllary margins, the point along the phyllary length where it reflexes (range of variation in involucre features shown in Figs. 13 and 14), and corolla length and relative lengths of tube and throat. Intergradation with *C. subcoriaceum* may underlie of plants with involucre most like *C. conspicuum* but with persistent tomentum. Production of multicellular hairs on the leaf surface also appears to be variable in *C. conspicuum*, which does not seem to be the case in other species.

That Petrak recognized more than one species within the *Cirsium conspicuum* "complex" is understandable. Botanists with opportunity for field study and more detailed herbarium study may reach a different or clearer view of variation patterns.

2. CIRSIUM FAUCIUM Petrak, Feddes Repert. Spec. Nov. Regni Veg. 58: 231. 1955. **TYPE:** MEXICO. Edo. Mexico. Mpio. Temascaltepec, Tequesquipan, barrancas, 2480 m, 3 Feb 1933, *G.B. Hinton 3250* (holotype W; isotypes: GH, K-Figs. 15 and 16, MO-Fig. 17, NY, US).

Stems 1–1.5(–3) m tall. **Heads** in a loose raceme. **Involucre**s 3–4.5 cm wide; phyllaries 14–30 mm long, spine-tipped, with needle-like marginal spines 5–12 mm long (at least some of them 10 mm long), outer with apical portion linear-lanceolate and reflexing, inner dark red to red-purple. **Corollas** 25–30 mm long, tube 4–7 mm long, throat 6–7 mm long, lobes 14–18 mm long.

Michoacan, Mexico, Puebla, Oaxaca, Veracruz. Pine-oak, oak-matorral ecotone, *Carpinus* woods, mesic woods; 1800–2400 m. Flowering January-May(-September).

Additional collections. Edo. Mexico. Valle de Bravo, May 1919, *Boege 1755* (MEXU); Mpio. Sultepec, 3 km NE of Capula, bosque cerrado de *Pinus-Quercus*, 2400 m, 6 Jul 1968, *Garcia S. 168* (MEXU); Distr. Temascaltepec, Rincon, 16 Feb 1932, *Hinton 266* (UR); Telpintla, 16 Feb 1936, *Hinton 8921* (GH, NY); near Ixtapan de la Sal, Mar 1952, *Matuda 26088* (MEXU, MO); Villa Guerrero, barranca del Puente de Calderon, *Matuda 27927* (MEXU); Cerro de Corona, Zacualpan, bosque alto, ladera húmeda, 2000 m, 2-3 May 1954, *Matuda 30729* (MEXU); 7 km N of Sultepec, cañada húmeda con vegetación de bosque de *Carpinus*, 2350 m, 17 Mar 1973, *Rzedowski 30328* (MEXU-2 sheets, MO, SD, UC, WIS). **Michoacan.** Mpio. Zitacuaro, Pareje Palo Amargoso del Ejido San Felipe los Alzati, area de reforestación, 2290 m, 29 May 2015, *Alvarez 15577* (MEXU); Mpio. Tlalpujahua, ladera N del Cerro El Cedral S de Presa Brockman, pastizal inducido entre el bosque de Cupressus, 2600 m, *Zamudio & Díaz 4506* (TEX). **Oaxaca.** Mpio. Santiago Textitlan, Llano Borrego, agricultura permanente, planicie de terreno de cultivo, 2509 m, 8 Aug 2006, *Jacob S. 258* (TEX). **Puebla.** Rancho de las Posadas, 2 Apr 1909, *Hno. Antonio s.n.* (MEXU); vicinity of Puebla, Hdo. Guadalupe (Alseseca), 17 Apr 1907, *Arsene 1168* (GH, MO, NY); Los Molinos (near Atlixco), wet soil along road, 6000 ft, 1 Apr 1945, *Gilly & Sharp 665* (LL); near San Martin [Texmelucan], 4 Apr 1939, *Perkins & Hall 3478* (F); Mpio. Caltepec, Majada Salea, al SW de San Simón, ecotonia matorral espinoso-encinar, 1870 m, 24 Jun 1983, *Tenorio L. 3946* (MEXU, TEX). **Veracruz.** Mountains just above Cd. Mendoza, E side of Mex Hwy 57, moist, open grassy roadside "mirador," 13 Dec 1975, *Reznicek 288* (MICH).

Intermediate? Puebla. KM 8 on hwy from Zaragoza to Zacapoaxtla, 2 km past turnoff to Las Lomas, roadside in pine-oak-hornbeam woods, 2255 m, 29 Oct 1982, *Benz & Burd 510* (LSU, MEXU).

Cirsium faucium is distinct from *C. conspicuum* in its shorter stature, smaller heads in a racemoid arrangement, longer marginal spines of the phyllaries, and smaller corollas. Collections of *C. faucium* have been relatively uncommon (compared to *C. conspicuum*) and the occurrence of three disjunct population systems (as mapped here) seems unusual. The geographic range lies within that of *C. conspicuum*, with *C. faucium* appearing to fit into geographical lacunae within the range of *C. conspicuum*, but the morphological distinction between the two entities seems clear and identifications mostly are secure.

The plants of *Benz & Burd 510* from Puebla seem to be in the geographical range of *Cirsium conspicuum* and have phyllaries with relatively short spines, but the involucre are intermediate in size and approach a racemoid arrangement.

3. CIRSIUM EORYTHROS Nesom, **sp. nov.** **TYPE: MEXICO. Tamaulipas.** Mpio. Guemes [Güémez]: 3 km SE de Los San Pedro, bosque mesofilo de montana, 1550 m, suelos derivados de caliza, hierba perenne de 90 cm con flores rojizas, 15 Oct 1989, *F. González Medrano 17305* (holotype: MEXU, Figs. 18-20).

Distinct from *Cirsium conspicuum* (sect. *Erythrolaena*) in its phyllaries in fewer series (6–8 vs. 10–15), the outer erect, and without a distinctly differentiated inner series extending above the outer. Distinct from the sympatric *C. novoleonense* in its broader, herbaceous, unkeeled, spiny-margined outer phyllaries.

Stems ca. 1 m tall, thinly tomentose-sericeous, without multicellular hairs, glabrescent. **Leaves** (cauline) broadly lanceolate, clasping, not decurrent, without multicellular hairs, adaxial surface green-glabrescent (nearly glabrous), abaxial surface thinly persistently tomentose. **Involucre** 4.5–5 cm wide (pressed); phyllaries in 6–8 series, outer evenly herbaceous, unkeeled, oblong-lanceolate, 4-5 mm wide, surface glabrous but margins prominently cobwebby and tardily

glabrescent, erect (reflexing at maturity?), margins with slender spines 1 mm long, apex with a thick, yellowish spine ca. 2 mm long, inner thickened, gradually becoming narrowly lanceolate and distally keeled, apex attenuate-spinulose, innermost entire-margined, becoming reddish but apparently not abruptly differentiated and not distinctly extending above the spiny-margined outer series.

Known only from the type collection.

I have seen only the image of the MEXU collection, hence the abbreviated description, but its distinction in morphology and geography is clear. The outer herbaceous, spiny-margined phyllaries indicate that *Cirsium eorythros* belongs with sect. *Erythrolaena* although it appears to lack morphologically differentiated outer (reflexing) and inner (remaining erect) series. It is the only species of sect. *Erythrolaena* in the eastern sierra of Mexico, set apart from those of the western sierra by its spiny-margined phyllaries. The epithet is an amalgam of "eos" (Gr. dawn or east) and "erythros" (Gr. red, and alluding to the section name).

Cirsium novoleonense (Nesom & Garcia-Mor. 2021) has red involucre and occurs in the same area as *C. eorythros*, but the two are different in morphology and hypothesized to be more distantly related (different sections within the genus). The rarity of *C. eorythros* suggests that it may occur in a more specialized habitat.

4. CIRSIUM JALISCOENSE Nesom, **sp. nov.** **TYPE: MEXICO. Jalisco.** Mpio. Cuautitlán: Nevado de Colima, 8000 feet, 28 May 1893, *C.G. Pringle 5505* (holotype: GH!: isotype: VT!).

Similar to *Cirsium conspicuum* but distinct in its twisting and curling innermost phyllaries with slightly dilated, crisped, and irregularly serrulate apical margins (vs. erect, stiffly acute, with smooth, entire margins) and corollas with tube 21–22 mm long, throat 9–11 mm long (vs. tube 9–18 mm, throat 14–19 mm).

Perennial herbs 2–3 m tall. **Stems** cottony, glabrescent, densely and prominently covered with long, vitreous, multicellular hairs. **Leaves** permanently and closely white-cottony beneath, glabrous or glabrate above, without multicellular hairs, the lower cauline 58 cm long, 26 cm wide, ovate, lobed 11/12 to the reddish midvein, marginal spines 2–5 mm long, bases clasping, not decurrent. **Heads** solitary on long peduncles, immediately subtended by a few, small, spiny-margined bracts. **Involucre** 5–6 cm wide (pressed); phyllaries glabrous to glabrescent, in 11–14 graduate series, eglandular, basally ovate to ovate-lanceolate and 6–7 mm wide, outer 4–5 series abruptly narrowed to a lanceolate, keeled, sharply reflexed apex with a short terminal spine, at least the outermost series with 6–10 pairs of marginal spines or sometimes these extending slightly below the reflexed portion as well, strongly indurate with glossy, minutely tuberculate lateral areas, inner "dark blood red," espinose, 60–65 mm long, projecting 40–45 mm above the outer 4–6 series, erect, phyllaries 3.5–5 mm wide, apices of the middle series reflexed, apices of the innermost twisting and curling, with slightly dilated, irregularly serrulate, and crisped margins and prominently hispidulous adaxial surfaces. **Corollas** "white to "cream yellow" (see Figs. 25 and 26), 48–53 mm long, tube 21–22 mm long, throat 9–11 mm long, lobes 17–21 mm long with hooded apices, lobe:throat ratio 1.7–1.9; anthers 12–13 mm long, including the apical appendages 3 mm long, filaments glandular; stigmatic branches 1.5–2 mm long. **Achenes** (mature) not observed: pappus bristles 33–37 mm long, not or very little apically dilated. Figs. 21–27.

South-central Jalisco and adjacent Colima. Oak, oak-pine, pine, pine-fir, fir, oak-magnolia, or *Carpinus* forests, often disturbed; 1700–3000 m. Flowering February-May(-June).

Additional collections. **Colima.** Paraje camino La Hierbabuena rumbo al volcán, transición de zona de potreros con bosque de encinos muy fragmentado a manera de pequeños manchones, con *Fraxinus* y *Clethra*, 1700 m, 22 Mar 2001, *Miranda M. & López R. 1112* (MEXU). **Jalisco.** Reserva Biósfera Sierra de Manantlán, SE corner of main volcanic ridge of the Sa. de Manantlán, pine-oak,

1750 m, 12 Jan 1990, *Cochrane et al.* 12203 (TEX); Mpio. Autlán, 16-17 km SE of Autlán, 6-7 km SW of Ahuacapan, *Cuevas & Nuñez* 2256 (WIS); Mpio. Autlán, 1 km N of Zaramoro, 24 Feb 1987, *Cuevas & Rosales* 1871 (WIS); 6-7 km SW of Las Joyas, La Cumbre, 7 Apr 1987, *Cuevas & Rosales* 1924 (WIS); Mpio. Tapalpa, NW of Tapalpa, ca. 12 km por la brecha Tapalpa-Chiquilistlán, bosque de pino con elementos de bosque mesófilo de montaña, 2100 m, 12 Mar 1989, *Flores et al.* 1523 (MEXU, WIS); Mpio. Cd. Guzmán, Nevado de Colima, paraje el Lioncito, Mar 1995, *García & Alvarez s.n.* (TEX); Parque Nacional Volcán de Fuego o de Colima, Mpio. de Tonila, límite de la vegetación arborea, bosque de *Pinus hartwegii*, *P. pseudostrobus*, y *Abies religiosa*, 3200 m, 19 Feb 1989, *González V.* 3520 (MEXU); Nevado de Colima, a few mi S of Cd. Guzmán, *Gregory & Eiten* 268 (GH, MO); E slope of Sierra de Manantlán Central, 5.3 km S of Rincon de Manantlán, 17.5 km S of El Chante, 2 km S from San Miguel "meadows," bottom of deep, moist, cool E-facing ravine with small stream, at first stream crossing (and before rapid descent) of lumber road, 2400 m, 12 Jan 1980, *Iltis* 2630 (US-on 2 sheets); Mpio. Cuautitlán, top of Sierra Manantlán Occidental, vicinity of Estacion Biologica "Las Joyas," along road to Los Cumbres, 1-1.5 km SE of station, 8 Mar 1987, *Iltis et al.* 29359 (TEX, WIS); Cerro Alto Las Yeguas, 3-5 km WNW of Rincon de Manantlán, *Judziewicz & Cochrane* 5022 (WIS); NW slopes of Nevado de Colima, near lower limit of pine-fir zone above Jazmín, near settlement of El Isote, 30 Mar 1949, *McVaugh* 10122 (DUKE, MEXU-on 2 sheets, US-on 3 sheets); Mpio. Zapotitlán, Campamento La Joya, cima del Volcán Nevado de Colima, bosque de *Pinus hartwegii*, *P. rudis*, *Abies religiosa*, *Cupressus lindleyi*, y *Alnus firmifolia*, 3250 m, 6 Apr 1988, *Mendoza* 3842 (MEXU); Volcán de Colima, E-facing slopes, along dirt road from Hwy 54 to saddle between Volcán de Colima and Nevado de Colima, mixed conifer forest along road edge, 3000 m, 26 May 1991, *Phillips* 1160 (MEXU, TEX, UCR); Mpio. Cd. Guzman, 4 km por la brecha hacia las Huertas de Aguacates, 1900 m, bosque de pino, perturbado, 14 Apr 1994, *Reynoso D.* 2127 (MEXU); Nevado de Colima, vertiente NE, 2 May 1966, *Rzedowski* 2271 (MEXU); Las Joyas, Canada del Laurelito, 9 Dec 1985, *Vasquez* 3843 (ZEA); Mpio. Venustiano Carranza, 20 km S de Floripondio, brecha a Los García, bosque de oyamal, con pinos y encinos, 2360 m, 14 Mar 1990, *Villa & Chávez* 660 (TEX); Las Joyas, Autlán, 6 Mar 1986, *Villalobos* 211 and 272 (ZEA); Mpio. Autlán de Navarro, 15.5 air km SE of Ahuacapan, just E of Cerro La Cumbre on upper end of road down to Rincon de Manantlán, 19 Mar 1989, *Wetter et al.* 1094 (MEXU, TEX, WIS); slopes of Cerro Grande, 38 air km WSW of Nevado Colima, 10.6 km N of El Terrero on road to La Laguna, 23 Mar 1989, *Wetter et al.* 2054 (TEX, WIS).

Plants of *Cirsium jaliscoense* are distinctive in their exceptionally large heads and corollas, reflexing outer phyllaries, reflexing tips of the mid-series of phyllaries, and especially in the curling-twisting apices of the inner phyllaries. The Manantlán plants have stems with prominent multicellular hairs, which those of the Pringle type collection lack. The dilated phyllary margins and innermost with minutely hispidulous adaxial surfaces and curling-twisting margins are features shared with *C. tancitaroense*.

Cirsium jaliscoense and *C. conspicuum* apparently are sympatric, but judging from collections seen in the current study, the latter is less common — the two can be distinguished by the contrasts in the diagnosis.

5. CIRSIUM TANCITAROENSE Nesom, **sp. nov.** **TYPE: MEXICO. Michoacan.** Mpio. Tancitaro: Tancitaro region, common in cloud forest, 8000 ft, 5 Jul 1941, *W.C. Leavenworth & H. Hoogstraal* 4026 (holotype: F, Figs. 28, 29).

Similar to *Cirsium conspicuum* in its spiny-margined phyllaries; distinct in its outer phyllaries with densely pectinate-spiny margins (15–25 spines/side vs. ca. 10–15 spines/side) and innermost phyllaries with membranous, prominently dilated, and erose upper margins (vs. margins thickened, smooth, and entire).

Perennial herbs from a thick woody taproot. **Stems** 1 m or greater tall, woody at the base and 1.4 cm thick, cottony but glabrescent, with abundant, thick, multicellular hairs. **Leaves** permanently cottony beneath, glabrate above with multicellular hairs, cauline on upper 45 cm of the stem deeply lobed, marginal spines 5–8 mm long, base slightly clasping, not decurrent. **Heads** solitary on long peduncles, immediately subtended by spiny-margined bracts. **Involucre** ca. 8 cm wide (pressed); phyllaries glabrous to glabrate, in 10–12 graduate series, eglandular, basally ovate and 6–7 mm wide, outer 4–5 series abruptly narrowed to a lanceolate, keeled apex, apices of the outermost reflexed, upper margins of outer densely pectinate-spiny with 15–25 spines on each side, inner reddish, espinose, 60–65 mm long, projecting ca. 25 mm above the outer series, with membranous, prominently dilated, and erose upper margins and minutely hispidulous adaxial surface. **Corollas** 48–50 mm long, tube 20 mm long, throat 9–10 mm long, lobes 17–19 mm long with hooded apices, lobe:throat ratio 1.8–2; anthers 12 mm long, including the apical appendages 3–3.5 mm long, filaments glandular; stigmatic branches 1–2 mm long, connate, annulus barely exerted from the anthers. **Achenes** (mature) not observed: pappus bristles ca. 35–40 mm long, apically acute.

Known only from the type collection.

Cirsium tancitaroense is characterized most prominently by the very large, glabrous heads, densely spiny outer phyllaries, inner phyllaries with dilated, erose, nearly petaloid upper margins (similar to those of *C. jaliscoense*), and the long corolla tube. It is similar to *C. subcoriaceum* in its very large heads but distinct in its more densely spiny phyllaries and its floral morphology. Geography suggests that it is closely related to *C. jaliscoense* (see contrasts in key). It seems unusual that a plant of such striking morphology has been collected only once where presumably many botanists have explored, but its distinction is remarkable.

In leaf and involucre morphology, *Cirsium tancitaroense* is superficially similar to *C. tolucanum* (Rob. & Seat.) Petrak, but the difference in size is striking and *C. tolucanum* has features that technically exclude it from sect. *Erythrolaena*. *Cirsium tolucanum* has also been collected on Mt. Tancitaro (*Leavenworth & Hoogstral 1179*, cited by McVaugh (1984) as '*Cirsium* sp. (1)') but in alpine meadows above 10,000 feet, far above the collection locality of *C. tancitaroense*.

6. CIRSIUM SUBCORIACEUM (Less.) Sch.Bip. in Seem., Bot. Voy. Herald 312. 1856. *Carduus subcoriaceus* Less., Linnaea 5: 130. 1830. **TYPE: MEXICO. Veracruz.** In monte Maculitepec prope Jalapam, Aug 1828, *C.J.W. Schiede 265* (as on the original, handwritten label, or "leg: C.J.W. Schiede & F. Deppe" as on the printed label (holotype: HAL 69940, Figs. 37 and 39). **EPITYPE** (designated here): **Veracruz.** [Mpio. Coscomatepec]: Barrancas near Huatusco, Feb 1913, *C.A. Purpus 6323* (US, Figs. 38 and 40).

Cirsium heterolepis Benth., Pl. Hartw., 87. 1841. *Cnicus heterolepis* (Benth.) A. Gray, Proc. Amer. Acad. Arts 10: 44. 1874. **TYPE: GUATEMALA.** Protologue: "In montibus Mixco." No collection data besides "Guatemala" on the specimen label, *K.T. Hartweg 596* (holotype: K image; isotypes: LD image, P image).

Cirsium maximum Benth., Pl. Hartw., 289. 1849. **TYPE: GUATEMALA.** Protologue: "In montibus Santa Rosa." Mountains near Santa Rosa, *K.T. Hartweg 596* (holotype: K image).

Cnicus pinnatisectum Klatt, Bull. Soc. Roy. Belg. 35: 292. 1896. *Cirsium pinnatisectum* (Klatt) Petrak, Beih. Bot. Centralbl. 27 (Abt. 2): 236. 1910. **TYPE: COSTA RICA.** Paramos del Abejonal, 1900 m, Apr 1893, *A. Tonduz 7791* (holotype: GH-on 2 sheets).

Stems 1–3(–4) m tall, cottony, glabrescent, without multicellular hairs. **Leaves** up to 60 cm long and 18 cm wide, clasping, slightly auriculate, not decurrent, permanently cottony beneath, dark gray-green and glabrescent above, without multicellular hairs. **Involucre** (3.5–)5–7 cm broad, phyllaries eglandular, permanently cottony, sometimes glabrescent, outer green, somewhat

herbaceous, sharply reflexed, with spinose tips and marginal spines on the upper 1/2, the inner erect, ciliolate to serrulate, often with curling-twisting apices, red-orange to bright yellow, the middle series with glossy, minutely tuberculate lateral areas, at least the innermost 3 series entire. **Corollas** violet to yellow or white, 34–49 mm long, the tube 16–22 mm long, throat 1–1.5 mm long, lobes 19–25 mm long; stigmatic branches 1.5–2.5 mm long. **Chromosome number**, $2n = 34, 36$.

Veracruz, Hidalgo, Mexico, Michoacan, Puebla, Oaxaca, Guerrero, Chiapas, to Panama. Open areas or clearings in woods, commonly on steep slopes, in pine, oak, *Cupressus*, *Alnus*, or other deciduous species, sometimes in cloud forest; 1200–3900 m but most commonly at higher elevations. Flowering apparently all year.

Two collections from Quintana Roo have been identified as *Cirsium subcoriaceum*, disjunct from the main range of the species (Fig. 5) and, as noted by Pruski (2018), also outside the altitudinal range: Mpio. Felipe Carrillo Puerto, sobre el nuevo camino a Vigía Chico, 47 km N de F. Carrillo Puerto, selva mediana alterada, herbácea de 1 m de altura con flores azules, 17 Sep 1982, *Cabrera 3520* (MEXU image); 33 km al SW de Chunhuhub, 6 Feb 1980, *Téllez & Cabrera 1498* (MEXU, not seen). These should be studied in more detail.

Cirsium subcoriaceum is recognized by its tall stature, large and permanently cottony heads, spiny-margined phyllaries, and diagnostically by its long corolla lobes cut to the base of the almost non-existent throat. Striking variation in the color of phyllaries (inner series) and corollas in Central America suggests that more detailed study is needed, perhaps with recognition of segregate taxa.

7. CIRSIUM BICENTENARIALE Rzed., Acta Bot. Mex. 29: 101. 1994. **TYPE: MÉXICO. Querétaro.**

Mpio. de Pinal de Amoles: 7 km al NE de Pinal de Amoles, sobre el camino a Jalpan, ladera caliza con vegetación de pastizal secundario, 2050 m, 18 Mar 1987, *J. Rzedowski 42872* (holotype: IEB; isotypes: CHAPA, MEXU-Figs. 38 and 40).

Stems 0.8–1.5 m tall, cottony, glabrescent. **Leaves** glabrate adaxially, with brownish multicellular hairs, abaxially thinly white-cottony, without multicellular hairs, subclasping but not decurrent or only slightly so, strongly reduced in size distally. **Heads** erect, mostly solitary, subtended by bracteate leaves. **Involucre**s 5–7 cm wide (pressed); phyllaries in 8–10 graduate series, **outer** ovate-lanceolate, erect, strongly keeled, greenish or slightly purple, persistently cottony spine-tipped (spines 2–5 mm long) with spiny margins, **inner** 3.5–4 cm long, linear, erect, spinose, distally red-purple. **Corollas** whitish, 35–40 mm long, tube 9–10 mm long, throat 13–16 mm long, lobes 12–14 mm long; stigmatic branches 2.5–3 mm long. **Achenes** ca. 5 mm long; pappus bristles ca. 30 mm long.

Querétaro, San Luis Potosí. Oak, oak-pine, mesophytic woods; 1250–2400 m. Flowering March–April, October–November.

Additional collections. Querétaro. Mpio. de Arroyo Seco: 3–4 km WSW de La Florida, ladera de cerro, cañada, 8 Mar 1991, *Carranza 3088* (CHAPA, IEB, TEX-2 sheets); W de Agua Fría de los Fresnos, *Carranza 3039* (CHAPA, IEB); alrededores de El Tepozán, *Carranza 2524* (CHAPA, IEB). Mpio. de Jalpan: 3–4 km N de La Parada, bosque de pino y encino, ladera de cerro, 1250 m, 16 Mar 1990, *Servín 31* (CHAPA, IEB, MEXU). Mpio. de Landa: Ca. 4–5 km NW de Tilaco, bosque de encino, ladera de cerro, 1300 m, 30 Mar 1989, *Carranza 1598* (CHAPA, IEB, MEXU); Hoyo del Lobo, ca. 5 km N de Acatitlán de Zaragoza, *González 1082* (IEB). Mpio. de Pinal de Amoles: 12 km NE de Pinal de Amoles, sobre la carretera a Jalpan, *Rzedowski 46428* (CHAPA, IEB); cerca de Huazmazontla, 13 km NE de Pinal de Amoles, sobre la carretera a Jalpan, ladera caliza con vegetación de bosque mesófilo de montaña, 1300 m, 12 Mar 1989, *Rzedowski 48396* (CHAPA, IEB, MEXU-Figs. 37 and 39). Mpio. de San Joaquín: 8 km E de San Joaquín, por la carr. a Casa de Máquinas, bosque de encino, 2250 m, 17 Nov 1993, *Díaz & Carranza 7430* (TEX); 1 km W de Campo Alegre, 3 km

al W de San Joaquín, bosque de encino, 2400 m, 14 Oct 1989, *Fernández 4600* (CHAPA, IEB, MEXU); 4 km W de San Joaquín, *Fernández N. 4670* (CHAPA, IEB). **San Luis Potosí.** Cerro de San Juan, cerca de Xilitla, *Paray 905* (ENCB - "ejemplar con una sola cabezuela, no muy bien desarrollada, que se asigna aquí con algo de incertidumbre").

Cirsium bicentenariale is similar to *C. subcoriaceum* in its very large heads with spiny-margined and persistently tomentose phyllaries, but corollas of *C. bicentenariale* have relatively long throats. The plants also are shorter in stature and the green-surfaced leaves (both sides) appear to be distinctive. The strongly keeled phyllaries and their even gradation in length are suggestive of the *Cirsium radiata* group and the phylogenetic position of *C. bicentenariale* perhaps will not be unambiguously known until molecular data are available.

8. CIRSIUM EHRENBURGII Sch.Bip. in Seem., Bot. Voy. Herald, 312. 1856. **TYPE: MEXICO.** [Hidalgo]. "Huajalote" [El Guajolote, Mpio. Epazoyucan, Hidalgo], 26 Jun 1852, *C. Ehrenberg 468* (holotype: B destroyed; isotype: P-fragments image). Schultz (or Seemann?), in the protologue, indicated that he saw the B type. **EPITYPE** (designated here): **México D.F.** Las Palmas, 3600 m, Jul 1932, *E. Lyonnnet 1006* (US, Figs. 41, 42).

Stems cottony, glabrescent, thin-based multicellular hairs present but not prominent. **Leaves** clasping, not decurrent or decurrent for up to 2 cm, permanently cottony beneath, glabrous to glabrescent above, without multicellular hairs. **Heads** 6–10 cm wide, immediately subtended by 1–2 spiny-margined bracts; phyllaries herbaceous, densely and permanently cottony, outer phyllaries 4–7 mm wide basally, mostly erect to spreading or reflexed, usually entire or uncommonly with a few stout marginal spines, terminal spine 5–8 mm long, inner phyllaries erect, red, stiff or flexuous, faces of apical portions hairy. **Corollas** 35–44 mm long, tube 11–17 mm long, throat 9–14 mm long, lobes 12–19 mm long; stigmatic branches 1–2.5 mm long, annulus exerted 4–8 mm.

Eastern and volcanic ranges, Jalisco, Mexico, Michoacan, Guanajuato, Morelos, Hidalgo, San Luis Potosí, Veracruz. Dry slopes, grassy openings, meadows, in pine, pine-oak, oak, pine-fir, fir, and deciduous forests; 2300–4000 m. Apparently flowering all year, at least in the southern part of the range.

9. CIRSIUM MIMBRENSE Nesom, **sp. nov.** **TYPE: MEXICO. Durango.** [Mpio. Durango]: 2 km W del puente Los Mimbres, ca. KM 48 de la carretera Durango-Mazatlán (Mex 40), a lo largo de la carretera en zonas rocosas en bosque de pino-encino, 2500 m, 20 Aug 1992, *J.L. Panero 2198* (holotype: TEX, Figs. 46–48).

Distinct in its auriculate-clasping, non-decurrent leaves, leaves with coarse multicellular hairs on the adaxial surface, pair of large foliaceous bracts immediately subtending the heads, phyllaries evenly (outer to inner) linear-triangular to linear-lanceolate, outer phyllaries with spiny margins, and long corolla lobes.

Perennial (from collector's notes). **Stems** 0.3–0.6 m tall, glabrescent (tomentum), persistently sparsely villous with long, vitreous, multicellular hairs. **Leaves** (cauline) lanceolate in outline, 10–18 cm long, 3–5 cm wide, sinuate-lobed with marginal spines 2–6 mm long, base clasping to subclasping, slightly auriculate, persistently densely white-tomentose abaxially, green-glabrescent adaxially but with persistent, coarse, multicellular hairs. **Heads** solitary, immediately subtended by a pair of large, foliaceous bracts; phyllaries evenly (outer to inner) linear-triangular to linear-lanceolate, all red, glabrescent (nearly glabrous), outermost with a spine-like apex and a few marginal spines, all others with a herbaceous apex and without marginal spines, outer loose and spreading but not reflexing, inner erect. **Corollas** 35 mm long, tube 5–6 mm, throat 9 mm, lobes 20–21 mm; stigmatic branches 2 mm long.

Known only from the type collection.

It seems remarkable that this plant along Highway 40, where many botanists have traveled, has been collected only once (as seen in this study). The distinction of the species is unambiguous.

10. CIRSIUM MICHILIENSE Nesom, **sp. nov.** **TYPE: MEXICO. Durango.** Mpio. Mezquital: 3 km from Los Charcos on the road to La Guajolota, pine-oak, 18 Oct 1984, *M. González 1640* (holotype: TEX; isotypes: MEXU-Figs. 49 and 50, CIIDIR).

Cirsium michiliense is distinct in its auriculate-clasping leaves densely and permanently cottony abaxially, glabrescent above, with minute, brown, multicellular hairs on both surfaces, espinoze phyllary margins (except for the bractlike outermost), extremely long corolla lobes and short throat, inner phyllaries with linear, loose, and flexuous apices, and flattened pappus bristles longer than the corolla and apically dilated.

Perennial. **Stems** cottony, glabrescent, villous with multicellular hairs. **Leaves** permanently whitish-tomentose abaxially, greenish-gray and glabrescent adaxially, minute (microscopic) brown-pigmented multicellular hairs abundant on both surfaces; middle and upper cauline 10–15 cm long, 2.5–4 cm wide, oblong-lanceolate, shallowly lobed, marginal spines slender, 4–7 mm long, bases auriculate-clasping, not decurrent, distalmost 3–5 cm long. **Heads** solitary, not immediately subtended by bracts but outermost phyllaries bractlike and with a few marginal spines. **Involucres** 4–5 cm broad (pressed). **Phyllaries** in 5–6 series, lanceolate, evenly tapered, red to carmine, moderately cottony, outer series reflexed or widely spreading, sometimes weakly keeled, tapered to a spinose tip 2–4 mm long, margins without spines or outermost sometimes with 1–2 spines, inner erect, 40–52 mm long, prominently ciliate-hairy on the upper margins and outer surface, apices linear, loose, and flexuous. **Corollas** red-pink to carmine, 36–37 mm long, tube 6 mm, throat 5–5.5 mm, lobes 26–27 mm, lobe:throat ratio 5–5.3; anthers white, 13–15 mm long including the pink appendages 1.8 mm long, filaments glandular; style red, stigmatic branches 2–2.5 mm long. **Achenes** (mature) not observed; pappus bristles 40–45 mm long (longer than the corolla), of varying widths, apically merely short-ciliate or smooth-margined and distinctly dilated.

Southeastern Durango. Meadows, hillsides, openings, open woods, areas of pine-oak; 7000–8300 ft. Flowering July–November.

Additional collections. Durango. Mpio. Mezquital: 3 km al S de Santa Maria de Ocotán, en ladera, 17 Oct 1984, *González 1564* (TEX); 17 km de La Guajolota por el camino a San Fco. Ocotán, 8301 ft, 14 Nov 1985, *González 1872* (MEXU-Figs. 51 and 52, NY, TEX); **Mpio. Suchil:** Potrero Reymundo, San Juan de Michis, ladera en bosque de encino-pino, 1 Nov 1985, *Alvarado 502* (MEXU); Temascal, 8 km al S de Rancho la Peña, 2400 m, bosque de encino-pino, 2 Sep 1977, *Martínez & Vazquez 754* (MEXU); Cacahuates [ca. 23°27' N, 104°16' W], Reserva de la Biósfera "La Michilia," bosque de pino-encino, 25 Jul 1981, *Morales Garcia 54* (MEXU); ca. 47 air km SSW of Vicente Guerrero on road to Las Margaritas, on the Reserva de la Biosfera "La Michilía", mesic W slope of Sierra Urica, with *Quercus sideroxylla*, *Q. rugosa*, *Pinus arizonica*, *P. durangensis*, 26 Jul 1990, *Spellenberg 10355* (TEX, UC).

11. CIRSIUM CANOASENSE Nesom, **sp. nov.** **TYPE: MEXICO. Durango.** Mpio. Mezquital: 14 km al ENE de Canoas, bosque de pino y encino, 31 Oct 1982, *S. González & J. Rzedowski 2258* (holotype: TEX, Figs. 53 and 54; isotype: MEXU-Fig. 56).

Similar to *Cirsium michiliense* in its geography and in its solitary heads with bracteate outer phyllaries but without immediately subtending bracts and its non-decurrent leaves with brown-pigmented, multicellular hairs on the surfaces; distinct in its stems without multicellular hairs, prominently keeled phyllaries, much longer corollas with much shorter lobes, and apically acute pappus bristles.

Perennial (presumably, base not seen). **Stems** sparsely sericeous, glabrescent, without multicellular hairs. **Leaves** (basal) pinnatifid, cauline lanceolate to oblong-lanceolate in outline, 12–40 cm long, 4–8 cm wide, shallowly lobed, slightly subclasping, not decurrent, marginal spines 1–5 mm long, densely, closely, and persistently white-tomentose abaxially, green-glabrate adaxially and with persistent, tiny (microscopic) to coarser, brown-pigmented, multicellular hairs. **Heads** solitary, without immediately subtending bracts but the outermost phyllaries sometimes bractlike. **Involucres** 4–6 cm wide (pressed); phyllaries (outer) oblong-lanceolate, spreading-reflexing, not keeled, margins spinose or the outermost with 2–3 pairs of spines, apical spine 3–4 mm long, inner linear-lanceolate, red. **Corollas** 44–47 mm long, tube 11–14 mm, throat 16–19 mm, lobes 12–13 mm; stigmatic branches 2.5–3 mm long. **Achenes** (mature) not observed; pappus bristles equalling or slightly shorter than the corollas, apically acute.

Additional collection. Durango. Mpio. Mezquital: 74 km WNW of Huejuquilla El Alto, Jalisco, near Canoas, meadows with *Pinus* and *Quercus* on surrounding hills, 2720 m, 22 Oct 1983, *Breedlove 59203* (MEXU, TEX-Figs. 54, 57, 58).

The two collections differ slightly in details of vestiture (multicellular hairs tiny or coarse) but their overall similarity and geography separate them from *C. michiliense*. Both species apparently are narrow endemics, *C. canoasense* the narrower.

1. Stems without multicellular hairs; phyllaries prominently keeled; corollas 44–47 mm long, lobes 12–13 mm; pappus bristles equalling or slightly shorter than the corolla length, apically acute

..... **Cirsium canoasense**

1. Stems villous with multicellular hairs; phyllaries not keeled or weakly so; corollas 36–37 mm long,

lobes 26–27 mm; pappus bristles longer than the corollas, apically dilated **Cirsium michiliense**

12. CIRSIUM TEPEHUANENSE Nesom, **sp. nov.** **Type: MEXICO. Durango. Mpio. Santiago Papasquiario:** ca. 20 air km WNW of Santiago Papasquiario, 3.3 mi by Topia Road, N crest of sierra from jct with road to antenna, steep forested slope, roadside, and canyon with spring, wet area about spring, 9 Jul 1983, *R.D. Worthington 10917* (holotype: TEX; isotype: COLO).

Similar to *Cirsium conspicuum* in overall aspect but the heads smaller and phyllary margins without spines, stems and adaxial leaf surfaces with multicellular hairs.

Stems 30–70 cm tall, permanently white-sericeous, tomentum glabrescent but with persistent multicellular hairs beneath. **Leaves** (basal) pinnatifid, 40 cm long, 16 cm wide, (cauline) narrowly lanceolate to oblanceolate in outline, 14–36 cm long, 7–13 cm wide, pinnately lobed with marginal spines 2–4 mm long, not clasping, decurrent 3–20 mm, densely and permanently white-tomentose abaxially, green adaxially but prominently invested with multicellular hairs. **Heads** solitary, immediately subtended by small, spiny-margined bracts sometimes barely distinguished from the outer phyllaries. **Involucres** 4–5(–6) cm wide (pressed); phyllaries in 6–8 series, cottony but glabrescent, without marginal spines, outer narrowly lanceolate, outermost tipped by a stout spine, reflexing at about midlength, inner linear-oblong, erect, carmine, extending 2–3 cm above the outer. **Corollas** 33–35 mm long, tube 10–11 mm, throat 10–11 mm, lobes 12 mm; stigmatic branches 3 mm long. Figures 59–65.

Northern Durango. Pine-oak, pine, wooded slopes, canyon bottoms, roadsides, wet areas; 2250–2720 m. Flowering April–October.

Additional collections. Durango. Mpio. Tepehuanes: 3 km al SE de la Joya (Ranchería), canada del arbol vestido, 2430 m, 26 Apr 1989, *Benítez 494* (MEXU); La Soledad, bosque de pino-encino, 2440 m, 6 Sep 1989, *Bravo B. 249* (MEXU); 40 km al oeste de Tepehuanes, hacia Topia, 2000 m, bosque de pino, encino, madraño, y táscate, 23 Jul 1982, *Hernández 8227* (MEXU); El

Tarahumar, 14 km al W de el Huacal, brecha a Tabahueto, bosque de pino-encino, 2720 m, 27 Aug 1983, *Tenorio L. 4196* (MEXU); 17 km al W de Los Altares, bosque de pino, 2250 m, 18 Sep 1985, *Tenorio L. 9767* (MEXU). Mpio. Santiago Papasquiario: ca. 20 air km WNW of Santiago Papasquiario, 3.3 mi by Topia Road N of crest of sierra from jct with road to antenna, steep forested slope, wet area about spring, ca. 8000 ft, 9 Jul 1983, *Corral D. 215* (UTEP; this collection made at the same time from the same population as the holotype, but numbered differently by Worthington and by Corral); 18 km al E de Cienega de Nuestra Señora, bosque de pino-encino, 2380 m, 6 Oct 1985, *González 3491* (MEXU); San Ramón, 21 Apr-18 May 1906, *Palmer 202* (CM, F, GH-2 sheets, MO, US).

13. CIRSIUM VERGELENSE Nesom, **sp. nov.** **Type:** MEXICO. Chihuahua. Mpio. San Pablo Balleza: S side of bridge crossing of Rio Verde in deep barranca, 21 mi SW of El Vergel, SW of Parral, 19 Aug 1988, *G. Nesom 6446* (holotype: TEX; isotypes: CAS, COLO, F, GH-Figs. 67 and 70, MEXU, MO, NY-Fig. 71, TEX-Fig. 66, US).

Cirsium vergelense is distinguished by stems sparsely tomentose but prominently hairy with multicellular trichomes, leaves not decurrent, green on both sides, glabrous abaxially, green-glabrate adaxially but with prominent multicellular hairs, heads mostly solitary, and phyllaries all linear-lanceolate and evenly tapered, the outer with spinose tips but espinose margins.

Perennial. **Stems** 0.8–1.5 m tall, freely branched, very thinly cottony just below the heads, otherwise only with prominent, multicellular hairs often with colored cross-walls. **Leaves** green above and beneath, without cottony pubescence but with prominent multicellular hairs above, glabrous or glabrate beneath or a few multicellular hairs along the main veins, basal not in a prominent rosette, lower cauline 25–32 cm long, 6–8 mm wide, narrowly oblong, deeply pinnatifid, lobes triangular, sometimes secondarily shallowly lobed, base auriculate-clasping, not decurrent or only slightly so (1–5 mm), marginal spines slender, 1–8 mm long, distal leaves progressively reduced in size but similar in shape, uppermost 3.5–4.5 cm long. **Heads** in a loose panicle, immediately subtended by leaflike, spiny-margined bracts. **Involucre** campanulate, 4–4.5 cm high, 3.5–5.5 cm wide (pressed); phyllaries in 5–6 series and mostly of 2 lengths, all erect, linear-lanceolate to narrowly lanceolate, evenly tapered, eglandular, red to carmine, outermost slightly cottony, 2.5 mm broad near the base, 19–21 mm long, 1/2–3/5 as long as the inner, tapering to an erect, inconspicuous yellow spine 4–6 mm long, margins without spines, inner without spines, minutely ciliate but otherwise glabrous, becoming much thinner, tapering to a long, flexible tip, innermost 40–45 mm long. **Corollas** red to carmine, 31–36 mm long, tube 5–9 mm, throat 8–10 mm, lobes 17–22 mm, lobe:throat ratio 1.9–4.4; anthers pink, 11–12 mm long, including the apical appendages 2–2.5 mm long, filaments glandular; style red, stigmatic branches 2–3.5 mm long. **Achenes** (mature) not observed; pappus of ca. 24–30 bristles 25–27 mm long.

Southern Chihuahua. Rocky microsites, shady, moist, pine or pine-oak woods, often with madroño; 2200–2500 m. Flowering August-October.

Additional collections. MEXICO. Chihuahua. Mpio. Guadalupe y Calvo: Above Rio Verde canyon, 93 mi along road from San Francisco del Oro to Guadalupe y Calvo, 8300 ft, 15 Nov 1967, *Kimnach & Brandt 1078* (US, Figs. 69, 72, 73); bottom of Turuachi Canyon, 0.5 mi S of bridge in Turuachi, 25.5 mi SW of Rio Verde bridge, SW of El Vergel, 22 Aug 1988, *Nesom 6521* (ARIZ, ASU-Fig. 68, CIIDIR, MEXU, MIN, NMC, TEX-2 sheets); Cerro Marshall y alrededores, poblado San Juan, 26° 01' 17.8 N, 106° 29' 55.8 W, bosque de pino-encino, 2600 m, 28-30 Apr 2009, *Tejero-D. 5556* (MEXU). Mpio. San Pablo Balleza: 13.8 mi NE of El Vergel on Hwy 24, 21 Oct 1986, *Nesom 5754* (MEXU, TEX-2 sheets).

Cirsium vergelense is distinguished especially by its leaves green-glabrate on both surfaces and narrowly lanceolate, evenly tapered phyllaries. This species is scattered but relatively common in local populations along Hwy 24 from just south of El Vergel to Guadalupe y Calvo.

14. CIRSIUM RUPINARUM Nesom, *sp. nov.* **TYPE: MEXICO. Chihuahua.** Mpio. Maguarichi: ca. 25 air mi SW of San Juanito, 6 mi NE of village of Maguarichi, igneous rock, at seep in small canyon on S-facing slope, ca. 7000 ft, with various *Quercus*, *Pinus*, and *Juniperus*, 28 Apr 1985, *R. Spellenberg et al.* 8112 (holotype: NMC!; isotypes: MEXU-Figs. 78 and 83, NY, LAC).

Distinct in its decurrent leaves, heads without immediately subtending bracts, and phyllaries with spinose margins, the outer with deeply concave-canaliculate distal portions and a long, flattened, spine-like apex.

Perennial, "stout, clumped, impenetrable" (the type collection). **Stems** to ca. 2 m tall, cottony, glabrescent, without multicellular hairs. **Leaves** permanently cottony abaxially, glabrous (quickly glabrescent) adaxially, without multicellular hairs, middle and upper cauline 12–37 cm long, 2–10 cm wide, elliptic-lanceolate, lobed 1/2–4/5 to the midvein, midvein straw-colored, 4–10 mm wide proximally, with prominent longitudinal ribs, marginal spines 1.5–6 mm long, bases subclasping, decurrent for 6–70 mm, uppermost leaves 2–5 cm long. **Heads** solitary, without subtending bracts. **Involucre** 2.5–3.5 cm high, 3.5–4.5 cm broad (pressed); phyllaries in 6–8 series, cottony, glabrescent, eglandular, lanceolate, margins without spines, outer series yellow-green, ovate and indurate in the proximal 3–4 mm, sharply reflexed above that point and abruptly narrowed and adaxially concave-canaliculate, with a flattened, spine-like apex 5–7 mm long, those of the inner series red-purple, erect, extending 18–25 mm above the reflexed outer, minutely tuberculate, margins ciliate, apex acute to short-acuminate. **Corollas** pink to carmine, 32–41 mm long, tube 12–17 mm, throat 5–11 mm, lobes 12–17 mm; anthers white to pink, 11 mm long including the apical appendages 2.5–3 mm long, tails 2 mm; styles red, stigmatic branches 3–3.8 mm long. **Achenes** (mature) 6 mm long, 2–2.5 mm wide, light tan, blackened near the bottom; pappus bristles 25–28 mm long, of relatively even width, dilated apically.

South-central Chihuahua. Areas of oak or pine, often with juniper or fir, moist slopes or seepage areas; 2100–2500 m. Flowering April–November.

Additional collections examined. MEXICO. Chihuahua. Mpio. Guazapares: near Taborachic, below Las Launitas, locally abundant on moist slope with mossy carpet of white volcanic rock in openings of pine-oak forest with scattered *Abies durangensis*, 7500 ft, 11 Nov 1973, *Bye* 5858 (COLO-Fig. 80, GH, MEXU-Figs. 79 and 84). Mpio. Guachochic: Pueblo Cusarare S of Creel, 2 km downstream from the pueblo, Cascada de Cusarare, wet rocks and slopes, shade, 24 Jun 1982, *Siplivinsky* 3946 (COLO-on 3 sheets). **Sonora.** Mpio. Yecora: 4 km al W de El Talayote, 35 km al E de Yecora, límites de Sonora y Chihuahua, bosque de pino-encino, 1750 m, 27 Sep 1983, *Tenorio L.* 4542 (MEXU-2 sheets, Figs. 81–82, 85).

The epithet "rupinarum" alludes to the deep canyons of region where the species occurs. Some specimens were earlier annotated as "C. chihuahuense."

A collection from Mpio. Yecora, Sonora, consists only of a highly dissected basal leaf, suggesting that it may represent a species of sect. *Erythrolaena* — Cienega de Camilo, 6.3 km E of El Kipor, 11.2 km W of Chihuahua border on Hwy 16, sphagnum bog in clearing in shady riparian pine-oak forest, 1580 m, 25 Sep 1997, *Reina G.* 97-1407 (TEX). The locality is relatively close to that of *Tenorio* 4542.

15. CIRSIUM BOCOYNENSE Nesom, **sp. nov.** **TYPE: MEXICO. Chihuahua.** Mpio. Bocoyna: ca. 3.6 road mi E of Gonogochic [Ejido San Ignacio Arareco], along small narrow arroyo (part of Rio Bocoyna-Rio Conchos drainage), few scattered plants on soil deposits on rock ledge, 2180 m, 26 May 1984, *R. Bye et al.* 12758 (holotype: UCR!; isotype: COLO-Figs. 74-77).

Distinct in its stems persistently villous with long, spreading, multicellular hairs, subclasping, non-decurrent leaves, adaxial midvein of leaves sparsely villous with long, multicellular hairs, and heads immediately subtended by spiny-margined bracts.

Perennial (probably, base not seen). **Stems** lightly sericeous and glabrescent but persistently sparsely villous with long, multicellular hairs. **Leaves** narrowly oblong to oblanceolate in outline, deeply pinnately lobed, base clasping, not broadly auriculate, not decurrent, marginal spines 2–5 mm long, persistently gray-tomentose abaxially, glabrescent adaxially. **Heads** paired at stem apex, immediately subtended by small, spiny-margined bracts. **Involucres** 3–5 cm wide (pressed); phyllaries without marginal spines, all erect, red to pinkish red, outer ovate, abruptly attenuate to a flattened, herbaceous but spine-like apex (terminal spine of the outer grading from the spiny, subtending bracts), inward gradually becoming ovate-lanceolate to lanceolate, linear-lanceolate, and linear. **Corollas** 36–38 mm long, tube 5 mm, throat 15 mm (tube and throat barely distinguishable), lobes 16–18 mm; stigmatic branches 2 mm long.

Known only from the type collection. *Cirsium bocoynense* is perhaps sympatric with *C. rupinarum* or at least closely parapatric, but distinctions between the two appear unmistakable, as in the key couplet.

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Figure 11. *Cirsium conspicuum*. Jalisco. Holotype (CM) of *Cirsium anartiolepis*.



Figure 12. *Cirsium conspicuum*. Jalisco. Head from isotype (MSC) of *Cirsium anartiolepis*.



Figure 13. *Cirsium conspicuum*. Variation in involucre morphology.



Figure 14. *Cirsium conspicuum*. Variation in involucre morphology.



Figure 15. *Cirsium faucium*. Mpio. Temascaltepec, Edo. Mexico. Isotype (K).



Figure 16. *Cirsium faucium*. Heads from K isotype (Fig. 15).



Figure 17. *Cirsium faucium*. Mpio. Temascaltepec, Edo. Mexico. Isotype (MO).



Figure 18. *Cirsium eorythros*. Mpio. Guemes, Tamaulipas. Holotype (MEXU).



Figure 19. *Cirsium eorythros*. Detail from holotype (Fig. 18).



Figure 20. *Cirsium eorythros*. Detail from holotype (Fig. 18).



Figure 21. *Cirsium jaliscoense*. Mpio. Cautitlán de García Barragán, Jalisco, Wetter 1094 (US).



Figure 22. *Cirsium jaliscoense*. Head from *Wetter 1094* (MEXU).



Figure 23. *Cirsium jaliscoense*. Colima. Head from Miranda M. & López R. 1112 (MEXU).



Figure 24. *Cirsium jaliscoense*. Jalisco. Head from Reynoso D. s.n. (MEXU).



Figure 25. *Cirsium jaliscoense*. Mpio. Minatitlán, near Los Cipresitos, El Terrero, Colima, ca. 0.6 km S of Jalisco border, in the Reserva de la Biofera Sierra Manantlán. Photo by Alfredo Avila, 18 April 2021. iNaturalist Mexico.



Figure 26. *Cirsium jaliscoense*. Sierra del Tigre (Mpio. Mazamitla), Jalisco, at 2500 m. Photo by Mihai Costea, 19 February 2013. From Phytoimages, used by permission.



Figure 27. *Cirsium jaliscoense*, with Mihai Costea. Sierra del Tigre (near Mazamitla), Jalisco, at 2500 m. Photo by Ignacio García-Ruiz, 19 February 2013. From Phytoimages, used by permission.



Figure 28. *Cirsium tancitaroense*. Mpio. Tancitaro, Michoacan. Holotype (F).



Figure 29. *Cirsium tancitaroense*. Head from holotype (Fig. 28).

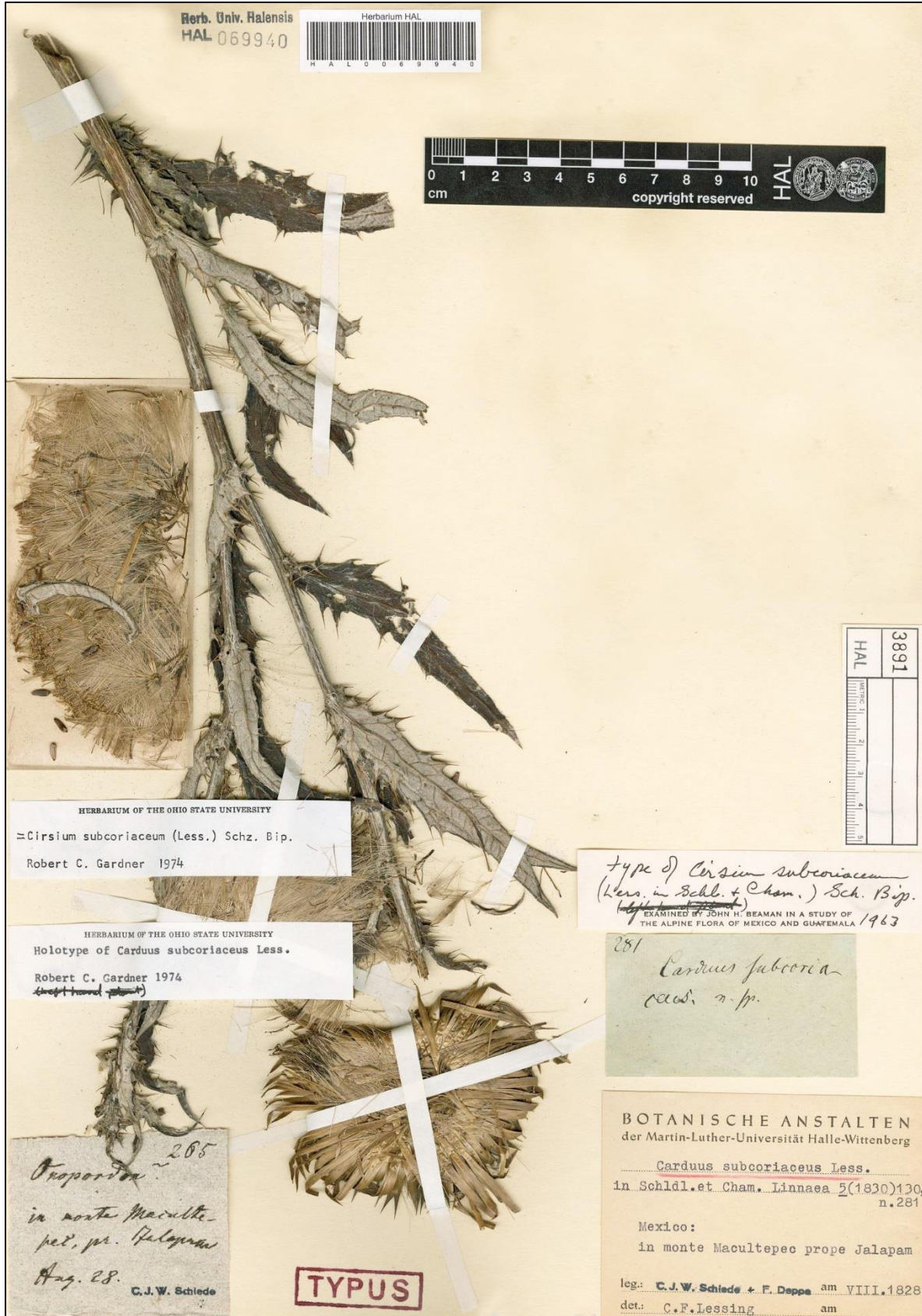


Figure 30. *Cirsium subcoriaceum*. Mpio. Xalapa, Veracruz. Holotype (HAL).



Figure 31. *Cirsium subcoriaceum*. Details from holotype (Fig. 30).

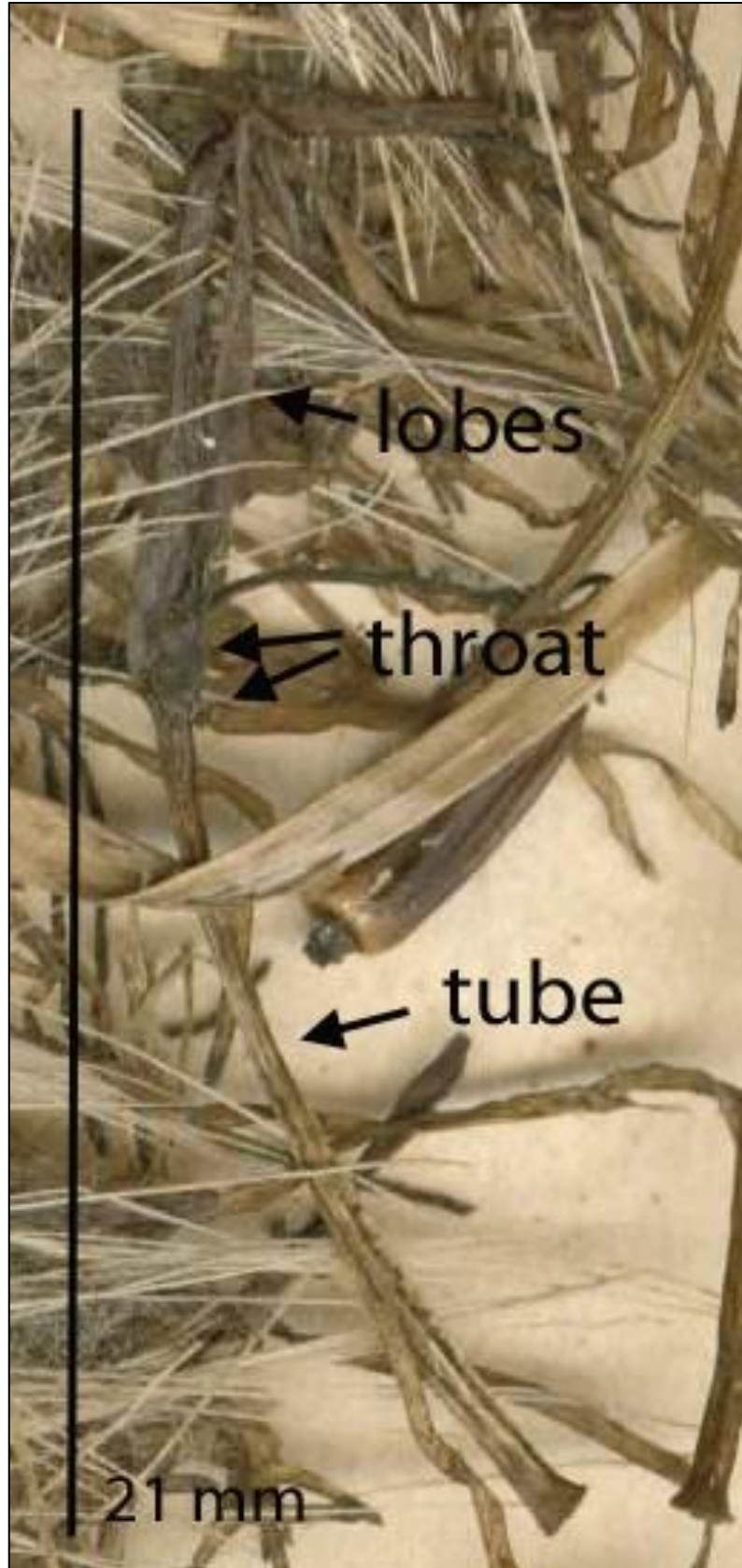


Figure 32. *Cirsium subcoriaceum*. Details from holotype. Corolla, showing extremely short throat.



Figure 33. *Cirsium subcoriaceum*. Mpio. Coscomatepec, Veracruz. Purpus 6323, epitype (US).



Figure 34. *Cirsium subcoriaceum*. Details from epitype (Fig. 33). Spiny-margined phyllaries.



Figure 35. *Cirsium subcoriaceum*. Mpio. Apaxtla, Guerrero, Mexico 9044 (US).



Figure 36. *Cirsium subcoriaceum*. Edo. Mexico, Lyonnet 2087 (US).



Figure 37. *Cirsium bicentenariale*. Mpio. Pinal de Amoles, Querétaro. Rzedowski 48396 (MEXU).



Figure 38. *Cirsium bicentenariale*. Mpio. Pinal de Amoles, Querétaro. Isotipo (MEXU).



Figure 39. *Cirsium bicentenariale*. Heads from Rzedowski 48396 (MEXU), Fig. 37.



Figure 40. *Cirsium bicentenariale*. Head from MEXU isotype (Fig. 38).



Figure 41. *Cirsium ehrenbergii*. Las Palmas, Mexico, D.F. Lyonnet 1006 (US).



Figure 42. *Cirsium ehrenbergii*. Head from *Lyonnet 1006* (US, Fig. 41).



Figure 43. *Cirsium ehrenbergii*. Mpio. Coyotepec, Edo. Mexico. Rzedowski 37250 (ASU).



Figure 44. *Cirsium ehrenbergii*. Mpio. San Sebastián del Oeste, Jalisco. Mexia 1616 (US).



Figure 45. *Cirsium ehrenbergii*. Head from Mexia 1616 (US, Fig. 44).



Figure 46. *Cirsium mimbresense*. Mpio. Durango, Durango. Holotype (TEX).



Figure 47. *Cirsium mimbresense*. Head from holotype (Fig. 46).



Figure 48. *Cirsium mimbresense*. Head from holotype (Fig. 46).



Figure 49. *Cirsium michiliense*. Mpio. Mezquital, Durango. Isotype (MEXU).



Figure 50. *Cirsium michiliense*. Head from MEXU isotype (Fig. 49).



Figure 51. *Cirsium michiliense*. Mpio. Mezquital, Durango. M. Gonzalez 1872 (MEXU).



Figure 52. *Cirsium michiliense*. Head from Gonzalez 1872 (MEXU, Fig. 51).



Figure 53. *Cirsium canoasense*. Mpio. Mezquital, Durango. Holotype (TEX).



Figure 54. *Cirsium canoasense*. Mpio. Mezquital, Durango. Breedlove 59203 (TEX).



Figure 55. *Cirsium canoasense*. Head from holotype (Fig. 53).



Figure 56. *Cirsium canoasense*. Head from MEXU isotype.

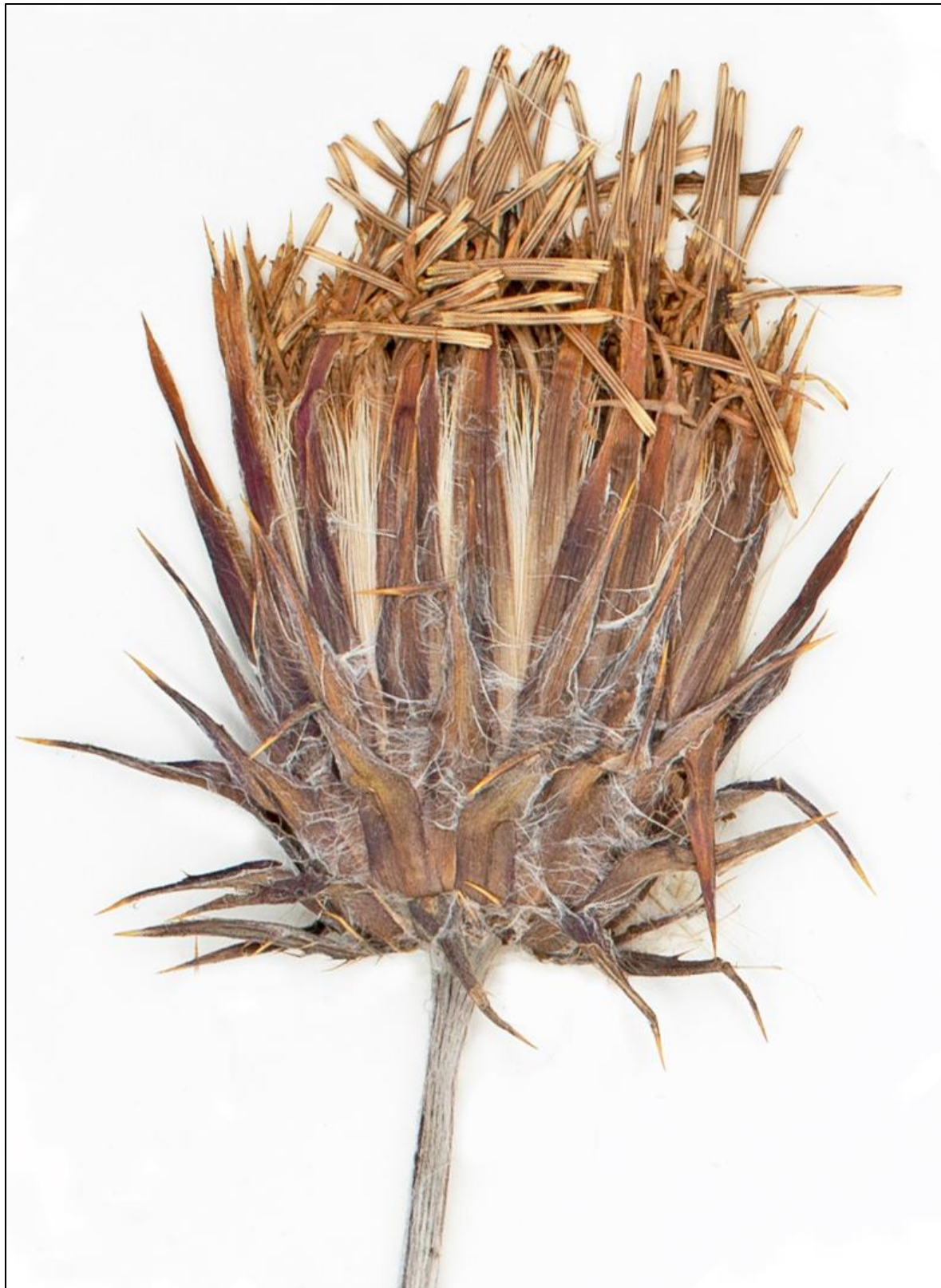


Figure 57. *Cirsium canoasense*. Head from *Breedlove* 5923 (TEX, Fig. 54).



Figure 58. *Cirsium canoasense*. Head and floret from *Breedlove* 5923 (TEX, Fig. 54).



Figure 59. *Cirsium tepehuanense*. Mpio. Tepehuanes, Durango. Tenorio L. 9767 (MEXU).



Figure 60. *Cirsium tepehuanense*. Mpio. Tepehuanes, Durango. *Hernandez 8227* (MEXU).

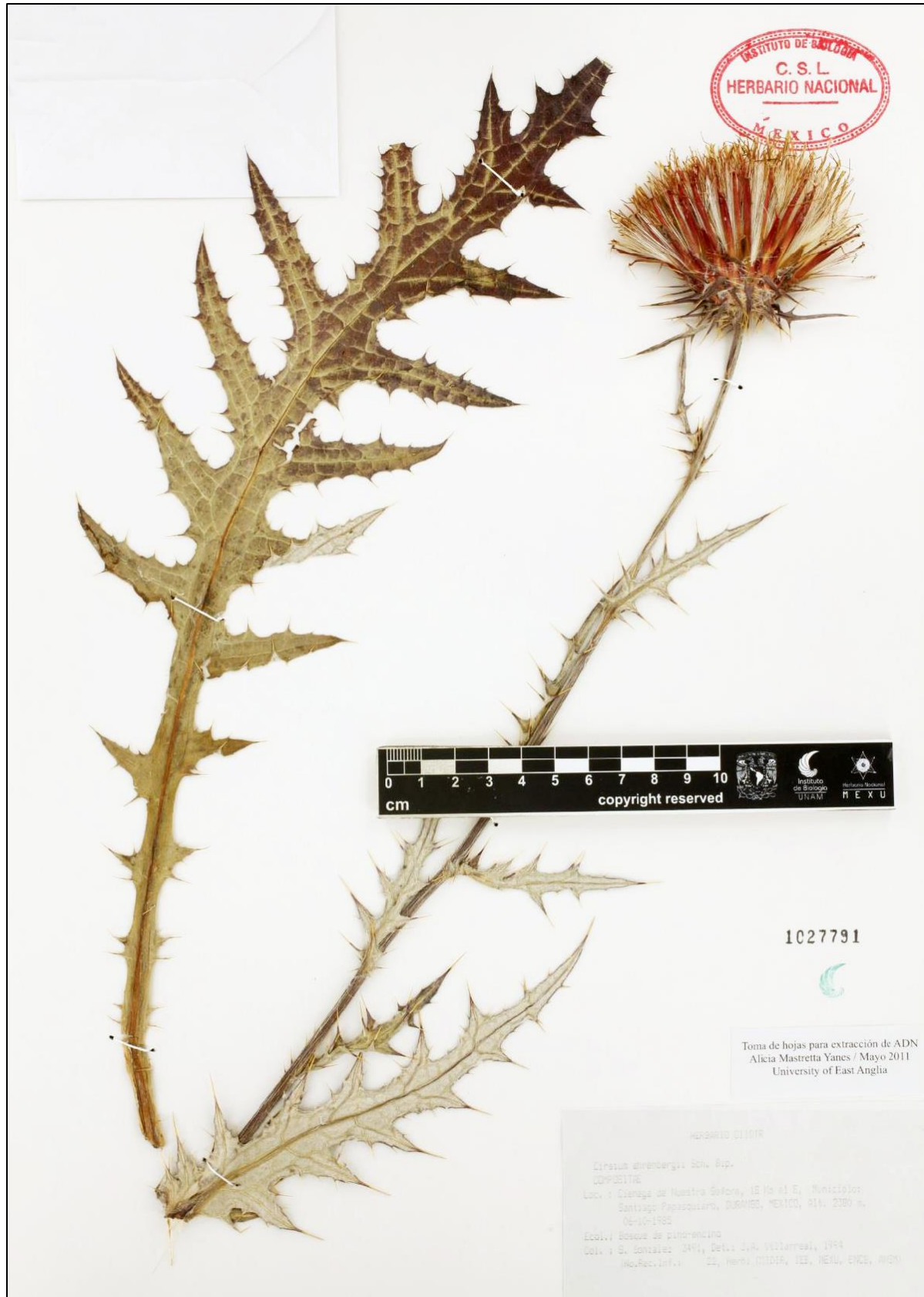


Figure 61. *Cirsium tephuanense*. Mpio. Santiago Papasquiaro, Durango. Gonzalez 3491 (MEXU).



Figure 62. *Cirsium tephuanense*. Head from Tenorio L. 4196 (MEXU).



Figure 63. *Cirsium tephuanense*. Head from Gonzalez 3491 (MEXU).



Figure 64. *Cirsium tephuanense*. Head from Tenorio L. 9767 (MEXU).



Figure 65. *Cirsium tepehuanense*. Head from Bravo B. 249 (MEXU).



Figure 66. *Cirsium vergelense*. Mpio. San Pablo Balleza, Chihuahua. Isotype (TEX).



Figure 67. *Cirsium vergelense*. Mpio. San Pablo Balleza, Chihuahua. Isotype (GH).



Figure 68. *Cirsium vergelense*. Mpio. Guadalupe y Calvo, Chihuahua. Nesom 6521 (ASU).



Figure 69. *Cirsium vergelense*. Mpio. Guadalupe y Calvo, Chihuahua. *Kimmach & Brandt 1078* (US).



Figure 70. *Cirsium vergelense*. Head from GH isotype (Fig. 67).



Figure 71. *Cirsium vergelense*. Head from NY isotype.



Figure 72. *Cirsium vergelense*. Adaxial leaf surface, *Kinnach & Brandt 1078* (US, Fig. 69).



Figure 73. *Cirsium vergelense*. Abaxial leaf surface, *Kinnach & Brandt 1078* (US, Fig. 69).



Figure 74. *Cirsium bocoynense*. Mpio. Bocoyna, Chihuahua. Isotype (COLO).



Figure 75. *Cirsium bocoynense*. Head from COLO isotype (Fig. 74).



Figure 76. *Cirsium bocoyense*. Adaxial leaf surface from COLO isotype (Fig. 74).



Figure 77. *Cirsium bocoyense*. Abaxial leaf surface from COLO isotype (Fig. 74).



Figure 78. *Cirsium rupinarum*. Mpio. Maguarichi, Chihuahua. Isotype (MEXU).



Figure 79. *Cirsium rupinarum*. Mpio. Guazapares, Chihuahua. Bye 5858 (MEXU).



Figure 80. *Cirsium rupinarum*. Mpio. Guazapares, Chihuahua. Bye 5858 (COLO).



Figure 81. *Cirsium rupinarum*. Mpio. Yecora, Sonora. Tenorio L. 4542 (MEXU).



Figure 82. *Cirsium rupinarum*. Mpio. Yecora, Sonora. Tenorio L. 4542 (MEXU).



Figure 83. *Cirsium rupinarum*. Head from isotype (MEXU, Fig. 78).



Figure 84. *Cirsium rupinarum*. Head from Bye 5858 (MEXU, Fig. 79).



Figure 85. *Cirsium rupinarum*. Head from *Tenorio L. 4542* (MEXU, Fig. 81).