

TWO NEW THISTLES (*CIRSIIUM*, ASTERACEAE) FROM MEXICO OF THE *RADIATA* GROUP

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ABSTRACT

Cirsium oaxacanum Nesom, **sp. nov.**, is endemic to Oaxaca, ***Cirsium hidalgoense*** Nesom, **sp. nov.**, to Hidalgo and closely adjacent Veracruz. Each is illustrated by specimen images and a distribution map. These two species are members of a Mexican/Central American group ("the *Radiata* group") characterized by linear-lanceolate and evenly tapered phyllaries with a thick, keel-like midrib along the whole length.

Collections of two undescribed species from Mexico were annotated by me several decades ago with unpublished names, but the names have never been published. The formal descriptions are provided below.

CIRSIIUM OAXACANUM Nesom, **sp. nov.** **TYPE: MEXICO. Oaxaca.** Distrito Etla, Las Sedas, 1950 m, 25 Dec 1938, *C. Conzatti 4766* & hijo (holotype: LL!; isotype: GH!).

Similar to *Cirsium orizabense* in its narrow, keeled, spiny-margined phyllaries but distinct in its adaxial leaf surfaces with multicellular hairs, sharply reflexing outer phyllaries, and longer corollas (39–45 mm vs. asdfasdfs) and corolla throats (16–25 mm vs. 4.5–6 mm).

Stems 1–3 m tall, cottony, glabrescent, without multicellular hairs. **Leaves** lanceolate, with deep to shallow triangular lobes, marginal spines 2–9 mm long, base subclasping, decurrent 0–5 mm, distal cauline permanently cottony beneath, with numerous and prominent multicellular hairs (sometimes as short as 0.1–0.2 mm) on the otherwise glabrescent upper surface. **Heads** on short peduncles with reduced leaves, immediately subtended by several spiny-margined bracts. **Involucres** 5–7 cm wide (pressed); phyllaries linear-lanceolate and evenly tapered to a spinescent tip, with a thick, keel-like midrib along the whole length, with stout marginal spines 3–5 mm long along the whole length, the inner wide, 5–15 cm long, erect, equal to subequal in length, the outermost sharply reflexed, eglandular, cottony but glabrescent, reddish? when fresh, drying brown to tan, 2–4 mm wide at the base. **Corollas** 39–45 mm long, tube 8–11 mm long, throat 13–19 mm long, lobes 14–17 mm long. **Stigmatic branches** 3–4 mm long.

North-central Oaxaca; pine and pine-oak woods, sometimes with alder or arbutus, secondary growth, roadsides; (1500–)1950–3100 m; flowering July–January. Figure 1.

Additional collections examined. MEXICO. Oaxaca. Mpio. San Juan Atepec, Llano de Las Flores, bosque de encino-pino, orilla de camino, 2780 m, 13 Jul 1988, *Acosta Castellanos 1021* (MEXU); Mpio. San Pablo Macuilianguis, around Puerto del Sol, 16 Dec 1980, *Castillo C. 1235* (TEX); Dist. Villa Alta, 3 km N of Cuajimoloyas, 8 Dec 1982, *Cedilla T. 1938* (MEXU); no locality data, *Conzatti & Gonzales 1234* (GH); return to Cuesta from Yalalag, 26 Jan 1966, *Ernst 2342* (APAU, MEXU, US); return to Cuesta from Yalalag, 26 Jan 1966, *Ernst 2343* (MEXU, US); return to Cuesta from Yalalag, 26 Jan 1966, *Ernst 2344* (US); Mpio. Ixtlán de Juárez, camino a Josaa, veg. secundaria de bosque mesófilo de montaña, 1450 m, 16 Mar 1999, *García R. 347* (MEXU); NE side of the San Felipe ridge along the logging road ca. 19 km N of Rte. 175, E of Oaxaca de Juárez, 15 Sep 1973, *Hill*

1583 (VT); Dept. Ixtlán, Sierra de Juarez, road from La Cumbre (Rte 175) to Corral de Piedra, near La Torre de TRM, 31 Jul 1985, *Lorence 4653* (MEXU); cumbre de Valle Nacional, 27 Oct 1971, *Matuda 38391* (MEXU); Mpio. Santiago Textitlan, El Naranjo de Santiago Textitlan, pino-encino, 2696 m, 27 Jun 2006, *Salinas 89* (TEX); Dist. Sola de Vega, Mpio. Santiago Textitlan, Llano Mazorca, agricultura permanente, 2280 m, 26 Aug 2006, *Salinas 413* (TEX); ca. 40 mi N of Oaxaca along Hwy 175, 24 Jul 1983, *Taylor 2428* (DUKE); between Oaxaca and Tuxtepec on Hwy 175, 29.6 mi S of Villa Hermosa, 15 Aug 1975, *Torke 527* (MO); Mpio. Santa Catarina Ixtepeji, La Cumbre, por el camino al Corral de Piedra, bosque de pino-encino, 1 Aug 2000, *Torres B. 1865* (MEXU); Mpio. Zacatepec, subida al Cerro Cempoaltepetl por el cruce a Zacatepec, bosque mesófilo, 2500-3500 m, 18 Sep 1988, *Torres C. 12503* (MEXU); ca. 16 mi by road N of Ixtlán, near Llano de Las Flores, 20 Jul 1972, *Webster et al. 17478* (MEXU); 3 mi S of Cerro Pelón [17.5, -96.46667], 31 Aug 1975, *Webster et al. 20253* (MEXU).

Collections from Mpio. Miahuatlán: 25.3 mi S of Miahuatlán along Hwy 175 between Oaxaca and Pochutla, 19 Jan 1979, *Croat 45978* (MO); San Sebastián, swamp in oak-grass savannah, 2500 m, 13 Oct 1995, *Hinton 26041* (TEX); Xianaguilla [Cieneguilla], oak, arbutus, and pine woods, by pond, flrs white, 2925 m, 13 Oct 1995, *Hinton 26076* (TEX); Quiexobra, fir, pine, and alder forest, flrs purple, 3045 m, 14 Oct 1995, *Hinton 26109* (TEX); Quiexobra, sparse pine forest, flrs pink, 3485 m, 15 Oct 1995, *Hinton 26153* (TEX); near Llano Grande, thicket, llano, flrs yellow, 2650 m, 18 Oct 1995, *Hinton 26197* (TEX); La Sirena, summit, 23 Oct 1995, *Hinton 26397* (TEX).

Some collections of *Cirsium oxacanthum* have been identified as *C. anartiolepis* of sect. *Erythrolaena* but the narrow phyllaries with a thick, keel-like midrib along the whole length are out of place there, as are the longer stigmatic branches. The involucre morphology is *C. oxacanthum* is similar to that of *C. novoleonense* (Nesom & García M. 2021), except for the striking and consistent red color of the latter.

Three collections made by Ernst between Cuesta and Yalalag in January 1966 (his 2342, 2343, and 2344; see Figs. 6-9) probably were made to illustrate a biological point. *Ernst 2343* is *Cirsium conspicuum*; 2342 is typical *C. oxacanthum*, for which the label notes "corollas subwhite and separating, anthers tan, stigmas barely pink — effect is yellowish head;" 2344 is *C. oxacanthum* but the label notes "heads deep purple to purple-red." One suspects gene flow between the two species at that locality; chromosome numbers in both groups are $2n = 34$.

Analogous variation in corolla color among collections of *Cirsium oxacanthum* was recorded in collections from Mpio. Miahuatlán — colors ranged from white and yellow to pink and purple. The population system in the Miahuatlán area appears to be disjunct from the one further north and should be more closely studied for possible morphological distinctions.

CIRSIMUM HIDALGOENSE Nesom, **sp. nov.** **TYPE: MEXICO. Hidalgo.** [Mpio. Nicolas Flores]: Woods above Minas Viejas near Km 255 on hwy between Zimapan and Jacala, 1800 m, 30 Apr 1947, *H.E. Moore, Jr. 2766* (holotype: GH, Fig. 10).

Similar to *Cirsium pinetorum* Greenm. but vestiture of stems, leaves, and phyllaries densely and persistently white-tomentose, without multicellular trichomes, outer phyllaries short and distally deeply concave, and corollas shorter.

Perennials 0.5–1 m tall. Stems, leaves, and heads densely and persistently white-tomentose, without multicellular hairs. **Leaves** somewhat coriaceous, white-tomentose abaxially, persistently gray-white above or less commonly glabrescent-glabrate, mid-cauline 4–10 (–18) cm wide, 14–43 cm long, subclasping, not decurrent. **Heads** solitary or in loose clusters on peduncles with reduced cauline leaves. **Involucre** 3–4.5 cm wide (pressed); phyllaries linear-lanceolate, margins without spines, keeled on at least the distal 2/3, the outer 19–26 mm long, spreading-reflexed and deeply concave in the distal portion, tipped by an orangish spine 2–4 mm long, the inner erect, flat, slightly to not at all

spinescent at the apex. **Corollas** red-purple, 21–26 mm long, tube 8–11 mm long, throat 7–9 mm long, lobes 5–6 mm long. **Stigmatic branches** 3–4 mm long.

Hidalgo and west-central Veracruz; woods of oak-pine, pine, or fir, or with deciduous species at lower elevations, sometimes with *Liquidambar* or *Platanus*; 1450–3300 m; flowering March–May. Figure 2.

Additional collections examined. MEXICO. Hidalgo. Mpio. Mineral del Chico, 25 km N of Pachuca-Zacualtipan hwy on the road to Mineral del Chico, 6 May 1978, *García P. 645* (MEXU); Mpio. Tianguistengo, 5 km W of Tianguistengo, 25 Mar 1981, *Hernández M. 5641* (MEXU, MO); Mpio. Metztitlán, Paraje "El Cerro," cercanía al "Rincon de los ahujes" predio particular, bosque de *Quercus*, ladera con calizas, abunda en áreas perturbados, 3 Mar 1992, *López García 31* (MEXU); Regla, 12 Apr 1891, *Maury 5629* (MEXU); Cerro del Águila, between Molango and Quetzalapan, no date, *Paray 910* (MEXU). **Veracruz.** Mpio. Huayacocotla, along Huayacocotla-Zontecomatlan road, between Miguel Lerdo and San Antonio Ixtatetla, 3 km NE of Miguel Lerdo, 27 Apr 1983, *Nee & Taylor 26843* (F).

Cirsium hidalgoense is characterized by the persistent, close, white tomentum of the stems, leaves, and especially the phyllaries, coriaceous, non-decurrent leaves without multicellular hairs, short, spreading-reflexed phyllaries that are deeply concave distally, and short corollas. Among the species of the *Radiata* group, it is closely similar to *C. pinetorum*, with which it shares linear phyllaries with entire margins.

The *Radiata* group

The new species described here are members of a group of primarily Mexican and Central American species of *Cirsium* that tentatively includes the following.

C. acantholepis (Hemsl.) Petrak	D.F., Guanajuato, Michoacan, México, Querétaro
C. acrolepis (Petrak) G. Ownbey	Coahuila, Guanajuato, Hidalgo, Nuevo León, Querétaro, San Luis Potosí, Tamaulipas,
C. consociatum Blake	Guatemala (see Pruski 2018)
C. hidalgoense Nesom	Hidalgo, Veracruz
C. nivale (Kunth) Sch.-Bip.	D.F., México, Morelos, Puebla, Veracruz
C. novoleonense Nesom & García-Mor.	Coahuila, Nuevo León, Tamaulipas
C. oaxacanum Nesom	Oaxaca
C. pinetorum Greenm.	Guanajuato, Hidalgo, Puebla, Querétaro, San Luis Potosí
C. radians Benth. (incl. <i>C. guatemalense</i> Blake)	Guatemala
C. subuliforme G. Ownbey	Hidalgo, México, Morelos, Puebla, Querétaro, Veracruz
C. zamoranense Rzed.	Guanajuato, Querétaro

Cirsium [subg. *Cirsium* sect. *Onotrophe*] subsect. *Radiata* Petrak, Beih. Bot. Centralbl. 35 (Abt. 2): 268. 1917. **LECTOTYPE** (designated here): *Cirsium radians* Benth. Petrak's group included *C. radians*, *C. orizabense*, and *C. acantholepis*.

Characteristic features of the group are these: **leaves** (in most) lanceolate-oblong in outline, barely or not at all clasping or decurrent; **phyllaries** eglandular, at least the erect ones nearly equal in length (not strongly graduated), linear-lanceolate and evenly tapered, with a thick, keel-like midrib along the whole length, with or without stout marginal spines; **chromosome number**, $2n = 34$ (Ownbey et al. 1975).

Ownbey (1982) seemingly accepted Petrak's placement of *Cirsium acantholepis*, but the phyllaries lack diagnostic features of the group.

Cirsium acrolepis is a variable taxon needing further study. It has strongly keeled outer phyllaries but displays several features anomalous in the group (graduate phyllaries and, at least in collections from Coahuila and Nuevo Leon, a glandular midline). It was provisionally included in this group by Ownbey (1982). *Cirsium acrolepis* was originally considered a subspecies of *C. occidentale* by Petrak.

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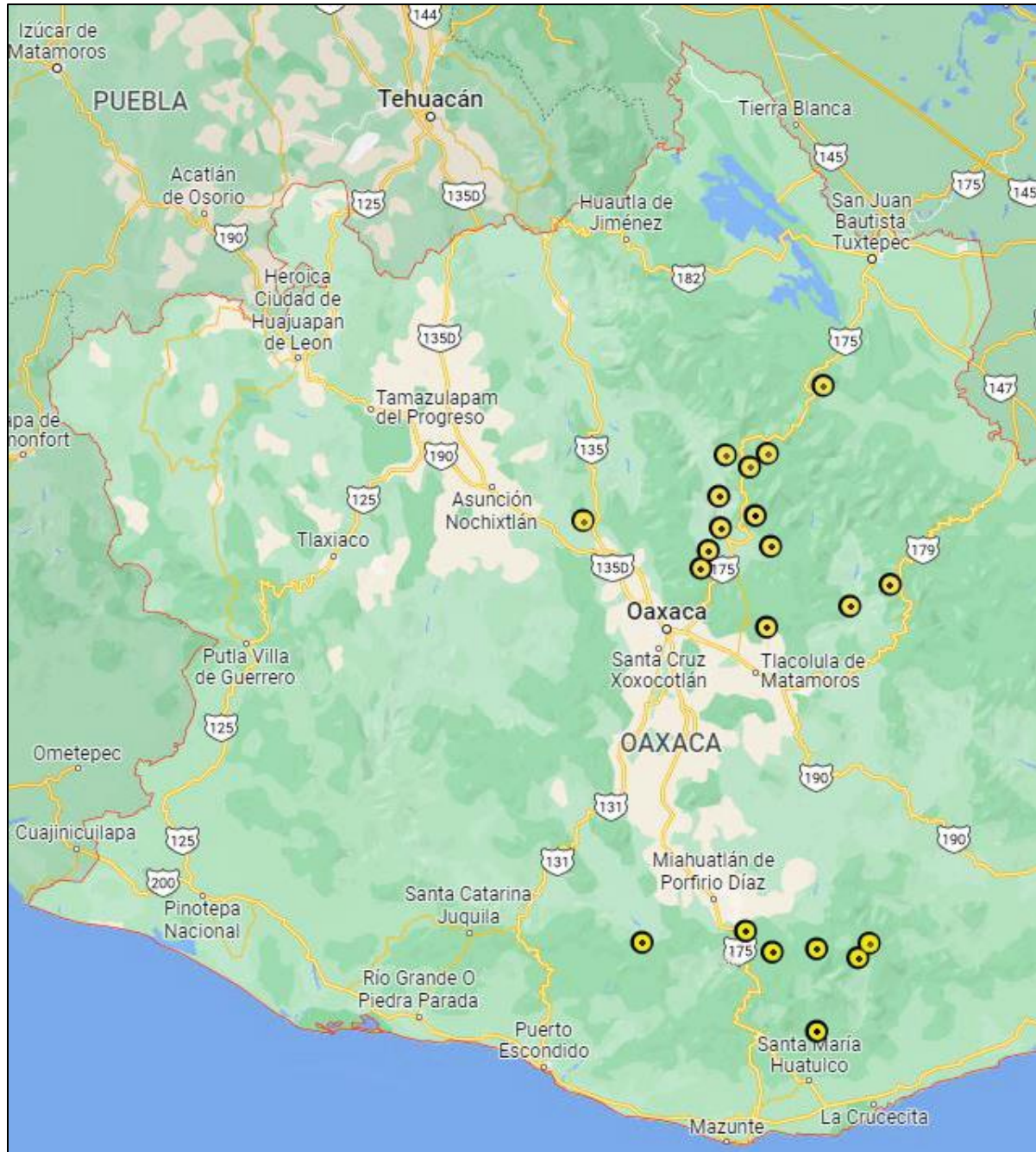


Figure 1. Distribution of *Cirsium oaxacanum*.

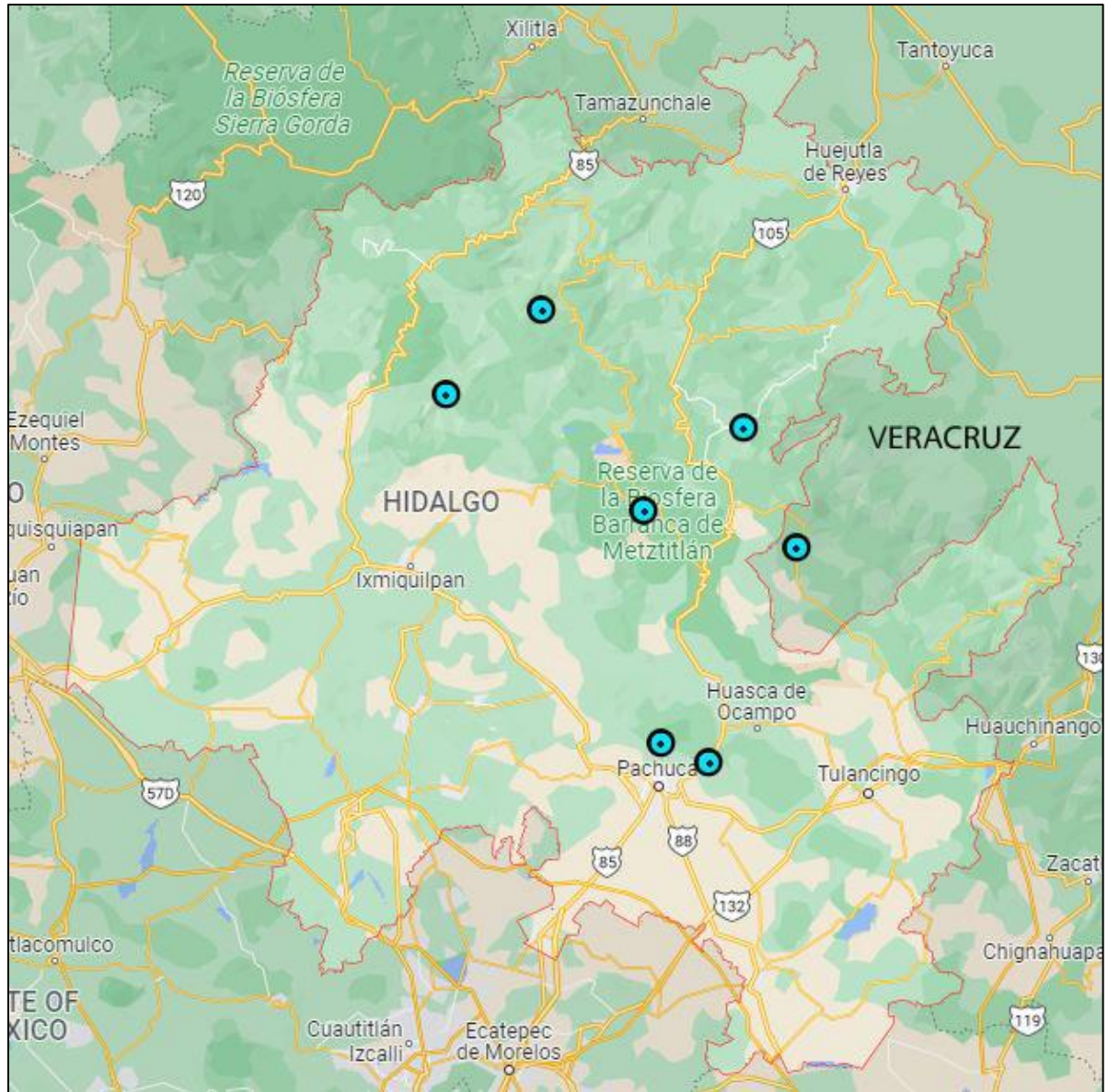


Figure 2. Distribution of *Cirsium hidalgoense*.



Figure 3. *Cirsium oxacacum*. Oaxaca, Lorence 4653 (MEXU).



Figure 4. *Cirsium oaxacanum*. Detail from Figure 3.

Figure 5. *Cirsium oxacanthum*. Oaxaca, Hill 1583 (VT).



Figure 6. *Cirsium oaxacanum*. Oaxaca, Ernst 2342 (US).



Figure 7. *Cirsium oaxacanum*. Detail from Figure 6.



Figure 8. *Cirsium oaxacanum*. Oaxaca, Ernst 2344 (US).



Figure 9. *Cirsium oaxacanum*. Detail from Figure 8.

Figure 10. *Cirsium hidalgoense*. Hidalgo, Mpio. Jacala, Moore 2766 (GH, holotype).



Figure 11. *Cirsium hidalgoense*. Hidalgo, Mpio. Metztitlan, López G. 31 (MEXU).



Figure 12. *Cirsium hidalgoense*. Detail from Figure 11.



Figure 13. *Cirsium hidalgoense*. Hidalgo, Mpio. Mineral del Chico, García P. 645 (MEXU).