

NOTES ON *CIRSIIUM HORRIDULUM* (ASTERACEAE: CARDUEAE) IN THE USA

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ABSTRACT

The *Cirsium horridulum* complex occurs in the eastern USA and also in southern Mexico and Guatemala (plus Belize and Honduras). It is considered here as a member of *Cirsium* sect. *Radiata*, whose species otherwise are endemic to Mexico and Guatemala. From *C. horridulum* sensu lato in the USA, 5 species are recognized — *C. horridulum* sensu stricto, **C. elliotii** (Torrey & Gray) Nesom, **comb. et stat. nov.**, *C. megacanthum* Nutt., **C. carrii** Nesom, **sp. nov.**, and *C. vittatum* (Small) Small. A key, maps, and formal taxonomy for the species are provided. Representative variation is shown through photos of types and other specimens as well as in situ photos.

SUMMARY

Five species are recognized from within what has been identified as *Cirsium horridulum*: *C. horridulum* Michx. sensu stricto, *C. elliotii* (Torr. & Gray) Nesom, *C. megacanthum* Nutt., *C. carrii* Nesom, and *C. vittatum* (Small) Small.

a) *Cirsium horridulum* is consistent in its white to cream corollas, red anthers, and bright white style branches — it occurs from northeastern South Carolina northward into New England. The diagnostic flower colors are often obscured by drying but are easily confirmed by hundreds of iNaturalist photos.

b) *Cirsium elliotii* is consistent in its dark purple corollas, anthers, and style branches — western North Carolina into most of South Carolina, Georgia, and Alabama. The range of *C. elliotii* lies between that of *C. horridulum* sensu stricto and the rest of the complex. *Cirsium horridulum* and *C. elliotii* both occur in North Carolina, where they are completely distinct in morphology and almost completely allopatric. *Cirsium elliotii* is sympatric, without intergradation, with *C. megacanthum* in southern Georgia and Alabama. The purple color is persistent and *C. elliotii* can be confidently identified from herbarium specimens.

c) *Cirsium megacanthum* is consistent in its relatively large involucre, long subtending bracts, and cream-yellow to pink, lavender, or light purple corollas — Texas, Louisiana, and Mississippi and along the Gulf Coast to peninsular Florida. Variants in Texas, Louisiana, and Florida suggest further taxonomic study is needed.

d) *Cirsium carrii* is characterized by its short and fistulose stems, large involucre, and white corollas, stamens, and style branches — endemic to southeastern Texas.

e) *Cirsium vittatum* is characterized by its low stature, subclasping leaves, relatively narrow involucre, and few and short bracts immediately subtending the involucre. It occurs in a unique habitat in Miami-Dade and Monroe cos., Florida, where *C. megacanthum* occurs only sporadically and probably as an adventive. Along with its geography and habitat, the morphological distinction of *C. vittatum* from Floridian *C. megacanthum* supports its recognition at specific rank.

Cirsium horridulum sensu lato is abundant in the eastern USA as well as in southern Mexico and Guatemala-Belize-Honduras. Variants have been formally described at specific and infraspecific rank — current floristic accounts for the USA (e.g., Keil 2006; Weakley 2026) recognize a single species with three broadly sympatric and intergrading varieties. Petrak (1910) recognized a segregate species based on a Mexican type, but Pruski (2018) recognized no formal variants in Central America. There has been no agreement on the features of distinction and no one has attempted to provide a detailed map that requires identification of infraspecific taxa. The present study accounts for variants in the USA — those in Mexico and Central America will be addressed separately.

Cirsium horridulum variants have been distinguished as in the following keys.

Small 1913 (Flora of Miami)

- a. Spiny pinnatifid outer bracts of the involucre longer than the inner **Cirsium horridulum**
- a. Spiny pinnatifid outer bracts of the involucre shorter than the inner.
 - b. Basal leaves with narrow, spine-margined blades; anthers about as long as the filaments **C. vittatum**
 - b. Basal leaves with broad pinnatifid blades; anthers twice as long as the filaments **C. pinetorum**

Small 1933 (Manual of the SE Flora)

- a. Involucral bracts puberulent or pubescent, but not ciliate **Cirsium horridulum**
- a. Involucral bracts all serrulate-ciliate.
 - b. Basal leaves with narrow spine-margined blades; anthers twice as long as the filaments **C. vittatum**
 - b. Basal leaves with broad pinnatifid blades; anthers about as long as the filaments **C. smallii**

Keil 2006 (FNA North of Mexico)

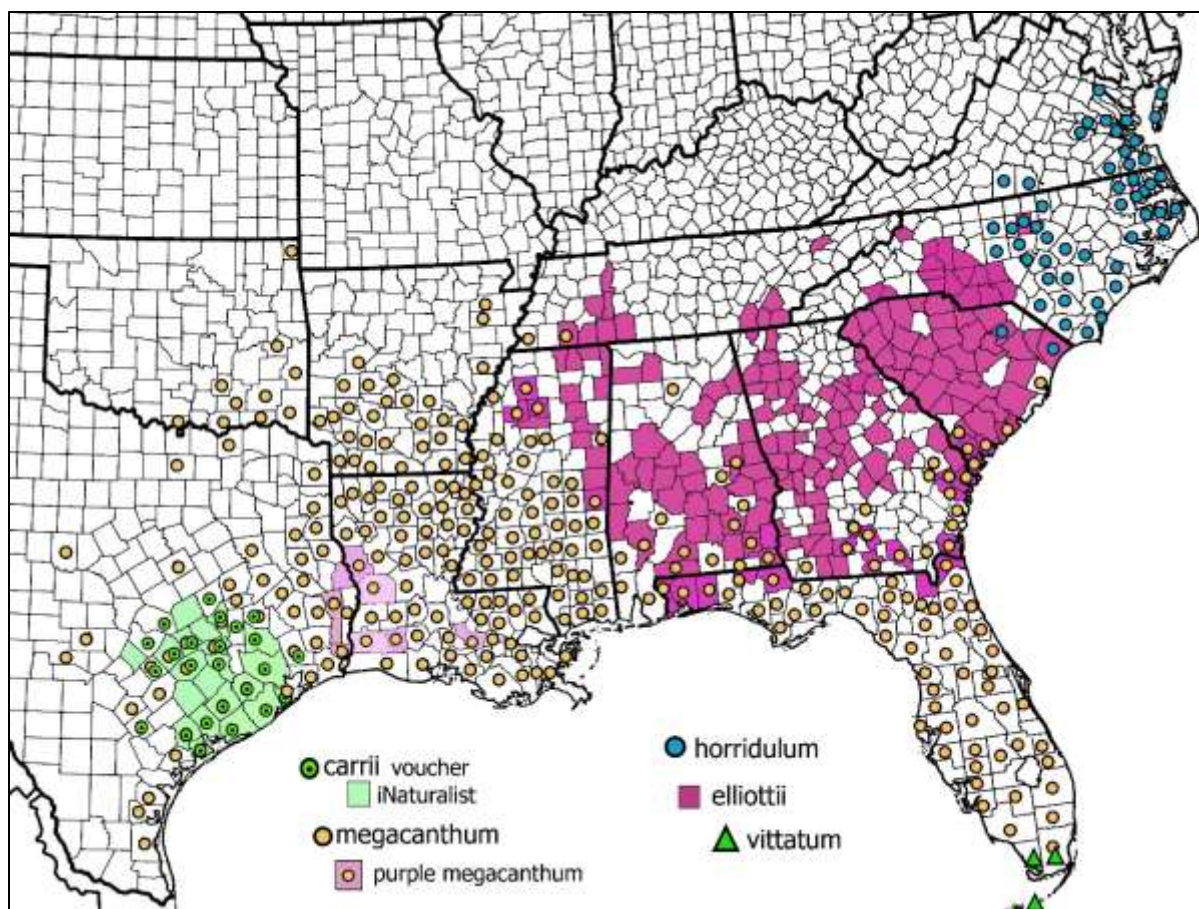
- a. Stems densely tomentose; involucre ± densely tomentose var. **horridulum**
- a. Stems glabrous or sparsely tomentose; involucre glabrous.
 - b. Leaves spinose-dentate to shallowly pinnatifid, main spines mostly 5–10 mm var. **vittatum**
 - b. Leaves shallowly to deeply pinnatifid, main spines 10–30 mm var. **megacanthum**

Weakley 2026 (Flora of the SE USA, mostly following Keil 2006)

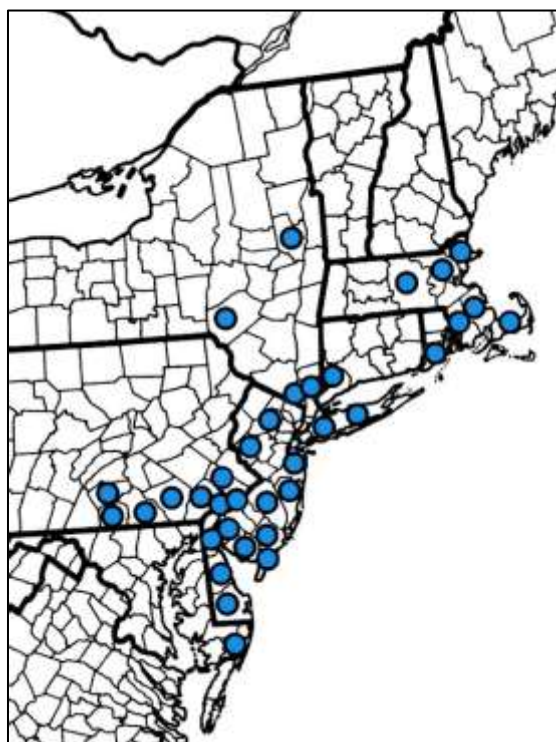
- a. Involucres more or less densely tomentose; stems densely tomentose; Coastal Plain and Piedmont
- a. Involucres glabrous; stems glabrous or sparsely tomentose; Coastal Plain var. **horridulum**
 - b. Leaves spinose-dentate to shallowly pinnatifid; main spines mostly 5–10 mm long; Coastal Plain, widespread var. **vittatum**
 - b. Leaves shallowly to deeply pinnatifid; main spines of the leaves 10–30 mm long; southern Alabama and panhandle Florida westward var. **megacanthum**

The present study confirms the distinction of *Cirsium vittatum*, but previous keys don't provide a basis for identification of the other entities recognized here. The key below emphasizes stem height, involucre size and length and number of subtending bracts, and flower color, as well as geography.

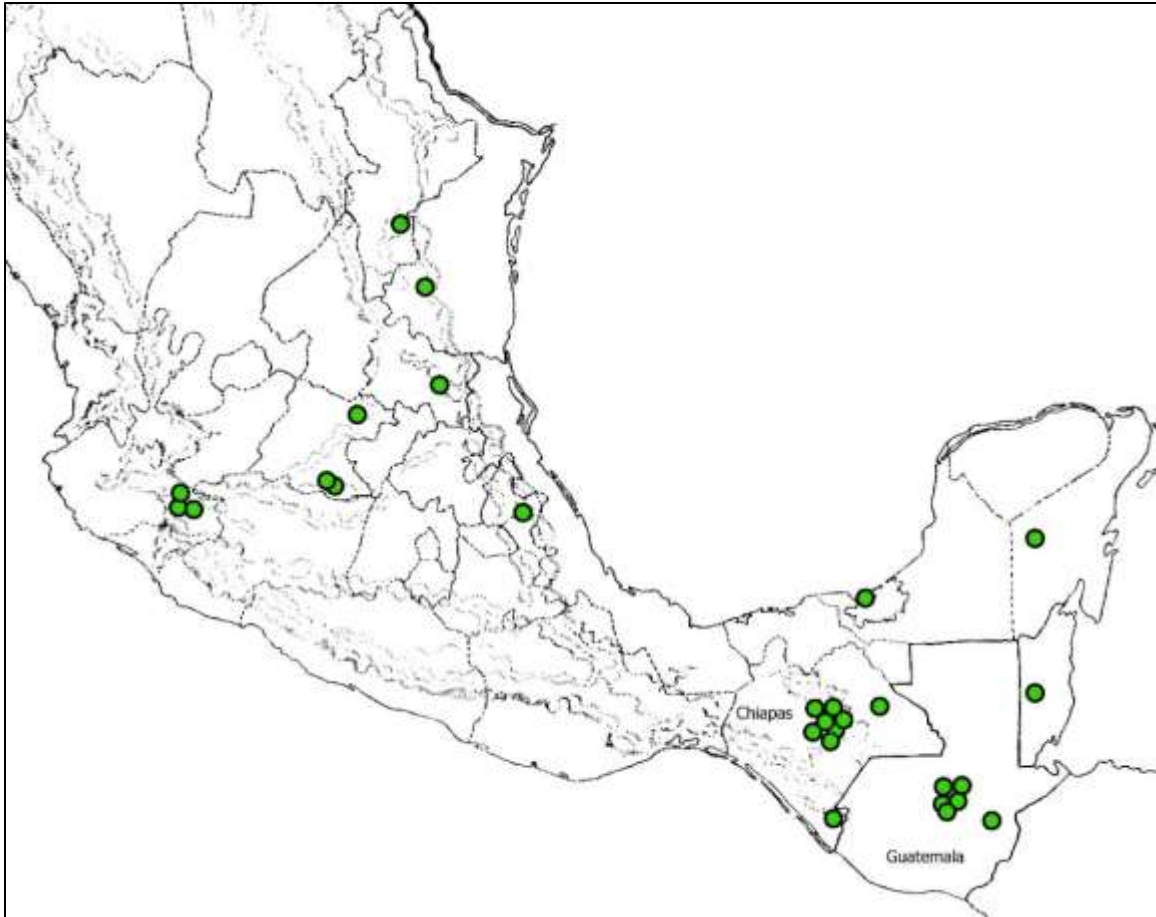
- 1. Corollas, anthers, and style branches dark purple **Cirsium elliotii**
- 1. Flowers variously colored but not (except along the Tex-La border) dark purple.
 - 2. Flowers all white to yellowish; involucre 5.5–8.5 mm wide; stems 20–60 cm tall; southeastern Texas **Cirsium carriei**
 - 2. Flowers variously colored; involucre mostly 4–6.5 mm wide (in Texas); stems 40–150 tall; Texas to Florida, northward to New England.
 - 3. Corollas white to cream, anthers red, style branches bright white; eastern Carolinas northward into New England **Cirsium horridulum**
 - 3. Flowers variously colored; eastern South Carolina southward and westward.
 - 4. Plants 40–150 cm tall; leaves wide and usually prominently lobed, not at all clasping; involucre 3.5–6.5 cm wide, subtended by 2–3 series of spiny bracts from half to fully as long as the involucre; se South Carolina, Georgia and Florida to Texas **Cirsium megacanthum**
 - 4. Plants 30–50 cm tall; leaves (basal and cauline) oblong-linear to narrowly oblanceolate, not deeply lobed, subclasping; involucre 2–3.5 cm wide, subtended by 1(–2) series of short spiny bracts, completely exposing the involucre; Miami-Dade and Monroe cos. **Cirsium vittatum**



Map 1. Distribution of the *Cirsium horridulum* complex in the USA. Map 2 for the northeastern USA.



Map 2. Distribution of *Cirsium horridulum* sensu stricto in the northeastern USA.



Map 3. Distribution of *Cirsium horridulum* sensu lato in Mexico, Guatemala, and Belize. Pruski (2018) recorded the species as also from Honduras.

Chromosome numbers of $2n = 32, 33, 34,$ and 35 have been reported in *Cirsium horridulum* (eg., Moore & Frankton 1969; Ownbey et al. 1975; Keil 2006), with the odd numbers reflecting the presence of accessory chromosomes. The dysploid decrease to 32 might provide useful phyletic information but too few samples are available.

Petrak (1917) observed that close relatives of *Cirsium horridulum* are not evident among species of the eastern USA, but others subsequently have sought to find its origin there. Parallel variation to *C. horridulum* in spininess and vestiture occurs within species of sect. *Radiata* of Mexico and Central America (Nesom 2022), which also are similar in phyllaries lacking a prominent median glandular ridge. A hypothesis that *C. horridulum* is a member of sect. *Radiata* also suggests its region of origin.

CIRSIUM VITTATUM

Cirsium vittatum is endemic to Miami-Dade and Monroe cos., Florida (Maps 1, 4) — the detailed map here is based on cited collections.

Cirsium vittatum is characterized by relatively narrow involucre subtended by a single whorl (rarely 2) of few, very short, spiny bracts, the involucre completely exposed. Basal and cauline leaves are linear to linear-oblongate or narrowly oblongate and usually unlobed, distinctly subclasping at the base. *Carduus pinetorum* was seen as different from *Carduus vittatum* by Small by its more pinnatifid leaves but these plants appear to be within the range of variation of *Cirsium vittatum* (or perhaps reflect genetic influence from *C. megacanthum*). Apparent intermediates exist with

characteristic *C. megacanthum*, but they are uncommon as the latter occurs sporadically in disturbed habitats within the range of *C. vittatum*.

Cirsium vittatum has recently been regarded as a more widely distributed entity (Keil 2006), but its range is narrow in the interpretation here. It apparently is rare and being challenged by civilization — deserving of conservation protection and study to determine its evolutionary and biological relationship with more widely distributed *Cirsium megacanthum*.



Map 4. Distribution of *Cirsium megacanthum* (circles) and *C. vittatum* (triangles) in Miami-Dade and Monroe cos., Florida.

Cirsium vittatum. Miami-Dade Co.: Everglades Natl Park, Long Pine Key, wet slash pine rockland, common, fls pink, 21 Dec 2013, *Basinger s.n.* (UNCC); Old Cutler Rd, E of jct at Red Rd, fls white, 12 Feb 1965, *Bellenger 20* (FTG); N Kendall Drive, 50 yds E of jct at Krome Ave, S side of road, fls purple, 8 May 1965, *Bellenger 240* (FTG); Everglades Natl Park, near Homestead, hammock and pineland association, Miami oolite and solution holes, 16 Oct 1962, *Cooley et al. 9419* (USF); N of North Kendall Drive, near Hwy 27, prairie with palmettos, 12 May 1981, *Correll 51779* (NY, FTG); Miami, pineland, 1906, *Cowles s.n.* (NY); between the Everglades and Biscayne Bay, prairies, Jun [1880], *Curtiss 1589* (FLAS, GA); Homestead, W of Experiment Station, rock prairie and pine, 12 Feb 1942, *Davis s.n.* (FLAS); ca. 20 mi SW of Homestead, 8 mi W of Royal Palm Park Inn, 25.329367 N, 80.705178 W, fallow

field in glades, rare, 5 Jan 1941, *Deam* 60359 (IND); ca. 16 mi SW of Homestead, Road 205 ca. 4 mi SW of Royal Palm Park Inn, glades, 26 Feb 1941, *Deam* 60889 (IND); Coral Gables, common in coral rocks, 7 Feb 1933, *Demaree* 10210 (US); Miami, pinelands, 30 Apr 1930, *Duckett* s.n. (NY); SW 72 Ave, pineland, fairly common, 10 Jul 1971, *Fanning & McMahan* 177 (FTG); Everglades Natl Park, near Sisal Hammock, roadside in broken limestone, fls pale pink, 6 Nov 1968, *Gillis* 7144 (FTG); 3 mi W of Homestead Airport, new road SW of Goulds, grassland bordering Everglades Natl Park, flrs lavender, 12 Mar 1975, *Hill & Popenoe* 2623 (FTG); Miami, Miami, 13601 Old Cutler Rd, 5-acre pineland in the SW corner of USDA Subtropical Horticultural Research Station at Chapman Field, bounded by Ludlam Rd (SW 67th Ave.) and SW 144th St., 25.6382 N, 80.3003 W, 3 Mar 2003, *Kabat* 1174 (FLAS); Everglades Natl Park, SW of Homestead, Hwy 29, outcrops of oolite, 30 Mar 1963, *Lakela* 25720 (USF); S of Miami, dry pineland, 10 Feb 1947, *Ledin* s.n. (FLAS); Everglades, Tamiami Trail, along roadside, 10 Jan 1947, *Ledin* s.n. (FLAS); Everglades Natl Park, between Pa-hay-okee Hammock and Pineland Trail, Apr 1969, *Long & Andorfer* 2873 (USF); 1 mi W of Florida City, on road to Everglades Natl Park, 9 Apr 1986, *Lester* 940 (FTG); 2.5 mi W of Sweet Water, Hwy 41, crushed limestone substrate, very common, flrs purple, 1 Jul 1950, *Ownbey* 1367 (MIN, NY); Silver Palm, roadside in pineland, 6 Mar 1939, *Scull* s.n. (FLAS); between Cutler and Longview Camp, everglades near the homestead road, 9-12 Nov 1903, *Small* 1087 (NY); near Camp Longview, everglades, 15 May 1904, *Small* 1794 (NY); vicinity of Murden Hammock, 22 Jun 1915, *Small* 6421 (NY); about Humbugus Prairie, pinelands, 8 Jul 1915, *Small* 6926 (NY); Homestead, rocky pineland, 17 Feb 1949, *West* s.n. (FLAS).

***Cirsium megacanthum*. Miami-Dade Co.:** Hwy 27 near Thompson Park, bank of canal, 16 Feb 1974, *Correll* 41571 (FTG, from near *Correll* 51779); SW of Homestead, Everglades Natl Park, 30 Mar 1963, *Lakela & Craighead* 25736 (USF); Tamiami Trail, ca. 10 mi W of Palmetto Expressway, 16 Feb 1974, *Meagher* 1160 (FTG); Goulds, 9 Mar 1930, *Moldenke* 740 (ILL, NY); Big Bend, W of Tamiami Trail, 1 Apr 1939, *Moldenke* 850 (ILL, NY, US); S of the old missile base [Nike Missile], edge of borrow pit, common along the main road, 25 Mar 1992, *Reimus* 76 (FTG, hybrid).

***Cirsium vittatum*. Monroe Co., Big Pine Key:** Ca. 2 mi from W end of islands off Hwy 1, pinelands with large stands of *Thrinax microcarpa* and *Coccothrinax argentata* over limestone soil, locally sporadic, 9 Jun 1973, *Almeda* 1923 (DUKE); Pine Heights subdivision along Key Deer Boulevard, roadsides, 19 Apr 1981, *Brumbach* 9686 (GH, MICH, NCU-2, USF); 19 Mar 1953, *Daggy* s.n. (UNCC); disturbed pineland, 15 Jul 1972, *Gilbert* s.n. (USF); along E-W street running along N side of prison, 0.5 mi N of Hwy 1, *Thrinax morrisii*-*Pinus elliottii* open woodland along weedy roadside, grading into mangroves on W end, 18 Aug 1987, *Hansen* 11419 (USF); pine woods, 3 Mar 1936, *Kilip* 31718 (FLAS); near Inn, 12-18 Feb 1938, *Killip* 31353 (US); near Inn, pine-palm woods, 14 Mar 1951, *Killip* 40995 (LSU); NW of Inn, pine-palm woods, 26 May 1954, *Killip* 44272 (GA, GH); NW of IS plot, 24.6694 N, 81.3542 W, 25 Sep 1997, *Koptur* 868 (FTG); dry pineland, 30 May 1947, *Ledin* s.n. (FLAS); pine woods, 4 Feb 1940, *Martin* 1405 (NY); just S of entrance to Key Deer Wildlife Refuge, *Pinus elliottii*-*Coccothrinax argentea* community, thin soil over limestone, 11 Nov 1970, *Musselman* 4226 (NCU); along Hwy 940, 1.8 mi NW of Hwy 1, 14 Mar 1982, *Saulea* 7056 (USF). Mainland, immediate coastal sites: East Cape, Cape Sable on Florida Bay, sandy beach, cover of grasses and succulents, common, 7 May 1965, *Lakela & Long* 28574 (GH = *vittatum*, USF = *horridulum*); near Flamingo, roadside, 22 Mar 1940, *Scull* s.n. (FLAS); Cape Sable, Middle Cape, hammocks, 2 Apr 1916, *Small* 7688 (NY).

***Cirsium megacanthum*. Monroe Co., mainland:** Pinecrest, open prairie at abandoned lumber camp, 1 Mar 1952, *Arnold* s.n. (FLAS); Pinecrest Road, prairie at abandoned road, 1 Mar 1952, *Cooley* 1108 (USF); 3 mi W of Pinecrest along the edge of Loop Road, large, purple flrs, plants to 3 ft tall, 18 Dec 1967, *Garbarini* s.n. (WIS); Pinecrest Road, ditch banks bordering hammock and glade areas, 13 Feb 1967, *Lakela* 30675 (USF); Loop Road, Hwy 94, 28 Feb 1970, *Long et al.* 3055 (USF); Loop Road 3 mi from 40-Mile Bend entrance, 2 Dec 1986, *Prosan* s.n. (FTG); 4 mi W of Pinecrest, road S from Loop Rd, pine association, edge of gravel road, sandy soil, flrs lavender, 7 Dec 1967, *Schmahl* 14 (FTG); 4 mi W of Pinecrest, S from Loop Road, pine association, edge of gravel road, sandy soil, flrs lavender, 8 Dec 1967, *Skinner* s.n. (USF). Keys: ca. 25 mi E of Key West, roadside bank, 31 Jan 1943, *Duncan* 5691 (GA); Big Pine Key, grassy roadsides bordering pineland, frequent, 4 Apr 1976, *Godfrey* 74786 (NCU); No Name Key, edge of pineland, roadside, 23 Jan 1939, *Jones* 1027 (GA); Big Pine Key, pine woods, 3 Mar 1936, *Killip* 31718 (MICH);

Cudjoe Key, 20 Mar 1930, *Moldenke 814* (ILL, NY); Key West, Mar 1975, *Olesiak 75-278* (UWSP); No Name Key, roadsides, 17 Jul 1929, *O'Neill s.n.* (WIS); No Name Key, pinelands, 4-5 Feb 1916, *Small 7432* (NY).

Intermediates. **Monroe Co., Big Pine Key:** No date, *Blodgett s.n.* (NY); between Inn and S.R.D. camp, edge of pine-palm woods, 21 Dec 1952, *Killip 42449* (NCSC, US); Watson's Hammock and surrounding pineland, 6 Aug 1966, *Long et al. 2099* (USF).

Mixed collections. **Monroe Co., Big Pine Key:** Pineland, 29 Mar 1969, *Gillis 7727* (FTG = intermediate, GH = vittatum); 17.9 mi W of Marathon, Hwy 1, 29 Jun 1950, *Ownbey 1365* (GH = horridulum, NY = vittatum).

CIRSIUM ELLIOTTII

Cirsium elliotii is recognized by dark purple flowers and spiny bracts (subtending the involucre) in 2 whorls. It is morphologically and geographically distinct (Map 1) and occupies a broad area, but while Torrey & Gray (1842), Mohr (1901), and Fernald (1943, 1950) have recognized it, the name mostly has resided in synonymy.

Cirsium elliotii is one of the two species in North Carolina, where it is allopatric with *C. horridulum* and dramatically distinct in flower color. What might maintain the sharp boundary of color would be an interesting investigation. In southern Georgia and Alabama, it is sympatric with *C. megacephalum* and obvious intermediates are not encountered.

CIRSIUM HORRIDULUM

I did not recognize the discrete nature of *Cirsium horridulum* sensu stricto until mapping iNaturalist observations. Top-down photos of *Cirsium* heads usually don't provide significant taxonomic information but flower color is diagnostic in these plants and the beautiful colors attract photographers. The distinctive combination of red anthers, bright white style branches, and cream corollas sometimes remains visible in herbarium specimens even after drying, but it often fades. As with *C. elliotii*, use of flower color as the diagnostic feature might seem unreliable but the sharply defined geography indicates the existence of a real evolutionary entity.

CIRSIUM MEGACANTHUM

Cirsium megacanthum is the most widely distributed of the species recognized here. Corolla color varies from pink or purple to yellowish to usually with one color consistent in a population. Color in the Florida peninsula is consistently light pink to light lavender (forma *purpureum*) but may fade on drying. A population system with purple corollas like *Cirsium elliotii* (but slightly lighter in hue and saturation and with smaller involucre) occurs along the Texas-Louisiana border (Map 1). These plants probably have developed in parallel with *C. elliotii*, and given the significance of flower color in this complex and the apparent sympatric occurrence of the Tex-La purple-flowered plants with *C. megacanthum*, further study is warranted.

In *Cirsium megacanthum*, length of bracts subtending the involucre varies but commonly at least equals the involucre, and the number of subtending whorls is 2–3. Numerous and longer bracts often completely obscure a view of the involucre. In Florida, bracts immediately subtending the involucre are relatively fewer and usually shorter than the phyllaries, exposing at least the upper half of the involucre. Bracts vary in degree of spininess (number and length of spines).

Stems and involucre vary in indument from glabrous to tomentose. Plants most commonly are glabrous (stem and involucre) except on the abaxial leaf surfaces, which are lightly tomentose but gradually glabrescent. Individuals with tomentose stems and heads are scattered but most common in Gulf Coastal states.

CIRSIIUM CARRII

Cirsium carriei is distinct from *Cirsium megacanthum* in Texas by its shorter stature, larger involucre, and white to yellowish corollas, anthers, and style branches. The stems are conspicuously fistulose, but the more elongated stems of *C. megacanthum* also often are fistulose, at least proximally. The clearly bounded geography of *C. carriei* is weighted here in its formal recognition, and the short stems give it a distinctive appearance.

At the margin of the range of *Cirsium carriei*, it is essentially parapatric or closely overlapping with *C. megacanthum*. Both species occur at least in Caldwell, Fayette, Galveston, Montgomery, and Victoria counties. Some populations of plants similar to *C. megacanthum* in stem height and involucre size have been noted to have both white- and pink-flowered individuals, perhaps indicating gene exchange (e.g., Wilson Co., Nesom 6856-TEX; Bastrop Co., Turner 95-57-TEX). *Cirsium megacanthum* in Texas most commonly produces pink to light lavender corollas.

Technical description

Herbaceous perennials, roots thick-fibrous. **Stems** 20–65 (100) cm tall, thick and fistulose at least proximally, often hollow or with chambered pith. **Leaves:** rosette and lower cauline oblong to oblong-lanceolate, deeply pinnatifid, ca. 20–28 cm long, 35–65 mm wide (lobe tips), glabrous adaxially sparsely persistently flocculent abaxially or glabrate to glabrous, cauline not clasping or decurrent. **Subtending bracts** of involucre in 2–3 series as long or longer than the involucre, narrowly lanceolate, sometimes shallowly lobed, pectinate-spinulose. **Involucre** 5.5–8.5 cm wide; phyllaries in 6–8 unequal to subequal series, inner 3.5–5.5 mm long, narrowly lanceolate, cream, usually with a narrow, slightly raised, eglandular keel, outer sometimes apically spinulose. **Flowers** evenly white to creamy yellow, corollas ca. 50 mm long, tube 35–38 mm long, throat 6–8 mm long, lobes 6–8 mm long. **Mature achenes** not seen.

Flowering (February-) March-April (-May). Coastal prairie, openings in woods, ditches, roadsides, sand, sandy loam, and sandy clay.

Additional collections. **Texas.** Austin Co.: Industry, 15 Apr 1922, *Tharp s.n.* (TEX). Bastrop Co.: Near Bastrop Lake, loblolly pine-post oak-blackjack oak mixed forest, acidic sandy loam, Jun 1991, *Baird 3497* (TEX); Bastrop State Park, N side of main road on Hoppy Springs Tract, ca. 200 ft NW of its crossing of Alum Creek, ca. 1.3 air mi SSE of Hwy 21 and Hwy 1441 NE of Bastrop, in weedy herbaceous vegetation along partially shaded drainage ditch along sand road crossing floodplain of perennial stream, rare, 2 May 2012, *Carr 30581* (TEX on 2 sheets). Brazoria Co.: Columbia, 10 Apr 1899, *Bush 102* (NY). Brazos Co.: College Station, SE side of Turkey Creek Road, 0.7 mi from FM 2818, roadside, dry sandy soil, 4 Apr 1998, *Baron 23* (LSU); College Station, in field, 16 Apr 1966, *Fryxell 500* (NY); Bryan, empty, grazed lot near 30th Street, 16 Apr 1947, *Fitch 183* (GA); 5 mi NE of Tabor on road to Edge, roadside, to 1/2 m tall, fls cream-colored, 16 Apr 1978, *Fryxell 2957* (NY, SMU); College Station, Apr 1938, *Goodlae s.n.* (WIS); College Station, field next to fourplex on corner of Sara and Longmire, wet, sandy soil, 10 Apr 1989, *Roberts 22* (SWT); Bryan, Harvey Mitchell Parkway (FM 2818), 1 mi from Hwy 21 overpass, roadside ditch, 2 Apr 2008, *Taylor 18* (LSU); 6 mi W of College Station, roadside borrow pits along hwy, 24 Apr 1970, *Weber 14013* (COLO). Caldwell Co.: Between McMahan and Delhi on FM 713, 3.7 mi E of jct with FM 86, roadside, 19 Apr 1993, *Lackey 181* (SWT); spring-summer 1931, *MacBryde s.n.* (TEX, St. Edwards Univ.). Calhoun Co.: Port O'Connor, 29 Mar 1930, *Tharp s.n.* (TEX); E of Green Lake on Hwy 35, coastal prairie, corollas cream, 2 May 1948, *Whitehouse 19856* (SMU). Chambers Co.: Near Dayton, disturbed roadside, 10 Apr 1941, *Rose-Innes 21824* (LL, OKL). Grimes Co.: 8 mi E of College Station, 15 Apr 1982, *Ragsdale 94* (BAYLU); 4.5 mi ESE of Navasota, red sandy clay hillside, pastured, on lower half of slope, corollas pale yellow, 8 Apr 1954, *Shinners 18263* (SMU-2). Fayette Co.: Ca. 9.6 air km NNW of La Grange, at jct of Race Track Road and Hwy 77, secondary woods, 3 Apr 2011, *Atha 9723* (NY); 5 mi NE of Schulenburg, 14 Apr 1966, *Janecek s.n.* (LLC); Schulenburg, 1 May 1935, *LeSueur s.n.* (TEX); 6 mi NE of Cistern (from Cistern to Muldoon), 17 Apr 1966, *Lynch 7063* (SEU); no other locality data, *Matthes 96* (GH); Hwy 95,

2.1 mi N of Hwy I-10 bridge, 0.5 mi N of jct FR 154 at small power line crossing of road, post oak-*Ilex vomitoria* woodland, sandy clay soil, 18 Apr 1992, *Mayfield 1212* (TAES, TEX, SWT); Muldoon, 8 Apr 1950, *Ripple 51-616* (TEX); between La Grange and Schulenberg, 20 Apr 1934, *Whitehouse 12062* (MICH).

Fort Bend Co.: N edge of Cullinan Park in Sugar Land, S side of Seminole Canyon Drive ca. 0.4 air mi WSW of jct Hwy 6 (Addicks-Howell Road) and Voss Road, top of gentle slope along N side of White Lake, 29.63983 N, 95.65817 W, tiny opening in young, mostly deciduous cedar elm-hackberry forest on flat upland landscape underlain by Beaumont Formation, on soils mapped as deep, moderately acid, somewhat poorly drained, fine sandy loam (Edna Series, Chromic Hapludalfs), disk corollas almost white, rare, 28 Mar 2015, *Carr 34573* (TEX); 3.5 mi S of Hwy I-10 on Hwy 1463, side of road, sandy clay soil, 17 Mar 1973, *Grim 32* (LL); 25 km S of Richmond, Hale Ranch State Park Site, upland grazed coastal prairie, flowers yellowish, 21 Mar 1977, *Lodwick 652* (SMU); ca. 50 km SW of Houston, Brazos Bend State Park, southern extent of the park (Management Unit 6), on and E of Hwy 762, 2.5 km N of its intersection with Hwy 1462, 29.36771 N, 95.62897 W, recently fire-disturbed grassland, occasional, 15 Apr 2012, *Rosen 5641* (TEX); Needville, between highway and railroad, sandy clay, 3 Apr 1955, *Shinners 19319* (SMU); W of Houston, Addicks Road, grassy flats, gray sandy clay-loam, 17 Mar 1973, *White 215* (SAT).

Galveston Co.: Virginia Point, coast strip of coast prairie, 3 feet high, occasional, 15 Apr 1899, *Bray 27* (TEX); S side of E-W road on Univ. of Houston Coastal Center, between areas C3-1 and C4-2, ca. 1.5-1.6 [mi] SSW of jct I-45 and Hwy 1764, 29°22'54.8" N, 095°02'31.6" W, level prairie underlain by Beaumont Formation (Pleistocene), occasional in strip of weedy herbaceous and short woody vegetation from which taller woody vegetation was recently removed, 28 Apr 2021, *Carr 37861* (UHCC-2 sheets); Galveston Island State Park, near the SW boundary of the park, ca. 1 km W of the bay side entrance gate (Management Unit 4), 29.19638 N, 94.96234 W, saline grassland community, occasional, 12 Apr 2013, *Rosen 5998* (TEX); 1.8 mi S of jct of Hwy 3 and 2nd Street on 2nd Street, Hitchcock Prairie, coastal prairie, 13 Oct 2015, *Singhurst 21046* (BAYLU); Texas City, 816 15th Ave N, sandy soil, 2 ft tall or less, flowers pale yellow, 6 Apr 1950, *Turner 1768* (TEX on 2 sheets).

Harris Co.: Houston, prairie, 1928, *Armer s.n.* (TEX); Houston, 2 May 1815, *Fisher s.n.* (WIS); Houston, 50 ft, 15 May 1938, *Fisher s.n.* (TEX); Houston, wet prairies, 12 Apr 1871, *Hall 370* (F, GH, NY); Houston, Apr 1848, *Lindheimer s.n.* (GH); Seabrook, loose sand, 6 Apr 1958, *McCart 8949* (TEX); 2.4 mi NE of Stafford, in sod bordering roadway, flrs ochroleucous, common weed, 19 Mar 1952, *Ownbey 1587* (SMU); 2 mi N of Katy Road on Hwy 6, 15 Apr 1971, *Seigler 3682* (ILL); S side of Houston, shallow roadside ditch, black clay, corollas yellowish white, 3 Apr 1955, *Shinners 19288* (SMU); Houston, May 1894, *Schneck s.n.* (F); 8 mi NNE of Brookshire, Katy Prairie Conservancy land, 11 Feb 2009, *Singhurst 17375* (BAYLU); Houston, beside Main Street near Houston Villa Motel and just N of I-610 near the Astrodome, 14 May 1988, *Thomas 104554* (NLU, TENN); Houston (Spring Branch), Long Point Road at Cedar Lane, patch of prairie, waste field, slightly clayey sand, 40-60+ cm tall, flrs yellowish, sweet odor, 16 Apr 1960, *Traverse 1398* (SMU).

Jackson Co.: S of La Ward, Hwy 172, roadside, flrs white, 11 Apr 1981, *Holland 4386* (KSP).

Lee Co.: jct of FM 696 and CR 305, S side of road., 30.38067 -97.19767, 4 Apr 2004, *Bergman 630* (NY, TEX); 0.7 mi E of Bastrop county line on TX 696, NE-most part of county, sandy soils, perennial to 0.4 m high, heads both yellow and pink at same locale, 22 Apr 1995, *Turner 95-57* (TEX).

Matagorda Co.: Ca. 8 mi SW of Blessing, roadside drainage ditch, flrs cream yellow, plant 1 ft. high, 11 May 1965, *Correll 31028* (LL); E of the town of Collegeport, private property on and SE of the intersection of Hwy 1095 and Oyster Lake Road, Franzen Prairie, remnant coastal prairie, infrequent herbs, 23 Apr 2008, *Rosen 4734* (TEX); Hawkins Ranch, ca. 2.7 mi S of the main gate on Hwy 521, on and W of main ranch road, 28.83342222 N, 95.794552778 W, mowed swath of prairie along roadside characterized by rolling surface over loose sandy loam soils, occasional, 10 Mar 2022, *Rosen 7676* (TEX); 5 mi N of Bay City, silty clay ditch, corollas yellowish, 3 Apr 1955, *Shinners 19371* (SMU).

Montgomery Co.: 3 mi E of New Caney, Lake Houston State Park, along and S of FM 1485, along "5-mile Road" in northern third of park between Caney Creek and East Fork San Jacinto River, artificial prairie on utility easement on undulating upper sandy alluvial terraces, low convex slope with few depressions and ditches, locally common, 17 May 2004, *Sanders 6526* (BRIT, TEX); Conroe, 19 Apr 1930, *Tharp s.n.* (NY).

Robertson Co.: Hwy 7, 16 Apr 1999, *Hunt 276* (BAYLU); SE end of Shiloh Church Road, 0.25 mi SE of jct with Hammond Road, ca. 2 air mi SE of Hammond, 385 ft, loamy soil, flrs tawny, 23 Apr 2019 *Ruhlman RCJ 77* (TEX); 14 mi NE of Franklin, roadside ditch, sandy soil, flrs light ochre yellow, 10 Apr 1945, *Shinners 7141* (SMU); 8 mi NNW of Easterly along Hwy 2096, 4 Apr 1982, *Starbuck 1583* (SMU, TAES).

Travis Co.: Austin, near 38th and

Guadalupe, in low, grassy area between concrete rows of parking lot, one large plant 0.6 m tall, flrs yellow, 18 Apr 1989, *Nesom 6859* (TEX). Victoria Co.: 4.4 mi NE of Fannin, prairie, sandy soil, lavender and ochroleucus flowered plants occur here, 20 Mar 1952, *Ownbey 1596* (MIN). Walker Co.: S of Huntsville on Hwy 59, 5 Apr 1955, *Ersine s.n.* (UWM). Washington Co.: No specific locality cited, 1 May 1938, *Brackett s.n.* (TEX). Wharton Co.: 6 mi S of East Bernard, sandy clay roadside, corollas yellowish, 4 Apr 1955, *Shinners 19432* (SMU). Williamson Co.: 3 km N of Lee County line on County Road 481, roadside, to 100 cm tall, corollas light yellow, 1 Oct 2015, *Gibson 6352* (TEX).

1. **CIRSIIUM HORRIDULUM** Michx., Fl. Bor.-Amer. 2: 90. 1803. *Carduus horridulus* (Michx.) Pers., Syn. Pl. 2: 390. 1807. **TYPE: USA.** "In pascuis et ruderalis Carolinae," no date, *A. Michaux s.n.* (holotype: P 00705969, Figs. 1-2; isotype: P 00705960). P 00705960 is a fuller specimen and is labeled as the holotype, but the label of 00705969 (noting "Herbarium Richard") exactly matches the protologue.

2. **CIRSIIUM ELLIOTTII** (Torrey & Gray) Nesom, **comb. et stat. nov.** *Cirsium horridulum* var. *elliottii* Torrey & Gray, Fl. N. Amer. 2: 460. 1843. *Carduus spinosissimus* var. *elliottii* (Torrey & Gray) Porter, Mem. Torrey Bot. Club 5: 345. 1894. *Cirsium horridulum* forma *elliottii* (Torrey & Gray) Fernald, Rhodora 45: 353. 1943. **LECTOTYPE** (designated here): **North Carolina.** Lincoln County, *Dr. Hunter s.n.* (GH 00061836). Figure 29. On the same sheet is mounted a head from a Curtis collection (as GH 00061837), perhaps taken from a NY syntype (Lincoln Co., North Carolina, *Dr. Curtis s.n.* — NY 00214872).

The protologue allowed a broad definition of var. *elliottii* — plants with corollas light purple or deeply purple — citing "β. Southern States, *Elliott*. Florida, *Dr. Chapman!* (Corolla in dried specimen light purple, the anthers yellowish.) Lincoln County, N. Carolina, *Mr. Curtis!*, *Dr. Hunter!* (Corolla, anthers, and style deeply purple.)." In the sense here, var. *elliottii* is the dark purple form and the lectotype is chosen from among those specimens. Plants with light purple corollas are characteristic of Florida and have been named "forma purpureum."

Cirsium horridulum forma *atropurpureum* Moldenke, Phytologia 26: 224. 1973. **TYPE: Alabama:** Clarke Co.: Atkison, common on road shoulders, flowers deep maroon, 7 Apr 1973, *A.L. Moldenke & H.N. Moldenke 26857* (holotype: LL).

3. **CIRSIIUM MEGACANTHUM** Nutt., Trans. Amer. Philos. Soc. ser. 2, 7: 421. 1841. *Cirsium horridulum* var. *megacanthum* (Nutt.) D.J. Keil, Sida 21: 214. 2004. **TYPE: Louisiana.** Protologue: "On the banks of the Mississippi, in the vicinity of New Orleans. Found by Mr. Little and myself." N. Orleans, *H. Little s.n.* (holotype: PH 00033820). Figures 22-23. Keil (2004, p. 214) designated the PH specimen as the lectotype, but there are no syntypes.

Cirsium horridulum subsp. *megacephalum* Petr., Beih. Bot. Centralbl., Abt. 2. 35: 384. 1917. Petrak listed this name in synonymy of *C. horridulum* as "in schedis 1910-11." Perhaps a misspelling of Nuttall's epithet "megacanthum"?

Carduus spinosissimus Walter, Fl. Carol. 194. 1788 (nom. illeg., not *Carduus spinosissimus* Vill., 1788]. **TYPE:** No information given regarding a collection. Not located in the publication series by Dan Ward, the "Thomas Walter typification project." A collection by Thomas Walter presumably would have been from the area around Charleston, South Carolina, and would be *C. elliottii* or *C. megacanthum*, as identified here.

Cirsium smallii forma *purpureum* Murrill, Quart. J. Florida Acad. Sci. 12: 66. 1949. Without reference to a specific type collection. The protologue says the name is for the purple "color-form of *C. smallii* found about Gainesville."

4. **CIRSIUM CARRII** Nesom, **sp. nov.** **TYPE: Texas.** Jackson Co.: 4 mi S of La Ward, prairie, flrs creamy white, 22 Apr 1959, *D.S. Correll 21026* (holotype: LL). Figure 36.

Distinct from *Cirsium megacanthum* in Texas by its shorter and thick-fistulose stems, larger involucre, and consistently white to yellowish corollas, anthers, and style branches.

The epithet is for Bill Carr, recognizing his numerous and perceptive collections and identifications of Texas plants. He has worked with the Texas Parks & Wildlife Department (Natural Heritage Program) and the Nature Conservancy of Texas, as well as with his own consulting firm and with curating the TEX,LL herbarium.

5. **CIRSIUM VITTATUM** (Small) Small, Fl. Miami 199, 200. 1913. *Carduus vittatus* Small, Bull. New York Bot. Gard. 3: 439. 1905. *Cirsium horridulum* var. *vittatum* (Small) R.W. Long, Rhodora 73: 45. 1970. **TYPE: Florida:** Miami-Dade Co.: Everglades, W of Camp Jackson, 6-9 May 1904, *J.K. Small & P. Wilson 1874* (holotype: NY). Figure 10.

Carduus pinetorum Small, Fl. S.E. U.S. 1308, 1341. 1903. *Cirsium smallii* Britton in Britton & Millsp., Fl. Baham. 458. 1920 [nom. nov. for *Carduus pinetorum* Small, not *Cirsium pinetorum* Greenman 1905 from Mexico]. *Carduus smallii* (Britton) Ahles, J. Elisha Mitchell Sci. Soc. 80: 173. 1964 [nom. illegit.]. **TYPE: Florida.** Miami-Dade Co.: Cocanut Grove, 2 and 5 Nov 1901, *J.K. Small and G.V. Nash s.n.* (holotype: NY). Figures 11-12.

[6.] Mexican plants

Cnicus chrismarii Klatt, Leopoldina 25: 108. 1889. *Cirsium chrismarii* (Klatt) Petrak, Petr., Bot. Tidsskr. 27: 215. 1910. *Cirsium horridulum* subsp. *chrismarii* (Klatt) Petr., Bot. Tidsskr. 31: 58. 1911. **TYPE: MEXICO.** Protologue: Hab. Mexico, ad fossas, leg. Chrismar. Herb. Mus. Bot. Berol." Probably in the Yucatan Peninsula (perhaps Campeche), ca. 1849, *von Chrismar s.n.* (holotype: B, photo F).

ACKNOWLEDGEMENTS

It's surprising that flower color provides a key toward understanding the taxonomy of these variable plants — gratitude to iNaturalist observers. If one wanted to treat the *horridulum* taxa at varietal rank, the combinations (except for "carrii") already are available and at least the main entities are identified here. It's always suspected that further study will show other morphological features of distinction, and a review with molecular evidence presumably will be incisive. All caveats due for the taxonomy of *Cirsium* apply. Thanks to Tim Whitfield (MIN) for an image of an Ownbey collection.

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Figure 1. *Cirsium horridulum*. From the holotype of *Cirsium horridulum* (P). Subtending bracts few but in 2 series and as long as the involucre.



Figure 2. *Cirsium horridulum*. Detail from the holotype of *Cirsium horridulum*.



Figure 3. *Cirsium horridulum*. Hertford Co., North Carolina. Ahles 41542 (NCU). Flower colors faded.



Figure 4. *Cirsium horridulum*. Ocean Co., New Jersey. Long 1676 (CHRB). Flower colors faded.



Figure 5. *Cirsium horridulum*. Ocean Co., New Jersey. iNaturalist photo by Jazzmin Ellis, 23 May 2026.



Figure 6. *Cirsium horridulum*. New Castle Co. Delaware, Tatnall s.n. (DOV). Characteristic colors of anthers and style branches have faded.



Figure 7. *Cirsium horridulum*. Duplin Co., North Carolina. iNaturalist photo by Josh Emm, April 2025.



Figure 8. *Cirsium horridulum*. Pender Co., North Carolina. iNaturalist photo by Matt Spangler, 25 April 2015.



Figure 9. *Cirsium horridulum*. Dare Co., North Carolina. iNaturalist photo by John H. McHaffie, 12 May 2026.



Figure 10. *Cirsium vittatum*. From the holotype of *Carduus vittatus* (NY).



Figure 11. *Cirsium vittatum*. From the holotype of *Carduus pinetorum* (NY).



Figure 12. *Cirsium vittatum*. Detail from the holotype of *Carduus pinetorum*.



Figure 13 *Cirsium vittatum*. Monroe Co., Florida, *Ledin s.n.* (FLAS).



Figure 14. *Cirsium vittatum*. Dade Co., Florida, Correll 51779 (NY).



Figure 15. *Cirsium vittatum*. Monroe Co., Florida, Ownbey 1365 (NY). Subtending bracts in 2 series.



Figure 16. *Cirsium vittatum*. Monroe Co., Florida, *Saulea* 7056 (USF). Subtending bracts in 2 series.



Figure 17. *Cirsium vittatum*. Monroe Co., Florida, Brumbach 9686 (NY).



Figure 18. *Cirsium vittatum*. Monroe Co., Florida, Big Pine Key, Killip 44272 (GH).

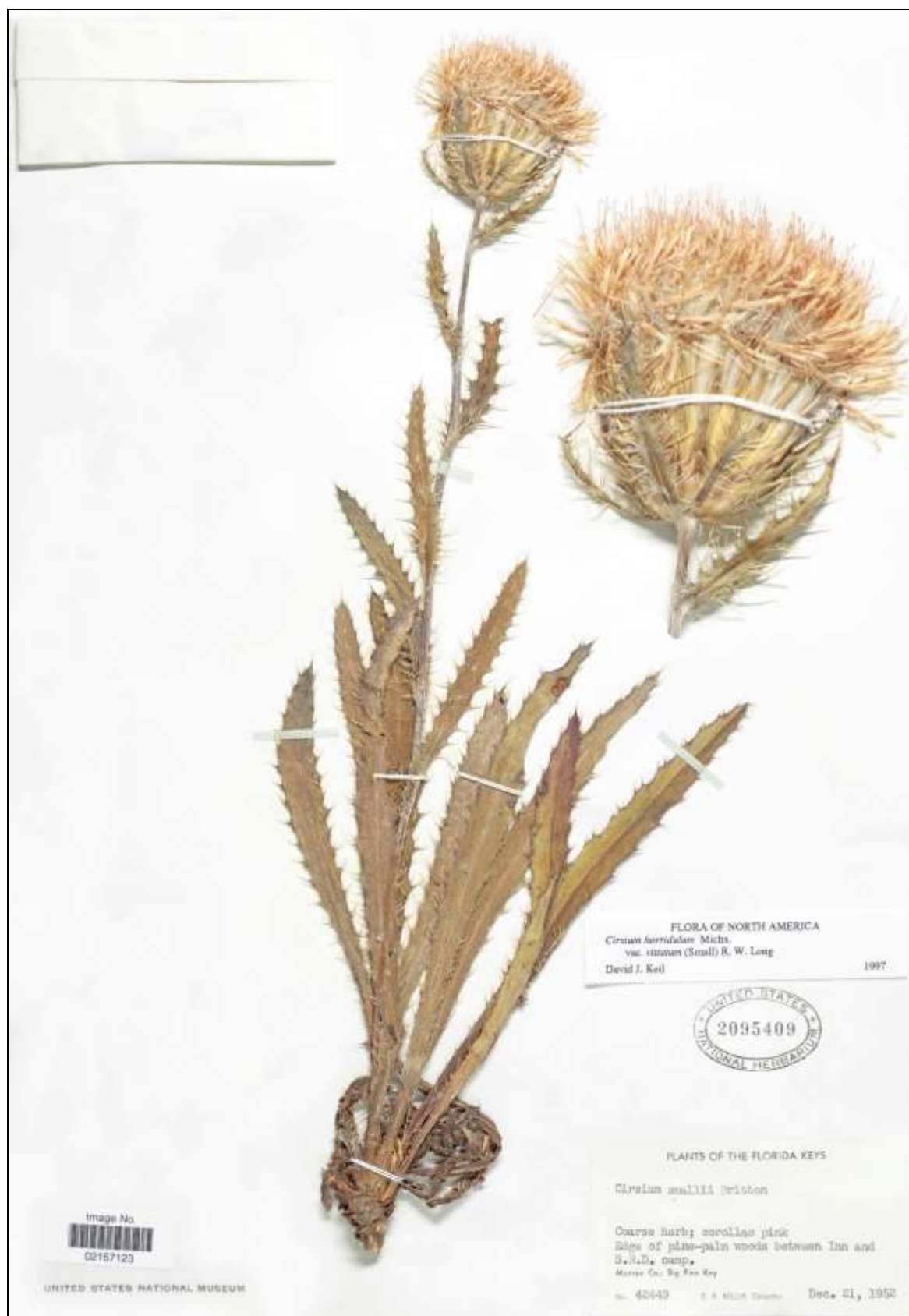


Figure 19. *Cirsium vittatum*. Monroe Co., Florida, Big Pine Key, Killip 42449 (US).



Figure 20. *Cirsium vittatum*. Monroe Co., Florida, Little Pine Key, Smith & Hodgdon 44272 (US).



Figure 21. *Cirsium vittatum*. Monroe Co., Florida, Big Pine Key, Ownbey 44272 (GH).



Figure 22. *Cirsium megacanthum*. From the holotype of *Cirsium megacanthum* (PH).



Figure 23. *Cirsium megacanthum*. Detail from the holotype of *Cirsium megacanthum*.



Figure 24. *Cirsium megacanthum*. Mobile Co., Alabama, *Deramus D306* (NCU). Subtending bracts in 1-2 series, equalling or longer than the involucre.



Figure 25. *Cirsium megacanthum*. Wakulla Co., Florida, Clifton 31824 (ASC).



Figure 26. *Cirsium megacanthum*. Lee Co., Florida, Cooley 2507 (NY).



Figure 27. *Cirsium elliotii*. From the holotype of *Cirsium horridulum* forma *atropurpureum* (LL). Clarke Co., Alabama.



Figure 28. *Cirsium elliottii*. Detail from the holotype of *Cirsium horridulum* forma *atropurpureum*.



Figure 29. *Cirsium elliotii*. Lincoln Co., North Carolina. Detail from lectotype (Hunter s.n. GH).



Figure 30. *Cirsium elliottii*. Lincoln Co., North Carolina, Daggy 5437 (UNCC). "Highly variable in height. Corollas all deep purplish red."

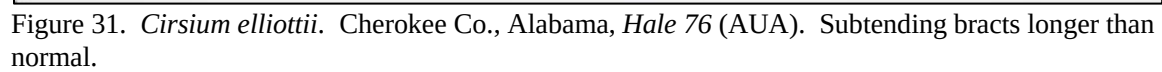


Figure 31. *Cirsium elliottii*. Cherokee Co., Alabama, Hale 76 (AUA). Subtending bracts longer than normal.

Figure 32. *Cirsium elliottii*. Lee Co., Alabama, Jones s.n. (NCU).



Figure 33. *Cirsium megacanthum*. Cullman Co., Alabama, Williams 51761 (TENN). Within the range of *C. elliottii*, perhaps adventive.



Figure 34. *Cirsium elliottii*. Sumter Co., Alabama. iNaturalist photo by Theo Witsell, 8 Apr 2025.



Figure 35. *Cirsium elliotii*. Davie Co. (Mocksville), North Carolina. iNaturalist photo by Greg Walker, 6 May 2026.



Figure 36. *Cirsium carrii*. Jackson Co., Texas, Correll 21026 (LL). Holotype.



Figure 37. *Cirsium carriei*. Galveston Co., Texas, Carr 37861 (UNCC).

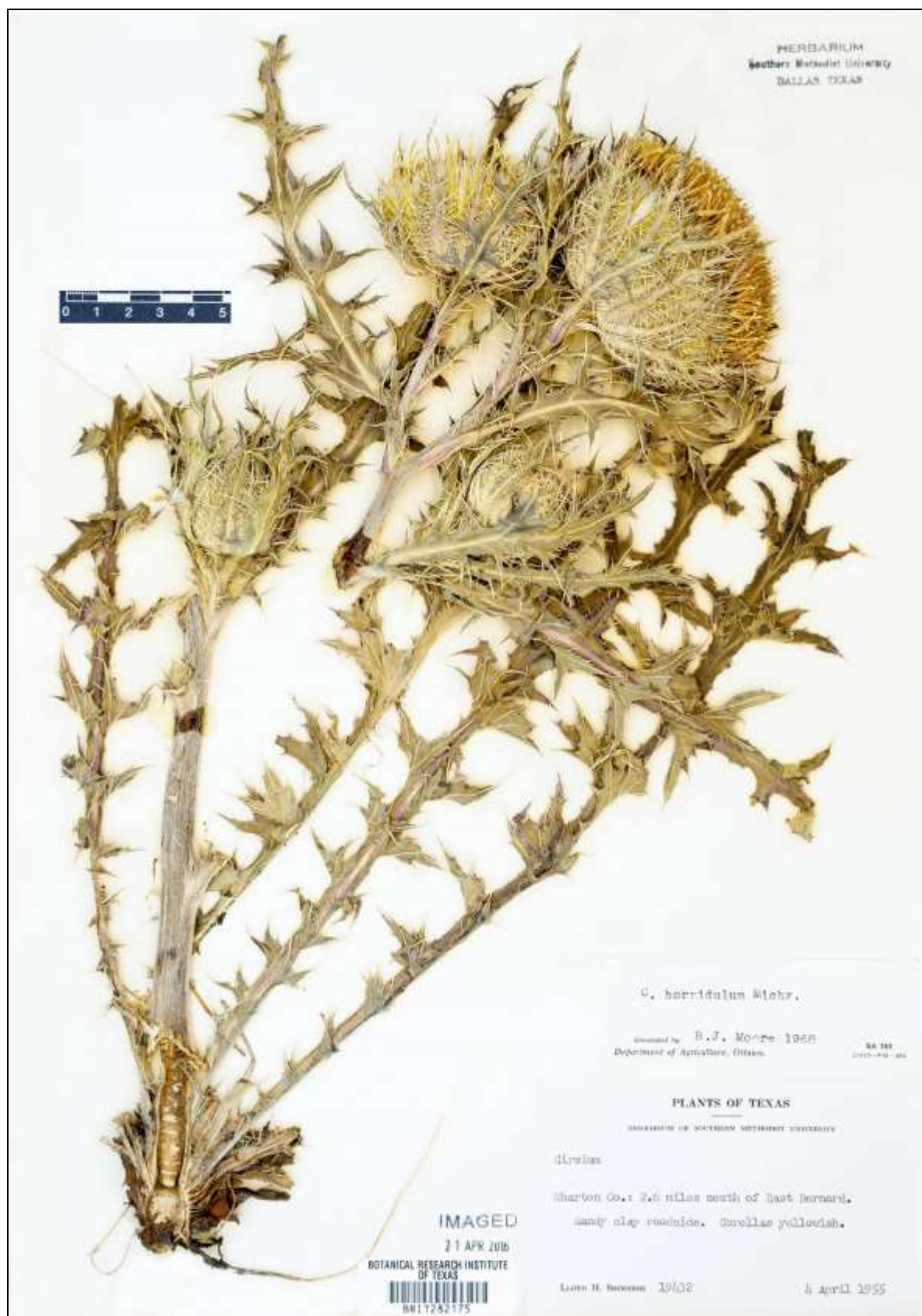
Figure 38. *Cirsium carriei*. Wharton Co., Texas, Shinnery 19432 (SMU).



Figure 39. *Cirsium carriei*. Matagorda Co., Texas, Shinnery 19371 (SMU).



Figure 40. *Cirsium carriei*. Harris Co., Texas, *Hall 370* (NY). Subtending bracts in 1-2 series, equalling or longer than the involucre, flowers white (drying yellowish).



Figure 41. *Cirsium carriei*. Galveston Co., Texas, iNaturalist photo, Zachary Mead, 7 March 2026.



Figure 42. *Cirsium carriei*. Harris Co., Texas, iNaturalist photo, hollasboy, 25 March 2024.



Figure 43. *Cirsium carriei*. Harris Co., Texas, iNaturalist photo, Chloe Claire, 2 April 2026.



Figure 44. *Cirsium carriei*. Harris Co., Texas, iNaturalist photo, Chloe Claire, 2 April 2026.



Figure 45. *Cirsium megacanthum*. Jefferson Co., Texas, iNaturalist photo, Jean H., 20 May 2026. Tall stature and lavender flowers. The stem is swollen, similar to that of *C. carii*.