

Var. *hispida* (Macbr.), comb. nov. Stems clothed with spreading bristles; plant usually coarser than in var. *genuina*.—*Greeneocharis circumscissa*, var. *hispida* Macbr. Proc. Am. Acad. li. 546 (1916). *Krynitzkia dichotoma* Greene, Bull. Calif. Acad. Sci. i. 206 (1885). *Piptocalyx dichotomus* Greene, Pittonia i. 60 (1887). *Wheelerella dichotoma* Grant, Bull. So. Calif. Acad. Sci. v. 28 (1906). *Greeneocharis dichotoma* Macbr. l. c. *C. dichotoma* Johnston, Contr. Gray Herb. n. s. lxxviii. 55 (1923).

Western Nevada and adjacent California. Infrequently collected.

NEVADA: between Boca and Verdi, 1884, *Curran* (G, ISOTYPE of *K. dichotoma*); Carson City, *Anderson* (G). CALIFORNIA: Andrews Camp, Bishop Creek, 2400 m. alt., *Davidson* 2700 (G); trail to Mt. Whitney, 3000 m. alt., *Culbertson* 4240 (G, TYPE of *G. circumscissa*, var. *hispida*); sandy plains, Erskin Creek, *Purpus* 5304 in pt. (G).

A detailed study of *C. circumscissa* and *C. dichotoma* has failed to disclose any fundamental character capable of separating the two. The nutlet-characters used by Gray and Greene are not distinctive, since among plants of indubitable *C. circumscissa* the nutlets not only vary from triangular-ovate to oblong-lanceolate, but also from smooth and shiny to very finely granulate and minutely muriculate. The size of the nutlets does not separate natural groups. The only tangible character separating *C. circumscissa* and *C. dichotoma* seems to be one of pubescence. Since all the material with spreading bristles comes from a definite region along the east base of the Sierra Nevada I believe that this hirsute form is best treated as a geographical variety. Consequently Macbride's varietal name is taken up. It is to be noted that annotations in the Gray Herbarium indicate that even Gray inclined towards treating *C. dichotoma* as a mere variety.

Ser. III. ALBIDAE. Nutlets 4, coarsely tuberculate, dark, triangular-ovate, thickish, very broadly obtuse or convex on the sides, homomorphous but with the abaxial nutlet subpersistent; style much surpassing the nutlets.

11. *C. albida* (HBK.) Johnston. An erect or frequently loosely ascending herbaceous or fruticulose plant 1-3(-4) dm. high; stems solitary or usually several, simple or commonly paniculately branched, more or less villous-strigose as well as hirsute; early leaves in evanescent basal rosettes, spatulate, becoming 5 cm. long, 1.5-4 mm. wide; cauline leaves numerous and somewhat crowded, reduced above but extending as linear bracts through the inflorescence, 3 cm. or less long, hirsute, usually minutely pustulate; spikes 1-7 cm. long, solitary,

numerous, loosely bracteate; corolla inconspicuous, ca. 2.5 mm. long, tube about equalling calyx; fruiting calyx broadly ovate, 2-3 mm. long, only slightly accrescent, becoming remote, subpersistent; mature calyx-lobes oblong-ovate to lance-ovate, loosely connivent, midrib slightly thickened and short-hirsute, margin appressed-hispid; pedicels ca. 0.5 mm. long; nutlets 4, homomorphous, triangular ovate, 1-1.5 mm. long, tan or brownish, usually sparsely granulate, low-tuberculate, thickish, one next abaxial calyx-lobe subpersistent, margins rounded, ventral side occupied by a very large open triangular areola which appears to be excavated in very mature nutlets by the breaking away of the attachment-scar from the nutlet-walls; gynobase narrowly pyramidal, about equalling the nutlets; style much surpassing nutlets.—Contr. Gray Herb. n. s. lxxviii. 53 (1923). *Myosotis albida* HBK. Nov. Gen. et Sp. iii. 91 (Aug. 1818). *Lithospermum ramosum* Lehm. Asperif. ii. 328 (Nov. or Dec. 1818). *Eritrichium ramosum* A. DC. Prodr. x. 132 (1846). *Krynitzkia ramosa* Gray, Proc. Am. Acad. xx. 274 (1885). *C. ramosa* Greene, Pittonia i. 115 (1887). *E. hispidum* Buckley, Proc. Acad. Philad. 1861, pg. 462 (1861). *K. mexicana* Brandg. Zoe v. 182 (1904); Macbr. Contr. Gray Herb. n. s. lxxviii. 49 (1916).

Western Texas to eastern Arizona in the vicinity of the international boundary, thence south to Durango and Puebla.

TEXAS: Davis Mts., *Tracy & Earle* 176 (G); Maxon Springs, *Havard* 46 (G); valley of Limpia, 1858, *Hayes* (G); Pecos, 1858, *Hayes* (G); without locality, 1874, *Buckley* (G, fragment of TYPE of *E. hispidum*); without locality, *Wright* 1572 and 488 in pt. (G). ARIZONA: waste land, Douglas, *Gooding* 2395 (G); sandy plain near the Mustang Mts., 1884, *Pringle* (G). COAHUILA: Rio Grande Valley near Diaz, 200 m. alt., *Pringle* 8301 (G, UC); mts. 10 km. east of Saltillo, *Palmer* 2046 (G); Urios, 72 km. east of Saltillo, *Palmer* 896 (G); vicinity of Saltillo, *Palmer* 243 and 343 (G); Parras, *Purpus* 2402 (G, UC); dry places southwest of Encantada, 1847, *Gregg* (G); Viesca, *Purpus* 126 (UC, TYPE of *K. mexicana*; G, ISOTYPE); without locality, *Gregg* 32 (G). CHIHUAHUA: foothills of Sierra Madra near Colonia Juarez, *Nelson* 6343 (G). DURANGO: City of Durango, *Palmer* 227 (G, UC). SAN LUIS POTOSI: San Luis Potosi, *Parry & Palmer* 623 (G); San Rafael Mts., *Schaffner* 731 (G). AGUAS CALIENTES: in fields, Aguas Calientes, *Hartweg* 157 (G). HIDALGO: between San Juan del Rio and Hacienda de San Antonio, *Humboldt* (G, authentic fragment of *M. albida*). MEXICO: sandy fields, Amecameca, *Pringle* 6648 (G, UC); San Juan Teotihuacan, District of Tezcoco, *Seler* 5304 (G). PUEBLA: Mt. Orizaba, 3000 m. alt., *Seaton* 173 (G).

The nutlets of this species are very thick in relation to their breadth. This condition, as well as the very large open (in age excavated) triangular areola, makes the species readily recognizable. It is practically confined to eastern Mexico where in Puebla it sets the southernmost outpost for the genus in North America. Not only is it the

most southerly ranging of the North American species, but it is the only North American species which appears to have its immediate relationships in the continent to the south. *Cryptantha albida* is very closely related to *C. argentinica* Brand of northern Argentina, if indeed it is not the same species.

Ser. IV. MARITIMAE. Nutlets 1-4, tuberculate or muricate, usually dark with pale roughenings, lanceolate to triangular-ovate, with rounded or obtuse sides, decidedly heteromorphous with odd nutlet (sometimes alone developing) axial and larger as well as occasionally less roughened than others; style surpassed by the nutlets or reaching their tips or rarely surpassing them.

Calyx most hirsute on axial side, conspicuously recurved or deflexed.

Ovules 2; nutlet 1, bent; style reaching to about 1/2 height of nutlet.....12. *C. recurvata*.

Ovules 4; nutlets 4, straight; style reaching to about the tips of the nutlets.....13. *C. echinosepala*.

Calyx most hirsute on abaxial side, spreading to strict.

Calyx strictly and closely appressed to the flattened rhachis, gibbous on axial side due to basal prolongation of rough odd nutlet.....14. *C. dumetorum*.

Calyx ascending or spreading, not at all gibbous; odd nutlet rather smooth.

Nutlets triangular-ovate, 0.7-0.9 mm. long; mature calyx subglobose, minute, with lobes scarcely surpassing the nutlets.....15. *C. micromeres*.

Nutlets oblong-lanceolate, 1-2 mm. long; mature calyx oblong, medium-sized, with lobes surpassing the nutlets.

16. *C. maritima*.

12. *C. recurvata* Cov. Ascendingly branched rather slender herb 1-3 dm. high; root frequently dye-stained; stems usually strigose, rarely appressed-hispid; leaves remote, oblanceolate or linear-oblanceolate, 1-2(-3.2) mm. long, 2-4(-5) mm. broad, rounded or obtuse, appressed-hispid, densely and minutely pustulate; spikes naked, slender, loose, 2-10 cm. long, solitary or geminate; corolla inconspicuous, subtubular, ca. 2 mm. long, not exerted, lobes short; fruiting calyces slender, subdistichously biseriata, very asymmetrical, characteristically bent and recurved, 3-4 mm. long, tardily deciduous, sessile; mature calyx-lobes linear, midrib somewhat thickened and hirsute, rarely merely strigose, axial lobe longest thickest and most hirsute; ovules 2; nutlet 1, subpersistent, oblong-lanceolate, inwardly curved, brownish, dull, granulate-muriculate, next the axial calyx-lobe, edges obtusish; groove somewhat oblique, narrow or closed, opening into a small basal areola; gynobase slender, ca. 1/2 length of

the matured nutlet, slightly exceeded by aborted one; style commonly much surpassed by nutlet.—Contr. U. S. Nat. Herb. iv. 165, t. 16 (1893).

Eastern Oregon to Utah and the Inyo Region of California.

OREGON: Alword Desert, 1600 m. alt., *Leiberg 2425* (G, UC). NEVADA: in open sand along water-pipe, Candelaria, 1950 m. alt., *Shockley 260* (G); sandy soil, Palmetto Range, 1800-2100 m. alt., *Purpus 5856* (UC). UTAH: sandy places, Grand River Canyon, 1230 m. alt., *Purpus 6488* (UC); Dugway, 1891, *Jones* (UC). CALIFORNIA: Surprise Canyon, Panamint Mts., 800 m. alt., *Coville & Funston 713* (G, UC, ISOTYPES); Silver Canyon in White Mts., east of Laws, *Heller 8221* (G, UC); Silver Canyon, 1913, *K. Brandegee* (G, UC); Fish Lake Valley, 1897, *Purpus*.

One of the most distinct and interesting species in the genus. It may be readily recognized by its biovulate fruit and spreading, recurved fruiting calyces.

13. *C. echinosepala* Macbr. Loosely branched herb 1-2 dm. high; stems usually reddish, strigose as well as somewhat hirsute; leaves 2-4.5 cm. long, 2-5 mm. wide, linear to linear-lanceolate, below pustulate and short villous-hirsute, above subglabrate or minutely strigose; spikes geminate or solitary, usually 2-5 cm. long, naked or rarely with a single bract; corolla inconspicuous, tube shorter than calyx, limb ca. 1 mm. broad; fruiting calyx ovate, 2-3 mm. long, sessile or subsessile, spreading or even reflexed, asymmetrical; mature calyx-lobes very unequal, lance-linear, strigose and usually hirsute along the thickened midrib, axial lobe the longest and most hirsute; nutlets heteromorphous, usually 4, pallid, groove narrow and scarcely dilated below; odd nutlet minutely muriculate-tuberculate, ovate, acute, 1.2-1.5 mm. long, subpersistent, next the axial calyx-lobe, margin angulate; consimilar nutlets ca. 1 mm. long, minutely tuberculate, lance-ovate; gynobase evidently shorter than consimilar nutlets, oblong; style longer than consimilar nutlets, equalling or just surpassed by the odd nutlet.—Contr. Gray Herb. n. s. lvi. 57 (1918); Johnston, Proc. Calif. Acad. Sci. ser. 4, xii. 1147 (1924).

Southern Lower California.

LOWER CALIFORNIA: Santa Agueda, *Palmer 242* (G); Magdalena Bay, *Lung* (UC), *Bryant* (UC), *Brandegee* (UC); Magdalena Island, *Orcutt 15* (G, TYPE); La Paz, *Palmer 26* (G).

At once distinguishable from nearly all other species of the genus by having its fruiting calyces deflexed and most heavily hirsute on the axial side. It is probably most related to *C. angustifolia*.

14. *C. dumetorum* Greene. Laxly branched closely strigose herb; stems at first erect but later commonly much elongated and sprawling