

RECENT ADDITIONS TO THE FLORA OF COLORADO

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Botanical field exploration conducted by the author and assistants during the 1947-1949 seasons has revealed the presence in Colorado of several species of native flowering plants hitherto unreported in the State. Documentary information concerning these species is presented below in an annotated list. Herbarium specimens of each collection are deposited in the Herbarium, University of Colorado Museum. The author wishes to express his appreciation to the University of Colorado Committee on Research and Creative Work and to the University of Colorado Museum for their financial support of this field work.

ANNOTATED LIST

ABUTILON INCANUM (Link) Sweet, Hort. Brit. 53. 1827. (Malvaceae)

BACA CO.: talus slopes, associated with *Dilaxis mercurialina*, confluence of Sand and Gallinas canyons, tributary to Cimarron River, vicinity of Wilson Ranch, 27 mi. s. of Pritchett, T. 35 S., R. 48 W., Sec. 5, 8, 1350 m. alt., Aug. 6, 1948, *Weber* 4322.

Abutilon incanum is a species with a recorded range of central Texas to southern New Mexico (Wootton & Standley, Fl. New Mex., Contr. U. S. Nat. Herb. 19. 1915) and enters Colorado along a very narrow strip of land draining into the Cimarron River in extreme southern Baca County. A large number of species with this geographic affinity occur in the area. Most of them penetrate no farther into Colorado, but a few, such as *Opuntia arborescens*, *Andropogon saccharoides*, and *Lesquerella ovalifolia*, extend their Colorado ranges through the Arkansas River valley to Canyon City, Pueblo, and sparingly northward. This element in the Colorado flora is a very significant one and will be discussed in detail in a later paper.

ACER GRANDIDENTATUM Nutt. ex T. & G., Fl. North Amer. 1: 247. 1838. (Aceraceae)

MONTEZUMA CO.: seepage areas along seams at base of white sandstone ledges, north rim of Mesa Verde at "B" Cut, Mesa Verde National Park, 2650 m. alt., Sept. 14, 1949, *Weber* 5233.

Colonies of the bigtooth maple were first discovered in 1945 by Mrs. Jean Pinkley, Ranger-Naturalist at Mesa Verde National Park, but herbarium specimens were not taken at that time. This species has eluded collectors for many years, although the known distribution, which includes Wyoming, Utah,

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and Arizona, strongly suggested its presence in Colorado. The recent discovery in Mesa Verde National Park has an interesting background.

According to Mrs. Pinkley, the few small groves of *Acer grandidentatum* have attracted the attention of tourists and park officials in late summer for many years because of their unusual and striking display of autumn color. The leaves of these trees turn a uniform rich salmon-pink color in contrast to the sombre green of the dense oak scrub by which the groves are surrounded. A few of the colonies are easily visible from the Park Point Fire Lookout and also from "B" Cut on the entrance highway, but, because of the extreme difficulty of access to them, the trees had not been examined but were generally assumed to be aspen. Unable to believe that aspens could display such autumn color, Mrs. Pinkley fought her way through the oak chaparral one day and returned with several branches of *Acer grandidentatum* in full autumn color. These branches have adorned the Mesa Verde Museum offices as dry bouquets ever since 1945. The discovery was not reported, inasmuch as Preston's Manual of Rocky Mountain Trees includes southwestern Colorado on its distribution map of the species. Nevertheless, the Mesa Verde plants represent the first authentic report of the bigtooth maple in Colorado. A previous report (Rydberg, *Flora of Colorado*, 1906) from Pikes Peak appears to be without substantiation.

ALLIUM NEVADENSE S. Watson in King, Geol. Expl. 40th Par. 5: 351. 1871. (Liliaceae)

MESA CO.: in loose red sandy soil, bare areas near west rim of Park headquarters, Colorado National Monument, 2100 m. alt., 6 mi. s. of Fruita, May 22, 1948, *Weber 3884*.

Allium nevadense was to be expected to occur in Colorado as a part of the Great Basin flora, which enters the State along the warm river valleys of the western tier of counties. Previous to this collection, the species had been found at several stations in eastern Utah not far from the Colorado line.

This onion appears to be very rare on the mesa rim of Colorado National Monument and occurs only in very loose red sandy soil which is totally devoid of competing vegetation. Bedrock here is usually only 3 inches below the surface of the soil. The stems of *A. nevadense* are subterranean and the umbels of white flowers are produced at ground level.

ASTRAGALUS LUTOSUS Jones in Contr. West. Bot. 13: 8. 1910. (Leguminosae)

RIO BLANCO CO.: loose shale, hillside 15 mi. n.w. of Rio Blanco, May 17, 1947, *Weber 3349*.

This is a very rare species, previously known only from the type collection, White River, near Dragon, Utah, near the Colorado line.

BERLANDIERA LYRATA Benth., Pl. Hartw. 17. 1839. (Compositae)

LAS ANIMAS CO.: river benches, head of Cottonwood Creek, an eastern tribu-

tary of Carrizo Creek, near the Bob Dodge Ranch, 7 mi. s. and 16 mi. e. of Kim, just west of the Baca County line, 1500 m. alt., Aug. 8, 1948, *Weber 4388*.
CHRYSOTHAMNUS PULCHELLUS (A. Gray) Greene in *Erythea* **3**: 107. 1895 (Compositae)

BACA CO.: stabilized dunes on south bank of Cimarron River, extreme southeastern corner of Colorado, T. 34 S., R. 42 W., on the Piper Ranch, 1200 m. alt., Aug. 31, 1949, *Weber & Anderson 5155*.

Reported by Rydberg, *Flora of Colorado*, 1906, from Colorado, "exact locality not given."

CRYPTANTHA RECURVATA Coville in *Contrib. U. S. Nat. Herb.* **4**: 165. 1893. (Boraginaceae)

MESA CO.: low rocky hogbacks beneath northwest escarpment, Colorado National Monument, 3 mi. s. of Fruita, west of highway approach to monument, 1530 m. alt., May 21, 1948, *Weber 3761*.

Collection of this species in Colorado represents an extension of range from southwestern Utah and extreme northwestern Arizona. It is essentially a species of the Great Basin.

DALEA LANATA Spreng., *Syst. Veg.* **3**: 327. 1826. (Leguminosae)

BACA CO.: sand blowouts in stabilized dunes on south bank of Cimarron River, extreme southeastern corner of Colorado, T. 34 S., R. 42 W., on the Piper Ranch, 1200 m. alt., Aug. 31, 1949, *Weber & Anderson 5141*.

Reported by Rydberg from "On the Platte", but occurrence unsubstantiated by specimens.

DITAXIS MERCURIALINA (Nutt.) Coulter in *Mem. Torr. Bot. Club* **5**: 213. 1894. (Euphorbiaceae)

BACA CO.: talus slope, confluence of Sand and Gallinas canyons, tributary to Cimarron River, vicinity of Wilson Ranch, 27 mi. s. of Pritchett, T. 35 S., R. 48 W., Sec. 5, 8, 1350 m. alt., Aug. 6, 1948, *Weber 4356*.

ERAGROSTIS SPECTABILIS (Pursh) Steud., *Nom. Bot. ed. 2.* **1**: 564. 1840. (Gramineae)

BACA CO.: talus slopes, confluence of Sand and Gallinas canyons, tributary to Cimarron River, vicinity of Wilson Ranch, 27 mi. n. of Pritchett, T. 35 S., R. 48 W., Sec. 5, 8, 1350 m. alt., Aug. 6, 1948, *Weber 4337*.

Strictly speaking, this is the second Colorado collection of the species. In all probability, however, the other collection, from Boulder County, was an accidentally introduced plant and not a part of the indigenous flora.

ERIGERON UTAHENSIS Cronquist in *Bull. Torr. Bot. Club* **70**: 270. 1943. (Compositae)

MOFFAT CO.: rocky summit of Roundtop Mountain, 2750 m. alt., Dinosaur National Monument, June 27, 1948, *R. A. Wolf & K. Dever 5162*.

ERIOGONUM LEPTOPHYLLUM (Torr.) Woot. & Standl. in Contrib. U. S. Nat. Herb. **16**: 118. 1913. (Polygonaceae)

MONTEZUMA CO.: black coal-bearing shales of mesas above the Mancos River northeast of its junction with the San Juan River, Ute Indian Reservation southwest of Towaoc, Sept. 13, 1949, *Weber* 5223.

HAPLOPAPPUS CILIATUS (Nutt.) DC., Prodr. **5**: 346. 1836. (Compositae)

BACA CO.: sandy flats, pastures, and margins of cultivated fields near north bank of Cimarron River south of Walsh and just north of the Oklahoma line, Aug. 31, 1949, *Weber & Anderson* 5152.

OENOTHERA GREGGII A. Gray, Pl. Fendl. 46. 1848. (Onagraceae)

LAS ANIMAS CO.: basalt caprock, head of Cottonwood Creek, an eastern tributary of Carrizo Creek, near the Bob Dodge Ranch, 7 mi. s. and 16 mi. e. of Kim, just west of the Baca County line, 1500 m. alt., Aug. 8, 1948, *Weber* 4387.

This is variety *lampasana* (Buckl.) Munz in *Amer. Jour. Bot.* **16**: 710. 1929.

ONOCLEA SENSIBILIS L., Sp. Pl. 1062. 1753. (Polypodiaceae)

DOUGLAS CO.: in shade of willows, swampy meadow along brook in hills s.w. of Sedalia along Hwy. 67 near Pappoose Club, 2300 m. alt., July 17, 1948, *Weber* 4272.

The area described above is deserving of further intensive study because it supports several species which are extremely rare in Colorado but whose affinities are with the flora of northeastern North America. These species are for the most part also present in the Black Hills of South Dakota. *Viola biflora*, *Athyrium angustum*, and *Onoclea sensibilis* occur in this area within a few miles of one another. An additional observation of note in this connection is the presence of breeding ovenbirds in the vicinity. Similar "islands" of epibiotic relict species occur elsewhere along the foothills of the Colorado Front Range. These islands will be discussed in a later paper.

PARRYELLA FILIFOLIA T. & G. in Proc. Amer. Acad. **7**: 397. 1867. (Leguminosae)

MONTEZUMA CO.: sandy draw above San Juan River bluffs, just northeast of "Four Corners", extreme southwestern corner of Colorado, T. 32 N., R. 20 W., Sec. 20, June 14, 1949, *Weber* 4834.

PERICOME GLANDULOSA Goodman in Rhodora **39**: 209. 1937. (Compositae)

BACA CO.: basalt caprock, confluence of Sand and Gallinas canyons, tributary to Cimarron River, vicinity of Wilson Ranch, 27 mi. s. of Pritchett, T. 35 S., R. 48 W., Sec. 5, 8, 1350 m. alt., Aug. 6, 1948, *Weber* 4322.

LAS ANIMAS CO.: basalt caprock, head of Cottonwood Creek, an eastern tributary of Carrizo Creek, near the Bob Dodge Ranch, 7 mi. s. and 16 mi. e. of Kim, just w. of the Baca Co. line, 1500 m. alt., Aug. 8, 1948, *Weber* 4418.

This entity is closely related to *P. caudata* A. Gray and may be, in fact, merely a geographic race of that species. The type locality of *Pericome glandulosa* is 3

mi. e. of Kenton, Cimarron Co., Oklahoma, a few miles south of the above-mentioned stations.

PHACELIA DEMISSA A. Gray in Proc. Amer. Acad. **10**: 326. 1875. (Hydrophyllaceae)

MONTEZUMA CO.: barren clay slopes of mesas, with *Atriplex*, near north bank of Mancos River a few miles east of its junction with the San Juan, June 12, 1949, *Weber* 4789.

SALVIA AZUREA Lam., Journ. Hist. Nat. **1**: 409. 1792. (Labiatae)

KIOWA CO.: prairie 3 mi. e. of Eads, Aug. 28, 1949, *Weber & Anderson* 5078.

The race occurring in Colorado is var. *Pitcheri* (Torr.) Epling. Rydberg, *Flora of Colorado*, 1906, reports this from "Eastern Colorado", but the report is unsubstantiated.

SPOROBOLUS GIGANTEUS Nash in Bull. Torr. Bot. Club **25**: 88. 1898. (Gramineae)

BACA CO.: sand flats on south bank of Cimarron River, extreme southeastern corner of Colorado, T. 34 S., R. 42 W., on the Piper Ranch, 1200 m. alt., Aug. 31, 1949, *Weber & Anderson* 5159. Identification verified by Swallen.

STILLINGIA SALICIFOLIA (Torr.) Raf. in Atl. Journ. **1**: 146. 1832. (Euphorbiaceae)

BACA CO.: stabilized dunes on south bank of Cimarron River, extreme southeastern corner of Colorado, T. 34 S., R. 42 W., on the Piper Ranch, 1200 m. alt., Aug. 31, 1949, *Weber & Anderson* 5153.

VERNONIA MARGINATA (Torr.) Raf. in Atl. Journ. **1**: 146. 1832. (Compositae)

BACA CO.: sandy flats along south bank of Cimarron River in extreme southeastern corner of Colorado, T. 34 S., R. 42 W., on the Piper Ranch, 1200 m. alt., Aug. 31, 1949, *Weber & Anderson* 5193.

Rydberg credited this species to Colorado on the basis of Edwin James's collection from "On the Arkansas". The record has been considered doubtful because of James's confusion of the Arkansas with the Canadian River. Ewan, in correspondence with the author, reports having seen a collection made by E. L. Greene at "La Junta, 16 July, 1889", in the U. S. National Herbarium. The species has not been collected in Colorado since that time, and the collection described above is cited as the first Colorado record in which the locality data are at all precise.