NEW SPECIES OF PERENNIAL CRYPTANTHA FROM UTAH

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In the spring of 1968 while preparing a dissertation on the perennial *Cryptantha*, section *Oreocarya* (Greene) Payson of North America the present writer discovered three new taxa of *Cryptantha* from Utah.

1. *Cryptantha johnstonii* Higgins sp. nov.

Herba perennis caespitosa, 1-2.5 dm alta; caules pluri e radice profunda lignosa erumpentes, 0.6-1.3 dm longi, minute strigosi; folia oblanceolata, obtusa vel acuta, 2-6.5 cm longa, 0.4-1 cm lata, subtus strigosa et pustulata, supra uniformiter strigosa et non pustulata; inflorescentia elongata, laxa, 0.5-2 dm longa; bracteae inconspicuae, 1-2 cm longae; sepala lineari-lanceolata, sub anthesi 5-6 mm longa, sub fructibus 8-10 mm longa, strigosa et albo-setosa; pedicelli 0.5-1 mm longi; corolla alba, tuba 12-15 mm longa, cristae basi tubae nullae, fornices flavi, erecti, emarginati, 1-1.5 mm longi, limbus patenter, 13-17 mm latus; stylus excedens fructum 3-8 mm (heterostylus); nuculae 4, ovatae, 3-3.5 mm longae, 2.3-2.7 mm latae, margine acuto, utrinquae laevibus et lucidis, sulco angustissimo-lineari, margine elevato nullo.

Caespitose perennial 1-2.5 dm tall; stems several, arising from the branched caudex, 0.6-1.3 dm long, very weakly strigose; leaves oblanceolate, the apices obtuse to acute, 2-6.5 cm long, 0.4-1 cm wide, dorsal surface strigose with conspicuous pustulate hairs; inflorescence somewhat open, 0.5-2 dm long; foliar bracts evident but not conspicuous, 1-2 cm long; calyx segments linear-lanceolate in anthesis 5-6 mm long, in fruit 8-10 mm long, strigose and spreading white setose; pedicels 0.5-1 mm long; corolla white, the tube 12-15 mm long, flaring in the throat, crests at base of tube lacking, fornices yellow, emarginate, 1-1.5 mm long, papillose, limb 13-17 mm broad; style exceeding mature fruit 3-8 mm (heterostyled); nutlets ovate, usually all 4 maturing, the margins acute or knife-like, in contact, 3-3.5 mm long, 2.3-2.7 mm wide, both surfaces smooth and glossy, scar straight closed, extending from base ⅔ the length of nutlet, elevated margin lacking.

Type. Utah: Emery County, on low rolling hills ca. 15 miles west of hwy. 50-6 along the road from Woodside to Castle Dale, May 25, 1968, *Larry C. Higgins 1310*. Holotype deposited at BRY. Isotypes will be distributed to CAS, GH, NY, POM, RM, US, UTC, and other major herbaria.

Distribution. Known only from the type locality 15 miles west

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of hwy. 50-6 on the San Rafael Swell, Emery County, Utah. Flowering from May to June.

Specimens Examined. Utah: Emery County, San Rafael, *Harrison 5628* BRY.

This distinctive species was first called to my attention by an immature specimen deposited in the herbarium at Brigham Young University. Later in the spring of 1968 several trips were made to the San Rafael Swell in order to relocate this species.

Cryptantha johnstonii is most closely related to *C. confertiflora* (Greene) Payson known from western Utah, northern Arizona, Nevada, and southwestern California. It can be distinguished from that species by its smaller size, longer and more open inflorescence, white flower color, larger corolla with longer fornices and no basal crest.

The plant is named in honor of the late Dr. Ivan M. Johnston, Harvard University, who was one of the foremost workers in Boraginaceae. It is only rightful that one of the most showy species in the entire genus should bear his name.

2. *Cryptantha compacta* Higgins sp. nov.

Herba perennis dense caespitosa, 0.3-1 dm alta; caules numerosi e radice profunda lignosa erumpentes, 0.1-0.4 dm longi, subtus albotomentosi, supra subtiliter strigosi: folia oblanceolata vel spatulata, obtusa, 0.5-1.5 (2) cm longa, 0.2-0.4 cm lata, adpressa setosi-pustulata et dense strigosa vel subtomentosa; inflorescentia angusta, aliquantum capitata, 1-5 cm longa; bracteae inconspicuae; sepala lanceolata, sub anthesi 2-2.5 mm longa, sub fructibus 3.5-4.5 (5) mm longa, dense albo-setosa et subtomentosa; corolla alba, tuba 1.8-2.2 mm longa, cristae basi tuba evidentes, fornices flavi, rotundati, ca. 0.5 mm longi, papillosi, limbus 4.5-5.5 (6) mm latus; stylus aequans vel breviter quam fructum; nuculae 1-2, lancolata-ovatae, 2.5-3 mm longae, 1.5-1.8 mm latae, margine acuto, dorso convexo, muricato vel infirme tuberculato-ruguloso, pagina ventrali muricata, sulco aperto subulato vel anguste-triangulari, margine elevato destituto.

Densely caespitose perennial, 0.3-1 dm tall; stems numerous, arising from a woody root, 0.1-0.4 dm long, tomentose below, weakly strigose above; leaves oblanceolate to spatulate, obtuse, 0.5-1.5 (2) cm long, 0.2-0.4 cm wide, dorsal surface with appressed setose-pustulate bristles, also densely strigose or subtomentose, ventral surface similar but with fewer pustulate hairs, the petiole tomentose; inflorescence narrow, somewhat capitate, 1-5 cm long; foliar bracts evident but not conspicuous; calyx segments lanceolate, 2-2.5 mm long in anthesis, in fruit becoming 3.5-4.5 (5) cm long, densely white setose and subtomentose; corolla white, the tube 1.8-2.2 mm long, crests at base of tube evident, fornices yellow, rounded, papillose, about 0.5 mm long, limb 4.5-5.5 (6) mm wide; style equalling or shorter than mature fruit; nutlets lanceolate-ovate, acute, 2.5-3 mm long, 1.5-1.8 mm wide, only 1-2 maturing, dorsal surface muricate or weakly tuberculate-ruguose, ventral surface muricate, scar

open, subulate to narrowly triangular, extending ⅔ the length of the nutlet, elevated margin lacking.

TYPE. Utah: Millard County, ca. 8 miles west of Desert Range Experiment Station Headquarters along hwy. 21, 100 m west of pass at the north end of Needle Range, June 18, 1968, *Larry C. Higgins 1613*. Holotype deposited at BRY. Isotypes will be distributed to CAS, GH, NY, POM, US, UTC, and other major herbaria.

DISTRIBUTION. Known only from southwestern Millard County, Utah, but to be expected from northern Beaver County, Utah, and perhaps in eastern Nevada. Flowering from May to July.

SPECIMENS EXAMINED. Utah: Millard County, north slope of Bull Grass Knoll, north end of Pine Valley, 9 miles north of Derest Range Experiment Station Headquarters, 6,500 feet, *R. C. Holmgren 521* (BRY); White Sage Valley, *Harrison 6371* (BRY); ca. 8 miles west of Desert Range Experiment Station Headquarters along hwy. 21, 100 m west of pass, *Higgins 1462* (BRY).

Cryptantha compacta is most closely related to *C. nana* (Eastw.) Payson but differs in its more compact and caespitose habit, smaller leaves, shorter calyx segments, and smaller corolla. This plant has been known for over thirty years, but has been placed with *C. nana* probably due to the immaturity of the specimens. In observing this species in the field it becomes even more apparent of its right to specific distinction due to its dense caespitose habit that more closely resembles *C. caespitosa* (A. Nels.) Payson than *C. nana*. At the type locality it is the most common plant, growing on shallow stony loam with *Sphaeralcea caespitosa* M. E. Jones, *Linum perenne* L. ssp. *lewisii* (Pursh) Hult., and *Cryptantha rugulosa* (Payson) Payson.

3. *Cryptantha ochroleuca* Higgins sp. nov.

Herba perennis humilis caespitosa, 0.2-1.3 dm alta; caules pluri, 0.1-0.4 dm longi, strigosi et setulosi; folia lineari-lanceolata vel oblanceolata, acuta vel obtusa, 1-2.5 cm longa, 0.1-0.3 cm lata, folia basiorum uniformiter et dense strigosorum, folia caulinum strigosorum et setosorum, pustulatorum; inflorescentia angusta, 0.2-0.7 dm longa, setulosa; sepala lineari-lanceolata, sub anthesi 2-2.5 (3) mm longa, sub fructibus 4-6 mm longa, setosa; corolla lutescens, tuba 2-2.5 mm longa, cristae basi tubae conspicuae, fornices flavi, rotundati, ca. 0.3 mm longi, limbus 4-5 mm latus; stylus vix excedens fructum; nuculae lanceolatae, 2.5-3 mm longae, 1.4-1.6 mm latae, vulgo non nisi unae maturescentes, margine acuto, dorso convexo, irregulariter curto ruguloso, pagina ventrali non nisi leviter aspera, sulco aperto anguste-triangulari, margine elevato destituto.

Low caespitose perennial, 0.2-1.3 dm tall; stems several, 0.1-0.4 dm long, strigose and weakly setose; leaves linear-oblanceolate to oblanceolate, the apices acute or sometimes obtuse, 1-2.5 cm long, 0.1-0.3 cm wide, basal leaves uniformly and densely strigose, sparsely setose, the petiole white-hairy, cauline leaves strigose and with some setose-pustulate bristles; inflorescence narrow, 0.2-0.7 dm long,

weakly setose; calyx segments linear-lanceolate, 2-2.5 (3) mm long in anthesis, in fruit 4-6 mm long, setose; corolla pale-yellow, the tube 2-2.5 mm long, crests at base of tube conspicuous, fornices yellow, rounded, about 0.3 mm long, limb 4-5 mm wide; style scarcely surpassing mature fruit; nutlets lanceolate, 2.5-3 mm long, 1.4-1.6 mm wide, usually only one maturing, margine acute, dorsal surface irregularly rugose with low rounded ridges, ventral surface only slightly uneven, scar open, narrowly-triangular, extending ¾ the length of nutlet, no elevated margin.

Type. Utah: Garfield County, on outcrop 100 m south of Red Canyon Campground along hwy. 12, 6,500 feet, July 21, 1968, *Larry C. Higgins 1788*. Holotype deposited at BRY. Isotypes will be distributed to GH, NY, US.

Distribution. Limited to the red Wasatch Formation near Red Canyon Campground in southwestern Garfield County, Utah, 6.500 to 7,000 feet. Flowering from May to August.

Specimens Examined. Utah: Garfield County, top of ridge south of Red Canyon Campground in Red Canyon, May 25, 1968, *Reveal & Reveal 1031* (BRY).

This local species is apparently confined to the red Wasatch Formation in southwestern Garfield County, Utah.

Cryptantha ochroleuca is apparently most closely related to *C. caespitosa* of southwestern Wyoming, but also has some affinities with *C. nana*. The new species differs from *C. caespitosa* by its less caespitose habit, the slender, less woody taproot, shorter calyx segments, shorter, pale yellow instead of white corolla, and smaller nutlets which are more rugose. From *C. nana*, *C. ochroleuca* differs by the shorter calyx segments, pale yellow corolla, and the rugose nutlets.