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CRYPTANTHA SCHOOLCRAFTII (BORAGINACEAE), A NEW SPECIES OF SECTION OREOCARYA FROM NEVADA

ARNOLD TIEHM

Tiehm, Arnold (New York Botanical Garden, Bronx, NY 10458–5126). *Cryptantha schoolcraftii* (Boraginaceae), a new species of section *Oreocarya* from Nevada. Brittonia 38: 104–106. 1986.—A new species, *Cryptantha schoolcraftii*, is described and illustrated. It is related to the *C. nubigena-sobolifera* alliance but differs in short duration and lowland habitat. It further differs from *C. sobolifera* in having smaller corollas, shorter nutlets, and a shorter style.

Cryptantha (sect. *Oreocarya*) *schoolcraftii* Tiehm, sp. nov. (Fig. 1)

Cryptanthae nubigenae (E. L. Greene) Payson et *C. soboliferae* Payson similis, sed radice breviter perenni diversa et locos aridos regionis inferioris (infra 1700 m) habitans; ulterius a *C. sobolifera* corolla minori, nuculis brevioribus, styloque breviori abstans.

Biennial or short-lived perennial with a taproot; *stems* erect, 1 to several or occasionally as many as 15, the central stem longer than the lateral ones, 0.6–2.3 dm tall, with spreading bristly-hairs and a soft under-pubescence; *leaves* densely gray-hairy with short soft hairs and longer generally appressed bristles, those on the lower surface often evidently pustulate at the base, those of the upper surface only occasionally pustulate and then only in the basal leaves; *basal leaves* numerous, tufted, oblanceolate to occasionally somewhat spatulate, mostly 1.5–4 cm long and up to 0.8 cm wide; *cauline leaves* few, reduced upwards, not as densely pubescent as the basal leaves, the bristles tending to spread especially along the petiole and leaf-margins; *inflorescence* capitate, tending to be somewhat open in fruit; *flowers* homostylic; *calyx* segments 2–4 mm long in flower, elongating to 5–7 mm in fruit; *corolla* tube short, about equaling the calyx, the flat spreading limb white, 3–6 mm wide, with evident yellowish fornicies; *nutlets* in profile lanceolate to ovate, 2.2–3.2 mm long, smooth and shiny to slightly roughened or occasionally roughened on both sides but not tuberculate, usually all 4 maturing, the scar elongate, closed, the margins not raised; *style* surpassing the mature nutlets by 0.3–1.1 mm.

TYPE: UNITED STATES. NEVADA. Washoe Co.: Yellow Hills, 1.6 km (1 mi) north of Bernard's Corral, T41N, R23E, 1646 m (5400 ft), 23 Jun 1984, *Arnold Tiehm, Susan Cochran, Jan Nachlinger & Gary Schoolcraft 8775* (HOLOTYPE: NY; ISOTYPES: CAS, MO, NSMC, RM, RSA, UTC).

Additional specimens (all from Washoe Co., Nevada): S side of Mahogany Mt., 1.1 km (0.7 mi) ESE of Denio Camp on N side of Little High Rock Creek, T39N, R22E, S23, 1616 m (5300 ft), 30 Jun 1983, *Tiehm 8041* (CAS, NY, RSA, UTC, and elsewhere, distributed as *C. celosioides*); about 0.4 km (0.25 mi) S of Little High Rock Reservoir, on NW side of road, T39N, R23E, S31, 1616 m (5300 ft), 25 Jun 1985, *Schoolcraft 1444* (BRY, CAS, NSMC, NY, RM, RSA, UTC); 0.8 km (0.5 mi) SE of Denio Camp, T39N, R22E, S23, 1616 m (5300 ft), 25 Jun 1985, *Schoolcraft 1447* (CAS, NY, NSMC, UTC); Yellow Hills area, T42N, R23E, S33, 1676 m (5500 ft), 10 Jul 1985, *Schoolcraft 1455* (NSMC, NY); near Bernard's Corral, 9 Jul 1985, *Schoolcraft 1458* (NY).

Cryptantha schoolcraftii can be characterized as a low elevation short-lived perennial with smooth to slightly roughened nutlets with a closed scar, short corollas, and a short style. Following Cronquist's (1984) key to the section *Oreocarya* (E. L. Greene) Payson, for the Intermountain Region, the smooth nutlets would place it in a group of species that are not at all similar to, and are geographically removed from, *C. schoolcraftii*. Ignoring the smooth nutlet character the short-lived perennial habit of *C. schoolcraftii* would key it to the group con-

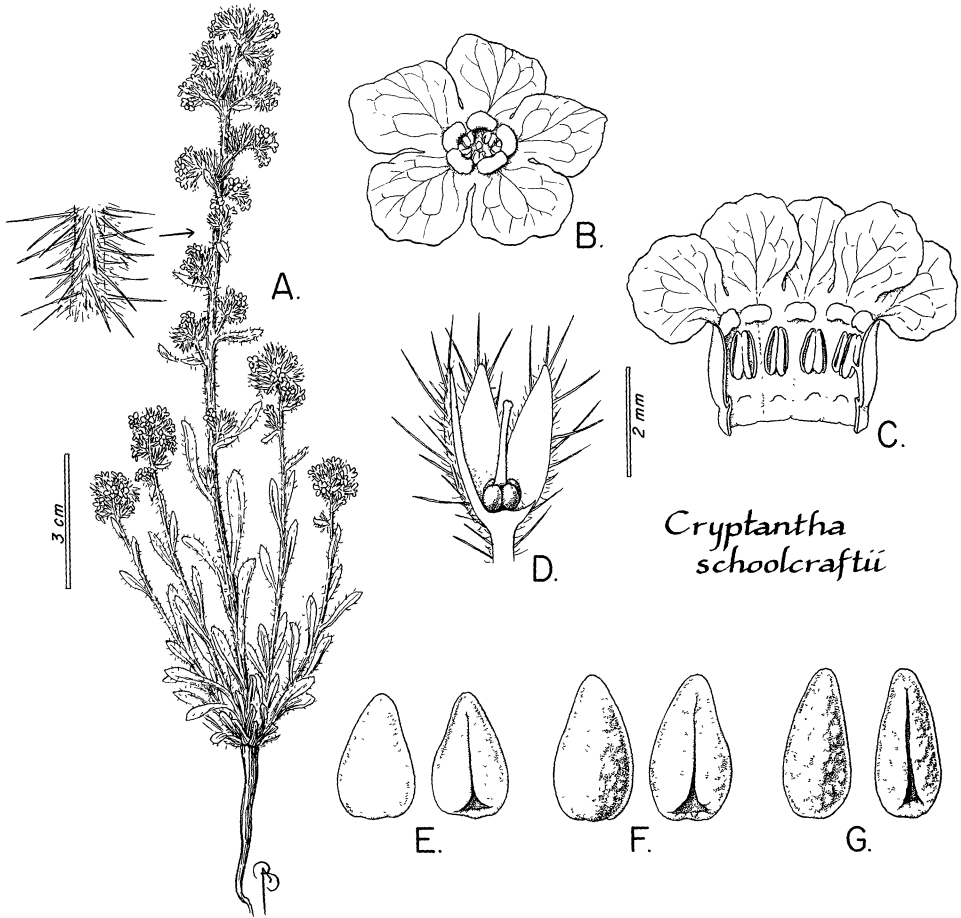


FIG. 1. *Cryptantha schoolcraftii*. A. Habit. B, C. Flowers. D. Calyx with two sepals removed showing the style and immature nutlets. (A–D from Schoolcraft 1444.) E, F, and G. Nutlets showing the variation in sculpturing. (E from Schoolcraft 1455, F from Schoolcraft 1444, G from Tiehm 8041.)

taining *C. rugulosa* (Payson) Payson, *C. virginensis* (M. E. Jones) Payson, and *C. welshii* K. Thorne & Higgins. Here, again, there seem to be no close relatives and the species of this group are also geographically removed. If the short-lived habit were ignored then *C. schoolcraftii* would key to *C. nubigena* (E. L. Greene) Payson and *C. sobolifera* Payson, and I believe that these two are its closest relatives.

The nutlets of both *C. nubigena* and *C. sobolifera* are smooth on the inner surface and roughened to sometimes nearly smooth on the outer surface. When smooth they are similar to the nutlets of *C. schoolcraftii*. *Cryptantha nubigena* and *C. sobolifera* differ from *C. schoolcraftii* in being stout perennials with thick sometimes branched caudices and having a longer harsher pubescence. They also both occur at elevations at least 1000 m higher than *C. schoolcraftii*. *Cryptantha sobolifera* further differs from *C. schoolcraftii* in having a larger corolla, longer nutlets, and a longer style.

The combined distributions of *C. nubigena* and *C. sobolifera* form an arc along and outside the western and northern boundaries of the Intermountain Region. *Cryptantha nubigena* occurs in the Sierra Nevada and the White and Inyo moun-

tains of California while *C. sobolifera* occurs in the Sweetwater and Warner mountains of California, thence north and east to the Cascade, Wallowa, and Steens mountains of Oregon, the Ruby Mountains of northeastern Nevada, and the mountains of central Idaho and western Montana (Cronquist, 1984). The range of *C. schoolcraftii* is near the inner edge of this arc, with the closest occurrence being *C. sobolifera* in the Warner Mountains, some 70 km to the west.

Thus *C. schoolcraftii* is to be considered as a low elevation correlative of the *C. nubigena-sobolifera* alliance. Other instances of a high elevation species having its closest relative at low elevations in the same general area are *Eriogonum argophyllum* Reveal-*E. kingii* Torrey & Gray (Reveal, 1972) and *Castilleja nana* Eastw.-*C. salsuginosa* N. Holmgren (Holmgren, 1973). This hypothesis is strengthened by the occurrence of *Anelsonia eurycarpa* (A. Gray) Macbride & Payson with *C. schoolcraftii* around Little High Rock Creek and Reservoir. *Anelsonia eurycarpa* otherwise occurs in the Sierra Nevada, White and Sweetwater mountains of California, and the mountains of central Idaho, always at elevations over 2700 m. The identity of *Anelsonia eurycarpa* (Tiehm 8042) was confirmed by Reed C. Rollins who found it to be identical to the high elevation collections.

The plants from the two known areas of occurrence of *C. schoolcraftii* are slightly different. Those from the Yellow Hills consistently have smooth shiny nutlets and corollas up to 4.5 mm wide. Those from around Little High Rock Creek and Reservoir have nutlets slightly roughened, and one collection (Tiehm 8041) has rough but non-tuberculate nutlets and corollas up to 6 mm wide. This matches the other collections in pubescence, size and shape of the leaves, and in being a short-lived perennial. It was first reported as *C. celosioides* (Eastw.) Payson (Schoolcraft & Tiehm, 1985).

The known distribution of *C. schoolcraftii* is nearly the same as that of the newly described *Astragalus tiehmii* Barneby (Barneby, 1984). The habitat is a light-colored volcanic ash which usually weathers to a fine clay.

This species is named in honor of Gary Dean Schoolcraft (b. 1942), botanist for the Susanville District of the Bureau of Land Management in California. His collections and assistance during field trips have greatly increased our knowledge of this rather inaccessible part of the Intermountain Region.

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