

NOTEWORTHY COLLECTION

CALIFORNIA

CRYPTANTHA CRASSISEPALA (Torrey & A.Gray) Greene var. *ELACHANTHA* I.M.Johnston (BORAGINACEAE) —Inyo County, Bishop, Owen's Valley, ca. 37.3667°, –118.3952° (estimated from label locality data), 1524 meters (5000 feet verbatim on label) elevation, 15 May 1897, *Marcus E. Jones A.M. s.n.* (POM73072, barcode RSA0347735), original determination *Krynitzkia crassisejala* Torrey & A.Gray, determined as *Cryptantha crassisejala* by L. Gross, May 2016. —Lassen County, 10 miles south of Amedee, ca. 40.14052°, –120.16931°, + 3 km (estimated from label locality data), 1220 meters (4000 feet verbatim on label) elevation, 22 June 1897, *Marcus E. Jones A.M. s.n.* (POM73157, barcode RSA0347753), original determination *Cryptantha texana* (A.DC.) Greene, determined as *Cryptantha crassisejala* by L. Gross, April 2016.

Previous knowledge. *Cryptantha crassisejala* var. *elachantha* was formerly thought to be limited in distribution in the United States (Johnston 1959; Kelley and Simpson in prep) to Arizona, Colorado, New Mexico, Nevada, western Texas, Utah, Wyoming (one collection), western Oklahoma, and southwestern Kansas; it is also found in Chihuahua, Mexico (SEINet 2022; georeferenced records mapped in Fig. 1). The conspecific *Cryptantha crassisejala* var. *crassisejala* is overlapping, but less widespread, in distribution (Fig. 1).

Significance. Although both of these California collections were annotated as *Cryptantha crassisejala* by one of us (L. Gross) in 2016, we now confirm these as *Cryptantha crassisejala* var. *elachantha*, comprising a new California state record. This taxon will be added to the *Jepson eFlora* (Jepson Flora Project 2022) treatment of *Cryptantha* in the near future.

Morphology. The species *Cryptantha crassisejala* is characteristic in part in having calyces with linear to lanceolate sepals with a thickened, indurate, hirsute midrib, this also found in close relatives (see below). The nutlets, however, are distinctive in being lance-ovate to ovate and heteromorphic. One, larger, “odd” nutlet is densely papillate and distinctively tuberculate-spinulose, being tightly adherent to the gynobase; three (sometimes zero, one, or two) smaller, consimilar nutlets are relatively coarsely rounded-tuberculate, with excavated attachment scars (Amsinckinae Working Group 2022; see exemplars in Fig. 2).

Taxonomy. *Cryptantha crassisejala* has been recognized with two varieties since the work of Johnston (1959), who named *Cryptantha crassise-*

pala var. *elachantha* I.M.Johnston as a variety novum. Johnston circumscribed this variety in part as having an inconspicuous corolla, the limb 2.5 mm in diameter. Johnston contrasted *C. crassisejala* var. *elachantha* with *C. crassisejala* var. *typica* [= *C. crassisejala* var. *crassisejala*, the autonym], which he described as having a corolla limb 3–5 mm in diameter.

In the upcoming *Flora of North America* treatment of *Cryptantha* (Kelley and Simpson in prep), *Cryptantha crassisejala* will continue to be treated as two varieties, distinguished as in the following key couplet:

- Corolla rotate, appendages prominent, yellow, limbs 3–6 mm wide
 *C. crassisejala* var. *crassisejala*
 Corolla funnellform, appendages white to pale yellow, limbs (1)1.5–2.5 mm wide
 *C. crassisejala* var. *elachantha*

We point out that fruits of both California specimens are different from the more common condition in having the consimilar nutlets reduced to one or apparently missing altogether. The *Jones s.n.*, 15 May 1897 specimen has at least some fruits with one large/odd nutlet and only one smaller/consimilar nutlet, with the other two consimilar nutlets abortive (Fig. 3A,B). The other California specimen, *Jones s.n.*, 22 June 1897 apparently has all of the consimilar nutlets abortive, based on our examination (Fig. 3C,D). However, both specimens have the characteristic sepal midrib thickening/induration (e.g., Fig. 3D) and both have the distinctive papillate-tuberculate-spinulose larger nutlets characteristic of this species. The very small corollas of both specimens are a fit for *C. crassisejala* var. *elachantha*.

Johnston (1925, p. 59) described *C. crassisejala* as having “nutlets 4 (1 or rarely 2 aborted) . . . ,” thus recognizing the sometimes reduced consimilar nutlet number seen in our two California specimens. Prior to Johnston's treatment, Nelson (1903, p. 30) had described the species *Cryptantha dicarpa* A.Nelson, stating in the protologue “only two maturing, these dissimilar, one larger more persistent and scabrous-roughened under a lens, the other minutely roughened-papillose. In a general way related to *C. crassisejala* and its allies but slender-stemmed and quite distinct in its fruit characters.” Johnston (1925) treated *Cryptantha dicarpa* as a synonym of *C. crassisejala*, apparently regarding the loss of two consimilar nutlets as variation within the species. We

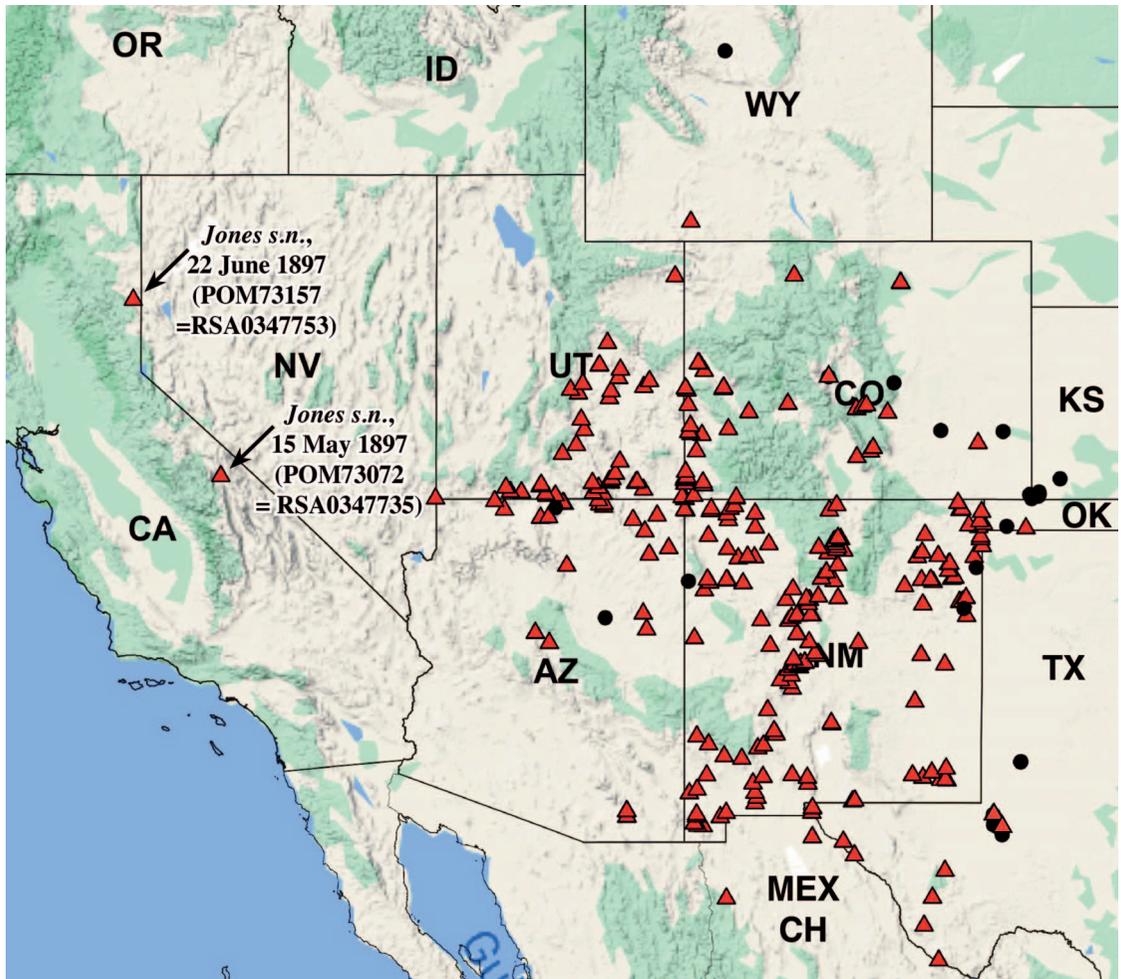


FIG. 1. Distribution map of georeferenced specimens of *Cryptantha crassisejala* var. *elachantha* (red triangles) and *Cryptantha crassisejala* var. *crassisejala* (black dots), data from this article and the SEINet data portal, accessed 07 September 2022. Note the two recently discovered specimens in California: *M.E. Jones s.n.*, 15 May 1897 (POM73072, barcode RSA0347735) and *M.E. Jones s.n.*, 22 June 1897 (POM73157, barcode RSA0347753).

examined the online image of the type specimen of *C. dicarpa* (T.D.A. Cockerell 30, Jan 1903, barcode RM0001553, New Mexico, Mesilla Park, 3800 feet elevation) and measured the largest corollas as ranging from 1.7–2.1 mm, which would fit our current concept of *Cryptantha crassisejala* var. *elachantha*, a relationship not noted by Johnston (1959) for this synonym.

Relationships. Based on molecular phylogenetic analyses (Simpson et al. 2017; Mabry and Simpson 2018), *C. crassisejala* (var. *elachantha* in those analyses) is sister to *C. minima* of series *Texanae* (Johnston 1925), their morphological similarity noted by Johnston (1925, 1959). These two species are sister to a clade consisting of *C. kelseyana*

Greene (also in series *Texanae*, sensu Johnston 1925) and *C. fendleri* (A.Gray) Greene, the latter the sole member of Johnston's series *Ramulosissimae* (Johnston 1925). Note that all members of series *Texanae*, including *C. crassisejala*, are similar in having sepals with thickened, indurate, hirsute midribs, but they differ significantly in nutlet morphology.

Rarity. We counted 401 unique collections of *Cryptantha crassisejala* var. *elachantha* from the SEINet (2022) herbarium database portal. Although the variety is not common, it is also not rare throughout its range, by our estimation. In California, however, it is only known from the two cited historical specimens, with the locality of one

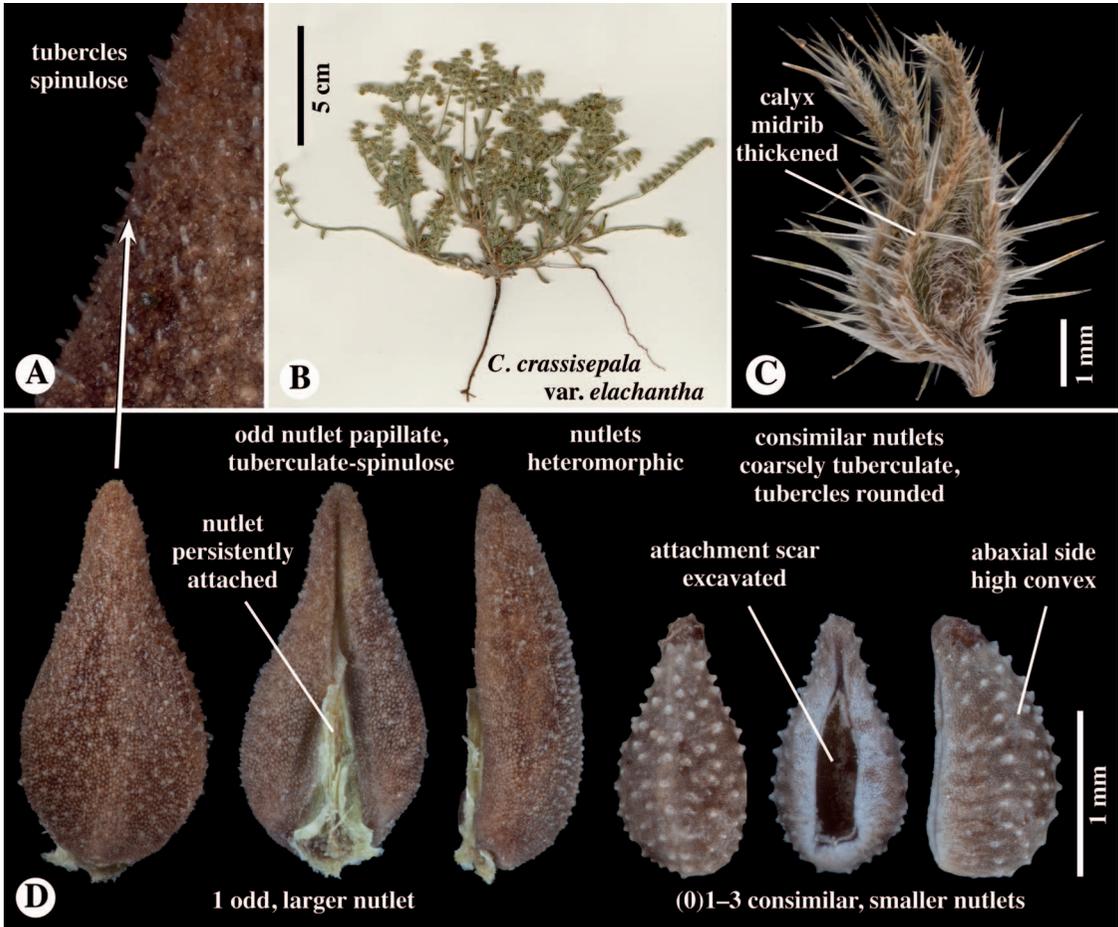


FIG. 2. Exemplars of *Cryptantha crassisejala* var. *elachantha*, the source of specimen material indicated. **A.** Close-up of surface of larger/odd nutlet (similar to that at “**D**”, below), showing papillae and tuberculate-spinulose sculpturing elements, the latter distinctive for the species (*Howe 4224*, *SD64231*). **B.** Whole plant, an annual, generally lacking floral bracts (*Ripma 414*, *SDSU20875*). **C.** Fruiting calyx, showing thickened sepal midribs, hispid in vestiture (*Sanders 4727*, *RSA374506*). **D.** Nutlets of a single fruit. Left: larger/odd nutlet in (left to right) dorsal, ventral, and lateral views; Right: one of three smaller/consimilar nutlets in (left to right) dorsal, ventral, and lateral views (*Ripma 414*, *SDSU20875*).

of these collections (*M.E. Jones s.n.*, 15 May 1897) being the city of Bishop, which has undergone considerable development since then. Given these collection data, we suggest a CA Rare Plant Rank of **2B.1** (CNPS 2022), defined as “plants rare, threatened, or endangered in California, but more common elsewhere” and “seriously threatened / high degree and immediacy of threat.” We will make a concerted effort to locate this taxon in and around the known localities in the future and urge other botanists to do so. We will search for additional collections that may be lying unnoticed

in herbaria, as they were at the RSA herbarium until recently.

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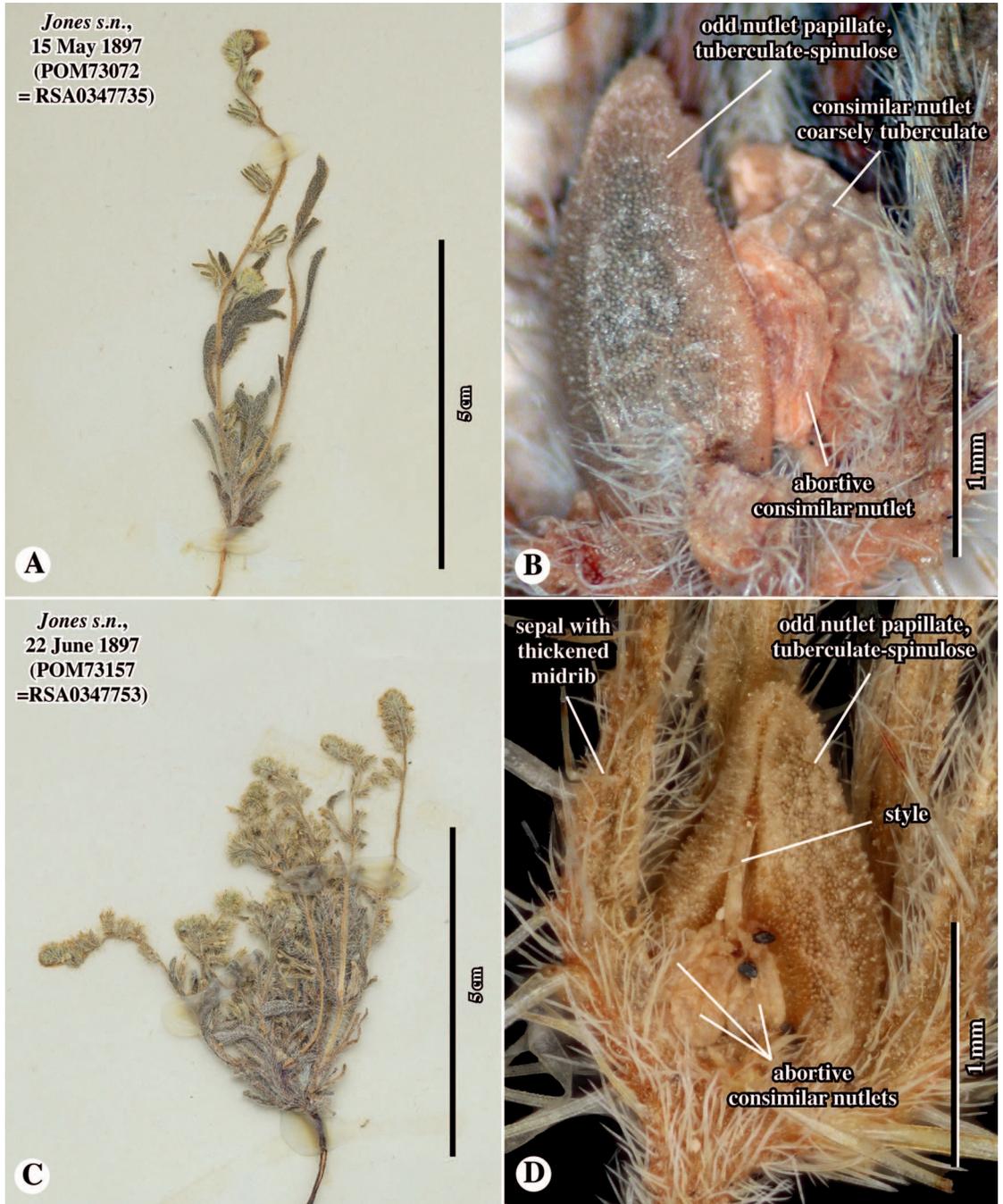


FIG. 3. California specimens of *Cryptantha crassisejala* var. *elachantha*. **A,B.** *M.E. Jones s.n.*, 15 May. **A.** Whole plant from imaged herbarium sheet. **B.** Dissected fruit, showing larger/odd, papillate, tuberculate-spinulose nutlet and one, coarsely tuberculate smaller/consimilar nutlet. Note one (of two) abortive, consimilar nutlet. **C,D.** *M.E. Jones s.n.*, 22 June 1897. **C.** Whole plant from imaged herbarium sheet. **D.** Dissected fruit, showing sepals with thickened midrib and hispid vestiture, larger/odd, papillate, tuberculate-spinulose nutlet, and three, abortive, consimilar nutlets.

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