Nutlet Morphology and the Use of SEMs to Determine Characteristics for Identification of Species in the Genus *Cryptantha* Lehm. *ex* G. Don Section *Oreocarya* (E. Greene) Payson.

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The genus *Cryptantha* Lehm *ex* G. Don section *Oreocarya* (E. Greene) Payson of the family Boraginaceae presents some problems to botanists, both professional and amateur, in the keying and identification of species. The genus contains approximately 150 species, the section about 60 perennial and biennial herbs located generally in western North America. Identification has presented some taxonomic difficulty due to the variability and lack of distinctive vegetative characters. Botanists have turned to the nutlet (fruit) and flower morphology to aid in identification for precise specific differentiation. In the past, 10X magnification and a decent botanical illustrator were required to provide the illustrations necessary to assist in this identification. We are in the process of collecting micrographs of nutlets (dorsal, sagital, and ventral views) and developing a webpage containing these micrographs along with descriptions of their morphological variations.

The materials used were dried and pressed specimens, collected by Dr. W.A. Kelley, and stored at the Mesa State College Herbarium in Grand Junction, CO. The nutlets were dissected out, fixed to an aluminum post with double-sided copper tape, and

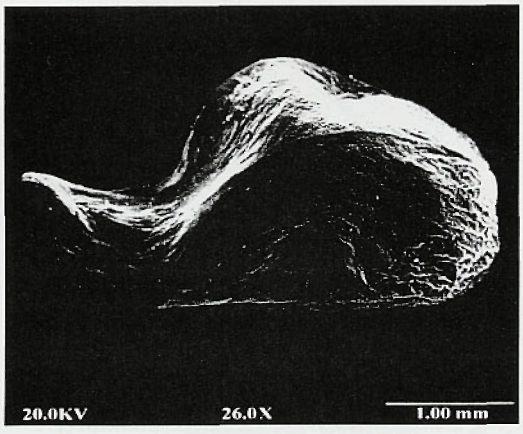

Figure 1

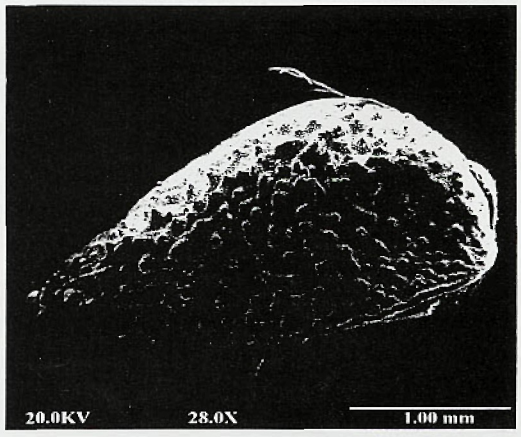

Figure 2

sputter coated with gold. Micrographs were produced by averaging over 16 separate scans of each specimen and enhanced using Adobe PhotoShop 4.0® software. Mesa State College Electron Microscopy Facility's AMRAY 1000 is a newly refurbished instrument that has been retrofitted with state-of-the-art electronics and digital imaging software. Images here were taken at a working distance of 12 mm utilizing a final aperture diameter of 200 µm.

The micrographs here represent a small sampling of those that will be available on the webpage (no web address has been established yet). The nutlets vary in shape from ovate to lanceolate. Figure 1 shows a nutlet described as lanceolate to narrowly ovate. The dorsal surfaces of most nutlets are commonly more or less convex, some species have a defined medial dorsal ridge. Surface characteristics may be smooth and shiny as in Figure 1 or variously roughened as in Figures 2-4. Figure 2 shows a species with small, numerous, low projections, a condition described as muricate. The ventral side of the nutlets displays a scar, occurring at the place of previous attachment to the style, another defining characteristic. All descriptions were taken from Intermountain Flora, Volume 4, an invaluable tool in aiding investigators in identifying the varied species of this genus. It is hoped that the webpage will prove helpful in the identification of genus *Cryptantha* Lehm *ex* G. Don section *Oreocarya* (E. Greene) Payson. ■

References: Cronquist, A., Holmgren, A.H., Holmgren, N.H., Reveal, J.L., and Holmgren, P.K. (1984). *Intermountain Flora: Vascular Plants of the Intermountain West, U.S.A.* V.4. The New York Botanical Garden, Bronx, New York. 573 p.

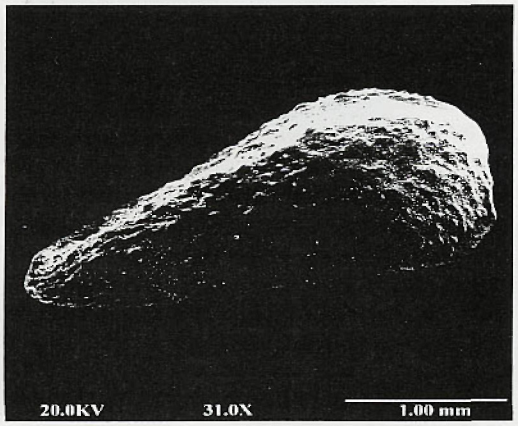

Figure 3

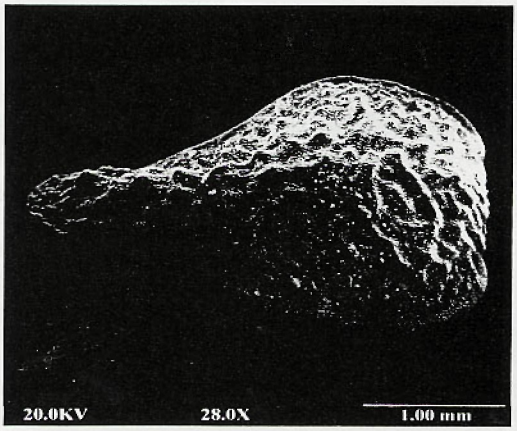

Figure 4