Descurainia kenheilii (Brassicaceae): Revised description and new records from Colorado

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ABSTRACT

Until recently, the only known collection of Descurainia kenheilii (Brassicaceae) was the holotype, a single, depauperate specimen from Stony Pass in San Juan County, Colorado. A revised description is provided based on recently examined specimens from the San Juan Mountains of Colorado. Herbarium specimens are cited to document the distribution of the species and a key is provided to separate it from D. incana. Published online www.phytologia.org Phytologia 104(2): 4-7 (June 21, 2022). ISSN 0303-19430.

KEY WORDS: Descurainia kenheilii, Brassicaceae, description, distribution.

In the summer of 1997 Ken Heil collected a diminutive member of the Brassicaceae in the tundra at the summit of Stony Pass, San Juan County, Colorado (Fig 1A). Unable to identify it, and thinking it was a species of Draba, he sent it to Ihsan Al-Shehbaz, an expert in the Brassicaceae, at the Missouri Botanical Garden. Al-Shehbaz determined that the miniature specimen, less than 1.5 cm tall, belonged to a new species of Descurainia and named it D. kenheilii in honor of its discoverer (Al-Shehbaz, 2007). In the years since, careful searches of the type locality, including by us, failed to find additional specimens of the species. Scott Smith, a talented amateur botanical sleuth from Colorado took on the challenge in 2021. He did not find any diminutive plants resembling D. kenheilii but did find much taller specimens of a species of Descurainia near the type locality that botanists have been calling D. incana (Fisch. & C. A. Mey.) Dorn (Fig. 1B, C). Thinking these specimens needed expert identification he sent them to Al-Shehbaz who recognized, based on characters of the fruits, ovules, pedicels, and duration, that they were taller, more robust, and as it turns out, typical members of D. kenheilii.

Using specimens housed primarily at San Juan College (SJNM) and supplemented by high resolution images of herbarium specimens available at SEINET (https://swbiodiversity.org), we have determined that D. kenheilii is limited to high elevations in the San Juan Mountains of southwestern Colorado. Below we provide an expanded description of the species, updated habitat information, a key to separate D. kenheilii from D. incana, representative specimens, and a distribution map of known specimens.


Revised description: Short-lived perennials (some biennial); eglandular; glabrescent to sparsely pubescent throughout with dendritic trichomes. Stems several, decumbent to suberect, branched basally mainly in the lower half with green leaves beyond the first year, mostly 1.4–11 dm, but when dwarfed, as in the holotype, unbranched and as little as 0.1 dm. Basal leaves: petiole (0.3–)3–40 mm; blade pinnate,
oblanceolate to obovate in outline, lateral leaflets 2–5 per side, (1–)1.2–6.5 × 0.5–1.5 cm, lateral leaflet lobes 2–4, pinnatifid, rounded. **Cauline leaves** subsessile, blade smaller distally, distal lobes narrower, surfaces sparsely pubescent to glabrescent. **Racemes** moderately to strongly elongated in fruit except not elongated in dwarfed plants as in the holotype. **Fruiting pedicels** ascending to erect, not appressed to the stem, straight, 1–7 mm. **Flowers:** sepalas ascending, yellowish, ovate, 1–1.4 mm, pubescent; petals light yellow, narrowly oblanceolate, 1–1.5 × 0.3–0.4 mm; median filaments 0.6–1 mm; anthers broadly ovate, ca. 0.1 mm. **Fruits** siliques, ascending to erect, linear, sometimes a few curved, 5–12 × 1–1.3 mm, somewhat torulose, short-tapered at both ends, the ends rounded-acute to acute, valves each with a distinct midvein; septum with a distinct midvein (viewed at 10× magnification); ovules 4–8(–10) per ovary; style nearly obsolete, 0.1–0.3 mm, glabrous. **Seeds** uniseriate, reddish brown, oblong, 1–1.2 × 0.5–0.6 mm.

As noted by Al-Shehbaz (2007), interspecific hybridization and the ability to be weedy in disturbed situations makes the genus *Descurainia* taxonomically difficult. The specimens cited below appear to us to not involve hybridization. Several other specimens, however, seem to be intermediate between *D. kenheilii* and *D. incana*, in which case the two species may be difficult or impossible to distinguish.

Flowering Jul–Sep. Alpine tundra, talus slopes, and rock outcrops, in both undisturbed and disturbed areas; plants are taller and more robust where well-watered and with little competition; when found on species-rich, environmentally stressed tundra, plants may be dwarfed; 3150–3856 m (10330–12650 ft); San Juan Mountains of southwestern Colorado. *Descurainia kenheilii* is likely endemic to the San Juan Mountains of Colorado (Fig. 2), where it seems to replace *D. incana* at the highest elevations. The two species can be distinguished by the following key.

1. Plants short-lived perennials; branched from the base and nearly throughout; stems single or often several from the base, decumbent to erect; leaves green basally; elevations above 3150 m (10330 ft); ovules 4–8(–10) per ovary (examine several fruits and count funicles, not seeds); fruits somewhat torulose; fruiting pedicels divergent to ascending; fruits ascending to erect, not at all appressed to the stems. **D. kenheilii**

1’. Plants biennial; mainly branched in the distal half of the stem; stems single, erect; leaves withered and deciduous basally; growing from low to high elevations; ovules (4–)6–22 per ovary; fruits nearly smooth...
to torulose; fruiting pedicels ascending to erect; fruits erect, often nearly appressed to the stems, at least apically .......................................................... \textit{D. incana}


\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{map.png}
\caption{Distribution of \textit{Descurainia kenheilii} in the San Juan Mountains of southwestern Colorado. Map generated using Google Maps.}
\end{figure}
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LITERATURE CITED