

SAGEBRUSH LOEFLINGIA

Loeflingia squarrosa Nutt. var. *artemisiarum* (Barneby & Twisselm.) R. Dorn

Authors: Julie A. Greene, P.O. Box 451, Los Alamitos, CA 90720 and Andrew C. Sanders, Herbarium, Department of Botany and Plant Sciences, University of California, Riverside, CA 92521-0124

Management Status: Federal: BLM Sensitive
California: S2.2, G5T4 (CDFG, 1998)
CNPS: List 1B, R-E-D Code 2-2-2 (Skinner and Pavlik, 1994)

General Distribution:

The sagebrush loeflingia occurs in the Great Basin of Oregon, Wyoming, California and presumably Nevada, but the varietal status of the plants (“rare”) reported for Washoe County is not given (Kartesz, 1988), though this is almost certainly the variety present since California loeflingia (*L. s. squarrosa*) is unreported east of the Sierra Nevada. Sagebrush loeflingia is also not discussed in the literature on the rare plants of Nevada (Mozingo and Williams, 1980; Morefield & Knight, 1992). The type specimen was collected on sandy flats 3 mi. (4.8 km) south of Wright's Point, Harney County, Oregon (Barneby AND Twisselmann, 1970).

In California, this plant is reported east of the Sierra Nevada from Lassen and Plumas Counties in the northern part of the state (Barneby and Twisselmann, 1970) and from Inyo, Kern, Los Angeles, and Riverside counties (Skinner and Pavlik, 1994) in the southern part of the state, but it is very poorly known and populations are not well documented. The report for Riverside County is highly questionable as it is well away from the rest of the species' known range in the eastern Sierra, CNPS does not have a specific locality for that county (Skinner and Pavlik, 1994), and the species is not reported in that county by Hartman (1993). A relatively large population is reported on BLM land in the Big Pine area in Inyo County, north of the WMPA (Chamberlain, 1982), and Big Pine is a locality reported for this plant in the original description (Barneby and Twisselmann, 1970).

Distribution in West Mojave Planning Area:

The distribution of this plant in the WMPA is very poorly known. In the original description (Barneby and Twisselmann, 1970) this species is reported from Buckhorn Dry Lake, near Buckhorn Lake on the route to “Old Pancho Barnes place”, and the south end of Rogers Dry Lake, all in Kern Co., as well as from 5 miles north of Lancaster in Los Angeles County. These are here considered to be the only reliable records of this plant in the western Mojave Desert. There are more recent reports, but we are unaware of specimens documenting these localities, so they must be considered tentative. Recent reported localities include: Edwards Air Force Base near the intersection of Mercury Boulevard and 140th street (Charlton, 1992) and washes west of the Rosamond Hills (Charlton, 1992). Neither of these localities is inherently unbelievable, but both are within the zone of overlap of *L. s. squarrosa* and *L. s. artemisiarum* and thus, in the absence of verified specimens, we cannot consider these to be definite localities.

Natural History:

This species is a diminutive annual in the pink family (Caryophyllaceae). It is compact, branched at the base, taprooted, and has glandular-hairy, rather stiff stems that may be either erect or prostrate. The leaves, 0.16-0.24 in. (4-6 mm) long, are slender and have a sharp tooth at the tip (cuspidate). Plants grow 0.4-2.75 in. (1-7 cm) tall, but are never strictly erect. The green, cleistogamous (fertilized unopened) flowers appear from April-May. They have three to five rudimentary petals, or none at all, and five spine-tipped sepals, which strongly resemble the leaves and are always straight and short (little longer than the ripe capsule). The three to five stamens are included in the flower as are the three short styles. The fruit capsule is lanceolate to ovate in profile. The seeds are ca. 0.02 in. (0.4-0.5 mm) long. It can reportedly be distinguished from California *loeflingia* by its shorter (2.7-3 vs. 3.5-6 mm), straight (vs. strongly recurved), and equal length sepals, but none of these characters seems sharply distinct. Plants with relatively straight sepals, for example, can occur in populations within the exclusive range of California *loeflingia*.

The wide distribution of this plant in the Great Basin combined with the few records suggests that it is under-collected. The apparent weakness of the characters separating this from California *loeflingia*, and the relative abundance and ecological success of California *loeflingia* on the coastal slope, suggests that sagebrush *loeflingia* may be much more common and widespread than is currently known. It is also possible some of the widely scattered reports are errors based on misidentifications of the nominate variety (especially the Riverside Co. report), or that the taxon is not consistently distinct from *L. squarrosa* var. *squarrosa*. The two varieties are reported to have generally separate ranges, and that they occur together only in the dunes at Buckhorn Dry Lake, Kern County (Barneby and Twisselmann, 1970). The morphological differences between the two varieties do not appear great and Twisselmann (1967) reported that intergrades between this (as *L. pusilla* Curran) and typical *L. s. squarrosa* were common, presumably at Buckhorn Lake. This is a taxon in desperate need of widespread collection efforts and of careful taxonomic study.

Habitat Requirements:

Sagebrush *loeflingia* grows in sandy soils of desert dunes and flats in Great Basin sagebrush scrub and Mojave desert scrub. It occurs at elevations of 2300-4000 ft. (700-1200 m) according to Hartman (1993) but the type description reports it at "mostly between 4000 and 7000 feet" but at "approximately 2450 ft." in the western Mojave Desert. It is reported to occur in "stiffer, more alkaline soils" than *L. s. squarrosa* (Barneby and Twisselmann, 1970; Twisselmann, 1967) where the two varieties occur together at Buckhorn Lake. The Big Pine population is associated with Inyo gilia (*Gilia inyoensis*) and golden gilia (*Linanthus aureus*) in coarse sand bordering clay slicks (Novak, 1983).

The known distribution of this plant is largely in the cold deserts of the Great Basin, extending south into somewhat similar habitats on the western Mojave Desert. To the west of the Sierra Nevada and to the south and southwest, it is replaced by California *loeflingia* (*L. s. squarrosa*).

The typical variety is better known ecologically and is a plant of sandy or gravelly open areas; often occupying flats between shrubs and sandy roadsides. The species never occurs in shade under shrubs but always in full sun in exposed areas (Sanders, pers. obs.). From the limited information available, it appears that sagebrush loeflingia occupies very similar sites.

Population Status:

The size of only one population of sagebrush loeflingia has been documented. The Big Pine population, Inyo County, contained about 1000 plants in a 5 acre area when examined (Novak, 1983). None of the other populations has had population counts reported.

This taxon occurs over a wide area, but is very seldom reported. It may well be that populations are small and widely scattered, though the inconspicuous nature of this plant has doubtless also served to reduce reports. The northern California populations in Lassen and Plumas Counties (Barneby & Twisselmann, 1970), are apparently known only from a few old specimens. Likewise, populations in Kern and Los Angeles Counties appear little known and virtually unstudied. As previously noted, the report for Riverside County (Skinner and Pavlik, 1994) is very doubtfully correct.

Threats Analysis:

Until this taxon is better understood, the extent of any threats will remain poorly known. It is reported to be threatened by residential development in the Rosamond Hills area (Charlton, 1992). There is some cattle grazing in the area of the Big Pine population but no impacts were detectable (Novak, 1983). However, increased grazing could cause more surface disturbance which would eliminate this population (Novak, 1983). Skinner and Pavlik (1994) do not detail threats to this species.

Biological Standards:

Sagebrush loeflingia is so poorly known that it is currently impossible to determine what is necessary to conserve it. The populations at the few known sites should be monitored and studied both taxonomically and ecologically. Additional areas should be surveyed and additional populations sought. Given its extensive overall range (extraordinarily vast for a rare plant), the fact that it does not appear to occupy any unusual habitat type, and the fact that *Loeflingia* is a rather inconspicuous genus of plants that is probably not very frequently collected, or even noticed, the probability that significant additional populations remain to be discovered appears high. Until additional surveys can be conducted, any gross soil disturbances in the vicinity of known populations should be avoided.

Literature cited:

- Barneby, R.C. and E.C. Twisselmann. 1970. Notes on *Loeflingia* (Caryophyllaceae), Madroño 20: 398-408.
- California Department of Fish and Game (CDFG). 1997. Special Plants List, Natural Heritage Division, Natural Diversity Data Base, Sacramento, California.

- Chamberlain, C. 1982. Sensitive Species Status Report, BLM office, Bakersfield, California. Rare plant report form on file at CDFG, CNDDDB, Sacramento, California.
- Charlton, D. 1992. An Introduction To The Plant Communities and Habitats of California Deserts and The Flora and Vegetation of Edwards AFB, Computer Sciences Corp., Edwards Flight Test Center, California.
- Hartman, R.L. 1993. *Loeflingia*. In: J.C. Hickman (ed.), The Jepson Manual: Higher Plants of California. Univ. California Press, Berkeley, California.
- Kartesz, J.T. 1988. A Flora of Nevada. Ph.D. Diss., Univ. Nevada, Reno, Nevada.
- Morefield, J.D. and T. A. Knight. 1992. Endangered, Threatened, and Sensitive Vascular Plants of Nevada. Nevada State Office of the Bureau of Land Management, Reno, Nevada.
- Mozingo, H.N. and M. Williams. 1980. Threatened and Endangered Plants of Nevada. U.S. Dept. of the Interior, Fish and Wildlife Service, Portland, Oregon.
- Novak, P. 1983. Species report for *Loeflingia squarrosa* var. *artemisiarum*. Rare plant report form on file at CDFG, CNDDDB, Sacramento, California.
- Skinner, M.W. and B.M. Pavlik (eds.). 1994. Inventory of Rare and Endangered Vascular Plants of Calif. CNPS Special Publication No. 1 (5th Ed.), California Native Plant Society, Sacramento, California.
- Twisselmann, E.C. 1967. A Flora of Kern County, California, The Wasmann Journal of Biology 25 (1 & 2):1-395. [Recently reprinted by California Native Plant Society, Sacramento, California, in book form, bound with A Key to Vascular Plant Species of Kern County, California by L. Maynard Moe.]