

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Abronia alpina*

COMMON NAME: Ramshaw Meadows sand-verbena

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2003

STATUS/ACTION:

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: ____

90-day positive - FR date: ____

12-month warranted but precluded

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: ____

New LP: ____

Latest date species first became a Candidate: July 1, 1975

Candidate removal: Former LP: ____

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of "species."

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Nyctaginaceae (Evening primrose family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: California

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

California

LEAD REGION CONTACT: Diane Elam (CNO), 916-414-6464; Scott McCarthy (RO), 503-231-6131

LEAD FIELD OFFICE CONTACT: Elizabeth Warne, Sacramento Fish and Wildlife Office, 916-414-6645

BIOLOGICAL INFORMATION:

Townshend Brandegee described this taxon in 1899 from specimens collected by Joseph Purpus at "Monatchy" Meadows near Mt. Whitney in 1896. For a number of years, this species was thought to have been extirpated, but it was rediscovered in 1970 in Ramshaw Meadow, Tulare County, California. No plants have ever been found at Monache Meadow. Therefore, the 1896 collection was either referenced erroneously as the type collection or has since become extirpated.

Abronia alpina is known from one main population center in Ramshaw Meadow on the Kern Plateau of the Sierra Nevada and from one subpopulation found in adjacent Templeton Meadow. Of the 34 recognizable subpopulations, all but the Templeton Meadow population are found around the borders of Ramshaw Meadow. Much of the Kern Plateau was surveyed during 1984-1989, and it is unlikely that additional surveys will locate new populations. The total estimated area occupied is approximately 6 hectares (15 acres). Population estimates from 1985-1994 range from a low of 69,652 plants in 1986 to 132,215 plants in 1987. Surveys conducted since 1994 indicate that no significant changes have occurred in population size or location. The population fluctuates from year to year without any clear trends.

Abronia alpina is found on arkosic gravel meadow margins between lodgepole pine forest and sagebrush scrub communities surrounding Ramshaw and Templeton Meadows. Elevation ranges between 2,621 to 2,652 meters (m) [(8,600 to 8,700 feet (ft)]. The soils are sterile, porous, subject to extreme diurnal temperature change and easily disturbed. The plant is a small, deeply-rooted perennial, 0.5 to 15.2 centimeters (1 to 6 inches) across.

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Lodgepole pine is becoming established within *Abronia alpina* habitat in some subpopulations. Currently, it appears that in two subpopulations, up to 20 percent of the area potentially occupied by *A. alpina* is now occupied by relatively young (< 25 years) lodgepole pine. In addition, smaller portions of the habitat for seven other subpopulations are occupied by young lodgepole pine. The rate at which encroachment is occurring has not been determined.

The Ramshaw Meadow ecosystem is subject to potential alteration by lowering of the water table due to downcutting of the South Fork of the Kern River (SFKR). The SFKR flows through Ramshaw Meadow, at times coming within 15 m (50 ft) of *Abronia alpina* habitat, particularly in the vicinity of five subpopulations. The habitat occupied by *A. alpina* directly borders the meadow system supported by the SFKR. Drying out of the meadow system could potentially affect *A. alpina* pollinators and/or seed dispersal agents. In Ramshaw Meadow and in other meadow systems within the same watershed, livestock trampling, along with the removal of bank stabilizing vegetation by grazing livestock, has been at least partially responsible for the downcutting of the SFKR.

Established hiker, packstock, and cattle trails pass through *Abronia alpina* subpopulations. Two main hiker trails pass through Ramshaw Meadow, but were rerouted out of *A. alpina*

subpopulations where feasible, in 1988 and 1997. Remnants of cattle trails that pass through subpopulations in several places receive occasional incidental use by horses and sometimes hikers.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

None known.

C. Disease or predation.

Gopher activities may result in significant destruction of *A. alpina*. Whole plants have been known to disappear, possibly either eaten or used for den building. In some areas, soil has been pushed up around gopher burrows completely covering the *A. alpina* plants. *Abronia alpina* is not eaten by cattle or deer, but light grazing by rabbits and gophers has been observed. Ant herbivory also has been observed on some subpopulations.

Disease is not known to be a factor at this time.

D. The inadequacy of existing regulatory mechanisms.

No current protection.

E. Other natural or manmade factors affecting its continued existence.

Subpopulations are subject to trampling by packstock and campers in addition to trampling from use of the trail. Campsites have been removed from four subpopulation locations. Resource crews may have removed other campsites that were unreported. Some of these campsites have occasionally recurred. One campsite adjacent to two subpopulations has resulted in trampling of these subpopulations on occasion. These are all informal campsites, established by users.

Significant trampling of *Abronia alpina* subpopulations by cattle has occurred in the past. Some subpopulations were protected by fencing, while the protection of others was dependent on close adherence to the trailing route. In 2001, the U.S. Forest Service made the decision to discontinue grazing on the Templeton allotment, which includes Ramshaw Meadow, for a period of 10 years.

Due to the extremely limited geographic range of the species, biological factors such as disease, pest outbreak, and random chance events associated with the highly variable climate can pose a serious threat to the species. *Abronia alpina* apparently is slow to recover from disturbance because of reproductive and dispersal limitations, short life span, and high annual fluctuation in population numbers. Non-adaptive forces such as inbreeding depression may also threaten the species when combined with the fragmented distribution of the subpopulations.

Abronia alpina appears to have very poor seed dispersal capability, which may have contributed significantly to the species' rarity. As the anthocarp (fruit) matures, the peduncle (stalk) recurves, plunging the mature fruit beneath the plant, and thereby limiting its means of dispersal. This serves to retain anthocarps on favorable sites, thus reducing the probability for dispersal downslope into meadow and sagebrush habitat where establishment is not possible. However,

this mechanism is also restrictive in that it does not provide any apparent means for dispersal of anthocarps to more distant favorable sites. No dispersal vectors have been identified.

Abronia alpina exhibits a predominantly monocarpic reproductive schedule (one fruiting period during the life cycle), resulting in low fecundity. Monocarpic plants rarely produce more than about 10 flowers in their abbreviated lifetimes.

The fragmented nature of the population may limit gene flow and contribute to poor resiliency. The population is fragmented into several subpopulations by breaks in habitat, such as forested areas or rock outcrops, between the sand flats. It is unclear whether or not these breaks in habitat are substantial enough to limit genetic interchange between subpopulations.

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? _____
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? _____
- c. Is a proposal to list the species as threatened or endangered in preparation? _____
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP: The only known sites of this species are located on land owned by the U.S. Forest Service. Property within the center of Ramshaw Meadow and adjacent to the sand flats supporting *Abronia alpina*, however, is privately owned by Mammoth Meadows Associates.

PRELISTING: This species is the subject of a draft conservation agreement that is being written by Inyo National Forest.

REFERENCES:

Andre, Jim. Botanist, Granite Mountain Preserve.

California Natural Diversity Database, California Natural Heritage Division, Department of Fish and Game.

Dedecker, Mary. Botanist.

Henry, Mary Ann. Species expert.

Nelson, Kathleen. Botanist, Inyo National Forest, Bishop, California.

U.S. Forest Service. 1993. Species Management Guide for *Abronia alpina* Bdg. Inyo National Forest. 30 pp.

_____. 2001. Draft Conservation Agreement *Abronia alpina* Bdg. Alpine sand-verbena. 12 pp.

_____. 1988. Draft Endangerment Status of *Abronia alpina* on the Inyo National Forest, California. Inyo National Forest. 57 pp.

Wilson, Ruth. Species expert.

LISTING PRIORITY (* after number)

THREAT

Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11*
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:

Imminence:

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Steve Thompson March 6, 2003
Acting Regional Director, Fish and Wildlife Service Date

Concur: _____ Date
Director, Fish and Wildlife Service

Do not concur: _____ Date
Director, Fish and Wildlife Service

Director's Remarks:

Date of annual review: February 2003
Conducted by: _____

Comments: _____

