

**SECTION 7 GUIDELINES - Snake River Basin Office**  
*Mirabilis macfarlanei*  
**MacFarlane's four-o'clock (threatened)**

## **I. BACKGROUND**

### **Legal status**

*Mirabilis macfarlanei* (MIMA) was originally listed as endangered in 1979 (44 FR 61912). At the time of listing, only three populations were known from the Snake River and Salmon River canyons in Idaho and Oregon. Threats included livestock grazing, herbicide use, and road/trail construction and maintenance. Listing did not include critical habitat.

Since this species was first listed, additional MIMA populations have been discovered in Idaho and Oregon. In addition, some populations are being actively monitored by the U.S. Forest Service (Hells Canyon National Recreation Area) and the Bureau of Land Management (Cottonwood Resource Area). MIMA was downlisted to threatened on March 15, 1996 (61 FR 10692).

### **Species Description**

MIMA is a long-lived herbaceous perennial with a deep-seated, thickened root. A member of the four o'clock family (Nyctaginaceae), MIMA typically blooms from May through June. The bright pink flowers are conspicuous, up to 25 mm (1 in) long by 25 mm (1 in) wide. The flowers occur in inflorescences which consist of a group of 3 to 7 flowers subtended by a 5-lobed involucre (saucer-shaped bract). The 5-merous flowers are funnel-shaped with a widely expanding limb. Leaves are opposite, somewhat succulent, and broadly lanceolate to ovate.

### **Life History**

Established plants generally start growth in early April. The timing and duration of flowering appears to be linked to precipitation levels. Drought may cause plants to be stunted, and may adversely affect flowering and seed production. Once established, individual plants may survive for decades.

In addition to reproducing by seed, plants reproduce clonally from a thick woody tuber (underground rhizome) that sends out many shoots (collectively called a genet). Daughter plants produced in this manner are known as ramets. Some MIMA populations are comprised of several clones (genets), although small populations may be comprised of only one clone. The size of a ramet can vary greatly, from a single stem with no flowers to ramets with over 200 inflorescences present.

### **Species Distribution/Abundance**

Nine populations of MIMA are currently known -- 2 of these are found in the Snake River canyon area (Idaho County, Idaho and Wallowa County, Oregon), 5 in the Salmon River area (Idaho County, Idaho), and 2 in the Imnaha River area (Wallowa County, Oregon). The total geographic range of the species occupies an area of approximately 30 by 20 miles. The total population size for this species is approximately 1,500 to 3,000 plants (genets) (Figure 1 - MIR).

## **Habitat**

MIMA occurs in grassland habitats that are characterized by regionally warm and dry conditions. Sites are dry and generally open, although scattered shrubs may be present. Plants can be found on all aspects. Slopes may be steep or nearly flat. Soils vary from sandy to talus (consisting of gravel and cobbles) substrate. Known MIMA populations range from approximately 300 to 900 m (1,000 to 3,000 ft) in elevation.

Habitat for MIMA generally consists of bunchgrass communities dominated by *Agropyron spicatum* (bluebunch wheatgrass). Associated native grass species include *Sporobolus cryptandrus* (sand dropseed), *Aristida longiseta* (red threeawn), and *Poa secunda* (Sandberg's bluegrass). Additional species that may be found in MIMA habitat include *Achillea millefolium* (yarrow), *Alyssum alyssoides* (pale alyssum), *Bromus tectorum* (cheatgrass), *Celtis reticulata* (hackberry), *Chrysothamnus nauseosus* (rabbitbrush), and *Rhus glabra* (smooth sumac).

Disturbances such as fire and livestock grazing tend to favor the spread of *Bromus tectorum*, which can eliminate native grassland species. Nearly all sites occupied by MIMA contain *Bromus tectorum*.

Because the existence of high quality grassland habitat is important for the long-term survival of MIMA, management actions should focus on maintaining the native plant community in areas of occupied or potentially suitable habitat. This should include maintaining ecological processes such as natural fire regimes and preserving populations of native invertebrates (e.g., pollinators).

## **Threats**

Road and trail construction and maintenance. All known MIMA populations in Idaho and Oregon are located near existing roads and/or trails, and could be adversely impacted by road or trail maintenance activities. The construction of new roads or trails is also a threat to this species.

Mining. Some MIMA populations are located near gravel mines and material borrow pits. In addition, road construction is often associated with mining activity. Expansion of existing mining operations and development of future operations are a threat to MIMA.

Landslides and flood damage. In 1996 and 1997, significant damage from landslides and flooding events occurred throughout northern and central Idaho, including the Snake and Salmon River canyons in Idaho and Oregon. Activities associated with flood damage repair, such as

maintaining roads, trails, and facilities damaged by landslides or flooding, are a potentially significant threat to MIMA. These activities are often linked to borrow pit development and expansion.

Exotic plant species. Exotic (nonnative) plant species pose a serious threat to MIMA and other native plants since they compete with native species for space, light, water and nutrients. Two of the most invasive exotic species are *Bromus tectorum* (cheatgrass) and *Centaurea solstitialis* (yellow star-thistle).

Livestock grazing. Livestock impact this species directly by trampling or consuming plants, and limiting potential plant height. Some degree of soil erosion and soil compaction is also likely to occur, especially under heavy grazing.

Off-road vehicles. Several MIMA colonies are found within 1/4 mile of existing roads or highways in Idaho and Oregon. Uncontrolled off-road vehicle use is a potential threat to this species on both public and private lands.

Herbicide and pesticide spraying. Spraying vegetation in areas where MIMA occurs could potentially have an adverse effect on this species. At least one population of MIMA is directly adjacent to a highway along the Salmon River where roadside vegetation spraying is routinely conducted. Insect control activities (i.e., pesticide spraying) may adversely affect pollinators of MIMA such as bumblebees (*Bombus* spp.).

Fire. Specific effects of historic and/or current fire regimes on MIMA are unknown. However, fire suppression activities and rehabilitation efforts, including seeding with non-native species, are a potential threat to this species.

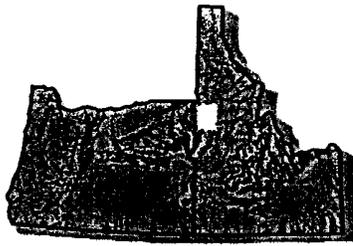
Trampling. Since most populations of MIMA are located near hiking or recreational trails, trampling by humans may be a threat to this species.

## **Land Ownership**

Populations of MacFarlane's four-o'clock occur on land administered by the BLM (Coeur d'Alene District, Cottonwood Resource Area) and Wallowa-Whitman National Forest (Hells Canyon National Recreation Area). Additional populations are found on private land in Idaho and Oregon.

## **Recovery Plan**

An agency review draft revised recovery plan has been developed by the SRBO, and is currently under review by the FWS Regional Office. This is the first revision of the original MIMA recovery plan, completed in 1985.



LOCATION MAP

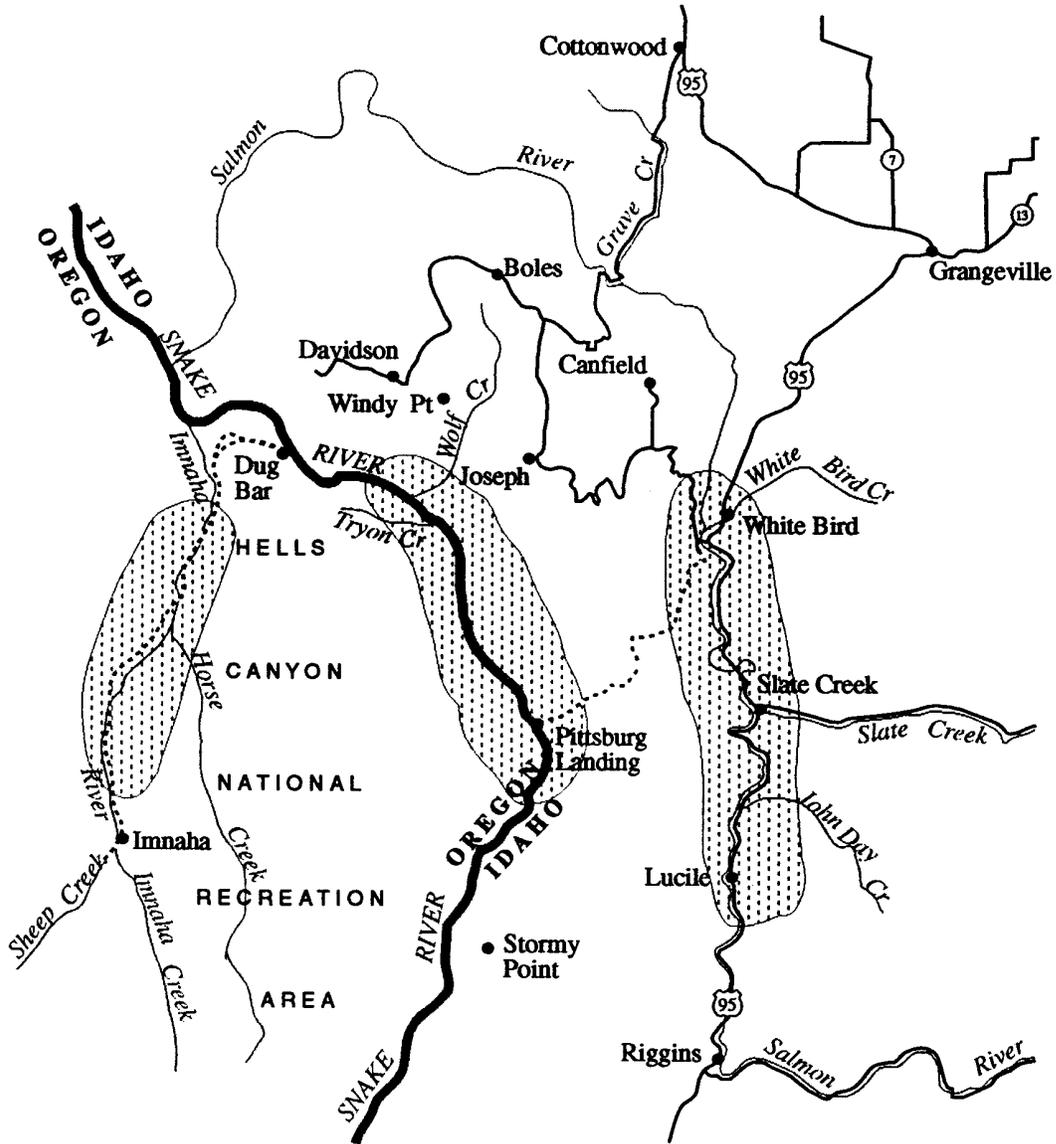


Figure 1. Distribution of MacFarlane's four - o'clock.

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U.S. Fish and Wildlife Service. 1979. Final rule to list *Mirabilis macfarlanei* as endangered. Federal Register 44 (209): 61912-61913.

U.S. Fish and Wildlife Service. 1985. Recovery plan for the MacFarlane's four-o'clock, *Mirabilis macfarlanei*. U.S. Fish and Wildlife Service, Portland, Oregon. 47 pp.

U.S. Fish and Wildlife Service. 1996. Final rule to reclassify *Mirabilis macfarlanei* from endangered to threatened status. Federal Register 61(52): 10693-10697.

## Contacts

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## II. GUIDELINES - Protocol for Evaluating Project Effects

Threat: Habitat degradation by the invasion of weedy species, usually resulting from previous and/or current grazing by livestock.

Resolution: Control exotic species in areas where occupied or potential habitat for MIMA occurs.

Apply specific management practices in allotments to reduce grazing pressure to MIMA habitat (occupied or potential habitat). For example, reduce impacts from livestock grazing by moving animals and/or fencing areas to protect the species. Change season of livestock use (e.g., graze livestock in the fall rather than spring to avoid grazing pressure during the active growing season for the species).

In addition, all areas that are (or will be) grazed on Federal lands containing suitable habitat for MIMA should be surveyed for this species (see attached Rare Plant Survey Guidelines for survey protocol).

Threat: Prospecting, mining, and borrow pit development/expansion.

Resolution: Reduce and/or reroute vehicular travel over claims. Inform contractors and miners of the species location (as appropriate), and their responsibilities for listed species protection.

Federal agencies should ensure that their activities (and activities that are permitted by such agencies) do not directly OR indirectly impact habitat (including occupied or suitable unoccupied habitat) for MIMA. All areas that may be impacted (that contain suitable habitat for MIMA) should be surveyed for this species (see attached Rare Plant

Survey Guidelines for survey protocol).

Threat: Road and/or trail construction and maintenance.

Resolution: Avoid road and trail development in areas containing occupied or potentially suitable, unoccupied habitat to reduce impacts from construction and road/trail maintenance. Conduct surveys in occupied and potentially suitable habitat prior to construction, maintenance, or other ground disturbing activities (see attached Rare Plant Survey Guidelines for survey protocol).

**Survey guidelines for Regular (i.e., non-emergency) consultation:**

1. Surveys should be conducted prior to ground disturbing activities in potentially suitable (i.e., grassland) habitats that are less than 3,000 ft (1,000 m) elevation in Idaho and Nez Perce counties.
2. See attached Rare Plant Survey Guidelines for additional survey protocol.

**Survey guidelines specific to Emergency consultation only:**

1. Contact Federal and state agencies for information on location of MIMA populations for flood-related projects and associated activities in Idaho and Nez Perce counties. If the proposed work falls within 5 miles of any known MIMA population or site, a survey of the entire project area should be conducted before ground disturbing activities begin.
2. See attached Rare Plant Survey Guidelines for additional survey protocol.