

ATTACHMENT SS2

*REGION 2 SENSITIVE SPECIES EVALUATION FORM*

Species: ( <i>Calochortus flexuosus</i> S. Watson / Straggling mariposa lily /CAFL – USDA PLANTS)			
Other common names include weak-stemmed mariposa lily and winding mariposa lily.			
Criteria	Rank	Rationale	Literature Citations
1 Distribution within R2	B	<p><i>Calochortus flexuosus</i> grows in southwestern Colorado. It has been reported from Montezuma, San Miguel and San Juan Counties. It is found on BLM, US Forest Service and Tribal lands.</p> <p>It is awarded a B rank because it has a patchy distribution and the “habitat exists primarily as patches, some of which are small or isolated to the degree that species interactions are limited by movements between patches. “ It is estimated that “local sub-populations in most of the species’ range interact as a metapopulation or patchy population, but some patches are so disjunct that sub-populations in those patches are essentially isolated from other populations.”</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li>• Occurrence data from: The Colorado Natural Heritage Program provided by Michael Menefee, September 16, 2002; The San Juan College Herbarium records provided by Ken Heil September 2002; The University of Colorado Herbarium provided by Nan Lederer September 2002; The Colorado State University Herbarium records provide by J. Rowens Ackerfield, September 2002.</li> </ul>
2 Distribution outside R2	B	<p><i>Calochortus flexuosus</i> grows in southwestern Colorado, southern Utah, New Mexico, Arizona, Nevada and southeastern California (Baldwin et al. 2002, Kearney et al. 1960, Welsh et al. 1993). It is designated a “Salvage Restricted Protected Native Plant” by the Arizona Dept. of Agriculture because it is perceived “subject to damage by theft or vandalism”.</p> <p>A “B rank is awarded because it has a limited distribution outside the Rocky Mountain Region. The confidence in the rank is “low”, not because there is doubt about its range but because interpretation of the criteria may change the rank assignment.</p> <p>The occurrences in Region 2 represent the edge of its eastern range and are not disjunct but rather “semi-contiguous” with the patchy distribution it exhibits from south-eastern California through northern Arizona and southern Utah to south-western Colorado.</p> <p>Confidence in Rank LOW</p>	<ul style="list-style-type: none"> <li>• Baldwin B.G. et al. 2002. The Jepson desert manual. University of California Press, Berkeley, California.</li> <li>• Kearney, T.H., R.H. Peebles et al. 1960. Arizona Flora. University of California Press, Berkeley, California.</li> <li>• Owenbey, 1940. Monograph of <i>Calohortus</i>. Annals of the Missouri Botanical Garden Vol. 27. Missouri Botanical Garden St Louis, Missouri.</li> <li>• Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins.1993. A Utah Flora. 2<sup>nd</sup> ed. Brigham Young University, Provo, Utah.</li> </ul>

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3 Dispersal Capability	B	<p>The plant has an erect, 3-angled 3-4 cm long capsule with many seeds in 2 rows per chamber (Cronquist et al. 1994). No data is available on dispersal mechanisms although the distribution of widely scattered individuals among large populations suggests that dispersal mechanisms are effective. Dispersal restrictions are not well known.</p> <p>A “B-rank” is awarded as it is likely it disperses only through suitable habitat.</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li>Cronquist, A., A.H. Hilmgren, N.H. Holmgren, JL Reveal, PK Holmgren. 1994. Intermountain Flora – vascular plants of the Intermountain West, USA.. Vol. 6. New York Botanical Garden, Bronx, NY.</li> </ul>
4 Abundance in R2	B	<p>There are at least 21 occurrences within Colorado although 5 of the observations were made more than 35 years ago (see occurrence data sources in “Criteria 1”.) Relatively few of the occurrences are on USFS land. Occurrence size ranges from as few as 4 individuals in an isolated patch to an estimated 3000 individuals scattered over 1500 acres (Colorado Natural Heritage Program element occurrence records, 2002).</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li></li> </ul>
5 Population Trend in R2	D	<p>There is little quantitative data on which to estimate a trend.</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li></li> </ul>
6 Habitat Trend in R2	B	<p><i>Calochortus flexuosus</i> grows in generally dry, rocky sites in creosote-bush, blackbrush, sagebrush scrub or, less commonly, in pinyon juniper woodland. It grows in sandy and clay soils. ORV recreation, livestock grazing, and extractive industry activity have all impacted the habitat. In addition, urban development has also significantly increased within the last decade in its habitat in south-eastern Colorado. Another concern mentioned in Colorado Natural Heritage Program element occurrence records (2002) is the increase in invasive, exotic, weed species. The US Forest Service land may not have the same severity of threats faced by other areas. Habitat quality requirements are not strictly defined.</p> <p>A “B rank” is awarded because there appears to be adequate amounts of suitable or potential habitat in the foreseeable future although a case can be made that it is not unchanged with regards to quality.</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li></li> </ul>

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Criteria	Rank	Rationale	Literature Citations
7 Habitat Vulnerability or Modification	B	<p>In Colorado, it is especially abundant in Mancos shale and Morrison formation that is heavily impacted by oil and gas extraction activity in the Four Corners region. Interestingly, evidence suggests it may grow in areas impacted by other resource extractive industries as it was also reported near a mine in the Eastern Mohave Desert (Schweich 2002). Colorado Natural Heritage Program element occurrence records indicate many of the occurrences are currently, as well as potentially threatened by ATV, ORV and other traffic, grazing and the potential for future development.</p> <p>A "B rank" is awarded as the habitat appears somewhat vulnerable.</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li>Schweich, T. 2002. Ecological sites along Excelsior Mine Road. Internet website: <a href="http://www.schweich.com/caexcelsiorminerdA.html">http://www.schweich.com/caexcelsiorminerdA.html</a> . Prepared 7/13/2002. [Accessed September, 2002]</li> </ul>
8 Life History and Demographics	B	<p>The bulbs of <i>Calochortus</i> are said to be very palatable and nutritious (Kershaw et al. 1998). Bulbs were eaten by native Americans (Moermann 1998). Therefore, it is likely there is some predation of the bulbs by rodents and other wildlife that may have an impact on populations under certain circumstances. This is a perennial species and so the bulb stage in the life history is likely particularly important. Therefore, a high degree of disturbance and/or predation may be detrimental. The importance of seed production and seedling recruitment has not been well defined.</p> <p>A "B rank" is awarded because the species has life history characteristics that suggest populations will have an intermediate ability to respond to disturbance</p> <p>Confidence in Rank Medium</p>	<ul style="list-style-type: none"> <li>Kershaw, L., A. MacKinnon, J. Pojar. 1998. Plants of the Rocky Mountains. Lone Pine Publishing, Vancouver, Canada.</li> <li>Moerman, D.E. 1998. Native American Ethnobotany. Timber Press, Inc, Portland, OR.</li> </ul>
Evaluator(s): Juanita A. R. Ladyman, Ph.D.			Date: September 17, 2002

**National Forests in the Rocky Mountain Region where species is KNOWN (K) or LIKELY (L)<sup>1</sup> to occur:**

<sup>1</sup> Likely is defined as more likely to occur than not occur on the National Forest or Grassland. This generally can be thought of as having a 50% chance or greater of appearing on NFS lands.

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Species Name: *Calochortus flexuosus* S. Watson

<u>Colorado NF/NG</u>		<u>Kansas NF/NG</u>		<u>Nebraska NF/NG</u>		<u>South Dakota NF/NG</u>		<u>Wyoming NF/NG</u>	
Known	Likely	Known	Likely	Known	Likely	Known	Likely	Known	Likely
Arapaho-Roosevelt NF		Cimarron NG		Samuel R. McKelvie NF		Black Hills NF		Shoshone NF	
White River NF				Halsey NF		Buffalo Gap NG		Bighorn NF	
Routt NF				Nebraska NF		Ft. Pierre NG		Black Hills NF	
Grand Mesa, Uncompahgre, Gunnison NF	L			Ogalala NG				Medicine Bow NF	
San Juan NF	K							Thunder Basin NG	
Rio Grande NF	L								
Pike-San Isabel NF									
Comanche NG									
Pawnee NG									

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