

**U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Erigeron lemmonii*

COMMON NAME: Lemmon fleabane

LEAD REGION: Region 2

INFORMATION CURRENT AS OF: April 2010

STATUS/ACTION:

Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: May 11, 2004

90-day positive - FR date:

12-month warranted but precluded - FR date:

Did the petition requesting a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? Yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

Higher priority listing actions, including court-approved settlements, court-ordered statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for Lemmon fleabane. We continue to monitor Lemmon fleabane populations and will change its status or implement an emergency listing if necessary. The "Progress on Revising the Lists" section of the current Candidate Notice of Review (CNOR) provides information on listing actions taken during the last 12 months.

Listing priority change

Former LP:

New LP:

Date when the species first became a Candidate (as currently defined): 1993

Candidate removal: Former LP:

A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or

continuance of candidate status.

- U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
- F – Range is no longer a U.S. territory.
- I – Insufficient information exists on biological vulnerability and threats to support listing.
- M – Taxon mistakenly included in past notice of review.
- N – Taxon does not meet the Act’s definition of “species.”
- X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Plant, Asteraceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Cochise, Maricopa, Graham, and Pima counties, Arizona.

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Cochise County, Arizona

LAND OWNERSHIP: All known locations of the plant are on the Fort Huachuca Military Reservation (Fort Huachuca); however, some may also occur on the Coronado National Forest. Based on survey work completed in 2006, there is an estimated area of 1 square kilometer (km) that supports Lemmon fleabane on Fort Huachuca (Malusa 2006, p. 9). To date, no populations of this species have been found on the Coronado National Forest, but some suitable habitat remains to be surveyed.

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LEAD FIELD OFFICE CONTACT: Mima Falk, Arizona Ecological Services Field Office, Tucson Sub-office, 520-670-6150 ext. 225, Mima_Falk@fws.gov

BIOLOGICAL INFORMATION:

Species Description: *Erigeron lemmonii* (Lemmon fleabane) is a perennial species with a prostrate (grows flat to the ground, in this case, the rock face) form. The species produces flowers from August through October (Arizona Rare Plant Committee 2001, pages not numbered). The reproduction and lifespan of Lemmon fleabane is currently unknown.

Taxonomy: *Erigeron lemmonii* was described in 1883 by Asa Gray. In 1947, Cronquist published a revision of the *Erigeron* species north of Mexico and included *E. lemmonii* as a valid taxon. In 1989, Nesom described a new species of *Erigeron* from Arizona (*E. piscaticus*). Specimens that had originally been placed by Cronquist in *E. lemmonii* were reviewed by Nesom and determined to be morphologically different, resulting in the description of the new species. The result was that *E. lemmonii* remained a valid taxon, but was limited in distribution to the Huachuca Mountains of southeast Arizona. Therefore, after careful review of the available

taxonomic information, we conclude that *E. lemmonii* is a valid taxon.

Habitat: This species occurs in crevices and ledges of west-, south-, and north-facing limestone cliffs and on faces of large boulders in canyon bottoms within the pine-oak woodland association at elevations from 1920 to 2225 meters (m) (6300 to 7300 feet (ft)) (U.S. Fish and Wildlife Service (Service) 1992, p. 41). Plants are rooted in rock crevices. The plants are associated with Escabrosa limestone, a type of limestone that forms resilient cliffs (Malusa 2006, p. 14).

Historic and Current Range and Status: Historically, this species was believed to occur in Cochise, Maricopa, Graham, and Pima counties in Arizona. Historical locations from Maricopa and Graham counties in Arizona have now been attributed to *Erigeron piscaticus* (Nesom 1989, p. 305), while the collections from 1943 and 1962 from Pima County, Arizona (Santa Catalina Mountains, Coronado National Forest) have not been verified as *Erigeron lemmonii*. The type specimen was collected in Tanner's Canyon of the Huachuca Mountains. There is no canyon in the Huachuca Mountains with this name today, but personnel from Fort Huachuca state that Tanner Canyon refers to Garden Canyon on Fort Huachuca. Scheelite Canyon is a tributary of Garden Canyon, and it is possible that the original collection was made from Scheelite Canyon (Stone 2005, p. 1).

Currently, this species is only known from one site, Scheelite Canyon, on Fort Huachuca on Department of Defense (DOD) lands (Warren *et al.* 1991, p.5) ([Figure 1](#)). Scheelite Canyon is in Cochise County in southeastern Arizona. All of the population remains within Fort Huachuca boundaries (Malusa 2006, p. 8). Areas of suitable habitat have been surveyed in the Huachuca Mountains (Miller Peak, Carr Peak, Carr Canyon, Huachuca Peak, Garden Canyon, Ramsey Canyon, Brown Canyon, Bear Canyon, Scotia Canyon, and Huachuca Canyon), within the Coronado National Forest and Fort Huachuca. Surveys were also conducted in the Santa Rita Mountains, Coronado National Forest, and in Sonora, Mexico (Sierra Los Ajos and the Sierra San Luis) (Warren *et al.* 1991, p. 6). It remains a sensitive species on the Coronado National Forest because, although there have been no collections, there have been reports of species presence from Huachuca Peak in the Huachuca Mountains and Temporal Gulch in the Santa Rita Mountains.

In Scheelite Canyon, the plants are restricted to a few rock faces. During spring of 1991, approximately 400 plants were counted in Scheelite Canyon (Warren *et al.* 1991, p. 9). Mills Tandy (botanist working on Fort Huachuca) counted approximately the same number in the late 1990s (Stone 2005, p. 1). Since the plants occur on rock faces and many are not accessible from the ground, it is difficult to determine if clumps represent one plant or many, thus the estimate of clumps/individuals should be taken as rough estimates of actual numbers. Based on this monitoring information, the population of *Erigeron lemmonii* seemed stable during the 1990s. The population in Scheelite Canyon was re-inventoried in 2006 and 462 plants were found. In addition, surveys in adjacent areas (other cliff areas in the canyon) of Escabrosa limestone extended the range of the known population, roughly doubling the size. The habitat is all contiguous; there are no more than 50 m (164 ft) between any two plants (Malusa 2006, p. 9). The habitat ranges over an area of approximately a kilometer square and the population is now estimated to support 954 individuals (Malusa 2006, p. 9).

THREATS

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

High intensity wildfire: Currently, Scheelite Canyon supports a heavy fuel load and the likelihood of ignition and spread is high (Stone 2005, p. 1). The ignition sources are lightning or human-caused. There have been no tree-ring studies documenting fire history for Scheelite Canyon specifically, but there is a fire history study for near-by Garden Canyon (Danzer *et al.* 1996, pp. 265-270). Fire history follows the general pattern established for southwestern ponderosa pine forests; there were frequent wildfires before the 1880s and much fewer after that. The last stand-replacing fire in the Huachuca Mountains was in 1983. The lack of recent fire activity, along with the current drought conditions, has produced fuel conditions that would support a very intense fire in the Huachuca Mountains. The area is used by undocumented human traffic from Mexico and fire rings have been documented in Scheelite Canyon. In the last few years, several fires in the Huachuca Mountains have been associated with undocumented immigrants. In summary, there is an accumulated fuel load in Scheelite Canyon from lack of recent fire and drought-stressed trees that could be ignited at any time from natural or human-caused ignitions. An intense wildfire in the narrow canyon would have devastating effects to this species. A high intensity burn would kill plants, either by burning or dessicating (drying out) the plants. There may be non-lethal effects to plants, including reduced vigor and reproductive output from heat stress. It is likely that a high intensity fire would affect a portion of the population, but plants higher on the cliff faces would not be affected. It is suspected that when fires occurred at more regular intervals and burned at lower intensities there was little to no effect on *Erigeron lemmonii* due to its location on cliffs. Fort Huachuca is developing a fire plan, in conjunction with adjacent land management agencies, but Scheelite Canyon is not targeted for thinning or prescribed burns due to the high cost of working in this narrow canyon (Stone 2005, p.2).

Recreational rappelling: Fort Huachuca does not allow this type of recreational activity, which is basically rock climbing up the cliff face and then rappelling down the cliff, using a rope. This activity could result in the death or injury of plants by kicking the plants or dislodging them from the crevices in which they are rooted. Chunks of rock may be dislodged and fall to the ground, possibly displacing plants or removing habitat for future germination. Although Fort Huachuca does not authorize this type of activity, it is possible that someone could do this without Fort Huachuca personnel being aware of it because Fort Huachuca is open for hiking, bird watching, and other recreational activities. The cliffs are not visible from the road or the trailhead so it would be fairly easy to hike into the canyon and not be visible. Impacts to individuals or groups of plants from recreational rappelling are possible, but not likely to result in population level effects.

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

This is not known to be a factor threatening the *Erigeron lemmonii*.

C. Disease or predation.

This is not known to be a factor threatening the *Erigeron lemmonii*.

D. The inadequacy of existing regulatory mechanisms.

This species is covered by the Arizona Native Plant Law, which prohibits collection without obtaining a permit and moving of plants off of private property without contacting the Arizona Department of Agriculture. The Arizona Native Plant Law does not protect the habitat. The species is designated by the U.S. Forest Service as a sensitive species. The Coronado National Forest continues to evaluate projects and survey in areas of suitable habitat that may be affected by proposed land management actions. However, no current regulatory mechanism addresses the plant's primary threats of wildfire and small population size.

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

Because it occurs as a single population, this species is vulnerable to extinction by a natural or human-caused catastrophic event (Menges 1991, p. 46). For example, a large rockfall (human-caused or natural) could displace many individuals or an earthquake could change the flow of water in such a way that the plants no longer receive moisture in the rock cracks where they are rooted. If the plants are obligate out-crossers (they need to receive pollen from different plants in order to produce fertile seed) and the pollinator necessary for pollen transport is eliminated, the population would be unable to reproduce and would not be viable over the long-term. If there were an extended drought (more than 20 to 50 years), species rooted in rock cracks, with very little soil to capture available moisture, would likely die.

Additionally, the population may be experiencing genetic consequences often associated with small, isolated populations. The ability of a species to persist over time is related, in part, to genetic variation in a population, which provides the basis of adaptation to changing environments. The greater the heterozygosity (number of different types of alleles) present, the higher the probability that at least some plants in a population will be able to adapt to changing circumstances (Huenneke 1991, p. 36; Reed and Frankham 2003, p. 230). As populations become less varied in their genetic make-up, the ability of the populations to adapt to changing environmental factors, such as changes in the local conditions, may decrease. However, for this genetic consequence to be realized, the species must have once been more widespread and more varied in its genetic make-up. While there is no information on the historical distribution of this species, it may have been more widespread in the Huachuca Mountains and surrounding mountains. If this is the case and Scheelite Canyon is the only remaining population then there may be legitimate concerns regarding its population genetics and its ability to persist into the future.

Virtually any habitat change is a serious threat to the species because it only occurs as a single population. Due to its vertical cliff face habitat, many of the threats typical of other southwest desert species (e.g., grazing and development) are unlikely. The threats to the species are from high intensity wildfire, recreation, and small population size.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED: There are no specific management or conservation actions for this species, except for periodic monitoring in Fort Huachuca's Integrated Natural Resource Management Plan. The Coronado National Forest's Land and Resource Management Plan has no specific conservation or management actions for this species, except the general standard and guidelines pertaining to sensitive species (e.g., survey and evaluate the effects of land management activities on the species). No prelisting activities are underway at this time, but we funded a section 6 project that updated the status of the species and developed a long-term monitoring plan. The work was completed in November 2006. Five permanent monitoring plots have been established in Scheelite Canyon (Malusa 2006, p. 3). We are in the process of developing a candidate conservation agreement with Ft. Huachuca for *Erigeron lemmonii*. Once the agreement is completed, and threats are ameliorated, we hope to remove this species from the candidate list.

SUMMARY OF THREATS: The main threat to the habitat and plant population in Scheelite Canyon is from high intensity wildfire. There has been a lack of recent fire activity in the general area, and now fuel loads have increased, both from lack of fire and drought-stressed trees. Ignition sources are present from yearly lightning strikes and the increase in human traffic in the area from undocumented immigrants. A high intensity fire in Scheelite Canyon would likely affect a portion of the population, especially plants lower on the cliff, which may be burnt or severely desiccated. Plants at the very top of the cliff may not be exposed to as much heat from the fire, and may suffer only from heat stress or being partially burnt. Another serious threat for this species is its small, isolated population size, making it vulnerable to extirpation from a stochastic event. Extended drought, changes in water flow, a large rock fall, and pollinator extermination are examples of stochastic events that would adversely affect the long-term viability of the species by reducing reproductive output and death of a large number of individuals. Recreational rappelling, a minor threat, could modify habitat and injure or destroy plants. We believe that the threats are significant and endanger the long-term viability of this species. We find that this species is warranted for listing throughout all of its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status:

___ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES: The fire danger for the population in Scheelite Canyon needs to be addressed in the fire management plan for Fort Huachuca. Efforts should be prioritized for reducing the threats of catastrophic wildfire in Scheelite Canyon. The completion of the conservation agreement for this species is a high priority for Fort Huachuca and the Service.

LISTING PRIORITY

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: The species is represented by a single population in one canyon (Scheelite) in southeast Arizona on Fort Huachuca. A single population is very vulnerable to extinction by natural stochastic events or human-caused events (e.g., rock fall, wildfire, and extended drought). The species occurs in an area where the risk of wildfire is considered high, but the threats to the overall population are considered relatively low. Plants near the ground may be affected, but not all of the population would be equally affected. Therefore, the magnitude of the threat is considered moderate.

Imminence: There is a high probability of wildfire occurring in Scheelite Canyon, where the single population of this species occurs. Because of the high risk of wildfire occurring in Scheelite Canyon and the continuing drought, the threats to this species are considered on-going and therefore, imminent.

X Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? Yes.

Is Emergency Listing Warranted? No. *Erigeron lemmonii* is protected by the Arizona Native Plant Law and is designated by the U.S. Forest Service as a sensitive species. Furthermore, it occurs on Fort Huachuca, where protective measures have been taken to protect this species (recreational rappelling).

DESCRIPTION OF MONITORING: Through the 1990s, Fort Huachuca conducted periodic

sites visits and verified that the population supported approximately the same number of individuals (400), indicating population stability. Since the late 1990s, visits to the population had not occurred until 2006. Not only was the population reassessed, but additional survey work was completed in suitable habitat. As a result, more plants were found in Scheelite Canyon. In addition, five permanent photo monitoring plots were established. This species occurs on difficult terrain (cliff faces) and it was difficult to devise a monitoring technique that would provide meaningful biological information and be repeatable. Photos points were chosen because: 1) the plants/clumps seem to be long-lived and do not change positions on the rock face, 2) the photo points can be easily located by Global Position System coordinates, and 3) the methodology is repeatable and relatively inexpensive. Fort Huachuca wanted a monitoring protocol that would assess the status of the population without endangering the life of the personnel assigned to the task (i.e., climbing up the steep rock face to visit individual clumps). We are working with Fort Huachuca staff to establish the monitoring schedule and work on the conservation agreement for this species. An internal draft conservation agreement was prepared in 2008 and we hope to finalize the agreement in 2010.

COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: None

Indicate which State(s) did not provide any information or comments: The Arizona Department of Agriculture (the agency that manages plants in the state) reviewed this form and had no comments. This species is not in Arizona's Comprehensive Wildlife Plan because the Arizona Department of Game and Fish has no authority to manage plants.

Lemmon Fleabane Candidate

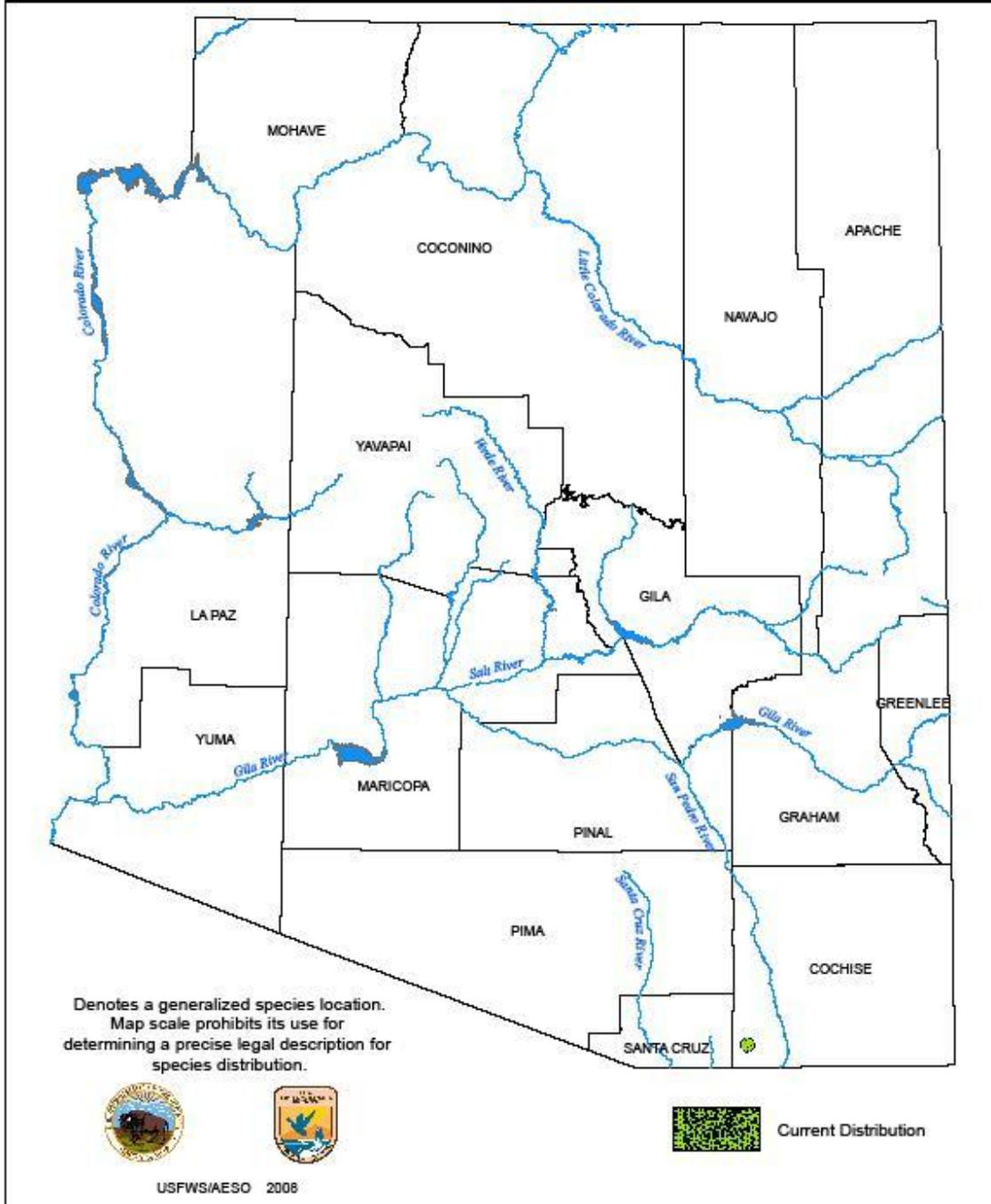


Figure 1. Distribution of Lemmon fleabane.

LITERATURE CITED

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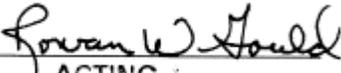
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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:  May 21, 2010
Acting Regional Director, Fish and Wildlife Service Date

Concur:  October 22, 2010
ACTING :
Director, Fish and Wildlife Service Date

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

Director's Remarks:

Date of annual review: April 2010
Conducted by: Mike Martinez