

1 CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Chorizanthe parryi* var. *fernandina*

COMMON NAME: San Fernando Valley spineflower

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2004

STATUS/ACTION:

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: December 14, 1999; February 29, 2000

90-day positive - FR date: _____

12-month warranted but precluded - FR date: _____

Is the petition requesting a reclassification of a listed species?

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP: 3

New LP: 6

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: Polygonaceae (buckwheat family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: California

CURRENT STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: California

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

LEAD FIELD OFFICE CONTACT: Ventura Fish and Wildlife Office, Rick Farris (805) 644-1766

BIOLOGICAL INFORMATION:

Chorizanthe parryi var. *fernandina* was thought to be extinct (Reveal and Hardham 1989). This taxon was collected in the late 1800s and early 1900s from Los Angeles County, near the city of Santa Ana in Orange County, and an unspecified area in San Bernardino County. The majority of the historical collections of this taxon from the greater Los Angeles metropolitan area were made in areas where urban, agricultural, and industrial development have replaced native habitats (Reveal and Hardham 1989). Prior to the disclosure of its rediscovery at Ahmanson Ranch (see below) in the late spring of 1999, the most recent collection was made in 1929 from Castaic in Los Angeles County.

Chorizanthe parryi var. *fernandina* is known historically from California in the area of Elizabeth Lake and Castaic, south through the San Fernando Valley in Los Angeles County, to near Santa Ana in Orange County, and from a single location on the coastal side of the mountains in San Bernardino County. The historical collections may be divided into 10 localities in Los Angeles County, one locality in Orange County based on specimens collected in 1902, and a generalized locality in San Bernardino County based on a specimen collected in 1876 (Goodman 1934; Reveal and Hardham 1989).

Based upon historical collections, the species occurred in sandy to gravelly soils, often in washes, and mostly in coastal sage scrub (Reveal 1979). Apparently, *Chorizanthe parryi* var. *fernandina* was also collected in some areas with relatively deep soils in coastal sage scrub (Glenn Lukos & Associates 1999). Contrary to some of the historical data, more recent information from investigations conducted on the site of the plant's rediscovery indicates that it occurs in sparsely vegetated areas with thin or highly mineralized soils (i.e., low organic content) (Sapphos Environmental 2001a). The conditions under which *Chorizanthe parryi* var. *fernandina* is able to persist are most likely due to the decreased competition from native and nonnative plants on thin soils, where other plants cannot become established. *Chorizanthe parryi* var. *fernandina* and related annuals do not fare well if shaded by taller plants or forced to compete for water and nutrients (McGraw and Levin 1998). The invasion of nonnative grasses and weeds in the last few decades, which grow profusely in deeper or disturbed soils, may explain the disappearance of *Chorizanthe parryi* var. *fernandina* from some historical areas and the current observation of the species primarily on thinner, mineralized soils (Sapphos 2001a). Also, of the 12 historical occurrences, the sites in San Bernardino, Orange, and Los Angeles Counties no longer support suitable habitat for *Chorizanthe parryi* var. *fernandina* as those areas have been extirpated by urbanization (Reveal and Hardham 1989; Schierenbeck 1995; California Native Plant Society 2001).

Studies of the pollination ecology of *Chorizanthe parryi* var. *fernandina* have been conducted (Sapphos Environmental 2002). The report indicates that the flowers are most often visited by ants (*Dorymyrmex pyramicus*), and that this is consistent with the flower type (i.e., other ant-pollinated flowers are small with low nectar yield). However, ants are not efficient pollinators, and the rate of fruit set measured by the researchers was high, which would indicate another, more effective pollinator was visiting the plants. The study revealed that honeybees (*Apis mellifera*) showed a strong constancy (carrying pollen of one plant species) for *Chorizanthe parryi* var. *fernandina* and visited the flowers fairly often (Sapphos Environmental 2002). Honeybees were the second most common visitors to the flowers of *Chorizanthe parryi* var. *fernandina*, followed by another ant (*Solenopsis xylonii*), and two beetles (*Dasytinae* sp. and *Zabrotes* sp.). The results of these pollination studies have implications for the conservation of

Chorizanthe parryi var. *fernandina* as the continued pollination, seed production, and germination of the plant will rely upon a healthy, mostly native, insect community that cannot exist in the face of urbanization and competition from non-native ants, such as the Argentine ant (*Linepithema humilis*), that often accompany human development.

The plant currently is known from two disjunct localities: the first is in the southeastern portion of Ventura County on a site known as Ahmanson Ranch, and the second is in an area of southwestern Los Angeles County known as Newhall Ranch.

At the Ahmanson Ranch site in 1999, when *Chorizanthe parryi* var. *fernandina* was first rediscovered, biologists estimated the number of individual plants¹ at between 5,000 and 10,000 (LSA Associates 1999). Further investigation that same year revised the number of individual plants to 23,000 over almost 6 acres (ac) (2.4 hectares (ha)) (Sapphos Environmental 2001a). In 2000, new populations were discovered and the number of individual plants, estimated at approximately 1.5 million over more than 10 ac (4 ha), was greater than in 1999 as a result of favorable weather during the winter and spring of 1999-2000 (Sapphos Environmental 2001a). In 2001 surveys, the *Chorizanthe parryi* var. *fernandina* population occupied approximately 12.8 ac (5.2 ha) of habitat within the study areas and consisted of approximately 1.8 million individuals (Sapphos 2001c). Our current information indicates that the Ahmanson Ranch population is composed of 18 sub-populations of various sizes, all located within 0.25 miles (mi) (0.49 kilometers (km)) of each other, and occupying approximately 12.9 ac (5.2 ha) (Sapphos Environmental 2001b; Sapphos Environmental 2003).

The Newhall Ranch population of *Chorizanthe parryi* var. *fernandina* was discovered in 2000. It is divided into six distinct sub-populations, with smaller satellite occurrences near the larger sub-populations (Newhall Land & Farming 2004). The total area within which the species occurs on Newhall Ranch is approximately 16 ac (6.5 ha), and the number of individual plants was estimated in 2003 to total approximately 6 million (Newhall Land & Farming 2004). In contrast to the population at Ahmanson Ranch, the Newhall Ranch plants are spread over a large area, with the smaller sub-populations scattered and farther apart. Like the Ahmanson Ranch population, the plants at Newhall Ranch are found mostly on thin soils in open areas where there is no competition from other plants. No detailed studies of this population have been reported to the Service.

THREATS:

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

Prior to its rediscovery at Ahmanson Ranch in 1999, 20 collections of *Chorizanthe parryi* var. *fernandina* were made by 16 individuals at 12 locations, with the most recent from the vicinity of Castaic in 1929 (Reveal and Hardham 1989). During the last few decades, numerous field botanists had been unable to locate the species, even where historically recorded, largely due to

¹ Counts of individuals of an annual plant species are somewhat meaningless. The number of individuals can fluctuate widely from year-to-year, sometimes not germinating at all if conditions are too dry. The areal extent or distribution of the populations is a more appropriate measure of the species' population size.

the alteration and loss of suitable habitat (Reveal and Hardham 1989). The best evidence we have suggests that *Chorizanthe parryi* var. *fernandina* is extirpated from all of the 12 general areas where it was originally collected. Chatsworth Park, site of the 1901 collection, is approximately 6 mi (10 km) from the Ahmanson Ranch site where urbanized Los Angeles County borders the more rural lands of southeastern Ventura County

The previous owner of Ahmanson Ranch, Washington Mutual, had attained approval for a development project in 1992, which was re-certified by the county of Ventura on November 24, 1992 (County of Ventura 2002). The approved development would have destroyed approximately 75 percent of the total occurrences of *Chorizanthe parryi* var. *fernandina* on the site. We were helping the developer redesign its project to protect more of the plants until August 2003, when the State of California announced it had offered to purchase the Ahmanson Ranch property. Washington Mutual accepted the State's offer, and the land fell into public ownership in November 2003. It is now under the auspices of the Santa Monica Mountains Conservancy; a joint powers authority operated by the State to conserve lands within the Conservancy's sphere of influence. We believe the direct threats to the species from the former Ahmanson Ranch development plan have been eliminated, and we are working with the new landowners to manage the site for the benefit of *Chorizanthe parryi* var. *fernandina*.

The Newhall Ranch population of *Chorizanthe parryi* var. *fernandina* is within the footprint of a proposed development of more than 20,000 homes, commercial structures, and infrastructure. The land was recently purchased from Newhall Land and Farming Company by Lennar Homes and the new owner intends to proceed with the development. The proposed project has been approved by the county of Los Angeles, but some legal hurdles from opponents remain before the project can begin. The California Department of Fish and Game (CDFG) was notified by an anonymous source in 2002 that the previous landowner (Newhall Land and Farming) had destroyed undisclosed occurrences of the plant on its property (the species is listed as endangered under the California Endangered Species Act (CESA) and is afforded some protection under that act). An investigation by CDFG wardens discovered numerous remains of *Chorizanthe parryi* var. *fernandina* on the property in areas that had been graded in preparation for an agave farm (Liotta 2002). The District Attorney chose not to pursue prosecution under CESA.

Following the CDFG investigation, Newhall Land and Farming revealed that its biologists had found five distinct occurrences of the plant, three of which are within the approved development footprint and had been partially destroyed by the agave farm (Liotta 2002). Recently, we were informed that *Chorizanthe parryi* var. *fernandina* is found on Newhall Ranch in six distinct locations with smaller satellite occurrences (Newhall Land & Farming 2004). Representatives of Newhall Ranch informed us that they intend to pursue a Candidate Conservation Agreement for the plant, and presented us with a preliminary plan that would avoid removing approximately 74 percent of the area the plant is believed to occupy (Newhall Land & Farming 2004). However, the level of detail available is not sufficient for us to conclude that the preserved populations would be appropriately buffered from proposed adjacent land uses, or that sufficient native vegetation would remain in proximity to the preserved areas to support a pollinator community.

The threats to *Chorizanthe parryi* var. *fernandina* from habitat destruction or modification are less than they were 2 years ago. One of the two populations is in permanent, public ownership and is being managed by an agency that is willing to work to conserve the plant. The other population is under threat of development; however, if a Candidate Conservation Agreement can

be developed with the landowner, it is possible that the remaining plants can also be conserved. Until such an agreement is finalized, the threat of development and the potential damage to the Newhall Ranch population remains, as shown by the destruction of some plants during installation of an agave farm.

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

This factor is not known to be applicable.

C. Disease or predation.

We found no evidence that disease is a factor affecting this species, nor did we find evidence that predation by livestock or wildlife is a current threat to this species. The Ahmanson Ranch site had been heavily grazed by sheep in the past, and the Los Angeles County sites are grazed by cattle.

D. The inadequacy of existing regulatory mechanisms.

Currently, *Chorizanthe parryi* var. *fernandina* is not protected under Federal laws. In June 2000, the species became a candidate for listing as endangered by the State of California, and was listed as endangered in August 2001. The State listing affords the plant some protection pursuant to CESA until a listing action is finalized. CESA provides that State-listed species are protected from take on private and State lands.

The California Environmental Quality Act (CEQA) requires a full disclosure of the potential environmental impacts of proposed projects. The lead agency is the public agency with primary authority or jurisdiction over the project, and is responsible for conducting a review of the project and consulting with other agencies concerned with the resources affected by the project. Protection of listed species through CEQA depends on the discretion of the lead agency involved. For example, Los Angeles County approved the Newhall Ranch CEQA documents with the knowledge that several other federally- and State-listed species were present on Newhall's property, including *Vireo bellii pusillus* (least Bell's vireo), *Empidonax traillii eximius* (southwestern willow flycatcher), *Gasterosteus aculeatus williamsoni* (unarmored threespine stickleback), and *Bufo californicus* (arroyo toad). Despite findings of significance of the impacts to these resources, the County had the discretion under CEQA to determine that the impacts could be mitigated or that other overriding considerations would allow the proposed development to proceed. Therefore, the adequacy of CEQA in protecting sensitive resources is limited to the discretion of the local jurisdiction and may not be effective for species such as *Chorizanthe parryi* var. *fernandina*.

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

Chorizanthe parryi var. *fernandina* may be threatened by invasive nonnative plants, including grasses that could potentially displace it from available habitat; compete for light, water, and nutrients; and reduce survival and establishment. A recent study of the endangered *Chorizanthe pungens* var. *hartwegiana* (McGraw and Levin 1999) implicated shade as the primary factor affecting the survival, reproduction and biomass of *Chorizanthe*. Current research and

management approaches are inadequate to control the problem of nonnative plant invasions (Hobbs and Humphries 1995; Schierenbeck 1995).

Chorizanthe parryi var. *fernandina* is particularly vulnerable to extinction due to its concentration in two isolated areas (Barrett and Kohn 1991). The existence of only two areas of occurrence and a relatively small range makes the variety highly susceptible to extinction or extirpation from a significant portion of its range due to random events such as fire, drought, erosion, or other occurrences (Shaffer 1981, 1987; Meffe and Carroll 1994). Such events are not usually a concern unless the number of populations or geographic distribution is severely limited, as is the case with *Chorizanthe parryi* var. *fernandina*. Once the number of populations or the plant population size is reduced, the remnant populations, or portions of populations, have a higher probability of extinction from random events (Primack 1998).

FOR RESUBMITTED PETITIONS:

- a. Is listing still warranted? Y
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Y
- c. Is a proposal to list the species as threatened or endangered in preparation? N
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded: We considered the petition in this assessment and incorporated information from the petition where appropriate. Since publication of the 2002 CNOR, the publication of a proposed rule to list this species has been precluded by other higher priority listing actions, and based on work scheduled we expect that will remain the case for the remainder of Fiscal Year 2004. Almost the entire national listing budget has been consumed by work on various listing actions taken to comply with court orders and court-approved settlement agreements, emergency listing, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of *Chorizanthe parryi* var. *fernandina* as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

LAND OWNERSHIP:

One of the two populations became property of the State of California in 2003. The other population is entirely on private property.

PRELISTING: We are working with the landowner of the Los Angeles County site to develop a conservation strategy in conjunction with approved development plans. The landowner has proposed developing a Candidate Conservation Agreement. The other site is in State ownership and is being managed for conservation.

REFERENCES:

Ahmanson Ranch. 2001. An investigation of the San Fernando Valley spineflower for the Ahmanson Land Company.

- Barrett, S. and J. Kohn. 1991. Genetic and evolutionary consequences of small population size in plants: Implications for conservation. In: Falk, D., and K. Holsinger, eds. *Genetics and conservation of rare plants*. Center for plant conservation, Oxford University Press. Pp. 3-30.
- California Native Plant Society. 2001. Inventory of the rare and endangered plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor, California Native Plant Society, Sacramento, CA. 388 pp.
- County of Ventura. 2002. Draft supplemental environmental impact report for Ahmanson Ranch Phase A Master Tract Map, Tentative Tract No. 5206, February 2002. State Clearinghouse Number 89041908. Ventura, CA.
- Glenn Lukos & Associates. 1999. Report: Biology of the San Fernando Valley spineflower, Ahmanson Ranch, California. Prepared for Ahmanson Land Company, Calabasas, CA.
- Goodman, G.J. 1934. A revision of the North American species of the genus *Chorizanthe*. *Annals of the Missouri Botanical Garden* 21(1): 50-80.
- Hobbs, R.J. and S.E. Humphries. 1995. An integrated approach to the ecology and management of plant invasions. *Conservation Biology* 9(4):761-770.
- Liotta, P. 2002. Return to search warrant issued by Los Angeles Superior Court Magistrate, David S. Wesley on May 21, 2002. Affidavit filed by Officer Penelope Liotta of the California Department of Fish and Game on May 30, 2002. Los Angeles, CA.
- LSA Associates. 1999. San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) – Supporting Information for a Petition to the United States Fish and Wildlife Service. Prepared for the City of Calabasas. Submitted by Myers, Widders, Gibson & Long, LLP, Ventura, CA.
- McGraw, J.M. and A.L. Levin. 1999 [1998]. The roles of soil type and shade intolerance in limiting the distribution of the edaphic endemic *Chorizanthe pungens* var. *hartwegiana* (Polygonaceae). *Madrono* 45(2):119-127.
- Meffe, G.K. and C.R. Carroll. 1997. Demographic processes. pp. 217-218 in: *Principles of Conservation Biology*. Sinauer Associates, Sunderland, MA.
- Newhall Land & Farming. 2004. Data submitted on current distribution and densities of *Chorizanthe parryi* var. *fernandina* on Newhall Land & Farming property. Submitted during a meeting on January 27, 2004, Ventura Fish and Wildlife Office, Ventura, CA.
- Primack, R.B. 1998. Minimum viable populations. pp. 280-304 in: *Essentials of Conservation Biology*. Sinauer Associates, Sunderland, MA.
- Reveal, J.L. 1979. *Chorizanthe parryi* var. *fernandina*, rare plant status report. California Native Plant Society. 2 pp.

- Reveal, J.L. and C.B. Hardham. 1989. A revision of the annual species of *Chorizanthe* (Polygonaceae: Eriogonoideae). *Phytologia* 66(2):98-198.
- Sapphos Environmental. 2000. Results of spring 2000 surveys for San Fernando Valley spineflower at Ahmanson Ranch. Prepared for the Ahmanson land company, Calabasas, CA.
- Sapphos Environmental. 2001a. Recorded census data using standardized data sheets for population census monitoring. Prepared for Ahmanson Land Company by Sapphos Environmental, Inc., Pasadena, CA.
- Sapphos Environmental. 2001b. Analysis of potential impacts to the San Fernando Valley spineflower with Respect to the Ahmanson Ranch Project. Prepared for the Ahmanson Land Company, Calabasas, CA.
- Sapphos Environmental. 2001c. Analysis Results of spring 2000 surveys for San Fernando Valley spineflower at Ahmanson Ranch. Prepared for the Ahmanson Land Company, Calabasas, CA.
- Sapphos Environmental. 2002. The pollination biology of the San Fernando Valley spineflower, *Chorizanthe parryi* var. *fernandina*, (S. Watson) Jepson. Prepared for Ahmanson Land Company, Calabasas, CA.
- Sapphos Environmental. 2003. 2081(a) Permit annual progress report for the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)/Spring 2002 Introduction Pilot Study Conducted at Ahmanson Ranch, Ventura County, CA. Submitted to California Department of Fish and Game, Species Conservation and Recovery Program, Sacramento, CA.
- Schierenbeck, K.A. 1995. The threat to the California flora from invasive species, problems and possible solutions. *Madroño* 42(2):168-174.
- Shaffer, M.L. 1981. Minimum population sizes for species conservation. *Bioscience* 31(2):132-134.
- Shaffer, M.L. 1987. Minimum viable populations: coping with uncertainty. pp. 69-86 in: Viable Populations for Conservation; M.E. Soulé, ed. Cambridge University Press, Cambridge, MA.

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:

Imminence: Formerly, the threats to *Chorizanthe parryi* var. *fernandina* were considered imminent because the two locations where the species occurs were proposed for residential developments, both of the projects had been approved by the local government agencies with jurisdiction over development, and the developments were to proceed within the next year or two. The site in Los Angeles County, Newhall Ranch, is still expected to begin development in 2004. The landowner has approached the Service with the notion to enter into a Candidate Conservation Agreement for *Chorizanthe parryi* var. *fernandina*. If successful, the Candidate Conservation Agreement could provide for long-term preservation of the populations on Newhall Ranch; however, no documents have been submitted nor any agreement processed, so we cannot assume that the immediate threats from the Newhall Ranch development are gone.

In contrast, the threat posed to the spineflower by development on Ahmanson Ranch has now been removed. Ahmanson Ranch in Ventura County is now in permanent ownership of the State of California. The site is being managed for conservation of its biological resources by the Santa Monica Mountains Conservancy (Conservancy). We have been in discussion with the Conservancy regarding its plans for protecting the population of *Chorizanthe parryi* var. *fernandina* on the site. In meetings with the Service, the Conservancy has indicated it will manage the site to protect the *Chorizanthe parryi* var. *fernandina* population, including trail closures, installation of signage to close sensitive areas, and ranger patrols. We have provided copies of research conducted with *Chorizanthe parryi* var. *fernandina* to help the Conservancy with management planning. While formal management plans have not yet been developed, the immediate threat to *Chorizanthe parryi* var. *fernandina* from development on Ahmanson Ranch has been removed.

Recent changes in landownership and development plans at Ahmanson Ranch lead us to conclude that the immediate threat of extinction of *Chorizanthe parryi* var. *fernandina*, which we

formerly considered to be imminent, is now less imminent. Although the threats to the preserved population from effects not related to development remain, the immediacy of the risk of losing that population is much lower than it would be under the development. Therefore, while the magnitude of the threats remains high because the species is rare and has an extremely limited distribution, we conclude that the imminence of the threats is lower for the following reasons:

1. The most likely scenario under which the Ahmanson Ranch population would be lost would be a stochastic event, in particular a landslide that altered site conditions to the point where the plant could not survive. This type of cataclysmic event is possible but not foreseeable, so we do not consider the immediacy of the threat to be high.
2. Erosion is not likely to greatly affect the *Chorizanthe parryi* var. *fernandina* population at Ahmanson Ranch. The plants grow at the edge of Laskey Mesa which tilts down from south to north, meaning that most flows would trend toward the north side of the mesa. *Chorizanthe parryi* var. *fernandina* grows primarily on the south edge of Laskey Mesa, where some erosion may occur, but it is less than if the mesa tilted to the south and all rainfall on the mesa ran off into the *Chorizanthe parryi* var. *fernandina* population.
3. Fire is identified as a possible factor in the risk to rare plants, among other natural factors. Because *Chorizanthe parryi* var. *fernandina* grows in areas where other vegetation grows poorly (due to shallow soils), the risk from fire is low. Fire would be problematic for *Chorizanthe parryi* var. *fernandina* if fires were suppressed and competing vegetation were allowed to gain a foothold, or if too frequent fires prevented *Chorizanthe parryi* var. *fernandina* from reaching its full potential of seed production in many years. These situations are most likely where there is human development. A natural fire regime should benefit the species, and because Ahmanson Ranch will no longer be developed, the immediate threat of fire suppression, fuel management, or human-caused fires is lower.
4. The population on Ahmanson Ranch has persisted despite extended drought, abnormally wet winters, invasion of non-native plants (which cannot compete in the areas occupied by *Chorizanthe parryi* var. *fernandina* due to thin soils), 25 years or more of cattle and sheep grazing, and human activity related to ranching. The vagaries of climate will continue; however, the adverse conditions caused by human activities have been removed and are being controlled by the Conservancy management. We expect that even without active management, the *Chorizanthe parryi* var. *fernandina* population at Ahmanson Ranch would persist as long as human-related disturbances are absent. The threats from such human activities, and the potential for negative effects from other edaphic factors, are not immediate.

We conclude that although the magnitude of threats to *Chorizanthe parryi* var. *fernandina* remains high due to the rarity of the plant and its limited distribution, the immediacy of threats to the species is lower with the advent of Ahmanson Ranch entering into public ownership and the consequent removal of the threat of loss of that population due to development.

