

**Chorro Creek Bog Thistle**  
*(Cirsium fontinale var. obispoense)*

**5-Year Review:  
Summary and Evaluation**



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**U.S. Fish and Wildlife Service  
Ventura Field Office  
Ventura, California  
September 2007**

## **5-YEAR REVIEW**

Chorro Creek bog thistle (*Cirsium fontinale* var. *obispoense*)

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**5-YEAR REVIEW**  
**Chorro Creek bog thistle/*Cirsium fontinale* var. *obispoense***

**I. GENERAL INFORMATION**

**I.A. Methodology used to complete the review**

We, the U.S. Fish and Wildlife Service (Service) published a Federal Register (FR) notice (71 FR 14538) announcing our initiation of a 5-year review of the Chorro Creek bog thistle and asked the public for information. We obtained most of the information by reviewing literature from our files, the California Department of Fish and Game's Natural Diversity Database (CNDDB), and the Chorro Creek Bog Thistle Recovery Project Final Report (Chipping 1994). We also contacted knowledgeable individuals who have expertise with the species, with the geographic region where the species occurs, and familiarity with the principles of conservation biology. We incorporated all comments and information from our files and the public into our review as appropriate.

**I.B. Reviewers**

**Lead Regional or Headquarters Office:** California Nevada Operations Office, Region 8; Diane Elam, Deputy Division Chief for Listing, Recovery, and Habitat Conservation Planning, and Mary Grim, Fish and Wildlife Biologist (916) 414-6464

**Lead Field Office:** FWS-Ventura Fish and Wildlife Office; Nic Huber, Biologist, (805) 644-1766 x 249; Connie Rutherford, Listing and Recovery Coordinator, (805) 644-1766, x 306

**I.C. Background**

**I.C.1. FR Notice citation announcing initiation of this review:**

The FR notice initiating this review was published on March 22, 2006 (71 FR 14538). This notice opened a 60-day request for information period, which closed on May 22, 2006. A second FR notice was published on April 3, 2006 (71 FR 16584), which corrected an error in a mailing address provided in the March notice. No information was received from the public as a result of this notice.

**I.C.2. Listing history:**

Original Listing

FR notice: 59 FR 64613

Date listed: December 15, 1994

Entity listed: variety (*Cirsium fontinale* var. *obispoense*)

Classification: endangered

**I.C.3. Associated rulemakings:** Listed by the State of California as endangered in 1993.

**I.C.4. Review History:** No complete status reviews have been conducted since the time of listing.

**I.C.5. Species' Recovery Priority Number at start of review:** The species recovery number is an "8," indicating a species with moderate risks and a high recovery potential. However, this is inaccurate because the Chorro Creek bog thistle was listed as a subspecies not a species, and therefore the species recovery priority number should be 9.

**I.C.6. Recovery Plan or Outline:**

Name of plan

Recovery plan for the Morro Shoulderband Snail and Four Plants from Western San Luis Obispo County, California

Date issued: September 26, 1998

Revisions: None

**II. REVIEW ANALYSIS**

**II.A. Application of the 1996 Distinct Population Segment (DPS) policy**

The Endangered Species Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listings as distinct population segments (DPS) only to vertebrate species of fish and wildlife. Because the species under review is a plant and the DPS policy is not applicable, the application of the DPS policy to the species listing is not addressed further in this review.

**II.B. Recovery Criteria**

**II.B.1. Does the species have a final, approved recovery plan containing objective, measurable criteria?**

Yes

**II.B.2. Adequacy of recovery criteria.**

**II.B.2.a. Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?**

Yes. The recovery criteria attempted to address the threats to the species due to the limited and specialized nature of its habitat. Additional refinement of the generalized recovery criteria would improve them. See the second delisting criteria in II.B.3. below for additional discussion.

**II.B.2.b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)?**

Yes, although the criteria are not explicitly based on the 5 factors.

**II.B.3. List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information. For threats-related recovery criteria, please note which of the 5 listing factors\* are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

The recovery objective is to downlist the plant to threatened, and depending on success of recovery efforts and gathering of additional management and life history information, the Service may consider delisting.

Criteria for downlisting:

1. Populations from throughout the range, each made up of multiple colonies, and their habitat at 6 sites are secure from human-induced threats, including water diversions or draw downs (addresses Listing Factors A and E).

This criterion has been partially met. Three sites are protected by fencing to exclude cattle: Laguna Lake Park, Camp San Luis Obispo (Camp SLO), and Pennington Creek on land owned by California Polytechnic State University (Cal Poly). A fourth population near San Simeon was voluntarily fenced and protected by the landowners with assistance from The Nature Conservancy (Wikler and Morey 1992). However, The Nature Conservancy is no longer involved with the protection of this population (T. Maloney, The Nature Conservancy, pers. comm. 2006). In addition, small colonies of bog thistle in

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\* A) Present or threatened destruction, modification or curtailment of its habitat or range;  
B) Overutilization for commercial, recreational, scientific, or educational purposes;  
C) Disease or predation;  
D) Inadequacy of existing regulatory mechanisms;  
E) Other natural or manmade factors affecting its continued existence.

Perfumo Canyon, located with the Irish Hills Natural Reserve (IHNR), and Froom Ranch may be protected by land use designation or location on upper slopes, as discussed in section II.C.1.a.

Our intention in requiring multiple colonies within each population to achieve recovery was to maintain the overall population at a site if there were slight changes in microsite conditions over time that could result in individuals occupying different portions of the site. Thus, the population would be more likely to survive if Chorro Creek bog thistle exists as multiple colonies at separate seeps within the overall protected area. Multiple colonies have been well documented at Camp SLO, the IHNR, Froom Ranch, Laguna Lake, and San Bernardo Creek (see section II.C).

2. At least 3 of these sites are: (a) in protected areas larger than 100 acres, and (b) populations deemed viable and stable or increasing as determined by monitoring over a precipitation cycle that includes multiple years of below average rainfall (addresses Listing Factors A and E).

(a) At least three of the sites are in protected areas larger than 100 acres and include the following: (1) populations of Chorro Creek bog thistle are protected within City of San Luis Obispo (City)-owned open spaces; (2) populations are protected on lands owned by the State of California and managed by the California Army National Guard (Camp SLO); and (3) populations are protected at Pennington Creek in the El Chorro Biological Reserve on land owned by Cal Poly.

(b) Of these, not all have sufficient monitoring to determine whether populations are viable and stable or increasing. Only Camp SLO conducts formal monitoring of the population. The populations at the City-owned open spaces and Pennington Creek are informally monitored by conducting presence/absence surveys, but presence is not quantified. Since the majority of the bog thistle populations are not monitored and the recovery plan was completed in 1998, there is not enough information and not enough time has passed to be able to determine the potential effects from precipitation cycles that include multiple years of below average rainfall. Therefore, this criterion has been partially met.

3. Protected sites are being managed in a way that will support the continued existence of populations and their wetland habitat (addresses Listing Factor A).

This criterion has been partially met. As discussed in section II.C.1.a, three populations that were fenced when the bog thistle was listed are still protected

by fencing (Laguna Lake Park, Camp SLO, and Pennington Creek). No additional populations have been fenced since the species was listed.

Laguna Lake Park, the IHNR, Pennington Creek, and Camp SLO are large areas of land protected from direct development impacts. These areas provide protection to the immediate, upstream water source that the bog thistle requires.

4. Management is effective, as shown by at least 10 years of monitoring (addresses Listing Factors A and E).

This criterion has been partially met. Camp SLO is the only site that utilizes a formal monitoring program, one which includes an adaptive management approach. However, other sites such as Pennington Creek and the City-owned open spaces are visually monitored by reputable scientists, including but not limited to City biologists, consultants, and Cal Poly faculty and students. Presence/absence surveys are conducted frequently, but population size is not quantified. The City of San Luis Obispo implements a monitoring program at the IHNR to gather data on the intensity of visitor use, patterns of visitor use (e.g. hiking, mountain biking, equestrian), changes in trail width, and population dynamics of Chorro Creek bog thistle (City of San Luis Obispo Natural Resources Program 2003). Monitoring programs identify changes in the condition of a given resource; changes beyond an acceptable level will result in the implementation of corrective measures (City of San Luis Obispo Natural Resources Program 2003).

Criteria for delisting:

Specific delisting criteria were not included in the recovery plan. The plan anticipated that as information on life history and management became available, recovery criteria would be revised and delisting criteria would be developed. No criteria have been developed or recommended at this time.

## **II.C. Updated Information and Current Species Status**

### **Distribution**

Chorro Creek bog thistle is restricted to open seep areas in serpentine soil outcrops in San Luis Obispo County, California; thus it has probably never been abundant due to its narrow habitat requirements (Service 1998). The current range is generally the same as it was when the species was listed. Chorro Creek bog thistle is known from 8 to 10 locations depending on how the sites are defined; most populations are scattered to the south, west, and north of the City of San Luis Obispo and one is 30 miles to the northwest near San Simeon.

Multiple colonies at Camp SLO have been well documented due to the formal monitoring of the Chorro Creek bog thistle population at that site. Other sites noted to include multiple colonies include those in Froom Ranch and the adjacent IHNR within Perfumo Canyon, the latter of which is a larger area of rugged hills and serpentine ridges that lies southwest of and overlooks the City (Tenera Environmental 2002, Chipping 1994). In addition, Laguna Lake Park consists of three groups of springs with multiple, small colonies of Chorro Creek bog thistle that collectively make up the population at this site. At San Bernardo Creek (private land), Chipping (1994) stated that there are several springs and seeps that emerge from an open-pit mining complex that was developed in serpentine landslide deposits. These springs and seeps occur within bogs that are surrounded by heavily-grazed grasslands and provide habitat for several hundred scattered bog thistle plants.

Three new populations have been observed since the time of listing. These populations are located west of Perfumo Canyon in the Irish Hills (CNDDDB 2003), at Miossi Creek east of Cal Poly (CNDDDB 2003), and west of the City-owned South Hills Open Space (Havlik, in litt. 2006a). All of these occurrences are located on private land and fall within the range of the species as known at the time of its listing.

### **Abundance**

The last range-wide surveys (1986) documented approximately 3,000 individuals; at that time, two populations (Laguna Lake Park and Pennington Creek) were made up of about 1,000 plants each and the other populations were 50 to several hundreds of individuals each (59 FR 64613).

The largest populations of Chorro Creek bog thistle are located at Pennington Creek in the El Chorro Biological Reserve, at Camp SLO, and at Laguna Lake Park. The Pennington Creek population contained approximately 2,000 plants in 1994 (Chipping 1994), but a recent population count does not exist (Keil, in litt. 2006). Camp SLO contained 1,843 individuals of Chorro Creek bog thistle in the spring of 2005 (David Magney Environmental Consulting (DMEC) 2006). We observed several thousand plants at Laguna Lake Park in the spring of 2006 (Elvin and Huber, Service, pers. comm. 2006). The total population size throughout its range is unknown.

### **Life History/Demographics**

The Chorro Creek bog thistle typically lives two to three years. In the first year, it forms a rosette of leaves that can reach up to three feet in diameter. The majority of seedlings that survive the first winter increase in size rapidly during that winter and the following spring, producing a branched, flowering stalk up to six feet in height (Chipping 1994). The species usually flowers during the second spring. In most cases, the plants die after flowering, but if sufficient reserves remain after flowering, some plants may persist into a third year (Chipping 1994). Generally, the flowering period is May through July, occasionally extending into September or October (DMEC 2006).

Stalk development during flowering is more vigorous in those plants with access to abundant water and is smaller in plants with marginal amounts of water. In drought-stressed plants, budding and development of flower heads are apparently much faster compared to plants growing in more optimal conditions. This may be a survival strategy to produce seed quickly before the bog dries out, either for marginal locations in normal years, or for normal locations in drought years. Stressed plants do not contain as many flowering buds as healthy plants (Chipping 1994).

At the population locations where dense, non-native grasses grow (e.g. Laguna Lake Park), many bog thistles are unable to spread their leaves in a typical rosette. Instead, the bog thistle plants begin to resemble spiny romaine lettuce; most of these plants flower and set seed. As the grasses die back in mid-summer, the leaves of the bog thistle plants fall outward to form a carpet around the center of the parent plant and repress grass growth. As a result, there is a significant amount of thistle germination within the circle of old leaves the following year, but very little germination beyond the circle (Chipping 1994).

**II.C.1. Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms):**

**II.C.1.a. Present or threatened destruction, modification or curtailment of its habitat or range:**

At the time of listing, the Chorro Creek bog thistle was threatened by trampling from cattle and water diversions (59 FR 64613). The threat from cattle grazing still exists today. The magnitude of threat to the species from water diversions would be high; however, the likelihood of this threat occurring in the near future is difficult to assess.

The small colonies of bog thistle observed at five different seep locations in Perfumo Canyon (Tenera Environmental 2002), located within the IHNR, are in an area designated as “habitat” that will be maintained in its natural state and human intrusion would be discouraged (City of San Luis Obispo Natural Resources Protection Program 2003). Froom Ranch, which is contiguous with the IHNR, was historically used for cattle grazing and dairy production. The lower, eastern portion of this ranch was recently annexed to the City and developed (Morro Group, Inc 2003). Due to the location of the multiple, small colonies of bog thistle on Froom Ranch, they are unlikely to be developed in the future (Havlik, in litt. 2006b). Laguna Lake Park, which encompasses approximately 375 acres, contains fenced enclosures of unknown size that contain the bog thistle plants. Camp SLO (which comprises approximately 5,600 acres in total) contains a 10-acre fencing enclosure that encompasses a series of seeps and swales in undeveloped serpentine grassland. The majority of the bog

thistle plants occur within this enclosure. The population at Pennington Creek, within the El Chorro Biological Reserve, comprises approximately 200 acres. All of the remaining populations are of unknown size, occur on private land, and may be subject to upstream water diversions and/or degradation or impacts from cattle.

Protective fencing that has been installed at some of the above-mentioned sites has helped reduce the adverse effects from cattle to the majority of the Chorro Creek bog thistle habitat at these locations. Cattle grazing may either harm or benefit Chorro Creek bog thistle, depending on how the grazing is managed. For instance, cattle may negatively impact bog thistle plants by trampling. However, cattle that move through bog thistle populations may positively affect the species by facilitating the creation of habitat within a bog through hoof-planting seed, creating habitat around hoof prints, dispersing seed, and eliminating competing vegetation (Chipping 1994). Encompassing populations with protective fencing is the most common management tool for protecting Chorro Creek bog thistle and its habitat from the impacts of cattle and inadvertent human trampling.

Grazing activity could also alter the nutrient content of the soils within seep habitats through fecal inputs, which in turn may favor the growth of other plant species that would otherwise not grow so readily on the serpentine-based soils. Over time, changes in species composition may render the sites less favorable for the persistence of Chorro Creek bog thistle. While grazing at a few locations is closely monitored (*e.g.*, Camp SLO), grazing at other sites is not, and is therefore a continuing concern.

One development that was proposed at the time of listing included a potential water diversion did not go forward. In general, activities that would divert the upstream water source away from the seep habitat where populations occur and/or cause an adverse effect to the water quality would most likely have the most significant adverse effect. This is because Chorro Creek bog thistle requires an abundant water supply at the seep habitats which they occupy. Any impact to the hydrological integrity of the water course that would result in degradation of water quality or quantity that support these seep habitats would most likely adversely affect Chorro Creek bog thistles. If there is not a supply of water to the seep habitats, the species will not persist long-term. Although we are currently unaware of any proposed diversions, we are unable to assess the likelihood of this occurring in the future.

Habitat loss due to development was not discussed at the time of listing because such loss seemed unlikely due to wetland habitat protections.

However, projected population growth in San Luis Obispo County is an indicator that secondary impacts resulting from development (*e.g.*, dewatering of seep areas and introduction of non-native species via adjacent landscaping) may threaten certain populations in the future. The California Department of Finance projects that the county's population will grow from its current 250,000 to 336,000 by 2020 (California Department of Conservation 2002). Such indirect impacts to bog thistle will need to be monitored.

### **Conservation Efforts**

Camp SLO restored the natural hydrologic conditions of the bog thistle habitat in 1994 in accordance with guidelines provided by the Service and the California Department of Fish and Game, and have actively monitored the site since then. The City of San Luis Obispo acquired Laguna Lake Park at an unknown date, and the IHNR between 1998 and 2001. In addition, the occurrence at San Simeon was previously fenced by a landowner with assistance from The Nature Conservancy's Landowner Contact Program. However, The Nature Conservancy is no longer involved with the protection of this population (T. Maloney, The Nature Conservancy, pers. comm. 2006).

### **II.C.1.b. Overutilization for commercial, recreational, scientific, or educational purposes:**

Overutilization was not known to be a factor at the time of listing and is not currently known to be a factor.

### **II.C.1.c. Disease or predation:**

At the time of listing, seedhead weevils (*Rhynocyllus conicus*) were listed as a threat because initial reports suggested that the weevils were foraging upon bog thistle seeds. However, more recent observations indicate that since the length of the flowering season of the bog thistle far exceeds the egg-laying period of the weevil, predation probably accounts for only a small reduction in seed availability (59 FR 64613).

The seedhead weevil has been recorded at Camp SLO. During the summer of 2005, biologists surveyed approximately 100 seed heads and looked for signs of damage. They determined that there was no significant damage to the Chorro Creek bog thistle plants (DMEC 2006). The seedhead weevil has also been documented at San Simeon; however, there is not enough information to determine population level effects (Service 1998).

Cattle have been known to lightly graze on Chorro Creek bog thistle plants. Grazing damage is limited to relatively succulent younger plants because the heavily-thorned seed heads and leaves of mature plants render them unpalatable (Chipping 1994). Although seed predation and grazing of foliage by cattle have been mentioned as concerns, we do not believe either one of these constitutes a primary threat to the species.

#### **II.C.1.d. Inadequacy of existing regulatory mechanisms:**

The Native Plant Protection Act, the California Endangered Species Act (CESA) and the California Environmental Quality Act (CEQA) provide some protection on public and private lands for the Chorro Creek bog thistle, which is state listed as endangered. Although both the Native Plant Protection Act and CESA prohibit take of State-listed plants, State law appears to exempt the taking of such plants via habitat modification or land use change by the landowner. State law requires only that the landowner notify the agency at least 10 days in advance of changing the land use to allow salvage of such plants (59 FR 64613). Take permits are issued by the California Department of Fish and Game. CEQA provides some level of protection for the bog thistle because a development project must go through an environmental review to determine the level of impacts to natural resources.

#### **II.C.1.e. Other natural or manmade factors affecting its continued existence:**

Due to the extremely small geographic areas the populations occupy, Chorro Creek bog thistle populations are vulnerable to elimination by chance events such as fire, disease, pest outbreak, severe flooding, or other natural and human-caused disasters. A prolonged drought may also threaten the populations by further limiting their already rare habitat. Each year of continuing drought, more boggy soils would become dry enough to support weedy species that may exclude Chorro Creek bog thistle (Wikler and Morey 1992).

At the time of listing, two non-native invasive plant species, European broom (*Cytisus monspessulanus*) and eucalyptus (*Eucalyptus* spp.) were beginning to invade Chorro Creek bog thistle habitat (Wikler and Morey 1992). European broom grows along Perfumo Canyon Road in the IHNR and eucalyptus occurs in Laguna Lake Park. In addition, we observed one pampass grass plant (*Cortaderia* sp.) growing adjacent to bog thistle plants at Laguna Lake Park (Elvin and Huber 2006). Grazing and trampling by livestock, coupled with mesic to hydric conditions around seeps, favors growth of non-native plants once they have become

established. Unlike non-native thistle taxa, Chorro Creek bog thistle is probably not able to compete with non-native plants (59 FR 64613). No new information is available regarding competition from non-native plant species. Additional research is needed to determine if competition is a primary threat to bog thistle populations.

#### **II.D. Synthesis:**

Overall, the status of Chorro Creek bog thistle remains very similar to when it was listed as endangered. The species has probably never been abundant due to its narrow habitat requirements of open seep areas in serpentine soil outcrops. At the time of listing, it was known from 8 to 10 locations depending on how the sites were defined. These populations are still extant and three additional populations have been observed on privately-owned land around the City of San Luis Obispo. However, none of these new observations represent a range expansion for the species.

Four populations are protected from direct development impacts because they are protectively fenced (Laguna Lake Park, Pennington Creek, Camp SLO) or on City-owned land that is designated as open space (IHNR). These populations are further protected because the Chorro Creek bog thistle plants are located in areas where future development is not likely to occur.

The three fenced populations (Laguna Lake Park, Pennington Creek, located within the El Chorro Biological Reserve at Cal Poly, and Camp SLO), plus the small colonies within the IHNR are protected from direct development impacts because they are protectively fenced and/or located on lands that are either designated as open space or where future development is not likely to occur.

Chorro Creek bog thistle still meets the definition for endangered (in danger of extinction throughout all or a portion of its range) because all remaining Chorro Creek bog thistle populations are extremely localized and are vulnerable to extirpation. The threats to Chorro Creek bog thistle that were described at the time of listing are still threats to the continued existence of bog thistle populations. No new threats have been identified. Activities that would result in the diversion or degradation of the upstream water source that supply these open seep habitats would have the most significant adverse effect. Cattle may trample bog thistle plants at unprotected sites or at sites that contain protective fencing if the fencing is not properly maintained. In addition, all populations are vulnerable to chance events such as fire, disease, pest outbreak, severe flooding, or other natural or human-caused disasters. Drought conditions may also threaten populations by further reducing its habitat and reducing the viability of remaining plants from drought stress.

### III. RESULTS

#### III.A. Recommended Classification:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change is needed

III.B. New Recovery Priority Number   9   (to correct an error in the previously assigned recovery number)

### IV. RECOMMENDATIONS FOR FUTURE ACTIONS:

1. Conduct surveys in the areas that contain suitable habitat between the northern-most occurrence near San Simeon and the remaining occurrences at the southern end of its range around the City of San Luis Obispo. We recommend working with a local land conservation organization to identify those land parcels that have a high likelihood to support the Chorro Creek bog thistle, and assist in gaining access to the privately-owned land parcels to determine if additional populations are extant. If additional populations are observed, the Service should try to work with a local land conservation organization and the landowner to ensure its continued existence.
2. Conduct annual monitoring of the populations at Laguna Lake Park and Pennington Creek to quantify presence of all life history stages of the Chorro Creek bog thistle.
3. Expand the size of the fencing enclosures at Laguna Lake Park and Camp SLO to ensure that the best habitat has been targeted for protection. At Camp SLO, bog thistle individuals occur immediately downstream of the fencing enclosure. Suitable habitat is present, although the number of plants present outside of the fence is much less than within the enclosure. Increasing the perimeter of the fence downstream to include more of the two waterways that create the suitable habitat for bog thistle would most likely increase the size of the population. At Laguna Lake Park, suitable habitat is present outside of the enclosures. Thus, increasing the perimeter of the fencing enclosure would most likely allow the population to expand.
4. Conduct a hydrological study to determine the upstream water source of the seep habitats that Chorro Creek bog thistle inhabits to determine if there are any proposed projects that would reduce the water flow to these habitats.

5. Revise Recovery Criterion 2 because it may not be necessary to protect areas of 100 acres or larger for the species to achieve recovery. Some populations of bog thistle are in areas much smaller than 100 acres and are still extant and stable from the date of listing. The intent of protecting large areas of land was to ensure protection of the upstream water source to the seep habitats that the Chorro Creek bog thistle requires. Therefore, we recommend revising the recovery criterion to focus on protecting the upstream water source instead of protecting large areas of land.

## V. REFERENCES:

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Keil, D. 2006. Electronic mail. Population size of Chorro Creek bog thistle at Pennington Creek. Dated May 3, 2006. Director, Robert F. Hoover Herbarium, and Curator of Vascular Plants, California Polytechnic State University, San Luis Obispo, California.

#### PERSONAL COMMUNICATIONS

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**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW**  
**Chorro Creek bog thistle (*Cirsium fontinale* var. *obispoense*)**

Current Classification: endangered

Recommendation resulting from the 5-Year Review

- Downlist to Threatened**
- Uplist to Endangered**
- Delist**
- No change is needed**

Appropriate Listing/Reclassification Priority Number, if applicable: N/A

Review Conducted By: Nic Huber, Biologist

**FIELD OFFICE APPROVAL:**

Field Supervisor, Fish and Wildlife Service

Approve Diane K. Nole Date 9/21/07

**REGIONAL OFFICE APPROVAL:**

Acting

Regional Director, Fish and Wildlife Service

Approve David Thomas Date 9/25/07