

*Arctostaphylos morroensis*  
Morro Manzanita

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



**U.S. Fish and Wildlife Service  
Ventura Fish & Wildlife Office  
Ventura, California**

**March 2008**

## **5-YEAR REVIEW**

### **Morro Manzanita (*Arctostaphylos morroensis*)**

#### **I. GENERAL INFORMATION**

##### **Purpose of 5-Year Review:**

The U.S. Fish and Wildlife Service (Service) is required by section 4(c)(2) of the Endangered Species Act (ESA) to conduct a status review of each listed species at least once every 5 years to ensure that its classification as threatened or endangered provides the appropriate level of protection. We consider the best available scientific and commercial data on the species, and focus on new information since the species was listed. The purpose of our review is to evaluate whether or not the species' status has changed since listing, and whether reclassification or delisting should be considered. Our original listing of a species as endangered or threatened is based on the existence of one or more of the five threat factors described in section 4(a)(1) of the ESA, and we must consider these same five factors in any subsequent reclassification or delisting of a species. A 5-year review contains an analysis of updated information on the species' biology and threats, and we interpret progress towards recovery in the context of eliminating or reducing the five threat factors. If we recommend a change in listing status based on the results of the 5-year review, we must propose to do so through a separate rule-making process defined in the ESA that includes public review and comment.

##### **Species Overview:**

*Arctostaphylos morroensis* is a long-lived shrub in the heath (Ericaceae) family that is endemic to San Luis Obispo County, California. Its distribution is correlated with that of soils developed on ancient sand dunes that were deposited during the Pleistocene (i.e., Baywood fine sands). This species is found in association with coastal dune scrub, maritime chaparral, and coast live oak woodland on sites with low to moderate slopes. *Arctostaphylos morroensis* flowers in the winter, with fruit maturation and seed dispersal occurring in the fall. Unlike other species of manzanita, *A. morroensis* is an obligate seeder, lacking a woody burl from which it can resprout post-fire.

#### **I.A. Reviewers**

##### **Lead Regional Office --Contact name and phone number:**

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Ventura Fish & Wildlife Office:

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

We, the U.S. Fish and Wildlife Service (Service) published a Federal Register notice (70 FR 39327) announcing our initiation of a 5-year review of *Arctostaphylos morroensis* and asking the public for information. We reviewed the information in our files regarding *A. morroensis*, including any scientific papers, survey reports, and letters to and from the Ventura Fish and Wildlife Office regarding this endangered plant species. We contacted botanical experts and other knowledgeable individuals regarding information gathered since the completion of the recovery plan in 1998. A site visit to several of the sites was conducted to determine the status of the plants and condition of surrounding habitat. This status review incorporates all relevant comments and information from our files and these parties. We received no information in response to our Federal Register (FR) notice (see section I.C.1, below).

**I.C. Background**

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

A *Federal Register* notice was published on March 22, 2006 (71 FR 14538) initiating a 60-day request for information. A second notice was published on April 3, 2006 (71 FR 16584) that clarified the contact office.

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

Original Listing

FR notice: 59 FR 64613

Date listed: December 15, 1994

Entity listed: Species (*Arctostaphylos morroensis*)

Classification: Threatened

**I.C.3. Associated rulemakings**

None.

**I.C.4. Review History**

This is the first in-depth status review that has been conducted for this species since its listing in 1994. A brief review was conducted during preparation of the

draft and a final recovery plan for *Arctostaphylos morroensis* in 1997 and 1998 (USFWS 1997, 1998), respectively.

**I.C.5. Species' Recovery Priority Number at start of review**

2C. This indicates a full species facing a high degree of threat and a high recovery potential where there is a potential conflict with economic activities.

**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

**Dates of previous revisions:** There have been no revisions to this recovery plan since its issuance in 1998.

**II. REVIEW ANALYSIS**

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

The 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  
 No

**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  
 No

**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  
 No

Factors A, D, and E are addressed in the recovery criteria. Factors B and C were not considered to be relevant to the listing.

**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 for *Arctostaphylos morroensis* is to delist the species. Text from the recovery plan states that the species can be considered for delisting when the three following criteria have been achieved:

**Delisting Criterion 1:** Ninety percent of existing acreage supporting high (75-100 percent) and medium (25-74 percent) cover of *Arctostaphylos morroensis* and 85-90 percent of low (1-24 percent) cover supporting *A. morroensis* are secured from human-induced threats in preserves in the Northeast Los Osos, South Los Osos, and West Pecho Conservation Planning Areas with no greater fragmentation by roads, residences, or other areas of human use than existed in 1998. [Addresses Factors A and D]

We consider this criterion appropriate to the recovery of the species and very close to being achieved (See Habitat Conservation Achieved Section below).

**Delisting Criterion 2:** Evidence that the acreage and approximate cover classes of *Arctostaphylos morroensis* in preserves can be maintained over time and that preserves are not made unmanageable by small size, proximity to urban development, or fragmentation. [Addresses Factors A and E].

We consider this criterion appropriate with respect to the species; however, monitoring programs to collect evidence that populations are being maintained need to be developed and implemented.

**Delisting Criterion 3:** Site-specific management plans have been successfully implemented for the preserves. [Addresses Factor E].

We consider this criterion appropriate with respect to the recovery of the species; however, it has not been met. With the exception of Elfin Forest Reserve, none of the conserved areas have site or species-specific management plans in place.

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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.

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

### II.C.1. Biology and Habitat

#### Distribution

*Arctostaphylos morroensis* is found scattered within coastal maritime chaparral and oak woodland communities, ranging from the northeast side of Morro Bay to the southern end of Montaña de Oro State Park, a distance of less than 10 miles (See Figure 1). The distribution of *A. morroensis* is correlated with the distribution of Baywood fine sands (ancient wind-blown beach sands). The species is found on a variety of slopes and aspects. On steeper slopes, particularly on the north-facing slopes of the Irish Hills, it can be found in almost pure stands. The area historically occupied by *A. morroensis* was estimated to be between 2,000 and 2,700 acres. Currently, the range of *A. morroensis* is estimated to be approximately 840-890 acres, with the total number of individuals ranging between 86,000 and 153,000 (Crawford, Multari and Clark 2004). Much of the historic area of Baywood fine sands found on gentle to moderate slopes has been converted to urban development, primarily in the communities of Los Osos, Baywood Park, and Cuesta-by-the-Sea. Limited development has also occurred on the steeper north-facing slopes of the Irish Hills. Approximately 65 percent of remaining habitat for *A. morroensis* is in private ownership, much of which has cover values of 75 to 100 percent (Crawford, Multari and Clark 2004).

#### Life History

*Arctostaphylos morroensis* is a long-lived shrub in the heath family (Ericaceae). It flowers in the winter with fruits maturing in the summer and seed dispersing in the fall. There is an unambiguous difference in a basic life history trait that separates the genus *Arctostaphylos* into two functional groups. One group resprouts from a woody burl following canopy removal by fire or mechanical action. The other group has lost this ability to resprout and, as such, reproduce only by seed. Lacking a woody burl from which it can resprout, *A. morroensis* is an obligate-seeding species. Seeds of obligate seeders are long-lived and inhibited from germinating until primary dormancy is released by a specific mechanism. The dormancy mechanism allows the species to build up a seed bank that is persistent (Tyler and Odion 1996). For *A. morroensis* and other obligate seeding species of manzanita, maintenance and regeneration is dependent upon mass germination triggered by fire (Tyler and Odion 1996). Fire breaks seed dormancy and also creates open areas where seedlings can germinate and individuals establish. The life history of an obligate seeder

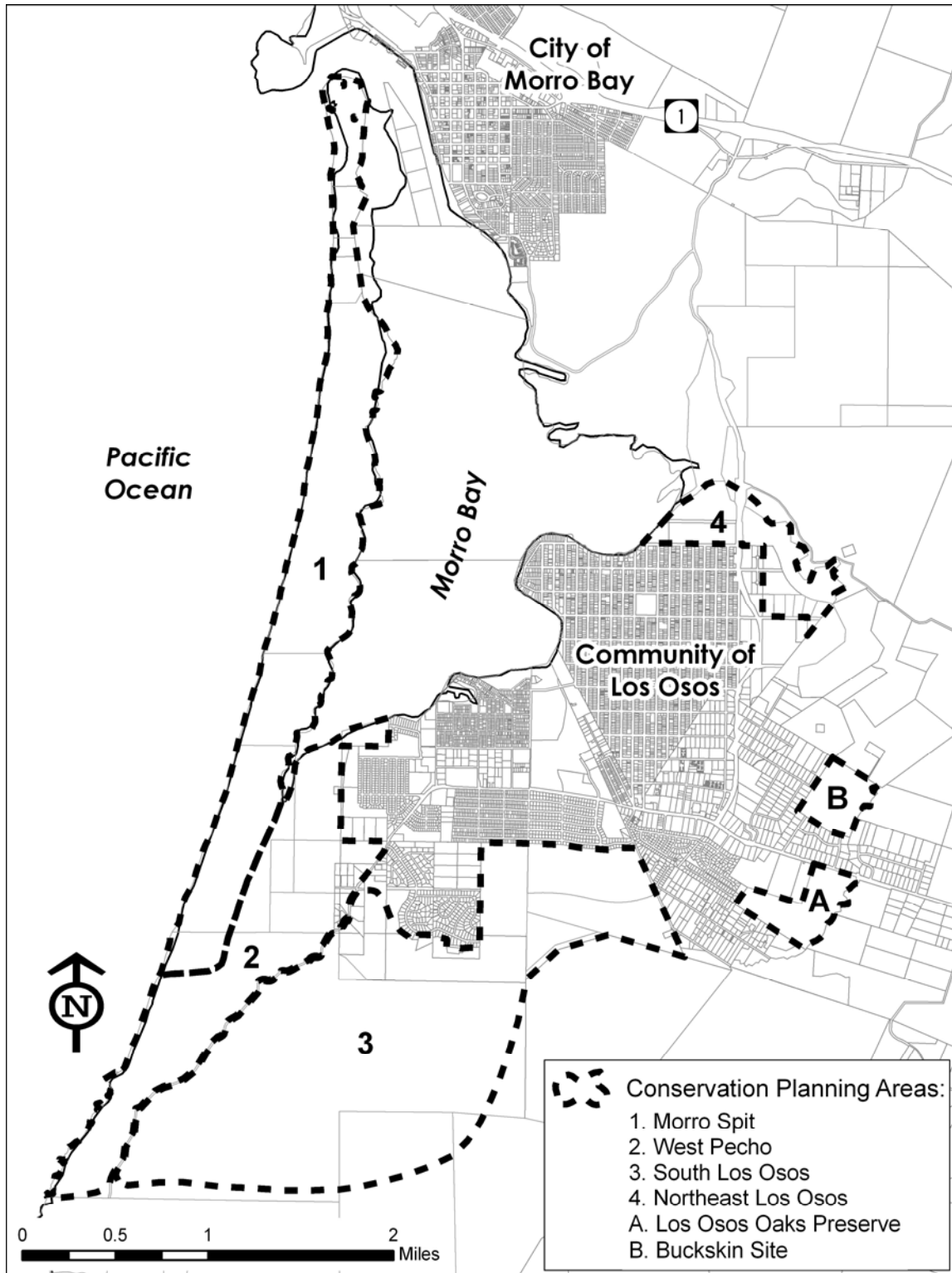


Figure 1. Morro Manzanita Conservation Planning Areas



can only be successful if the interval between fires is long enough for seeds to accumulate the quantity required to replace the parent generation. The number of seeds in the soil that must accumulate is very high as seed mortality has been found to be substantial in chaparral burns (Tyler and Odion 2000). However, suppressing fire for too long could lead to the development of climax, closed canopy chaparral stands, eventually adversely affect populations of *A. morroensis* by precluding expansion into otherwise suitable habitat and maintenance of even-aged, eventually senescing stands.

Land management needs to consider maintenance of a natural burn cycle in chaparral that contains *Arctostaphylos morroensis*. This may necessitate the use of prescribed fire. The time between fires is critical to the persistence of the species and Tyler and Odion (2000) recommend that stands not be burned at cycles less than 40 years in order to accumulate an adequate seed bank. They suggest that land managers avoid burning stands of chaparral containing *A. morroensis* until it can be demonstrated the action would be beneficial to the population. Thus, it appears that increasing fire frequency could more adversely affect populations than suppression for long periods.

In those areas where it is not feasible to use prescribed fire or to allow for naturally-occurring fire, mechanical clearing has been suggested as a surrogate. While mechanical clearing may serve to open up the canopy or provide seed scarification, fire may serve other purposes (*e.g.*, nutrient cycling) that would not be duplicated (Tyler and Odion 1996). Additional research is necessary to determine whether mechanical clearing could be a tool used to manage more fragmented manzanita habitat within an urban landscape where the risks associated with controlled burns is considered unacceptable.

### **Habitat Conservation Achieved**

Within the West Pecho Conservation Planning Area, the majority of the land is conserved and includes a portion of Montaña de Oro State Park, other lands under the jurisdiction of the California Department of Parks and Recreation (*i.e.*, Hotel and Butte Drive parcels), and a 40-acre parcel owned by the California Department of Fish and Game. Depending upon the source, chaparral in this conservation planning unit contains *Arctostaphylos morroensis* at cover values between 1 and 5 percent (LSA 1992) or 5 and 25 percent (Mullany 1990). The majority of these lands are within Montaña de Oro State Park; however, privately-owned lands include two larger parcels (>10 acres) and a number of smaller, residentially-zoned (< 1 acre) lots.

Lands within the Northeast Los Osos Conservation Planning Area are predominantly conserved and include the Elfin Forest Reserve and lands under the jurisdiction of the California Department of Parks and Recreation (*i.e.*, Attman, Powell, and Pismo parcels) and California Department of Fish and Game. Chaparral cover by *Arctostaphylos morroensis* typically ranges from 1 to 25 percent, although a portion of land owned by the California Department of Fish and Game contains chaparral with cover values for *A. morroensis* estimates at greater than 50 percent (Mullany 1990, LSA 1992). Remaining private lands consist of only a few parcels that range in size from 3 to 6 acres and contain lower cover values (< 5 percent) of *A. morroensis* (Mullany 1990).

A mixture of conserved and unconserved lands exists in the South Los Osos Conservation Planning Area. As with the West Pecho Conservation Planning area, the majority of the land is conserved and includes a portion of Montaña de Oro State Park found east of Pecho Valley Road, lands under the jurisdiction of the California Department of Fish and Game (*i.e.*, the Morro Dunes Ecological Reserve), and two 40-acre parcels (known as the Broderson parcels) conserved through a consultation with the Service. The highest cover values of *Arctostaphylos morroensis* are found in Montaña de Oro State Park (50 to 100 percent cover), with the Morro Palisades Reserve and Broderson parcel providing habitat for *A. morroensis* at cover values of 50 to 75 percent. Remaining lands under private ownership include several larger parcels (>20 acres) with cover values of *A. morroensis* that range from 75 to 100 percent (Mullany 1990).

The conservation of additional parcels of land in the Los Osos area increases the likelihood that delisting criterion 1 can be met. The largest block of contiguous habitat supporting *Arctostaphylos morroensis* contains cover classes that range between 50 and 100 percent and includes a portion of Montaña de Oro State Park, the Morro Palisades Reserve, the Broderson parcels, and private lands south of Rodman Drive. Conserved parcels require specific management and maintenance to sustain and enhance extant *A. morroensis*.

## **II.C.2. Five Factor Analysis**

### **II.C.2.a. Present or threatened destruction, modification or curtailment of its habitat or range:**

Habitat loss and fragmentation compromise ecosystem function and constituent species (Hudson 1991, Harris and Silva-Lopez 1992; Hanski 2005; Watling and Donnelly 2006). In order to recover *Arctostaphylos morroensis*, reversing the trend of destruction, modification, or curtailment of its habitat is of paramount importance. Under Factor A in the final listing document (USFWS 1994); we noted that loss of habitat

from development constituted a primary threat to *Arctostaphylos morroensis*. While approximately one-third of occupied habitat was owned and managed by the California Department of Parks and Recreation (*i.e.*, Montaña de Oro State Park), it was recognized that more lands needed to be secured. Since the time of listing, additional private lands have been purchased by, or turned over to, the California Department of Fish and Game, and California Department of Parks and Recreation to be managed for their resource values, some of which include habitat for *A. morroensis*. Areas of habitat with high cover of *A. morroensis* are still at risk on private lands that could be developed in the future.

**II.C.2.b. Overutilization for commercial, recreational, scientific, or educational purposes:**

Under Factor B in the final listing document, we stated that overutilization was not known to be a threat to this species. Although specimens identified as *Arctostaphylos morroensis* are available in limited numbers as nursery stock, we still believe that overutilization is not a threat to *A. morroensis*.

**II.C.2.c. Disease or predation:**

Under Factor C in the final listing document, we stated that neither disease nor predation was known to be a threat to this species; and there is no new information to indicate this now.

**II.C.2.d. Inadequacy of existing regulatory mechanisms:**

Under Factor D in the final listing document, it was determined that the inadequacy of existing regulatory mechanisms was a threat/factor in determining threatened status for *Arctostaphylos morroensis*. While *Arctostaphylos morroensis* remains unlisted by the State of California, both the California Department of Fish and Game and the California Coastal Commission consider this species to be sensitive and any loss of individuals to be significant pursuant to the California Environmental Quality Act (CEQA). The Coastal Commission considers the presence of *A. morroensis* (as a federally listed species) in its determination of environmentally sensitive habitat lands. Environmentally sensitive lands are subject to Section 30240 of the Coastal Act, which requires their protection.

The County of San Luis Obispo considers impacts to *Arctostaphylos morroensis* to reach the level of significance pursuant to CEQA when losses approach 5 to 10 percent of a population. The County coordinates with the California Department of Fish and Game regarding the

significance of the impact and necessary mitigation (J. Eliason, pers. comm. 2006). Mitigation for *A. morroensis* most often consists of replacing affected individuals at a ratio of 4:1 or 5:1 by outplanting new individuals; however, the location of the replacement plantings can be wholly in a landscape setting. This does not support the preservation of *A. morroensis* in a natural habitat landscape and, therefore, does not contribute to species recovery.

#### **II.C.2.e. Other natural or manmade factors affecting its continued existence:**

In our discussion of Factor E in the final listing document, we considered that the introduction and invasion by alien plants into maritime chaparral adversely affected *Arctostaphylos morroensis*. The non-native veldt grass (*Ehrharta calycina*), has spread to the Los Osos and Morro Bay region. This species has not only invaded disturbed areas, such as vacant lots, road cuts, and utility corridors, but is becoming naturalized in native plant communities, including conserved lands owned and/or managed by the California Department of Fish and Game and California Department of Parks and Recreation for *Arctostaphylos morroensis* (J. Vanderwier, U.S. Fish and Wildlife Service, pers. obs., 2006). Veldt grass more likely competes for resources with herbaceous species than with established perennials; however, its presence may increase the frequency and risk of fire that would significantly affect *A. morroensis*. The long-term effects of veldt grass on the dynamics of native communities are not clearly understood.

In the final listing rule, we also recognized that stands of *Arctostaphylos morroensis* in Montaña de Oro State Park were being overtopped by spreading eucalyptus (*Eucalyptus* spp.) planted in the early 1900s. We noted that *A. morroensis* is not able to survive such encroachment due to reduction in available soil moisture, increased shading, and the effects of growth-inhibiting terpenes that are released from eucalyptus. While the General Plan for Montaña de Oro State Park prepared in 1988 calls for the removal of exotic species, including eucalyptus, this program has only been partially implemented. Eucalyptus removal efforts have generally focused on removing seedlings from outside the bounds of the original groves and not specifically from habitat, that supports *A. morroensis* (U.S. Fish and Wildlife Service 1998); therefore, we still consider competition with eucalyptus to be a threat.

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

The current status of *Arctostaphylos morroensis* is not markedly different that what was summarized in the final listing document published in 1994 or the final recovery plan completed in 1998. The primary change is that the risk of habitat loss from development

has been significantly reduced by the transfer of lands that provide habitat for the species out of private ownership; however, the majority of these conserved lands do not incorporate specific management guidelines for *A. morroensis*.

The removal of the threat of development on additional parcels through their transfer of ownership to the California Department of Fish and Game or California Department of Parks and Recreation represents a significant step towards the recovery of this species; however, threats to preserved lands still exist.

The threats to *Arctostaphylos morroensis*, as identified in the listing rule, included loss of habitat from development, competition from non-native invasive plant species, and inadequate regulatory mechanisms. Fewer areas of habitat are at risk due to more lands being conserved for this species, and extant occurrences appear to be stable. Habitat in Los Osos continues to be degraded by the incursion of invasive non-native plant species (e.g., eucalyptus and veldt grass). While the California Department of Parks and Recreation is working to control eucalyptus, there are no consistently-applied efforts being made to control veldt grass in Moñtana de Oro State Park (V. Cicero, pers. comm. 2006).

After securing habitat for *Arctostaphylos morroensis*, one of the primary issues regarding the recovery of this species is its need for some form of disturbance to regenerate and revitalize populations. Morro manzanita is an obligate-seeding species. Its seeds are inhibited from germinating until dormancy is released by a specific mechanism. It is commonly held that the mechanism for most manzanitas is fire. This may necessitate the use of prescribed fire. The time between fires is critical to the persistence of the species and Tyler and Odion (2000) recommend that stands not be burned at cycles less than 40 years in order to accumulate an adequate seed bank. Extant stands of *A. morroensis* are even-aged dating back to the time of the most recent fire. The development of climax, closed canopy chaparral, eventually will adversely affect populations of *A. morroensis* by precluding expansion into otherwise suitable habitat and maintenance of even-aged, eventually senescing stands.

Although substantial progress has been made in protecting chaparral containing *A. morroensis* from development, some areas are still threatened by development, some preserved areas threatened by nonnative invasive species, and existing regulatory mechanisms appear inadequate. Therefore, we conclude that the species still meets the definition of threatened (*i.e.*, is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range), and no status change is needed.

### III. RESULTS

#### III.A. Recommended Classification:

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

**III.B. New Recovery Priority Number 8** This denotes a full species with a moderate degree of threat and a high potential for recovery. This change in recovery priority number from the previous 2C is based on the reduction of the threat of development and that was the source of the original potential conflict.

### IV. RECOMMENDATIONS FOR FUTURE ACTIONS

1. Additional lands with high densities of *Arctostaphylos morroensis* should be secured from the threat of development.
2. All secured lands must be managed to ensure ecosystem function. Active management is needed to maintain and enhance populations of *Arctostaphylos morroensis*; therefore, the development and implementation of management plans that identify specific actions for the species are critical to its recovery. These plans need to address regeneration requirements and assess the true threat of competition from non-native invasive plant species. The Service should continue to engage its partners to ensure such plans are developed and implemented.
3. Funding sources need to be secured to ensure that management actions are ongoing.

### V. REFERENCES

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**U.S. FISH AND WILDLIFE SERVICE**  
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**Current Classification:** Threatened

**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** \_\_\_\_\_

**FIELD OFFICE APPROVAL:**

Field Supervisor, Fish and Wildlife Service

Approve \_\_\_\_\_ Date \_\_\_\_\_

**REGIONAL OFFICE APPROVAL:**

Regional Director, Fish and Wildlife Service

Approve \_\_\_\_\_ Date \_\_\_\_\_



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**Review Conducted By:** Julie Vanderwier, Ventura Fish and Wildlife Office

**FIELD OFFICE APPROVAL:**

Field Supervisor, Fish and Wildlife Service

Approve  Date 3/26/08

**REGIONAL OFFICE APPROVAL:**

Regional Director, Fish and Wildlife Service

Approve  Date 3/31/08