

**Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel's Watercress (*Rorippa gambelii*)**

**Original Approved:** 1998

**Original Prepared by:** Ventura Fish and Wildlife Office

**DRAFT AMENDMENT**

We have identified information that indicates the need to amend recovery criteria for these species since the recovery plan was completed. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and describe the rationale supporting the proposed recovery plan modification. The proposed modification is shown as an appendix that supplements the recovery plan, superseding only section II.A. (pp. 30-31) for *Arenaria paludicola* (Marsh sandwort) and *Rorippa gambelii* [*Nasturtium gambelii*] (Gambel's watercress) of the recovery plan.

**For  
U.S. Fish and Wildlife Service  
Pacific Southwest Region  
Ventura, CA**

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**BACKGROUND INFORMATION**

Recovery plans should be consulted frequently, used to initiate recovery activities, and updated as needed. A review of the recovery plan and its implementation may show that the plan is out of date or its usefulness is limited and therefore warrants modification. Keeping recovery plans current ensures that the species benefits through timely, partner-coordinated implementation based on the best available information. The need for, and extent of, plan modifications will vary considerably among plans. Maintaining a useful and current recovery plan depends on the scope and complexity of the initial plan, the structure of the document, and the involvement of stakeholders.

An amendment involves a substantial rewrite of a portion of a recovery plan that changes any of the statutory elements. The need for an amendment may be triggered when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified, such as population-level threats to the species or previously unknown life history traits, that necessitates new or refined recovery actions and/or criteria; or (3) the current recovery plan is not achieving its objectives. The amendment replaces only that specific portion of the recovery plan, supplementing the existing recovery plan, but not completely replacing it. An amendment may be most appropriate if significant plan improvements are needed, but resources are too scarce to accomplish a full recovery plan revision in a short time.

Although it would be inappropriate for an amendment to include changes in the recovery program that contradict the approved recovery plan, it could incorporate study findings that enhance the scientific basis of the plan or that reduce uncertainties as to the life history, threats, or species' response to management. An amendment could serve a critical function while awaiting a revised recovery plan by: (1) refining and/or prioritizing recovery actions that need to be emphasized, (2) refining recovery criteria, or (3) adding a species to a multispecies or ecosystem plan. An amendment can, therefore, efficiently balance resources spent on modifying a plan against those spent on managing implementation of ongoing recovery actions.

## **METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT**

This amendment was prepared by the Ventura Fish and Wildlife Office. We used information from our files, the California Natural Diversity Database maintained by the California Department of Fish and Game, and information from species experts. The amended criteria will be peer reviewed in accordance with the OMB Peer Review Bulletin following the publication of the Notice of Availability.

## **ADEQUACY OF RECOVERY CRITERIA**

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five listing factors.

### **Recovery Criteria**

See previous version of criteria in the recovery plan for *Arenaria paludicola* (Marsh sandwort) and *Rorippa gambellii* [*Nasturtium gambellii*] (Gambel's watercress) on pages 30-31. The original recovery plan can be found [here](#).

## **SYNTHESIS**

### *Arenaria paludicola* (Marsh sandwort)

*Arenaria paludicola* is an herbaceous perennial in the Caryophyllaceae (pink family). It has trailing stems that can be up to 39 inches (in) (1 meter (m)) long and are often supported by surrounding vegetation. *Arenaria paludicola* has small, white flowers that are borne singly on long stalks arising from the leaf axils (point of leaf attachment to the stem). This plant can also reproduce asexually. It can produce adventitious roots on the trailing stems that come in contact with suitable conditions. It generally blooms from May to August. At the time of listing, *A. paludicola* was known from one wild population.

As of the 2008 5-Year Review, *Arenaria paludicola* is known from one wild population, which is different from the one known at the time of listing. This population is declining. It is on protected (conserved) lands, but it continues to face a number of threats. There have been three attempts to introduce this species back into suitable habitat within its historical range, two of which have failed. The surviving introduced population, at Sweet Springs Marsh, is on protected (conserved) lands and appears to be stable. Plants have been collected in central Mexico and

Guatemala that have been tentatively identified as *A. paludicola*. Experts are currently analyzing these specimens to determine whether or not they are *A. paludicola*.

#### *Nasturtium gambelii* (Gambel’s watercress)

*Nasturtium gambelii* is a rhizomatous perennial herb in the Brassicaceae (mustard family) that can grow up to 6 feet (2 meters) tall. Historically, *N. gambelii* occurred in wetland locations in central and southern California (Orange, San Bernardino, Los Angeles, Santa Barbara, and San Luis Obispo Counties). At the time of listing in 1993, there were three known *N. gambelii* populations: Black Lake Canyon, Oso Flaco Lake, and Little Oso Flaco Lake, all within San Luis Obispo County.

At the time of the 2011 5-Year Review, we believe that all three populations known at time of listing have had no pure *N. gambelii* plants; all plants that have been observed are either introgressed with *N. officinale* (white or common watercress) or only pure *N. officinale* exist at the site (Service 2011, entire). Pure *N. gambelii* is currently known from one remaining wild population, discovered in 1996, on Vandenberg Air Force Base in Santa Barbara County, California; and one population was introduced in October 2008 on the Guadalupe-Nipomo Dunes National Wildlife Refuge in San Luis Obispo County, California. The threats to *N. gambelii* consist of loss and degradation of habitat due to development and urbanization; adverse effects from biostimulation (a state of excessive growth of vegetation caused by the addition of nutrients into an ecological system); sedimentation; inadequacy of existing regulatory mechanisms; nonnative species; stochastic (i.e., random) extirpation/extinction events due to the small size and isolation of the three remaining populations; and genetic swamping from the closely related, introduced crop species, common watercress.

#### **AMENDED RECOVERY CRITERIA**

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened or that the protections afforded by the Act are no longer necessary and *Arenaria paludicola* (Marsh sandwort) and *Nasturtium gambelii* (Gambel’s watercress) may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from endangered to threatened. The term “endangered species” means any species (species, sub-species, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

We provide both downlisting and delisting criteria for the *Arenaria paludicola* (Marsh sandwort) and *Nasturtium gambelii* (Gambel’s watercress) which will supersede those included in the Recovery Plan for Marsh Sandwort (*Arenaria paludicola*) and Gambel’s Watercress (*Rorippa gambelii*) as follows:

#### **Current recovery criteria (from original recovery plan)**

The main objective for the long-term management and recovery of *Arenaria paludicola* and *Rorippa gambelii* is to secure viable, self-sustaining populations of both species in their natural

habitats. The objective is to reclassify them from endangered to threatened status, and ultimately to delist them completely.

Preliminary criteria for downlisting are:

- 1) New plants of each species are established so that there are at least 5 populations of at least 500 individuals each.
- 2) Some of these populations occur in permanently protected habitats in Black Lake Canyon and the Dune Lakes area.
- 3) Some of the populations must be in other areas of suitable habitat within the species' historical ranges in the United States.
- 4) The populations remain viable for at least 5 years.

Viable populations are defined as those that are showing natural reproduction and either stable or increasing in size over time, without artificial augmentation.

Permanent protection of habitats means not only protection of the sites through permanent securing of the sites through ownership or conservation easements, but also permanent arrangements for appropriate management and substantial progress by managers towards assuring habitats are appropriately managed to minimize threats.

### **Amended recovery criteria**

#### *Arenaria paludicola* (Marsh sandwort)

Delisting may be warranted when the downlisting criteria have been met and the species exhibits sufficient resiliency, redundancy, and representation to support long-term viability. For this species, the historical distribution of colonies within four geographically separated areas (Puget Sound in Washington State, San Francisco Bay to Santa Cruz, central coastal region (Santa Barbara County to Los Angeles County), and San Bernardino County) is important for its resiliency, redundancy, and representation. With respect to resiliency, propagation and outplanting efforts over the last decade have shown that this species has a potential to propagate vegetatively, though with the caveat that much of the vegetatively-propagated material represents a small genetic stock. Redundancy has been somewhat increased, as the species is now extant in two of the four geographic areas it used to occur. On the other hand, one outplanted population in the central coastal region was recently extirpated due to a stochastic event. While representation has been increased somewhat on a regional scale, this is tempered by the fact that, on a microhabitat scale, this species has a very narrow tolerance for soil moisture and salinity conditions, as elucidated by the outplanting trials; therefore, there are a limited number of locations where those habitat conditions can be met for future outplanting efforts.

When the downlisting criteria have been met for a species, the species can be considered for delisting if:

- 1) Threats are reduced or eliminated so that protected populations are capable of persisting without significant human intervention, or perpetual endowments are secured for management necessary to maintain the continued existence of the species. The greatest

outstanding management needs currently are: a) controlling competition with nonnative species and b) managing water conditions, particularly flow and salinity, on which the species depends.

- 2) Populations are established across the species ecological settings (in addition to Black Lake Canyon and the Dune Lakes area), including San Mateo Creek in San Onofre State Park in Orange County or comparable site(s) in that region; the San Antonio Creek drainage on Vandenberg Air Force Base in Santa Barbara County or comparable site(s) in that region; and wetlands in Golden Gate National Recreation Area in San Francisco County or comparable site(s) in that region.
- 3) The populations remain viable for at least 10 years. This species can tolerate only a relatively narrow range of microhabitat conditions, particularly with respect to water flow and nutrient loads. In light of fluctuations that can occur with climatic conditions, local water availability, and nutrient loading, the persistence of populations with these varying conditions over time needs to be confirmed. A period of ten years should be sufficient to assess viability over a range of favorable and unfavorable conditions.

#### *Nasturtium gambelii* (Gambel's watercress)

Delisting may be warranted when the downlisting criteria have been met and the species exhibits sufficient resiliency, redundancy, and representation to support long-term viability. For this taxon, the historical distribution of colonies within three geographically separated areas (coastal portions of San Luis Obispo County, Santa Barbara County, and San Bernardino County) is important for its resiliency, redundancy, and representation. The species is currently represented by only one small population in the wild. The species has the potential of having high resiliency, based on its ability to propagate vegetatively, both in the greenhouse and in the wild. However, this is tempered by the fact that, due to the ubiquity of common watercress (*Nasturtium officinale*), the genetic purity of the wild population has already been partially compromised by the presence of common watercress, and any efforts to outplant *N. gambelii* in other locations may face the same challenge.

When the downlisting criteria have been met for a species, the species can be considered for delisting if:

- 1) Threats are reduced or eliminated so that protected populations are capable of persisting without significant human intervention, or perpetual endowments are secured for management necessary to maintain the continued existence of the species. The most outstanding management needs currently are: a) controlling competition with nonnative species and hybridization with common watercress and b) managing water conditions, particularly flow and nutrient loads, on which the species depends.
- 2) Populations are established across the species ecological settings (in addition to Black Lake Canyon and the Dune Lakes area in San Luis Obispo County), including suitable site(s) in the Santa Barbara County and Ventura County region (e.g.; the San Antonio Creek drainage on Vandenberg Air Force Base or comparable sites); and coastal wetlands in Los Angeles, Orange, or San Bernardino Counties.

- 3) The populations remain viable for at least 10 years. This species can tolerate only a relatively narrow range of microhabitat conditions, particularly with respect to water flow and nutrient loads. In light of fluctuations that can occur with climatic conditions, local water availability, and nutrient loading, the persistence of populations with these varying conditions over time needs to be confirmed. A period of ten years should be sufficient to assess viability over a range of favorable and unfavorable conditions.

All classification decisions consider the following five factors: (1) is there a present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) is the species subject to overutilization for commercial, recreational scientific or educational purposes; (3) is disease or predation a factor; (4) are there inadequate existing regulatory mechanisms in place outside the ESA (taking into account the efforts by States and other organizations to protect the species or habitat); and (5) are other natural or manmade factors affecting its continued existence. When delisting or downlisting a species, we first propose the action in the *Federal Register* and seek public comment and peer review. Our final decision is announced in the *Federal Register*.

### **Rationale for Recovery Criteria**

We have amended the recovery criteria for *Arenaria paludicola* (Marsh sandwort) and *Nasturtium gambelii* (Gambel's watercress) to include delisting criteria that incorporate the biodiversity principles of representation, resiliency, and redundancy (Schaffer and Stein 2000) and threats addressed under the five factors. The amended criteria were developed based on the Service's current understanding of the species needs and requirements. This understanding includes information gathered since the original recovery plan was published, such as more recent information about population status and trends along with an updated understanding of the threats acting on the species. These criteria presented are based on the reduction of threats to the species and include a temporal aspect to ensure that the species are resilient to expected variation within a reasonable time frame.

### **LITERATURE CITED**

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