

## **Recovery Plan for Five Plants from Monterey County, California**

**Original Approved:** 2004

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

### **AMENDMENT 1**

We have identified best available information that indicates the need to amend recovery criteria for these species since the recovery plan was completed. In this modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and the rationale supporting the recovery plan modification. The modification is shown as an appendix that supplements the recovery plan, superseding only section III. pp. 49-56 for *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickman's potentilla), and *Trifolium trichocalyx* (Monterey clover) of the recovery plan.

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

**September 2019**

### **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 A review of the recovery plan and its implementation may show that the plan is out of date or its usefulness is limited, and therefore warrants modification.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 delisting factors.

#### **Recovery Criteria**

See previous version of criteria in recovery plan for *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickman's potentilla), and *Trifolium trichocalyx* (Monterey clover) pp. 49-56.

#### **Synthesis**

*Astragalus tener* var. *titi* (coastal dunes milk-vetch)

*Astragalus tener* var. *titi* (coastal dunes milk-vetch) is a small annual plant in the pea family (Fabaceae). Historically, populations occurred in San Diego, Los Angeles, and Monterey counties. It is currently known from one highly fragmented population located on a coastal terrace grassland along 17-Mile Drive in Pebble Beach on the Monterey Peninsula, Monterey County, California. The population is bordered along one side by the Pacific Ocean and the other side by a golf course; 17-Mile Drive bisects the population. The small size of the population and its proximity to a variety of human recreation activities makes it vulnerable to stochastic extinction.

At the time of our last 5-Year Review (Service 2009a, entire), the status of *Astragalus tener* var. *titi* had not changed substantially since the time of listing in 1998. When the species was listed only one population was known from along the coast in Pebble Beach, Monterey County, California. Since 1992, annual population numbers have fluctuated between less than 100 and

7,000, depending on winter and spring climatic conditions. Approximately 2,000 individuals were observed in 2011, the last year that the population was surveyed. The population occurs on private lands owned by the Pebble Beach Company and the Monterey Peninsula Country Club. The two landowners have undertaken measures to protect and manage the habitat for *Astragalus tener* var. *titi*, including establishing one enclosure to protect a portion of the population, removing nonnative species from its habitat, and installing sensitive habitat signs along the road margins. *Astragalus tener* var. *titi* continues to be threatened by human activities such as hiking, picnicking, ocean viewing, wildlife photography, equestrian use, and golfing. In addition, there is little suitable habitat for the taxon to expand into adjacent to its current distribution because of habitat conversion that has already occurred. Deposition of cobble and saltwater inundation appear to be a new event that threatens the continued existence of the individuals along the edge of the coastal bluffs.

*Piperia yadonii* (Yadon's piperia)

*Piperia yadonii* (Yadon's piperia) is a slender perennial herb in the orchid family (Orchidaceae). It is endemic to Monterey County and is found within Monterey pine forest and maritime chaparral communities. As observed with other orchids, germination of seeds is believed to involve a symbiotic relationship with a fungus. The blooming season is brief, usually starting in mid-June and ending in early August. Individuals that flower in one year may not flower the next, and a portion of the population may be completely dormant in any given year. At the time of listing in 1994, habitat fragmentation and development were detailed as threats to the species.

At the time of the 2009 5-Year Review, the historical extent of suitable habitat for the species had become fragmented. There is still potential for continued habitat fragmentation but efforts to reduce fragmentation from development have been pursued (Service 2009b). Populations of *Piperia yadonii* have been protected through agreements with Pebble Beach Company, Naval Support Activity Monterey, and lands formerly part of Fort Ord. Since the time of listing, extensive surveys have detected an expanded known range, additional populations, and higher numbers of individuals. However, a number of factors have been shown to reduce the reproductive potential of the species, including high rates of herbivory that have significantly affected the populations of *P. yadonii* over time by reducing the ability of individual plants to survive and reproduce. More populations in permanent protection and managed for conservation are needed to ensure the long-term survivability of the species.

*Potentilla hickmanii* (Hickman's potentilla)

*Potentilla hickmanii* (Hickman's potentilla) is a small perennial herb in the rose family. It is restricted to two general areas, one in San Mateo County and one in Monterey County, California, where it occurs within coastal terrace prairie habitat. In San Mateo County, a population of between 2,000 and 3,000 individuals is scattered over a half square mile (sq mi) (130 hectares (ha)). In Monterey County, one population comprised of less than 20 plants occurs on less than one quarter of an acre (0.1 ha). The species is threatened by alteration of habitat due to development, changes in hydrologic regime, and invasion by nonnative species.

At the time of the 2009 5-Year Review, in addition to the two native populations, greenhouse-grown plants were outplanted to a site at Point Lobos State Reserve in Monterey County in 2006 (Service 2009c, entire). This effort was unsuccessful in establishing a self-sustaining population highlighting the need to preserve the natural populations. Habitat threats remain at all native sites, and include altered hydrology, grazing by a variety of wildlife species, cattle, and nonnative slugs and snails. The population in San Mateo County has been secured from development due to the acquisition of the land by the National Park Service as part of the Golden Gate National Recreation Area. The Monterey County population occurs on private lands with protective land use designations and active management.

#### *Trifolium trichocalyx* (Monterey clover)

*Trifolium trichocalyx* is a small annual plant in the pea family (Fabaceae). The species was originally only known to from a 206-acre (83-hectare (ha)) area in the central portion of the Monterey Peninsula, Monterey County, California. This area is bordered by golf courses, residential development, and commercial development. In 2011, *Trifolium trichocalyx* was identified along logging roads in Mendocino County. Additional populations have since been found in Mendocino but the population sizes and area remain restricted. *Trifolium trichocalyx* was believed to be a classic fire follower, taking advantage of reduced forest cover that allows a significantly higher proportion of light to reach the herbaceous ground cover for the first few years after a fire. Based on the Mendocino County populations, it appears that more general ground disturbance that reduces competing cover also supports the species. The species becomes scarce when the forest canopy closes, persisting primarily as seed in the soil while shade and competition increase during succession of the forest community. The Monterey population has not been subject to a fire since 1987 when approximately 160 acres (65 ha) burned. The fire history of the Mendocino County populations are unknown but there is periodic disturbance from being along active logging roads with low to heavy use and associated maintenance activities.

Very few individuals have been observed within the Monterey population of *Trifolium trichocalyx* since listing in 1998. Prior to listing, 22 individuals were observed in 1995. No individuals were observed during surveys in 2016. Twenty three individuals were observed in 2017 and no surveys were conducted in 2018 (Service 2009d, entire; McCabe 2017, entire). Between 2,000 and 5,000 individuals have been observed across all the known Mendocino County populations since 2011 during annual surveys (Heise and Hulse-Stephens 2016, pp. 9-16). The remaining Monterey pine forest habitat (which may harbor *Trifolium trichocalyx* seed banks) on the Monterey Peninsula is still threatened with development and the alteration of natural fire cycles within Monterey pine forest. In addition, there is little suitable habitat at this location for the taxon to expand its current distribution because of residential and recreational development that has already occurred. The Mendocino County populations are subject to disturbance from road maintenance, logging activities, and competition with invasive species.

#### **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 *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickman's

potentilla), and *Trifolium trichocalyx* (Monterey clover) 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 *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon’s piperia), *Potentilla hickmanii* (Hickman’s potentilla), and *Trifolium trichocalyx* (Monterey clover) which will supersede those included in the Recovery Plan For Five Plants from Monterey County, California as follows:

#### Current recovery criteria

##### *Astragalus tener* var. *titi* (coastal dunes milk-vetch)

Downlisting for *Astragalus tener* var. *titi* can be considered when all of the following criteria have been achieved:

- a) At least five viable populations (i.e., populations that are stable or increasing based on multiple years of monitoring, including at least two populations in San Diego or Los Angeles Counties) occur on suitable habitat with few to no nonnative competitors, and no threats from trampling. The area surrounding each population should allow for movement and expansion.
- b) A minimum of five populations are on land that is permanently protected from development (e.g., residential, commercial, recreational, etc.) including the population that currently exists on Pebble Beach and Monterey Peninsula Country Club property. Funds must be available for appropriate long-term management. Protected habitat must be of adequate size and configuration to ensure that ecosystem and community processes (i.e., hydrologic regime, food webs, pollinator fauna, coastal dune community associates, and associated species) are maintained, and an adequate diversity of sites exist for colonization of new areas as microhabitat conditions change.
- c) Site selection, restoration, and plant reintroduction has been initiated in at least two historical localities in Los Angeles or San Diego Counties. These two reintroduced populations will be considered as part of the five populations of plants described in 1(a) and 1(b) above.
- d) The populations of plants are being adequately maintained, such that encroachment by nonnative plants, excessive herbivory, fire prevention activities, or other threats are not negatively affecting *Astragalus tener* var. *titi* directly or indirectly.
- e) The 17-Mile Drive population and additional populations have been appropriately managed such that monitoring has determined that these populations are stable or increasing for a minimum of 3 consecutive years.
- f) A seed bank has been established at a recognized institution that is certified by the Center for Plant Conservation.

*Piperia yadonii* (Yadon's piperia)

Downlisting for *Piperia yadonii* can be considered when all of the following criteria have been achieved:

- a) Secure and protect areas throughout the present range of *Piperia yadonii* that contain populations of sufficient size to ensure the long-term survival and recovery of the species. In the draft recovery plan, we stated that areas should be established that encompass and protect metapopulations of the *P. yadonii*; however, the information needed to define and delineate metapopulations is not available at this time. Until sufficient information is available for a metapopulation approach to *P. yadonii* conservation, we have identified areas and populations of plants that need to be protected to accomplish the goal of downlisting the species. To facilitate the identification of these areas and populations, we have divided the current range of the species into five geographic areas based on the known distribution of the plant: the Monterey Peninsula (Area 1), the area interior of the Monterey Peninsula (Area 2), northern Monterey County-Prunedale-Elkhorn (Area 3), the area east of Point Lobos State Reserve-Point Lobos Ranch (Area 4), and Palo Colorado Canyon (Area 5). The goal is to protect self-sustaining populations of *P. yadonii* in each of these five areas. By doing so, we will ensure both the preservation of the plant throughout its range and its representation in both of the community types in which it is known to occur (Monterey pine forest and maritime chaparral). A minimum of 12 populations will require protection: four in Area 1, three each in Areas 2 and 3, and one each in Areas 4 and 5. The two largest populations of *P. yadonii* occur in Area 1, and both of these populations should be protected to the maximum extent feasible. However, if this is not feasible, additional protected areas may be required in Area 1. These additional areas would be necessary to ensure an adequate number of individuals are protected and that Monterey Pine Forest habitat occupied by *P. yadonii* is adequately represented. The protected areas must be of adequate size and configuration to ensure the following: 1) maintenance of ecosystem and community processes and constituent species (e.g., hydrologic regime, drainage patterns, proximity to pollinator habitat, Monterey pine forest and maritime chaparral community associates); 2) continued, unimpeded gene flow between populations, either through wind-dispersed seed or animal-mediated pollen exchange; 3) an adequate diversity of sites for population expansion and for colonization of new areas as microhabitat conditions change; and 4) the persistence of *P. yadonii* populations throughout the full range of environmental conditions they are likely to encounter (e.g., extended drought, wildfire). Protected areas should be as large as possible (e.g., hundreds of acres) and configured such that they preserve ecosystem function and minimize the adverse influences of adjacent development. Protected areas of greater than a hundred acres will not be feasible at all locations; therefore, the ability of smaller areas to fulfill the criteria should also be considered. Adequate, long-term funding should be available for these protected areas to allow for their maintenance.
- b) Protected areas are adequately maintained, such that encroachment by non-native plants (e.g., *Genista monspessulana*, *Cortaderia jubata*), excessive herbivory (from deer and rabbits), edge effects from road maintenance, fuel modification activities, or other threats do not directly or indirectly adversely affect *Piperia yadonii* and its habitat.
- c) Results of monitoring activities have determined that the protected populations of *Piperia yadonii* are of adequate size to be self-sustaining and to ensure their long-term persistence. Because this species is a perennial that exhibits dormancy, spending an undetermined period

underground between seed germination and emergence of first leaf aboveground, it is likely that a minimum of 10 to 15 years of monitoring will be needed in order to define a population trend.

*Potentilla hickmanii* (Hickman's potentilla)

Downlisting for *Potentilla hickmanii* can be considered when all of the following criteria have been achieved:

- a) At least five viable populations (i.e., populations that are stable or increasing based on a minimum of 10 years of monitoring) occur in suitable habitat.
- b) All five of the sites are on land that is protected from human-induced disturbance. Funds must be available for appropriate long-term management. As determined by research, protected habitat must be of adequate size (large enough to support a functioning ecosystem [e.g., species present to support seed dispersal and pollination, areas that support fluctuating distributions, areas that harbor suitable unoccupied habitat for population expansion]) and configuration to ensure that ecosystem and community processes and associated species (e.g., hydrologic regime, food webs, pollinator fauna, forest meadow communities) are maintained, and that an adequate diversity of sites exist for population expansion and for colonization of new areas as microhabitat conditions change. One of these protected sites should be the Indian Village population; another should be the Montara population in San Mateo County.
- c) Surrounding vegetation has been managed for a reduction of nonnative plant species and nonnative snails and slugs. The populations should be adequately maintained, such that encroachments by nonnative plants and herbivorous predators (including deer) are not negatively affecting *Potentilla hickmanii* directly or indirectly.
- d) The populations have been appropriately managed to such a degree that monitoring has determined the populations are of adequate size, density, and number that the trend for each of the populations is projected to be stable or increasing in the future.
- e) A seed bank has been established at a recognized institution certified by the Center for Plant Conservation.

*Trifolium trichocalyx* (Monterey clover)

Downlisting for *Trifolium trichocalyx* can be considered when all of the following criteria have been achieved:

- a) At least five viable populations (i.e., populations that are stable or increasing based on a minimum of 12 years of monitoring) occur in suitable habitat. One of these populations is the Huckleberry Hill population.
- b) All five of the sites are on land that is protected from human-induced disturbance (i.e. development, recreation) that would negatively affect growth or reproduction of the plants. Funds must be available for appropriate long-term management. As determined by research, protected habitat must be of adequate size (large enough to support a functioning ecosystem [e.g., species present to support seed dispersal and pollination, areas that support fluctuating distributions, areas that harbor suitable unoccupied habitat for population expansion]) and configuration to ensure that ecosystem and community processes and associated species (e.g., hydrologic regime, fire, food webs, pollinator fauna, Monterey pine forest communities) are

maintained, and that an adequate diversity of sites exist for population expansion and for colonization of new areas as microhabitat conditions change.

c) The Huckleberry Hill population and four additional viable populations (as described in (a) above) have been managed so as to allow regeneration of plants and replenishment of the seed bank found in the soil within the protected habitat.

d) A seed bank has been established at a recognized institution certified by the Center for Plant Conservation.

#### Amended recovery criteria

*Astragalus tener* var. *titi* (coastal dunes milk-vetch)

**Delisting Criteria:** 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. With respect to resiliency, all of the colonies in the Monterey Bay are considered to be part of one population. While some annual variability has been observed in the size of the population, numbers typically have not been over 3,000 individuals – a small number for an annual taxon. The historical distribution of colonies within three geographically separated areas (Monterey Peninsula, coastal Los Angeles County, and coastal San Diego County) is important to its redundancy and representation. Currently, the taxon only occurs on the Monterey Peninsula; therefore, redundancy and representation is low. Establishing additional colonies in the historical areas of Los Angeles County and San Diego County is key to increasing resiliency, redundancy, and representation for this taxon.

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: protection from recreational activities such as hiking, picnicking, equestrian use, and golfing; research is needed on soil seed bank dynamics.

2) unoccupied habitat in the area has been assessed for its suitability for reintroduction efforts directly adjacent to occupied patches to allow for expansion, especially to offset losses of patches along the immediate coast due to storm surge and saltwater intrusion; and three additional, new populations are established and protected where appropriate, with a goal of increasing redundancy and representation with the establishment of new populations on the Central Coast, in Los Angeles County, and San Diego County; and

3) all protected populations remain viable for at least 10 years to demonstrate long-term viability under a range of environmental conditions. We expect above-ground population size to fluctuate annually, based on response to amount and timing of rainfall (e.g. see Fox et al. 2006).

Therefore, a period of 10 years should be long enough to include most of the variability in rainfall that occurs in this region (Zedler & Black 1989; NOAA 2018).

*Piperia yadonii* (Yadon's piperia)

**Delisting Criteria:** 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 distribution of populations throughout Monterey County is important to its resiliency, redundancy, and representation. The downlisting criteria for this species discuss the goal of protecting multiple populations in each of five geographic areas within the county. Since the time the recovery plan was written in 2004, known populations have been provided with protection and management, and additional populations have been discovered in several different habitat types, and research has been conducted that contributes toward our understanding of how the species responds to annual variation in climatic conditions. Furthermore, robust abundance in favorable years coupled with its perennial life history, contributes to its resiliency.

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) maintaining and restoring habitat through control of nonnative species (especially grasses and broom), and b) control of herbivory by deer and small mammals;
- 2) a seed bank has been established at a recognized institution certified by the Center for Plant Conservation; and
- 4) all protected populations remain viable for at least 10 years to demonstrate long-term viability under a range of environmental conditions. Based on recent research by Graff (2006), we expect above-ground population size to fluctuate somewhat on an annual basis, based on response to amount and timing of rainfall. Even though this is a perennial species, the aboveground portion is herbaceous and dies back each year, and thus responds to some extent like an annual species. Therefore, a period of 10 years should be long enough to include most of the variability in rainfall that occurs in this region (Zedler & Black 1989; NOAA 2018).

*Potentilla hickmanii* (Hickman's potentilla)

**Delisting Criteria:** 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. With respect to resiliency, the colonies on the Monterey Peninsula are extremely small, while colonies in San Mateo County are more robust; overall, however, resiliency is still low. With respect to redundancy and representation, the species only occurs in one population on the Monterey Peninsula and one population in San Mateo County; therefore, redundancy and representation are also low. Establishing additional populations, particularly in the Monterey Peninsula area, is key to increasing resiliency, redundancy, and representation for this species.

When the downlisting criteria have been met for this species, it 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) maintaining and restoring habitat through control of nonnative grass species, and b) control of herbivory by deer and small mammals;
- 2) unoccupied habitat in the area has been assessed for its suitability for reintroduction efforts; the Monterey Peninsula area should be further assessed for potential sites. Two additional, new populations are established and protected where appropriate; and
- 3) all protected populations remain viable for at least 10 years to demonstrate long-term viability under a range of environmental conditions. We expect above-ground population size to fluctuate annually, based on response to amount and timing of rainfall (e.g. see Fox et al. 2006). Even though this is a perennial species, the aboveground portion is herbaceous and dies back each year, and thus responds to some extent like an annual species. Therefore, a period of 10 years should be long enough to include most of the variability in rainfall that occurs in this region (Zedler & Black 1989; NOAA 2018).

*Trifolium trichocalyx* (Monterey clover)

**Delisting Criteria:** 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. Since the time the recovery plan was written, the species has been discovered in Mendocino County. For this species, the distribution of colonies within two geographically separated areas (Monterey Peninsula area and Mendocino County) is important to its resiliency, redundancy, and representation. With respect to resiliency, the occurrences on the Monterey Peninsula are in poor or declining condition, and represented by a small number of individuals; as of 2017, less than 30 individuals were located here (McCabe 2017). In Mendocino County, the occurrences totaled approximately 3,300 individuals in 2016 (Heise and Hulse-Stephens 2016, pp. 9-16). Redundancy and representation are improved by the discovery of the Mendocino County occurrences but could still be improved given that the occurrences in both Mendocino and Monterey occur within a small area. Therefore, delisting criteria focus on increasing the number of colonies and individuals, such that resiliency, redundancy, and representation are all increased.

When the downlisting criteria have been met for this species, it 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. We currently do not know what the specific habitat needs are for this species. To the best we know now, the most outstanding management need currently is: a) integrate, or find a replacement for, a fire regime as a means of revitalizing declining or senescing colonies; and b) research on soil seed bank dynamics and conditions for germination;
- 2) unoccupied habitat in the area has been assessed for its suitability for reintroduction efforts; the area in Mendocino County where colonies were discovered in 2011 should be assessed, as

well as the Monterey Peninsula area. Also, two additional, new populations are established and protected where appropriate; and

3) all protected populations remain viable for at least 10 years to demonstrate long-term viability under a range of environmental conditions. Assuming that habitat was being managed to incorporate a fire regime to increase openness and to release fire-adapted seed, we would then expect above-ground population size to fluctuate annually, based on response to amount and timing of rainfall (e.g. see Fox et al. 2006). Therefore, a period of 10 years should be long enough to include most of the variability in rainfall that occurs in this region (Zedler & Black 1989; NOAA 2018).

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 *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickman's potentilla), and *Trifolium trichocalyx* (Monterey clover) 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. Legal challenges to recovery plans have affirmed the need to frame recovery criteria in terms of threats assessed under the five factors (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)). A 2006 Government Accountability Office audit of NMFS' and FWS' endangered species recovery programs recommended that the Secretaries of Commerce and Interior direct their staff to ensure that all new and revised recovery plans have either recovery criteria evidencing consideration of all five factors, or a statement regarding why it is not practicable to do so (GAO 2006).

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## APPENDIX A – SUMMARY OF PUBLIC, PARTNER, AND PEER REVIEW COMMENTS RECEIVED

### Summary of Public Comments

We published a notice of availability in the *Federal Register* on January 31, 2019 (84 FR 790-795) to announce that the proposed recovery plan amendment was available for public review, and to solicit comments by the scientific community, State and Federal agencies, Tribal governments, and other interested parties on the general information base, assumptions, and conclusions presented in the draft revision. An electronic version of the proposed recovery plan amendment was posted on the Service's Species Profile website ([https://ecos.fws.gov/docs/recovery\\_plan/Draft%20Recovery%20Plan%20Amendment%20MCIover%20CDMVetch%20YAPP%20HickPot.pdf](https://ecos.fws.gov/docs/recovery_plan/Draft%20Recovery%20Plan%20Amendment%20MCIover%20CDMVetch%20YAPP%20HickPot.pdf)). We also developed and implemented an outreach plan that included (1) publishing a news release on our national webpage (<https://www.fws.gov/news/>) on January 30, 2019, (2) sending specific notifications to Congressional contacts (D-20 Rep. Jimmy Panetta, D-18 Rep. Anna Eshoo, and D-24 Rep. Salud Carbajal), and (3) sending specific notifications to key stakeholders in conservation and recovery efforts. These outreach efforts were conducted in advance of the *Federal Register* publication to ensure that we provided adequate notification to all potentially interested audiences of the opportunity to review and comment on the proposed recovery plan amendment.

### Summary of Public Review Comments

*Comment (1):* Concern that, “criteria are being added in the absence of any scientific peer review and that this will lead to a failure on the Service’s part to follow the best-available science.”

*Response:* Peer review was conducted following the publication of the Notice of Availability, and in accordance with the requirements of the Endangered Species Act (Act). We provide a detailed summary of peer review comments below.

*Comment (2):* Concern that, “the decision to update recovery criteria for these 42 species as a group is indicative of the Service moving away from utilizing recovery teams and outside scientific expertise.”

*Response:* Section 4 of the Act provides the Service with the authority and discretion to appoint recovery teams for the purpose of developing and implementing recovery plans. The current effort to update recovery plans with quantitative recovery criteria for what constitutes a recovered species is not indicative of the future need for, and does not preclude the future utilization of, recovery teams to complete recovery planning needs for listed species.

*Comment (3):* New and significant information has been developed in the years since the existing recovery plan was adopted. Updating this plan can serve to better inform the Service, the regulated community, and Federal, State, and local resource agencies.

*Response:* We agree. A recovery plan should be a living document, reflecting meaningful change when new substantive information becomes available. Keeping a recovery plan current

increases its usefulness in recovering a species by ensuring that the species benefits through timely, partner-coordinated implementation based on the best available information.

*Comment (4):* The Service should consider whether the updated recovery criteria would be less burdensome on Federal agencies and the regulated community than the existing criteria.

*Response:* Recovery plans are guidance documents that outline how best to help listed species achieve recovery, but they are not regulatory documents. Recovery plans are intended to establish goals for long-term conservation of listed species and define criteria that are designed to indicate when the threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act.

Recovery criteria are achieved through the funding and implementation of recovery actions by both the Service and our partners. In addition to the existing recovery actions included in each of these recovery plans, the amendments address the need for any new, site-specific recovery actions triggered by the modification of recovery criteria, along with the costs, timing, and priority of any such additional actions. Because recovery plans are not regulatory documents, identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements. Nothing in a recovery plan should be construed as a commitment or requirement that any Federal agency obligate or provide funds.

*Comment (5):* The Service should consider whether the recovery criteria are achievable, because including unattainable recovery criteria could render such plans meaningless, or impede other processes under the Act.

*Response:* The National Marine Fisheries Service and U.S. Fish and Wildlife Service Interim Endangered and Threatened Species Recovery Plan Guidance (2010) emphasizes the development of recovery criteria that are specific, measurable, achievable, realistic, and time-referenced (SMART). The achievable component of SMART criteria implies that the authority, funding, and staffing needed to meet recovery criteria are feasible, even if not always likely.

In developing recovery criteria specifically, we attempt to establish criteria that are both scientifically defensible and achievable to the greatest extent possible. At times, however, the feasibility of achieving certain criteria can be, or appear to be, constrained by the particular, difficult circumstances that face a species. Even in such cases, criteria serve to guide recovery actions and priorities for the species. Furthermore, as recovery progresses, periodic reevaluation of the species status through the 5-year review process may reveal that the barriers to achieving certain criteria have been removed or that circumstances or our understanding of the species have evolved. In that event, the Service can revise recovery criteria to ensure that they reflect the strategy most likely to succeed in the goal of recovery.

*Comment (6):* The Service should consider conservation efforts that have been put into place for the listed species since the previous iteration of the recovery plan, especially where the Service has supported conservation efforts, in formulating recovery criteria that will be established or amended by the revised draft plan.

*Response:* We agree. While section 4 of the Act directs the Service to specifically develop and implement recovery plans, several other sections of the Act and associated programs and activities also provide important opportunities to promote recovery. Information from these programs and activities about the biological needs of the species can inform recovery planning (including the formulation or revision of recovery criteria) and implementation. These conservation efforts have been considered during the development of this and other recovery plans.

*Comment (7):* The Service should determine whether ongoing species conservation efforts beneficially address one or more of the listing factors set forth in the Act implementing regulations addressing species listings and designation of critical habitat.

*Response:* All Service decisions that affect the listed status or critical habitat designation of a particular species, including our 5-year review of each listed species, are made by analyzing the five factors described in section 4 of the Act. Such an analysis necessarily includes an assessment of any conservation efforts or other actions that may mitigate or reduce impacts on the species. While our objective with this particular effort was to establish objective, measurable criteria for delisting, conservation actions play a crucial role in determining if and when those criteria have been satisfied.

*Comment (8):* The Service should be mindful of the impacts that recovery plan criteria can have on the section 7 process of the Act for the regulated community, because the Service and other Federal resource agencies sometimes request that recovery criteria be addressed in biological assessments and other planning processes under the Act addressing listed species.

*Response:* We agree. Recovery plans can both inform, and be informed by section 7 processes of the Act. When revising a recovery plan, existing section 7 consultations may provide helpful information on: recent threats and mechanisms to avoid, minimize, or compensate for impacts associated with those threats; a summarized status of the species; and indication of who important partners may be. Section 7 consultations can inform the need for revised recovery actions, recovery implementation schedule activities, recovery criteria, or species status assessments to provide more comprehensive recovery planning while the species remains listed.

*Comment (9):* The Service should include the full panoply of current information available for the species in all revised draft recovery plans.

*Response:* Our recovery planning guidance recommends that recovery planning be supported by compilation of available information that supports the best possible scientific understanding of the species. Although it is not necessary to exhaustively include all current information within the text of the recovery plan, to the extent that this information is specifically relevant and useful to recovery, the recovery plan may summarize such material or incorporate it by reference. Supporting biological information may also be included within a species status assessment or biological report separate from the recovery plan document itself.

*Comment (10):* The Service should consider whether the existing recovery plan should be revised or replaced in its entirety rather than amended in part.

*Response:* Under guidance established in 2010, partial revisions allow the Service to efficiently and effectively update recovery plans with the latest science and information when a recovery plan may not warrant the time or resources required to undertake a full revision of the plan. To further gauge whether we had assembled, considered, and incorporated the best available scientific and commercial information into this recovery plan revision, we solicited submission of any information, during the public comment period, that would enhance the necessary understanding of the species' biology and threats, and recovery needs and related implementation issues or concerns. We believe the recovery plan amendment, which targets updating recovery criteria, is appropriate for the species. However, we will also continue to evaluate the accuracy and usefulness of the existing recovery plan with respect to current information and status of conservation actions, and may pursue a full revision of the plan in the future, if appropriate.

### **Summary of Peer Review Comments**

We solicited independent peer review between the draft and final revision of the plan amendment in accordance with the requirements of the Act from academic and scientific groups. Criteria used for selecting peer reviewers included their demonstrated expertise and specialized knowledge related to *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickman's potentilla), and *Trifolium trichocalyx* (Monterey clover). The qualifications of the peer reviewers are in the decision file and the administrative record for this recovery plan amendment.

In total, we solicited review and comment from 4 peer reviewers. We received comments from 1 peer reviewer. In general, the draft recovery plan revision was well-received by the reviewer who asked for additional information in the final version.

We considered all substantive comments, and to the extent appropriate, we incorporated the applicable information or suggested changes into the final revised recovery plan. We addressed the reviewer's specific comments and incorporated their suggestions as changes to the final revised recovery plan. Such comments did not warrant an explicit response, and as such, are not addressed here. We appreciate the input from the commenter, which helped us to consider and incorporate the best available scientific and commercial information during development and approval of the final revised recovery plan amendment.

## Recovery Plan Amendments for 10 Pacific Southwest Species

The U.S. Fish and Wildlife Service has identified best available information that indicates the need to amend recovery criteria for the species listed below. Each amendment is recognized as an addendum that supplements the specific portions of the existing recovery plans.

<b>Recovery Plan for Insect and Plant Taxa from the Santa Cruz Mountains in California</b>	
Original Recovery Plan Approved:	1998
Page(s) Superseded:	45-48
Species Included:	<i>Chorizanthe robusta</i> var. <i>hartwegii</i> (Scotts Valley spineflower)
<b>Recovery Plan for Five Plants from Monterey County, California</b>	
Original Recovery Plan Approved:	2004
Pages superseded:	49-56
Species Included:	<i>Astragalus tener</i> var. <i>titi</i> (coastal dunes milk-vetch) <i>Piperia yadonii</i> (Yadon's piperia) <i>Potentilla hickmanii</i> (Hickman's potentilla) <i>Trifolium trichocalyx</i> (Monterey clover)
<b>Recovery Plan for the Morro Shoulderband Snail and Four Plants from Western San Luis Obispo County, California</b>	
Original Recovery Plan Approved:	1998
Pages Superseded:	41-43
Species Included:	<i>Eriodictyon altissimum</i> (Indian Knob mountainbalm) <i>Cirsium fontinale</i> var. <i>obispoense</i> (Chorro Creek bog thistle) <i>Clarkia speciosa</i> ssp. <i>immaculata</i> (Pismo clarkia)
<b>Recovery Plan for Marsh Sandwort (<i>Arenaria paludicola</i>) and Gambel's Watercress (<i>Rorippa gambelii</i>)</b>	
Original Recovery Plan Approved:	1998
Pages superseded:	30-31
Species Included:	<i>Arenaria paludicola</i> (Marsh sandwort) <i>Rorippa gambelii</i> [ <i>Nasturtium gambelii</i> ] (Gambel's watercress)

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

**September 2019**

Approved: \_\_\_\_\_

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke, positioned above a horizontal line.

Regional Director, U.S. Fish and Wildlife Service  
Pacific Southwest Region

Date: \_\_\_\_\_

9/13/19