

**Nipomo Mesa Lupine**  
**(*Lupinus nipomensis*)**

**Draft Recovery Plan**



Nipomo Mesa lupine (*Lupinus nipomensis*) in bloom at Black Lake Ecological Area in San Luis Obispo County, California, March 19, 2019, Kristie Scarazzo, U.S. Fish and Wildlife Service

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

**April 2020**

## **Disclaimer**

Recovery plans delineate such reasonable actions as may be necessary, based upon the best scientific and commercial data available, for the conservation and survival of listed species. Plans are published by the U.S. Fish and Wildlife Service (USFWS), sometimes prepared with the assistance of recovery teams, contractors, state agencies and others. Recovery plans do not necessarily represent the view, official positions or approval of any individuals or agencies involved in the plan formulation, other than the Service. They represent the official position of the Service only after they have been signed by the Regional Director. Recovery plans are guidance and planning documents only; 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 this plan should be construed as a commitment or requirement that any Federal agency obligate or pay funds in any one fiscal year in excess of appropriations made by Congress for that fiscal year in contravention of the Anti-Deficiency Act, 31 U.S.C. 1341, or any other law or regulation. Approved recovery plans are subject to modification as dictated by new findings, changes in species status and the completion of recovery actions.

### **Recommended Citation:**

U.S. Fish and Wildlife Service. 2020. Draft Recovery Plan for Nipomo Mesa lupine (*Lupinus nipomensis*). U.S. Fish and Wildlife Service, Pacific Southwest Region. Ventura, California.

An electronic copy of this recovery plan is available at:  
<https://www.fws.gov/endangered/species/recovery-plans.html>.

## **Acknowledgements**

Many individuals, agencies and organizations provided useful information, technical assistance and expertise throughout the recovery planning process. We extend sincere thanks to the following list of individuals for their participation and contributions:

### *Recovery Team:*

Jim Anderson, Maintenance Superintendent, Santa Maria Refinery – Phillips 66  
Cherilyn Burton, Senior Environmental Scientist – California Department of Fish and Wildlife  
John Chesnut, Rare Plant Botanist – California Native Plant Society, San Luis Obispo Chapter  
Ronnie Glick, Senior Environmental Scientist – California Department of Parks and Recreation  
Barrett Holland, Biologist – California Department of Transportation, District 5  
Justin Luong, Species Expert – University of California Santa Cruz  
Lindsey Roddick, Restoration Ecologist – Land Conservancy of San Luis Obispo County  
Mark Skinner, Restoration Specialist II – Coastal San Luis Resource Conservation District  
Lisa Stratton, Director of Ecosystem Management – Cheadle Center for Biodiversity and Ecological Restoration  
Jenn Yost, Assistant Professor of Botany – California Polytechnic State University, San Luis Obispo

### *U.S. Fish and Wildlife Service:*

Kristie Scarazzo, Botanist – Ventura Fish and Wildlife Office  
Cat Darst, Assistant Field Supervisor – Ventura Fish and Wildlife Office  
Colleen Grant, Biologist – Ventura Fish and Wildlife Office

## **Introduction**

This document presents the U.S. Fish and Wildlife Service's (USFWS) plan for the conservation and recovery of Nipomo Mesa lupine (Nipomo lupine, *Lupinus nipomensis*). Pursuant to Section 4(f) of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.) development and implementation of recovery plans is required for listed species, unless such a plan would not promote the conservation of a particular species. Each recovery plan must include: (1) a description of site-specific management actions as may be necessary to achieve the plan's goals for the conservation and survival of the species; (2) objective, measurable criteria which, when met, would support a determination under Section 4(a)(1) that the species should be removed from the List of Threatened and Endangered Species; and (3) estimates of the time and costs required to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

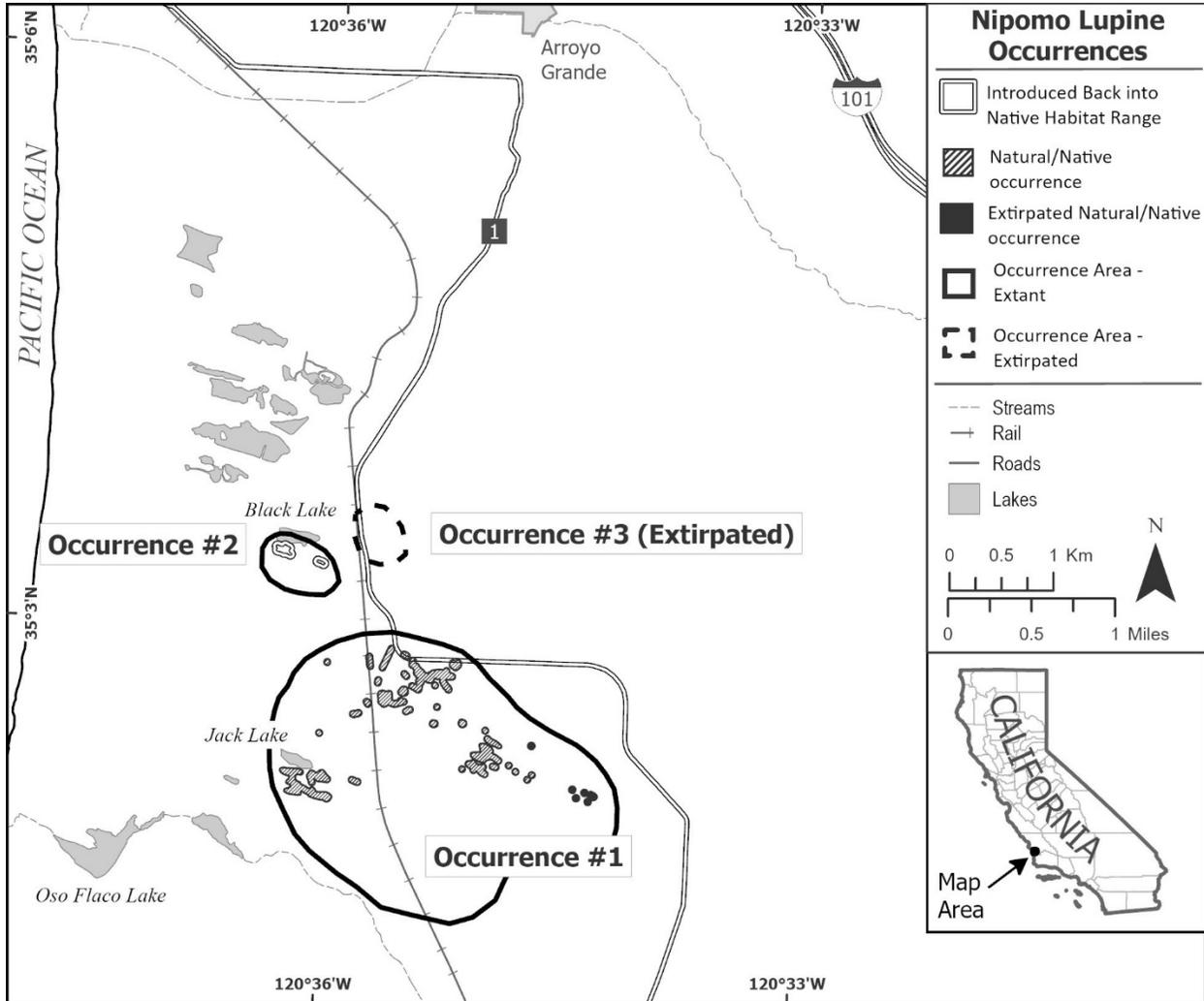
This recovery plan is based on the 2020 Nipomo Mesa Lupine Species Report (Species Report), which includes an evaluation of the best available scientific information on the species biology and needs, current status and viability, and an evaluation of its threats (USFWS 2020, entire). All the general information in this plan is summarized from the Species Report or is based on the results of the most recent field surveys, observations, and informational updates, unless otherwise cited. The specific operational tasks and activities required to implement the proposed recovery actions outlined within this plan are presented in the Nipomo Mesa Lupine Recovery Implementation Strategy (RIS). The RIS is a separate document from the recovery plan and can be modified and refined as needed, if new information becomes available or if the approach needs to be adjusted, therefore maximizing the flexibility of species recovery implementation.

## **Background**

Nipomo lupine was listed as an endangered species by USFWS under the ESA in 2000 (65 FR 14888). It has a recovery priority number of 5, indicating that the species faces a high degree of threat and has low potential for recovery. Critical habitat for Nipomo lupine has not been designated. USFWS conducted the first 5-year review of the species in 2009 and a subsequent review was completed in 2019. Neither of these evaluations resulted in a recommendation for change in species status and it remains listed as endangered (USFWS 2009 and USFWS 2019b, entire). In 1987, Nipomo lupine was listed by the State of California as an endangered species under the California Endangered Species Act of 1984 (California Code of Regulations, Title 14, §670.1 and 670.2, and California Department of Fish and Wildlife [CDFW] 2019).

Nipomo lupine is a small, annual species in the Fabaceae (legume; pea and bean) family restricted to stabilized coastal dune scrub habitat that is associated with the Nipomo Mesa, in southwestern San Luis Obispo County California. Its current geographic range is restricted to an area that is approximately 5.2 square kilometers (two square miles). The species range is situated behind the Callender Dune sheet, which is one of three dune formations that comprise the Guadalupe-Nipomo Dunes Complex. The species is known from a single population that is currently recognized as three separate occurrences in the CDFW California Natural Diversity Database ([CNDDDB] 2019). We use the CDFW definition of occurrence: populations, individuals, or colonies that are separated from other conspecifics by at least 0.40 km (0.25

mile). Two of the three occurrences are known to be extant (Occurrences 1 and 2), the smaller of which was re-established through experimental outplanting efforts (Occurrence 2). The third occurrence is extirpated. The location and distribution of the population is provided below in Figure 1.



**Figure 1.** Geographic distribution and status of the three occurrences of the Nipomo lupine (*Lupinus nipomensis*) population in southwestern San Luis Obispo County, California.

Germination of Nipomo lupine seed is likely stimulated by the first adequate rainfall event in the autumn or winter and occurs in patches of bare soil. After germination, individuals grow in stature, begin producing distinctively palmately compound, succulent, hairy leaves, and start branching until the first flowers appear between the months of March through May. Nipomo lupine inflorescences are dense racemes and the bottom flowers open and mature first. The flowers are spirally arranged around the central axis. The flowers are bilaterally symmetric and composed of five purplish to pink petals. Little is known about Nipomo lupine's breeding system. There is consensus among researchers that it is likely capable of both selfing and outcrossing, although a specific pollinator has yet to be identified. Most plants typically start to

form fruits between the months of April and June and do not stop fruiting until the plants die. The fruits are succulent legumes (like a conventional pea pod), which allows the seeds to continue to ripen in the pod, even if they are broken off or if the plant is pulled out of the ground. The pods eventually do dry out, which results in explosion of the fruits as a dispersal mechanism. Each fruit produces approximately three to five seeds. Nipomo lupine likely has a persistent seed bank because it has a hard, orthodox seed. However, species-specific studies on its ability to persist in the seed bank have not been conducted.

Nipomo lupine is a narrow endemic that occurs in the stabilized, vegetated dune scrub areas behind the open sand of the Callender Dune sheet. It has never been found anywhere else throughout the Guadalupe-Nipomo Dunes. The stabilized back dunes within this habitat type are dominated by mock heather (*Ericameria ericoides*), which is the primary indicator species of coastal dune scrub vegetation throughout the region. This habitat supports a high diversity of native annual forbs and a few other prominent non-native grasses and forbs. The coastal dune scrub habitat type is extremely dynamic and diverse, and the species composition is highly variable. This variability depends on the amount of annual rainfall, level of disturbance, current land use and/or management regimes, successional stage of development and degree of infestation from non-native invasive species, especially perennial veldt grass (*Ehrharta calycina*).

### **Threats**

The primary threats to Nipomo lupine include: displacement and habitat loss from invasive species (especially perennial veldt grass), development activities, seed predation, stochastic loss and extinction, and climate change. All of these threats are compounded by the species biology including: likely low genetic diversity (due to its apparent lack of an insect pollinator, selfing reproductive strategy, small population size, and small geographic extent), annual life cycle, dependence on adequate and seasonally-timed rainfall events to cue germination, and limited distribution of suitable habitat. Implementation of the recovery efforts outlined herein are expected to increase the overall species viability, so that it will be better equipped to withstand stochastic and catastrophic events and more able to adapt to environmental changes.

### **Recovery Vision**

The ultimate vision for Nipomo lupine recovery is survival and conservation of the species and its remaining habitat, as well as restoration to a fully viable state throughout its inherently small, historic range. Recovery of the species will be indicated by increasing population trends and threat reduction. Implementation of this recovery plan will lead to a comprehensive increase in the species' viability over time. Specifically, implementation of this plan will result in greater resiliency, redundancy, and representation, so that the species is more able to withstand stochastic and catastrophic events, and is better adapted to changing environmental conditions and other stressors. Implementation of the plan will reduce the species extinction risk and threats, so that protection under the ESA is no longer warranted.

## **Recovery Strategy**

The Nipomo lupine recovery strategy is the primary course of action designed to achieve recovery of the species, so that the threats are ameliorated and the risk of extinction is lowered to negligible levels. Recovery of the species requires that a sufficient number of occurrences are established, protected, and restored throughout the geographic range, to the degree necessary for them to be fully viable and self-sustaining, meaning the population trends are stable or increasing with minimal to low levels of management. Structured monitoring and additional studies need to be conducted in order to effectively assess viability, population trends, and whether the threats have been sufficiently reduced.

The primary strategy for recovery of Nipomo lupine is to implement a series of deliberate recovery actions to prevent extinction of the species and reverse declines. Simultaneously, ongoing annual monitoring efforts and several other focused research projects need to be conducted to fill specific knowledge gaps. Additional actions are to pursue partnering and land acquisition opportunities to introduce the species to new sites with suitable habitat (or those where the habitat can be effectively restored) across the historical range.

For the recovery strategy to be successful, land owners and other conservation partners must stay engaged and remain committed to achieving the recovery goals and objectives provided below. Efficient coordination and streamlined communications are needed for recovery strategy success.

## **Recovery Goals and Objectives**

The overarching goal of this recovery plan is to outline the suite of recovery actions that, when implemented, will facilitate downlisting of the species from an endangered to threatened species and culminate with delisting of the species when it has achieved full recovery. As such, the main recovery goal is to adequately and permanently protect viable and self-sustaining Nipomo lupine occurrences throughout its geographic range. Another primary goal of the plan is to reduce the threats to the species and its habitat for the purpose of conservation in perpetuity.

In order for the recovery goals to be met, a series of objectives need to be accomplished. The recovery objectives are the explicit tasks designed to transition Nipomo lupine from its current condition to a restored and viable condition. Species viability is defined as the ability to maintain populations in the wild over time and is characterized by the conservation biology principles of resiliency, redundancy and representation (Smith et al 2018, pg. 306-307). Additional information regarding the results and analysis used to quantify the current status of Nipomo lupine is presented in the Species Report (USFWS 2020, entire).

Nipomo lupine currently has low resiliency, meaning that the population has a reduced ability to withstand stochastic (or random) events. The population is currently comprised of less than a thousand individuals and has shown no signs of increasing, making it highly vulnerable to stochastic events. The species has low redundancy because it is such a narrow endemic with only a single population. Therefore, its overall ability to survive catastrophic events is low. It also likely has low representation, which means that it has reduced adaptive capacity to changes in the environment (whether they are human induced or naturally caused). While no genetic studies on Nipomo lupine have been conducted, we assume it has reduced genetic diversity because of

its small population size and because it is a self-pollinated, annual species. Similarly, it only occurs in one, limited habitat type or distinct ecological setting. Given its current condition, Nipomo lupine is at high risk of extinction.

The recovery objectives are to systematically increase the species' resiliency, redundancy, and representation to a viable and self-sustaining state suitable for this narrow endemic. The recovery objectives will be accomplished through implementation of a series of recovery actions that, over time, will restore species viability. Recovery will be signified by a consistent increase in the population over time and establishment of new self-sustaining (or resilient) occurrences. Annual monitoring data will demonstrate that resiliency is improved, with ample ecological representation across the range of available suitable habitat, and sufficient redundancy to ensure survival in the face of catastrophic events.

### **Recovery Criteria**

According to the definitions provided in the ESA, an endangered species is a species that is in danger of extinction throughout all or a significant portion of its range and a threatened species is one that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. When we evaluate whether or not a change in the species status is warranted, such as downlisting or delisting, we consider if the species continues to meet either of these definitions or not. A recovered species is one that no longer meets the definitions of endangered or threatened because the threats to that species have been ameliorated and its viability has been restored to levels expected to be sustainable into the foreseeable future.

Recovery criteria outline the specific conditions that, when met, indicate that a species warrants downlisting or delisting. Criteria also serve as the performance measures or targets to track the species progress towards achieving recovery. Recovery criteria are our best assessment at this time of what needs to be completed so that the species may be downlisted from an endangered to threatened species and subsequently removed from the list of threatened and endangered species. Because we cannot predict the exact course that recovery may take and because our understanding of the species vulnerability to threats is likely to change as more information becomes available about the species and the threats, it is possible that a status review may indicate that downlisting is warranted even though not all of the recovery criteria have been met. Conversely, it is possible that the recovery criteria could all be met and a status review may indicate that downlisting is still not warranted because, for example, a new threat emerged that is not addressed in the current recovery criteria.

### **Downlisting and Delisting Criteria**

At the time of listing, Nipomo lupine was known from a single population, made up of as many as seven colonies with fewer than 700 plants (65 FR 14888). Synthesis of data from historic herbaria suggest that there were likely three known occurrences of the species throughout its geographic range, including: State Route 1 near entrance of Phillips 66, vicinity of Black Lake, and vicinity of Jack Lake. Collections at these locations occurred between 1933 and 1965 (Consortium of California Herbaria Portal [CCH2] 2019). Currently, Occurrence 1 is the largest original, extant occurrence (shown previously, Figure 1). Based on expert opinion at this time, a

resilient state for Occurrence 1 is defined as not fewer than 1,000 reproducing individuals distributed across the spatial extent of the occurrence. For all other occurrences, a resilient state is defined as no fewer than 300 reproducing individuals, distributed across the spatial extent of each occurrence. The average percent of the population that is reproductive across the past 10 years is approximately 45 percent (USFWS 2019a, pg. 12). Between 2007 and 2017, the proportion of Occurrence 1 that was reproductive ranged from a low of 10 percent in 2015 to a high of 66 percent in 2007 (USFWS 2019a, pg. 12). Given this range of variation, the species experts agree that the reproductive capacity of Occurrence 1 needs to increase, and at least double from what it is currently, to be resilient. We expect future demographic research and continued monitoring to refine our understanding of the number of reproducing individuals required for population resiliency at any given occurrence.

### Downlisting Criteria

Nipomo lupine may be considered for downlisting when the following criteria are met:

1. At least three resilient occurrences display stable or increasing population trends averaged over 10 consecutive years;
2. Each of the three resilient occurrences is protected from habitat loss, including development activities;
3. Each of the three resilient occurrences is being managed in a way that will support continued existence of Nipomo lupine and its coastal dune scrub habitat, including management of non-native, invasive species;
4. Management is effective as shown by monitoring for 10 consecutive years; and
5. An *ex situ* permanent conservation seedbank is established in a Center for Plant Conservation-affiliated botanic garden that reflects the breadth of the species' genetic diversity.

Having three resilient occurrences will increase the species redundancy back to what it likely was historically and increase its representation throughout its limited range. Ten years typically encompasses the full range of wet and dry year variation in coastal California.

### Delisting Criteria

Once the downlisting criteria have been met, Nipomo lupine may be considered for delisting when the following criteria are met:

1. At least five resilient occurrences, are successfully established within the Guadalupe-Nipomo Dunes Complex, and display stable or increasing population trends averaged over 10 consecutive years;
2. Each of the five resilient occurrences is protected from habitat loss, including development activities;

3. Each of the five resilient occurrences is being managed in a way that will support continued existence of Nipomo lupine and its coastal dune scrub habitat, including management of non-native, invasive species; and
4. Management is effective as shown by monitoring for 10 consecutive years.

Having five resilient occurrences would further increase the species redundancy and representation, so that it is better equipped and more able to withstand catastrophic events and potential environmental changes, particularly in the face of climate change. Threats from climate change, including increased drought, flooding, and wildfire (Service 2020, p. 14-15), are predicted to be persistent in ways that the species has not experienced in the past, warranting increased redundancy and representation to mitigate extinction risk.

### **Nipomo Lupine Recovery Actions**

Recovery actions are the prioritized, site-specific interventions that need to be taken to conserve, manage, restore, and enhance the current condition of Nipomo lupine and its habitat to meet the recovery criteria. The recovery actions identified are based on the best available science and are those that the USFWS and other species experts deem imperative to move Nipomo lupine towards recovery.

Nearly all of the Nipomo lupine recovery actions need to be initiated immediately given the level of urgency associated with the species' high extinction risk. Some of the recovery actions are designed to help inform future management endeavors and therefore, may take longer to implement. Examples of these types of recovery actions include research-based elements that, when accomplished, will fill important knowledge gaps and inform subsequent restoration plans and recovery decisions. Most of the recovery actions pertain to the two extant occurrences, but will also apply to any new outplanting sites, once they are established. The recovery actions for Nipomo lupine are provided below.

1. **Protect all currently unprotected habitat where the species occurs.** The coastal dune scrub habitat associated with Nipomo lupine has a limited distribution and is considered a sensitive vegetation type. USFWS will work with potential partners to establish conservation easements, fee title agreements, or other appropriately protective measures on private lands that support the species and its habitat for conservation.
2. **Conduct outplanting activities at suitable sites to establish new occurrences throughout the Guadalupe-Nipomo Dunes region.** Potential outplanting locations include:

- Kathleen’s Canyon Overlook – located along Black Lake Canyon, on the corner of Callender Road and State Route 1 in rural Arroyo Grande. The Land Conservancy of San Luis Obispo (LCSLO) recently purchased this 55-acre site for conservation purposes.
  - Coreopsis Hill – located south of Oso Flaco Lake, southwest of the town of Nipomo, and less than one mile directly inland from the Pacific Ocean. The site is jointly owned by California Department of Parks and Recreation, Oceano Dunes State Vehicular Recreation Area and private landowners that support environmental stewardship and long-term preservation of the property. However, a conservation easement for the site has not yet been established with the private entity. The site is approximately 60 acres.
  - USFWS Guadalupe-Nipomo Dunes National Wildlife Refuge (Refuge) – a 2,553-acre site located northwest of the town of Guadalupe and west of State Route 1. The property is part of a national system that is managed specifically for conservation purposes.
  - Guadalupe Oil Field – a remediation site for diluent contaminants that is owned and managed by Chevron Corporation in cooperation with several other agencies and partners. The property is located on the north side of the Santa Maria River and immediately south of the Refuge. It is 2,700 acres in size.
  - Dune Lakes Limited – a privately owned duck-hunting club located north of Black Lake and south of the town of Oceano. LCSLO holds a conservation easement on approximately 970 acres of this 1,255-acre property.
  - Oceano Dunes Natural Preserve – this property is part of the Oceano Dunes State Vehicular Recreation Area and is owned and managed by California Department of Parks and Recreation. The preserve area is approximately 500 acres and is located southwest of the town of Oceano.
  - Trilogy Dunes Open Space – this site is located southeast of the Phillips 66 Refinery and is designated as an open space preserve to offset impacts from two associated residential developments under the California Environmental Quality Act. The property is approximately 175 acres.
3. **Manage habitat that supports the species to reduce or eliminate threats** to the population (particularly non-native, invasive weeds) and to foster natural regeneration and recruitment of Nipomo lupine.
  4. **Collect seed and deposit accessions into the permanent conservation seedbank** established for the species at the Santa Barbara Botanic Garden that includes additional backup sent to the U.S. Department of Agriculture’s National Laboratory for Genetic Resource Preservation seed vault, located in Fort Collins, Colorado.

5. **Conduct annual census monitoring and experimental research projects** across the occurrences to fill data gaps and document the progress of recovery implementation.
6. **Determine those factors necessary for seed survival, optimal germination, and effective seedling establishment** and use this information to ensure future recovery efforts. In particular, consider the role of disturbance, predation, and pollination on the species viability.
7. **Conduct genetics and demographic research** to better inform future recovery activities and criteria. Examples of potential projects include:
  - Investigate the effects of outplanting on the species genetic variability and compare variability of extant occurrences to that of propagated lines.
  - Determine the number of reproducing individuals required for population resiliency in any given occurrence.
  - Quantify seedbank longevity.
8. **Develop opportunities for education and outreach** within local and regional communities, and throughout San Luis Obispo County.

### **Estimated Time and Cost of Recovery Actions**

Table 1 below summarizes the estimated time and costs to achieve recovery of Nipomo lupine. The costs include financial, volunteer, and in-kind support as well as other conservation endeavors likely to be supported by other cooperating agencies. The estimate does not include any actions that have already taken place or project funding that was obligated prior to development of this recovery plan. We anticipate that full implementation of the recovery actions will improve the condition and status of Nipomo lupine, so that the imminent threat of extinction is ameliorated. Simultaneously, implementation of the research-based recovery actions needs to be initiated. We assume 5 years for implementation of recovery actions associated with new outplanted occurrences. As soon as the recovery actions are completed and the results from the research-based elements are available, the species will likely be eligible for reclassification as a threatened species after 10 consecutive years of monitoring. After that 10-year time period, persistence of viable, self-sustaining populations will be further assessed and monitored, and the recovery actions will continue to be implemented. After 20 consecutive years of monitoring and full implementation of all the recovery actions (a total of 25 years), we expect consideration of the species for delisting to be plausible.

**Table 1.** Estimated Time and Costs of Nipomo Lupine Recovery Action

<b>Recovery Action Number</b>	<b>Recovery Action</b>	<b>Estimated Time to Achieve</b>	<b>Estimated Cost</b>
1	Acquire/safeguard all currently unprotected habitat where the species occurs*	3 years	\$1,500,000
2	Conduct outplanting activities at suitable sites to establish new occurrences throughout the Guadalupe-Nipomo Dunes region**	3-5 years	\$1,000,000
3	Manage habitat that supports the species to reduce or eliminate threats	20 years	\$3,000,000
4	Continue to collect seed and deposit accessions into the permanent conservation seedbank	10 years	\$10,000
5	Conduct annual census monitoring and experimental research projects***	20 years	\$750,000
6	Determine those factors necessary for seed survival, optimal germination, and effective seedling establishment	5 years	\$450,000
7	Conduct genetics and demographic research	5 years	\$175,000
8	Develop opportunities for education and outreach	30 years	\$10,000
		<b>TOTAL ESTIMATED COSTS</b>	<b>\$6,895,000</b>

\*Assumes a conservation easement will be established on a single property whereas the current owner would maintain grazing rights with prohibitive development uses at a cost of approximately 30 to 50 percent of the total property value.

\*\*Cost is to establish three additional new occurrences to achieve five extant occurrences, which is a recovery criterion for delisting.

\*\*\*Assumes a total of 10 consecutive years to achieve the downlisting criteria and another 10 consecutive years to achieve the delisting criteria.

## Literature Cited

- [CDFW] California Department of Fish and Wildlife. 2019. State and Federally Listed Endangered, Threatened, and Rare Plants of California. Last Updated: October 3, 2019. Available Online at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline>.
- California Natural Diversity Database. 2019. RareFind 5. California Department of Fish and Wildlife, Government Version 5.82.16, dated September 30, 2019. Public Viewer Available Online at: <https://apps.wildlife.ca.gov/bios/>.
- [CCH2] Consortium of California Herbaria Portal. 2019. Data for *Lupinus nipomensis*. Available Online at: <http://www.cch2.org/portal/>.
- Smith, D.R., N.L., Allan, C.P. McGowan, J.A. Szymanski, S.R. Oetker, and H.M. Bell. 2018. Development of a species status assessment process for decisions under the U.S. Endangered Species Act. *Journal of Fish and Wildlife Management* 9(1): 302-320.
- [USFWS] U.S. Fish and Wildlife Service. 2020. Species report for Nipomo Mesa lupine (*Lupinus nipomensis*). Version 1.0. Ventura, California.
- USFWS. 2019. 5-Year review: summary and evaluation for Nipomo Mesa lupine (*Lupinus nipomensis*). Ventura, California.
- USFWS. 2009. 5-Year review: summary and evaluation for Nipomo Mesa lupine (*Lupinus nipomensis*). Ventura, California.