



Protection of the Dune Protected Areas from Invasive Species Threats *(amended)*

Recipient: The Land Conservancy of San Luis Obispo County

Project Period: 11/01/2022 – 10/27/2023

Award Amount: \$78,835.92

Project Number: #8006.23.078572

Summary of Accomplishments

Invasive plant species were controlled within two Dune Protect Areas (DPAs) of the Guadalupe Nipomo Dunes Complex; The Guadalupe-Nipomo Dunes National Wildlife Refuge (Refuge) and, Black Lake Ecological Area (BLEA) (owned and managed by The Land Conservancy of San Luis Obispo County). Invasive species control was focused on Iceplant (*Carpobrotus* spp) over 67.8 acres within the Refuge and on perennial veldt grass (*Ehrharta calycina*) and European beachgrass (*Ammophila arenaria*) over 120 acres within BLEA. This project has enhanced and protected important foredune and coastal scrub habitat, essential to rare and common native species found in the coastal dune ecosystem.

Project Activities & Outcomes

This project has protected and enhanced coastal habitats through the following tasks:

Task 1: Control iceplants (Carpobrotus spp) within a 58-acre Refuge treatment area to build upon iceplant control work already being conducted within the neighboring DPA.

Iceplant control was completed in December 2022 over five days (December 13, 14, 15, 16, and 19). A total of 67.8 acres of iceplant was treated using 1.5% Roundup Custom. Monitoring using the grid surveying method to record percent cover of iceplant was completed in the treatment zone.

A survey for special status plant species was completed prior to treatment (December 13 & 14) and pin flags were placed southwest of individuals to notify applicators of their presence. This survey is not a census as it was not completed during peak season. Totals for each species found are given in Table 1 and Figure 2. The Land Conservancy's restoration crew was trained on native species identification with special consideration for special status species.

Table 1: Rare Plant species detected in the treatment area in December 2022.

Species	Number of Plants Detected in December 2022
Dune spectaclepod (<i>Dithyrea maritima</i>)	1108
Surf thistle (<i>Cirsium rhotophilum</i>)	982

Task 2: Control perennial veldt grass and European beachgrass within the 129-acre BLEA DPA while creating defensible spaces to minimize reintroduction from plant propagules.

Invasive species control was implemented during two treatment events, December 2022 and February/ March 2023. Several treatment methods were utilized including a helicopter grass specific herbicide treatment, backpack herbicide treatment, and mechanical removal (mainly with hands). Invasive species targets included perennial veldt grass (*Ehrharta calycina*), Iceplant (*Carpobortus* spp.), slender leafed iceplant (*Conicosia pugeniformis*), and Sahara mustard (*Brassica tournefortii*).

The herbicide application took place following a rare plant survey of the project area conducted by LCSLO's Restoration Ecologist. During this survey, all federal and state listed plant species were marked with a pin flag and no herbicide application will take place 15-25 ft surrounding the plant. Nipomo lupine (*Lupinus nipomensis*) was the only listed species detected. Perennial veldt grass was be hand pulled within rare plant buffers.

English Air completed an aerially-applied herbicide treatment within 86 acres of the Black Lake DPA on December 8, 2022. Clethodim, a grass specific herbicide was used with a 100-foot buffer around wetlands and sensitive resources. Following the aerial application, ground crews treated an additional 32.8 acres within helicopter buffer zones and where the helicopter was unable to reach over four days using Roundup. A veldt grass herbicide treatment within the eucalyptus ring was completed on December 22 & 23, 2022 across 4.5 acres. Hand removal of Sahara mustard (*Brassica tournefortii*) was completed on the east side of the DPA (near the railroad tracks) on January 6th, 2023. Monitoring using the grid surveying method to record percent cover of veldt grass was completed in the treatment zone.

Hand removal of perennial veldtgrass was completed within the 25-foot buffer surrounding all Nipomo lupine on December 2nd and again in January 2023 (4th and 5th). The Nipomo lupine population is monitored by UCSB's Cheadle Center for Biodiversity and Ecological Restoration. Their team provides valuable research that helps determine the property's management. Required state 2081a permitting was completed. The 2081a permit allows management within the Nipomo lupine habitat and is reported each year to CDFW. Each year, rare species are reported to the California Natural Diversity Database (CNDDDB) to maintain important collection permits for staff.

A second treatment of invasive species (perennial veldt grass and iceplants) was completed in February and March 2023 with aerial and backpack treatments, using the same methods as the December 2022 treatment. English Air completed an aerially-applied herbicide treatment within 86 acres on February 16, 2023. Following the aerial application, ground crews treated an additional 36.3 acres within helicopter buffer zones and where the helicopter was unable to reach over nine days

using Roundup (two days were completed in April 2023 with matching funds). Hand removal of perennial veldt grass was completed within the 25-foot buffer surrounding all Nipomo lupine plots and Sahara mustard on the east side of the DPA (near the railroad tracks) on March 1, 2023 as well as periodically following herbicide treatments.

Maps of treatment areas are given below.

This funding has provided important gap funding while a long-term endowment was established. Without this funding, an entire year of invasive species threats would not be controlled, allowing invasive species to increase their seed bank and threaten rare native habitats. The work completed within this project is protected by the long-term funding that has now been secured. The long-term endowment will provide the necessary funds to continue invasive species management annually in perpetuity within both DPAs.

Lessons Learned

A combination of treatment methods provided the best management of the diverse set of invasive plant species targets. The helicopter herbicide treatment was cost efficient and provided consistent coverage for the control of veldt grass. Backpack sprayers were better suited for iceplant treatments and were necessary within the 100 ft buffer of sensitive resources. Hand removal was best suited very close to sensitive resources. Together the treatments allowed good coverage over the entire project area.

This project experienced very wet conditions during the implementation of this project. Significant rain and subsequent fallen trees made the timing of treatment difficult. Fallen trees prevented normal access but creative solutions were made. A friendly neighbor allows our vehicles to park on their property.

Dissemination

The Land Conservancy collaborates with other dune habitat restoration entities such as State Parks, USFWS Refuge system, and neighboring private land frequently through a group called the Dunes Collaborative. Lessons learned are easily shared between partners and property managers through this group.

POSTING OF FINAL REPORT: *This report and attached project documents may be shared by the Foundation and any Funding Source for the Project via their respective websites. In the event that the Recipient intends to claim that its final report or project documents contains material that does not have to be posted on such websites because it is protected from disclosure by statutory or regulatory provisions, the Recipient shall clearly mark all such potentially protected materials as "PROTECTED" and provide an explanation and complete citation to the statutory or regulatory source for such protection.*

Project Photos

Guadalupe Nipomo Dunes National Wildlife Refuge

Iceplant Treatment December 2022

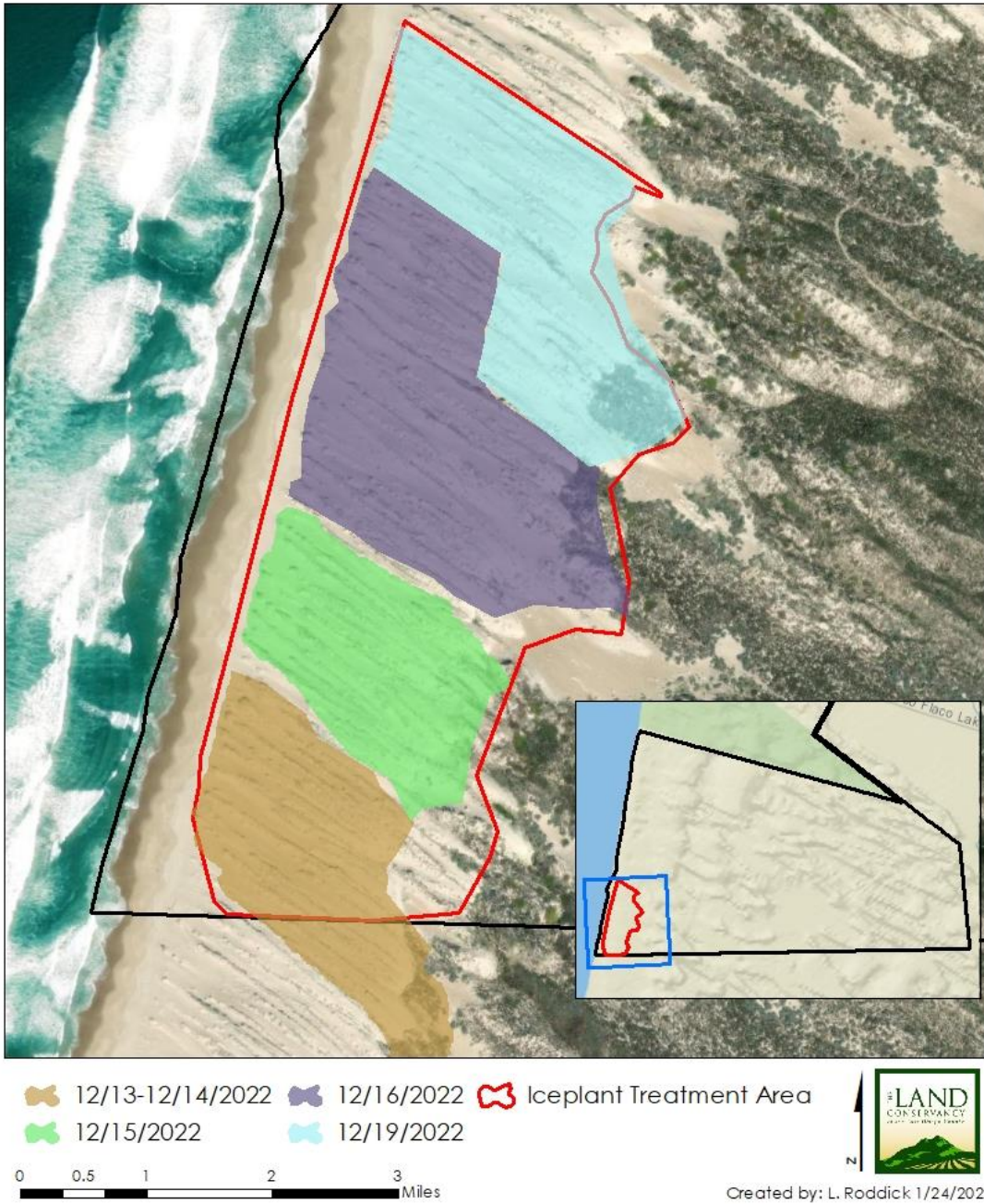
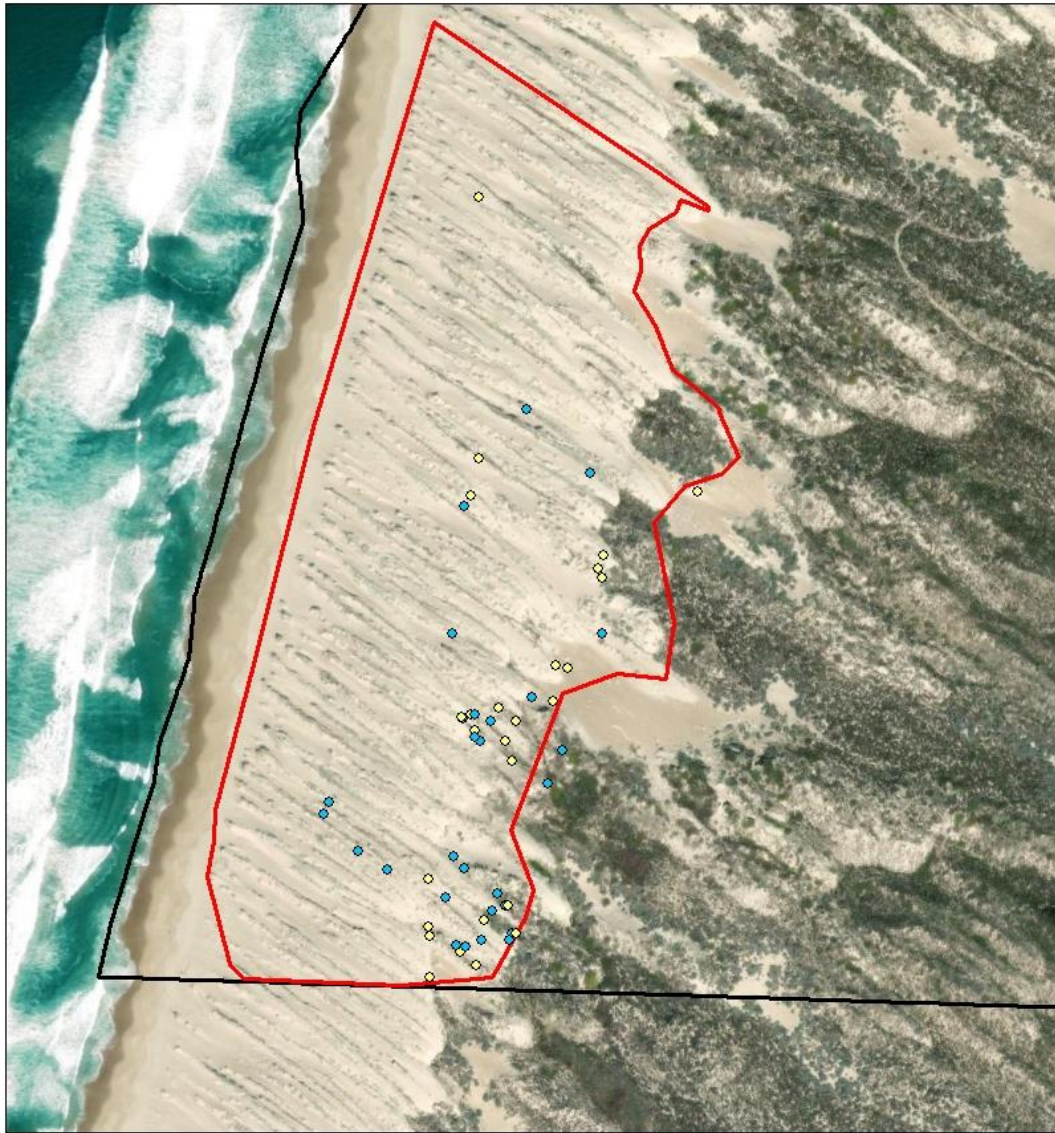


Figure 1: Herbicide Treatment for Iceplant with the Refuge completed in December 2022.

Guadalupe Nipomo Dunes National Wildlife Refuge

Rare Plant Species December 2022



- ◊ Dune spectaclepod
 - ◆ Surf thistle
- Iceplant Treatment Area

0 0.5 1 2 3 Miles



Created by: L. Roddick 1/24/2022

Figure 2: Rare plants detected within the treatment zone prior to treatment.

Black Lake Ecological Area

Veldt Grass Treatment Decmeber 2022

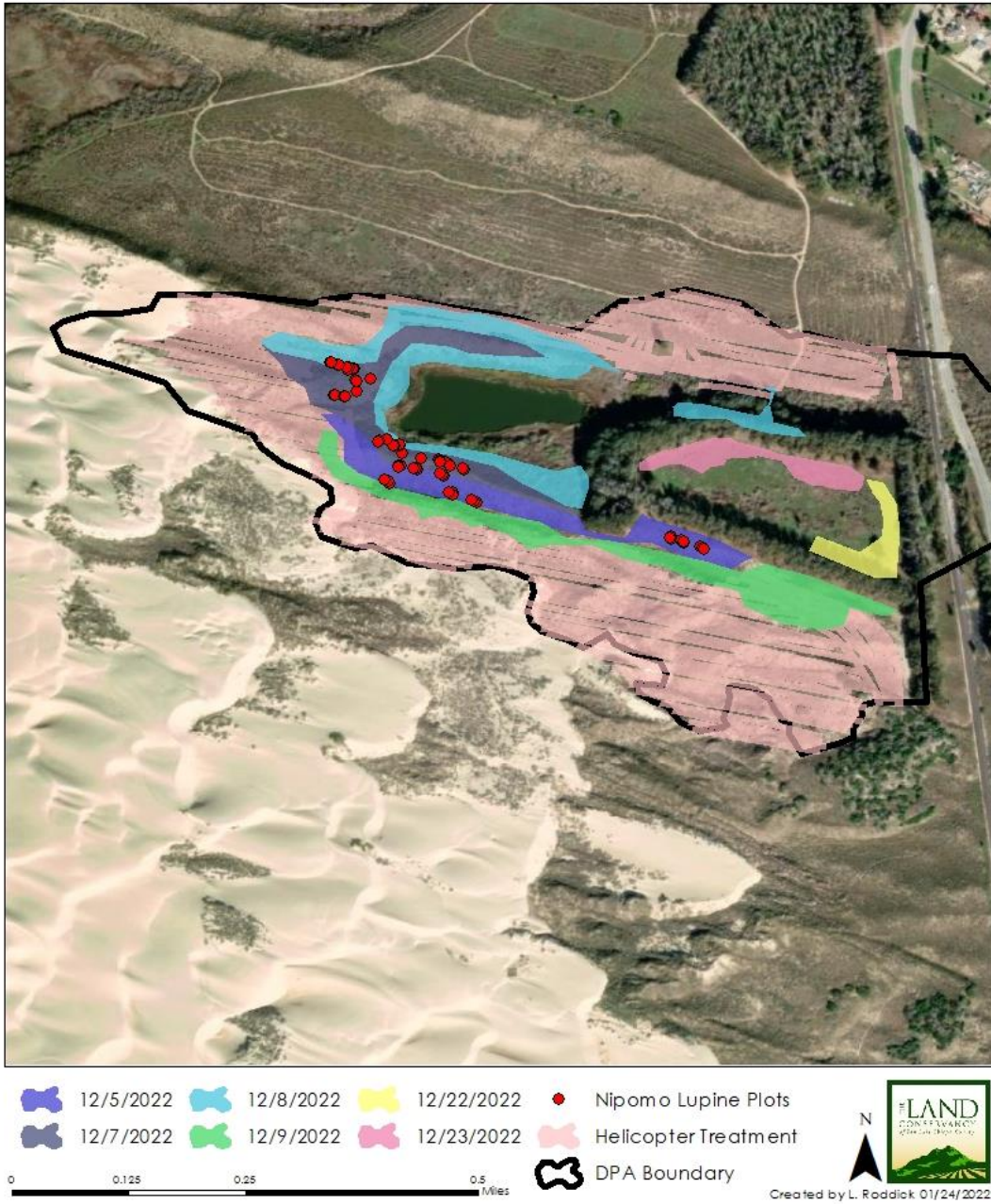


Figure 3: Invasive plant species control within Black Lake Ecological area completed in December 2022.

Black Lake Ecological Area

Invasive Species Management March 2023

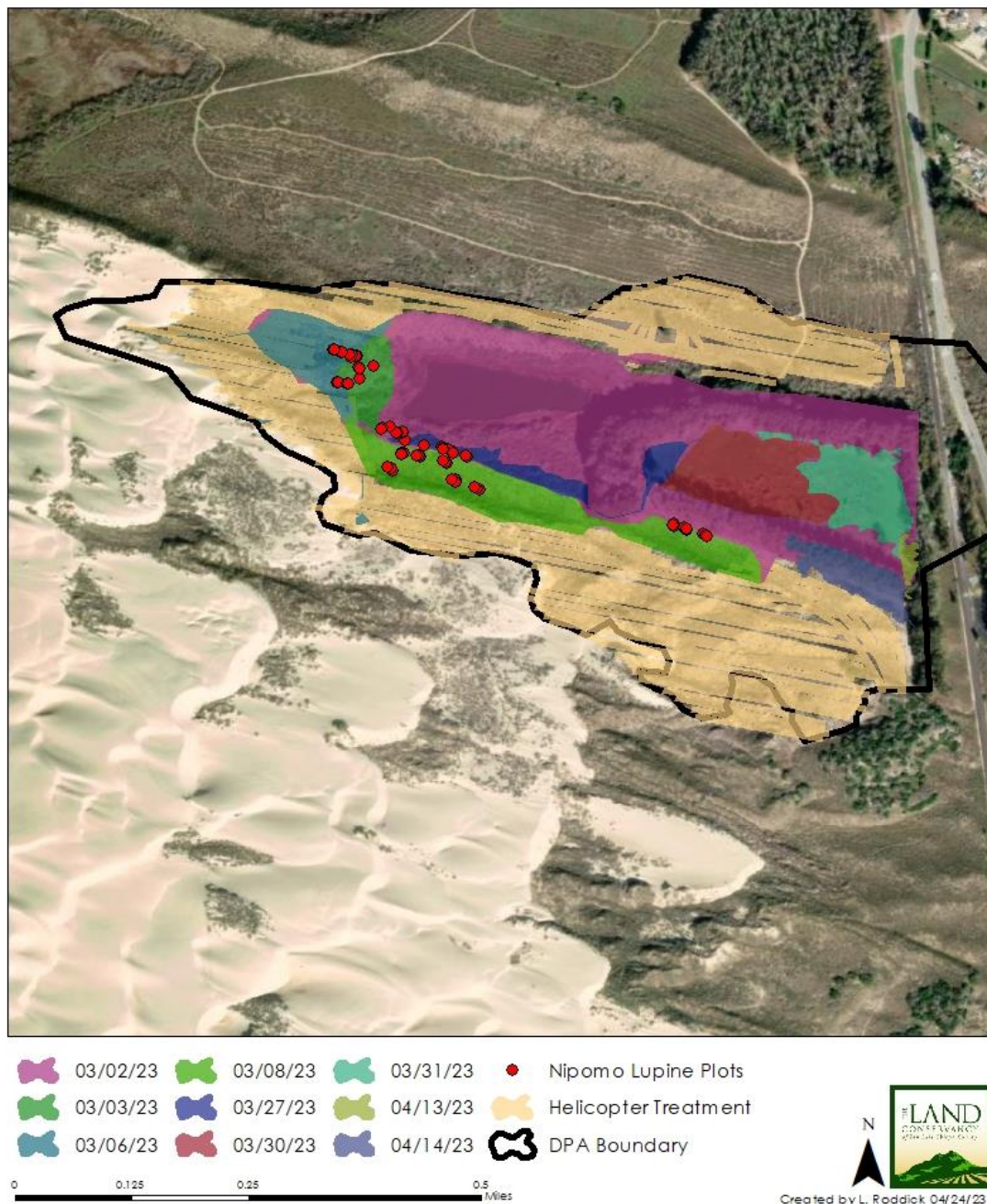


Figure 4: Invasive plant species control within Black Lake Ecological area completed in February through April 2023.



Figure 5: Iceplant treatment area within the Refuge. Iceplant is now in very low percent coverage following years of consistent management.



Figure 6: Sahara mustard germinating within the eucalyptus debris (left) and Nipomo lupine found at Black Lake Ecological Area (right).



Figure 7: Coastal dune scrub within the Black Lake Ecological Area treatment area. Perennial veldt grass and iceplants were controlled in this zone.



Figure 8: Black Lake, looking east among the dune scrub habitat of the project area.