



Wetland Habitat Restoration Within the Guadalupe-Nipomo Dunes National Wildlife Refuge

Recipient: The Land Conservancy of San Luis Obispo County

Project Period: 9/01/2019 – 3/31/2024

Award Amount: \$24,413

Matching Contributions: \$62,161

Project Number: #8006.19.066526

Summary of Accomplishments

This project established a new occurrence of La Graciosa thistle at Myrtle Pond and appears to be sustaining naturally. Establishing the population has allowed The Land Conservancy of San Luis Obispo County (LCSLO) and US Fish and Wildlife Service (USFWS) staff a better understand of the species and the preferred methods for seed collection and plant propagation that will help future outplanting efforts throughout the region. Wetland and dune scrub habitat surrounding Myrtle Pond and 3 Pond West have been protected from invasive species threats through hand and chemical removal. European beachgrass (*Ammophila arenaria*), iceplant species (*Carpobrotus* sp.), slender leaf iceplant (*Conicosia puguiniformis*), and other invasive species have been managed surrounding Myrtle Pond and are below 1% cover. Bulrush, a native species that dominates shallow freshwater ponds, has been removed from a large portion of the pond, creating additional open water habitat, and allowing a diversity of wetland habitat to thrive. Poison hemlock has been controlled surrounding 3 Pond West to below 1% cover, providing the space necessary for wetland vegetation to recover.

Project Activities & Outcomes

Activities

- LCSLO collected seeds from all five existent occurrences prior to the beginning of this project and sent to them to the California Botanic Garden for seed viability testing and bulking; germination proved to be relatively high, 60-70% germination during testing.
- Plants were grown from the seeds at the Guadalupe Restoration Site in their greenhouse facilities. 44 plants (most 4-inch and some 1 gallon) were given to LCSLO to plant on the Wildlife Refuge. Additional seed was collected in Fall 2020 from the Dune Lakes Limited occurrences. This seed was sowed, and plants cared for by the LCSLO staff in their greenhouse (65, 4-inch plants).
- All seeds were directly sowed into 1-inch pots (3 seeds per pot) and repotted in 4-inch pots once true leaves were mature (approximately 2 months).
- The plants were outplanted after an additional 3-4 months in the 4-inch pots. The plants were divided between two sites, Myrtle Pond and 3 Pond West.
- The two sites were monitored frequently to provide necessary management. Management actions included watering, hand weeding, herbicide treatments outside a 25ft buffer, and general surveys of the

outplanting's health.

- Invasive species management surrounding Myrtle Pond included management of European beachgrass (*Ammophila arenaria*), bull thistle (*Cirsium vulgare*), sow thistle (*Sonchus* spp.), beard grass (*Polypogon* sp.), slender iceplant (*Conicosia pugioniformis*), Coyote brush (*Baccharis pilularis*), and hemlock (*Conium maculatum*). Invasive species management occurred within a 25 ft buffer of the La Graciosa outplantings.
- Herbicide treatments with follow up manual removal were completed to remove large stands of bulrush (*Schoenoplectus californicus*) from Myrtle Pond.
- Herbicide treatments were completed each spring (usually two treatments to catch all germination).
- General monitoring surveys were completed 3-4 times a year to provide an official count of La Graciosa thistle individuals. Official population size was measured every summer during peak 3 flower. A final monitoring visit was completed in January 2024, outside peak flowering to provide additional data before the project term was completed.
- Water and soil sampling occurred at both Myrtle Pond and 3 Pond West near La Graciosa outplantings.

Outcomes

- A majority of La Graciosa thistle planted at 3 Pond West did not survive to maturity unlike the thistle planted at Pond West.
- Soil analysis showed that 3 Pond West had higher iron concentration and a lower pH than Pond West.
- It is possible that the soil at 3 Pond West was too moist and cold which led to the low survivability of mature La Graciosa thistle.
- Water analysis did not show a difference in composition between the sites.
- By removing much of the bulrush and invasive species, native plant species can coexist providing a better diversity of habitat.
- Summer monitoring data is given in Table 1.

Table 1. Annual survey of La Graciosa thistle on the Wildlife Refuge

	Myrtle Pond (Introduced)	Myrtle Pond (2014 planting site)	3 Pond West (Assumed Introduced)	3 Pond West (Historic Occurrence)*
Summer 2020	12	3	32	30
Summer 2021	58	0	52	40
Summer 2022	173	0	5	23
Summer 2023	321	3	3	35
Current Population (January 2024)**	200+	3	0	New germination observed

*Only counted within fenced area and 30 ft radius, may not include all individuals at 3 Pond West.

**Off season data collection. Numbers are likely low.

Lessons Learned

LCSLO learned that seed collection and propagation methods have been proven successful through this project and can be implemented in the future. Future outplantings will also explore other potential reasons the sites differ and what can be done to provide more hospitable environments for La Graciosa thistle to thrive. LCSLO and USFWS will continue to work together to implement experimental outplantings to understand the dynamics best suited for La Graciosa thistle.

Dissemination

All the procedures and data collected through this project are continually shared with partners at USFWS as well as the Guadalupe Restoration site, where similar restoration efforts are taking place.

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

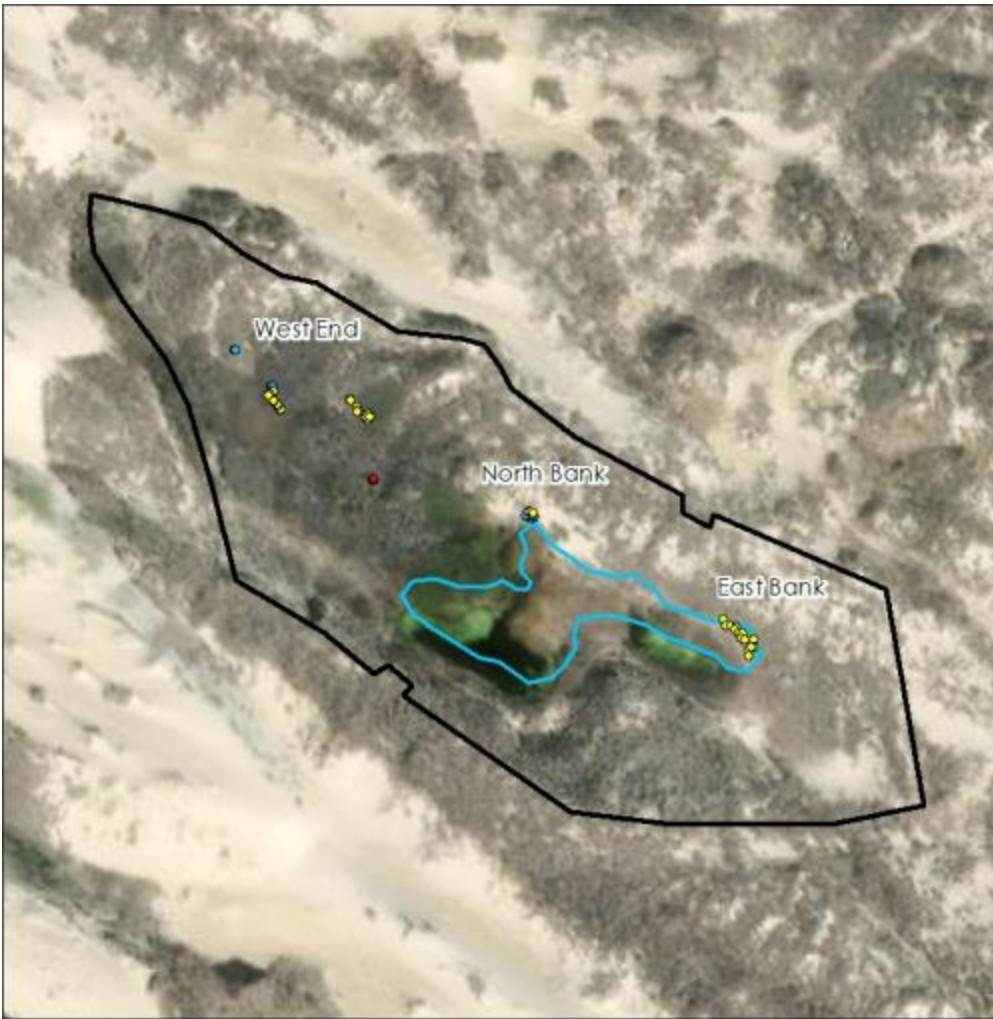


Guadalupe-Nipomo Dunes National Wildlife Refuge
La Graciosa Thistle Outplanting Locations

0 0.5 1 2 Miles

Created by: L. Roddick 03/2024

Image 1: La Graciosa thistle outplanting locations on the Guadalupe-Nipomo Dunes Wildlife Refuge.



Guadalupe-Nipomo Dunes National Wildlife Refuge

Myrtle Pond

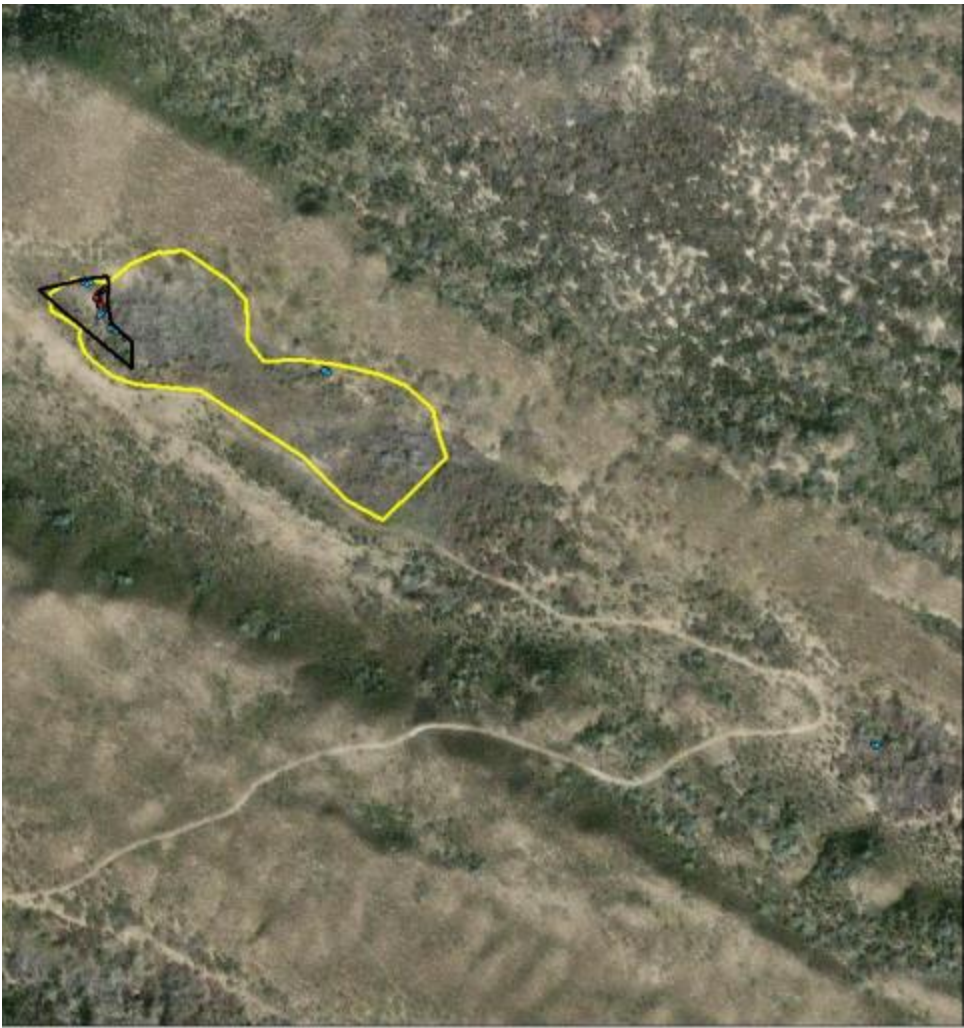


Created by: L. Roddick 11/2022

Image 2: La Graciosa thistle outplanting locations at Myrtle Pond.



Image 3: Myrtle Pond before (top, 10/21/2021) and after herbicide treatment and mechanical removal of bulrush (bottom, 8/24/2023).



Guadalupe-Nipomo Dunes National Wildlife Refuge
3 Pond West



Created by: L. Roddick 02/2024

Figure 4. La Graciosa thistle outplanting locations at 3 Pond West.

Image 4: La Graciosa thistle outplanting locations at 3 Pond West.