

NRPP Completion Report

Habitat Protection/Restoration for Mission Blue Butterfly in Marin Corridor

PMIS 53768, Golden Gate National Recreation Area, PWRO

TE-00-02

Fund Sources: NRPP T&E, Recreational Fee Demonstration 80%

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Project Summary

The project focused on the physical removal of 8.25 acres of non-native Monterey pine trees (*Pinus radiata*) and understory Australian tea trees (*Leptospermum laevigatum*) that were invading the habitat for the federally endangered mission blue butterfly (*Plebejus icariodes missionensis*). This was a top vegetation and wildlife management priority for the Golden Gate National Recreation Area (GGNRA). A GIS inventory of Monterey pine stands was completed throughout the Marin Headlands mission blue butterfly (mbb) habitat corridor in 1998-1989. The data were compiled to determine the highest priority threats that impacted butterfly habitat. These areas were targeted for treatment under this project. Tree removal was carried out by contract helicopter, due to the steep terrain and need to minimize soil and vegetation disturbance within the mbb habitat areas.

A total of 8.25 acres of butterfly habitat were restored upon completion of the tree removal by revegetating suitable disturbed areas with coastal grassland species and mission blue butterfly host and nectar plants. Project costs (\$209,122) were provided by NRPP-Threatened and Endangered Species funds (\$120,100) and Recreational Fee Demonstration funds (\$89,022). These funds supported the direct project costs. Other non-project funded support was provided by ONPS-funded permanent staff for overall project coordination, compliance, and implementation, as well as volunteers during follow-up weeding and monitoring.

Project Details

The mission blue butterfly is a federally listed endangered species. Its population range is restricted to four small areas within the greater San Francisco Bay region, three of which are within GGNRA - at Milagra Ridge and Sweeney Ridge in San Mateo County, and within the Marin Headlands in Marin County. The Marin Headlands populations are scattered in discontinuous pockets between East and West Fort Baker (Figure 1).



Figure 1 –
Mission blue
butterfly habitat
in the southern
Marin Headlands

Populations of the mission blue butterfly's host plant, silver-leafed lupine (*Lupinus albifrons* var. *collinus*), (Figure 2) are threatened by numerous invasive exotic plant species. Invasive species of concern include thoroughwort (*Ageratina adenophora*), French broom (*Genista monspessulana*), pampas grass (*Cortaderia jubata*), Monterey cypress (*Cupressus macrocarpa*), and Monterey pine (*Pinus radiata*). When this project started, these and other exotic plant species dominated approximately 260 acres of mbb habitat within and adjacent to silver-leafed lupine patches.



Figure 2 – Mission blue
butterfly on silver-leaf
lupine

The primary project purpose was to further two recovery objectives cited in the 1984 USFWS Recovery Plan for the San Bruno elfin (*Callophrys mossii bayensis*) and the mission blue butterflies. Specifically, these objectives are “to maintain and enhance existing populations of these endangered species throughout their range,” and “to rehabilitate ecosystems that have been altered by exotic species introductions” (pp. 43-55, USFWS 1984). Additionally, this project furthered the actions outlined under the 1999 Presidential Executive Order on Invasive Species. It also enabled GGNRA to meet its obligation to restore butterfly habitat in accordance with the USFWS Section 7 consultation (USFWS, 1991). This consultation for the trail maintenance activities, special events, raptor programs and natural resources activities in the Marin Headlands within mission blue butterfly habitat, GGNRA was mandated to restore 30 acres of potential mission blue butterfly habitat. At the time of the project, less than five acres of mbb habitat had been restored by the park. The project completed the park’s commitment to meet this obligation.

The 8.5 acres of trees were identified at Hawk Hill (Battery Construction 129 – a WWII-era gun battery) and along Slacker Ridge above Conzelman Road in the Marin Headlands (Figure 3).



Figure 3 –
Trees on Hawk
Hill in 2001

In order to minimize impacts to the extremely friable Franciscan mélange soils and the associated native plant community on those slopes, it was determined that the best method for removal) was to hand-fell the trees and remove a majority of the woody material with a contract helicopter. The helicopter would then lift and haul the felled trees to a staging area in Rodeo Valley located to the north of the tree removal sites on the historic Fort Baker rifle range. The helicopter flights occurred over the top of the

popular Conzelman road which parallels the Golden Gate corridor, requiring an extensive signage and barricade plan for temporary road closures and delays (Figure 4).



Figure 4 – Traffic control on Conzelman Road.

The work was coordinated by a term Biological Technician (Dina Robertson) with assistance from numerous park staff in Natural Resources, Interpretation, Public Affairs, and Law Enforcement during the actual removal period. Additional assistance was provided by seasonal interns, native plant propagation, planning and outreach assistance through task agreements with the Golden Gate National Parks Association (GGNPA, now Conservancy), Marin Conservation Corps (MCC) crews, and Americorps interns who monitored and conducted pre-tree removal prep and post-tree removal clean-up (Figure 5). Circuit Riders was contracted to out plant the native plants that had been propagated by the nursery and to re-establish a contiguous vegetation cover supportive of mission blue butterflies.



Figure 5 – MCC crew members flush cutting tree trunks on Slacker Ridge.

Compliance was initiated through internal and external scoping in spring 2001. National Historic Preservation Act compliance was received in June 2001 after consideration of

the potential for impacts to Battery Construction 129 and to the landing and tree staging area at the Fort Baker Rifle Range along Bunker Road. Outreach to interested parties (e.g., Audubon Society, Golden Gate Raptor Observatory, and Sierra Club) was conducted in the fall of 2001. The project was approved by the park through a Categorical Exclusion (E (3) Removal of individual members of a non-threatened/endangered species or populations of pests and exotic plants that pose an imminent danger to visitors or an immediate threat to park resources) to NEPA in July, 2001 (PW 01-045) and the project conditions were completed by December 2001. Consultation with the US Fish and Wildlife Service was reinitiated in January 2002, and an amended Biological Opinion received in February 2002.

Timeline

March 2001 – Vegetation and butterfly transects established and monitored
 April – August 2001 – GGNPA seed collection
 August-February 2001 – GGNPA plant propagation
 December 2001 – MCC monitoring plants, prep for tree removal
 Feb 2002 – Large scale tree removal by Marin County Arborists and helicopter operations by Aris Helicopters, San Carlos, CA.
 Feb 2002 – Site prep for planting, small tree removal, stashing small woody debris, flush cutting stumps by MCC
 February 2002 – out planting by Circuit Riders, Windsor, CA
 March 2002-2003 – Monitoring and removal of saplings

Accomplishments

Through this project, the park was able to meet the overall objective of restoring 30 acres of mission blue butterfly habitat in the Marin Headlands as required by the 1991 Biological Opinion (USFWS 1991). The 30 acres of restoration was accomplished through a combination of efforts by the National Park Service Habitat Restoration Team and GGNPA Site Stewardship program (invasive plant removal and control), as well as planting and revegetation work in the Headlands. These efforts of staff and volunteers doing manual removal and replanting accounted for over 20 acres of restored habitat. The revegetation work following tree removal for this project showed about 85% survival after the first year of planting, and additional planting was done in 2003 and 2004 to fill in these small gaps. Continued work is carried out through the park's habitat restoration and stewardship programs to eliminate new pine seedlings in the area, as there is still a seed source for this species in the area.

Lessons Learned

Primary “lessons learned” were related to implementation. For example, some of the Australian tea tree stumps had to be re-cut and re-treated with herbicide, as the first treatments were delayed due to the complex helicopter operations and follow-up flush cutting. Other issues related to the road closures and difficulty keeping people out of the closed sections. Finally, the timing for the project – February – resulted in the trees being much heavier than had been anticipated, which necessitated cutting them into smaller sections to allow the helicopter to remove them to the Rifle Range – and additional time and cost from what had originally been contracted. Upon arrival at the Rifle Range, the logs were heavy enough to create significant indentations in the range surface, which then required follow-up regrading using hand tools to re-establish the pre-existing flat sloping grade. In future projects, tree removals have occurred in late fall when trees are more likely to be drier and (therefore) lighter.

Budget

Item	NRPP T&E Costs	Rec Fee Costs
Project manager (GS-7 term)	\$22,477	0
Third party drafts for contract weeders year prior to tree removal implementation		\$7,500
Task Agreement and modification for plant propagation contract with the Golden Gate National Parks Association native plant nursery		\$21,301
, vegetation transects, butterfly transects, flag host plants, and paint trees to be removed by Marin Conservation Corps and Americorps interns		\$33,571
Staff interns to assist with overall project planning, implementation, and follow-up monitoring and maintenance.		\$3,853
Housing for interns		\$2,342
Task Agreement for planning and outreach support with the Golden Gate National Parks Association site		\$5,208

stewardship program.		
Tree removal contract; helicopter subcontract, and modification to add six additional trees to meet full 30 acre restoration goal per USFWS consultation	\$97,623	0
Overtime for NPS staff during helicopter operations (82 hours total for nine staff)		\$4,856
Contract for out-planting native plants		\$10,000
Miscellaneous supplies (Bay Nature volunteer advertisement, flagging, and spray paint)		\$92
COR training for Project Manager		\$299
TOTALS	\$120,100	\$89,022
\$209,122		

Comment [n1]: PHOTOS: Include, if possible, at least 5 photos of activities conducted pertaining to the project. Digital photos are preferred.
DESTINATION: The final completion report and the accompanying photos should be sent to the project coordinator. Please provide one hard copy and one copy on electronic media (preferably on a DVD-R).

Comment [n2]: Needs literature cited

Literature Cited

Presidential Executive Order 13112 on Invasive Species, 1999.

U.S. Fish and Wildlife Service. 1984. Recovery plan for the San Bruno elfin and mission blue butterflies. Portland, Oregon. 81 pp.

U.S. Fish and Wildlife Service. 1991. Biological Opinion on the Proposed Trails, Special Events, and Resource Management Plan, Golden Gate National Recreation Area, Marin County, California. Sacramento, California.