



U.S. Fish & Wildlife Service

Coastal Prairie Restoration at Nestucca Bay National Wildlife Refuge, Oregon

Less than one percent of Oregon's coastal prairie remains. Its decline is attributed to fire suppression, the establishment of invasive species, and development for home sites and grazing. Consequently, populations of prairie dependent species such as the threatened Oregon silver spot butterfly (OSB) have become small and disjunct. There are only four populations of the OSB and three of these are experiencing marked decline. The Revised Recovery Plan for the Oregon Silverspot Butterfly emphasizes restoring this ecosystem to support additional populations. Thus the Coastal Program is partnering with the Recovery Program, the Nestucca Bay National Wildlife Refuge, and the Institute for Applied Ecology (IAE) to convert pastures consisting of non-native species to native coastal grasses and forbs. The goal is to promote plant species required by the OSB on the Nestucca Bay National Refuge's Cannery Hill Unit.

Cannery Hill is within the Pacific Region's Coastal Focal Area for Strategic Habitat Conservation and is located midway between two known Oregon coastal sites occupied by OSB. Although not currently occupied, portions of the Cannery Hill grasslands have potential for supporting the primary larval host plant, the early blue violet, as well as plants used by adults for dispersal and nectaring.



Figure 1. Cannery Hill overlooking Nestucca Bay and the Pacific Ocean. Photograph by David Ledig, USFWS.

Females lay up to 200+ eggs near the violet host plant, usually in late August and early September. The eggs hatch in approximately 16 days and the newly hatched larvae (caterpillars) wander short distances to find a suitable site for diapause (suspended growth for overwintering). Diapause ends in early spring and the larvae feed on the violet leaves until they pupate. The adult butterflies emerge from July into September and mating occurs through August and September.



Figure 2. Adult Oregon silverspot butterflies nectar on a variety of prairie species, including goldenrod. Photograph by Mike Patterson.

The Cannery Hill project aims to restore up to 39 acres of prairie by controlling non-native plants and establishing locally-sourced native plants cultivated by the Natural Resource Conservation Service's Plant Materials Center. Following restoration, Oregon silverspot butterflies will be reintroduced to establish a non-essential experimental breeding population of this species.

Site activities in 2012 focused on exotic species control, seed bed preparation, and the seeding of native sand (red) fescue. The Jane Goodall Environmental Middle School (JGEMS) also visited the site three times to engage in stewardship activities, including weeding, seed collection, and planting.



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Figure 3. JGEMS students planting coast strawberry. Photograph by IAE.

The Cannery Hill restoration site is particularly challenging due to the density of persistent and aggressive pasture grasses. Restoration to native species must be initiated by the application of herbicide followed by thatch reduction.



Figure 4. A pilot project conducted in 2009 along the overlook trail on Cannery Hill planted four primary nectar plants used by OSB. Photograph by USFWS.

Following thatch reduction, it was discovered that in Area 2, there remained a dead rhizome layer that was several inches thick. Concern over whether it would impede seed germination and seedling establishment led to the use of two treatment techniques to minimize or eliminate the rhizome mats. Following seeding, the different treatment areas will be compared to provide further information on the appropriate site preparation for seeding other areas.



Figure 5. Refuge staff preparing the ground for seeding using a chain drag harrow to break up rhizome mats. Photograph by IAE.



Figure 6. The germination of sand fescue, a coastal prairie native, is evident in Area 2 in December, 2012. Photograph by IAE.

The Coastal Prairie Restoration Project is funded thus far with a combination of Service funds totaling approximately \$75K and many hours of in-kind support by Refuge staff for site preparation.

Partnerships:

- USFWS: Coastal, Recovery, Nestucca Bay NWR
- Institute of Applied Ecology
- U.S. Forest Service
- Peoria Gardens
- Oregon Youth Conservation Corps
- Mid-Coast Watershed Council
- NRCS Plant Materials Center
- Jane Goodall Environmental Middle School



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