

Conservation SHOWCASE



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Bringing Back The Butterflies: Habitat Being Prepared for the Return of the Oregon Silverspot

Gearhart, Ore. – The Clatsop Plains on the Oregon coast is normally a place of quiet solitude pierced occasionally by the shrill sound of a Western seagull. On this volunteer work day, there are also the sounds of clippers and hand saws, as a small army of habitat advocates works to reclaim the dunes of the Clatsop Plains from a sea of Scotch broom, so the Oregon Silverspot Butterfly can be reintroduced and flourish.

The Oregon Silverspot Butterfly is a member of the family Nymphalidae. It belongs to one of fifteen subspecies of *Speyeria zerene boisduval*. The wings of the silverspot are about one inch wide for males, and a little larger for females. The silverspot has orange and brown markings with black veins and spots on the dorsal side of the wings, with bright metallic silver spots on the ventral sides. The original territory for the butterfly spanned large tracts of land in California, Washington and Oregon.

A habitat restoration project is underway for this endangered butterfly on farmland owned by the North Coast Land Conservancy (NCLC). Now, the USDA-Natural Resource Conservation Service (NRCS) is playing a major role in the butterfly habitat



Oregon Silverspot,
photo courtesy Oregon zoo

restoration by funding the management of land where Scotch broom has been removed and native grass meadows are recovering. This restoration project is currently enrolled in the **Environmental Quality Incentives Program (EQIP)**, which provides financial and technical assistance to agricultural producers. Clatsop County NRCS District Conservationist Sarah Tanuvasa says, “One of the most important things in recovery of the butterfly is site preparation. We need to make sure the natives will thrive.”

NCLC Executive Director Katie Voelke and her crew are working hard to remove Scotch broom

“ One of the most important things in recovery of the butterfly is site preparation. We need to make sure the natives will thrive. ”

—Sarah Tanuvasa
NRCS District Conservationist



Crew members at work removing Scotch broom

from Clatsop Plains because, “It is one of the biggest threats to the (dune) prairie ecosystem,” she says. “It comes in and changes it from grassland to shrubland and outcompetes the native plants. It doesn’t contribute to the ecosystem here.” The Scotch broom grows so thickly that it prevents the growth of the early blue violet (*Viola adunca*) plant where the adult silverspot butterfly lays her eggs to produce the next generation of caterpillars. It also impedes the growth of butterfly food sources and courting areas.

The Scotch broom shrub (*Cytisus scoparius*) is more than just a familiar sight along I-5. It was originally brought to the West Coast by settlers in the early 1800s to be ornamental, then later planted to prevent erosion and stabilize the dunes in the Clatsop Plains. Scotch broom is a woody, leguminous shrub that establishes quickly in disturbed areas, often outcompeting natives to form dense monospecific stands in pastures, road easements and forestland. Only one species of plant can grow in a monospecific stand.

Scotch broom’s impact on ecosystemic health is immeasurable, but its economic impact is significant as well. According to Andy Hulting, a weed specialist for Oregon State University Extension Service, “The state of Oregon loses \$40 million each year in timber revenue and control expenses” dealing with Scotch broom.



Significant grazing land has been lost to the spreading Scotch broom in Clatsop Plains

Fortunately, the Clatsop Plains salt spray meadows are responding well to the conservation measures already underway. The tiny early blue violet flowers are now visible alongside chocolate lilies and a healthy stand of native grasses. “We are really excited about how well the land is responding,” says Katie. “Typically ecosystems work on a longer time frame and on a larger scale than what people usually work under.” She points out that restoring an ecosystem takes time, patience, reflection and making small-but-steady steps toward the conservation goal. “But you eventually get there,” she remarks as she gestures to the cleared meadowland that lies at her feet in sharp contrast to the untreated thicket of bright yellow Scotch broom towering behind her.

“NRCS’s role in this project is to help the habitat prepare to receive the reintroduced species,” says Sarah.” Many site preparation methods have been scientifically proven to work in restoring other dune systems across the world, yet little is known about effective prairie restoration in this region.”

The restoration here won’t happen overnight. On the Clatsop Plains, NRCS and NCLC will establish

a total of five blocks of four plots measuring 15 m x 5 m (about 49 x 16 ft). In each block, plots will be randomly assigned one of four site-preparation techniques. Two years of site preparation will be followed by three years of adaptive management using multiple treatment combinations.

In years three through five, plots will be divided to test various site-management techniques. Treatment combinations following site preparation will include hand-weeding, grazing, and herbicide applications. Vegetation and soils will be monitored over five years with two years of pre-treatment monitoring and three years of post-treatment monitoring to inform selection of treatment combinations and to evaluate success. At the end of the five years, an adaptive management plan will be developed for the Clatsop Plains.

The four site preparation techniques being tested include prescribed fire, topsoil inversion, topsoil removal and herbicide application:

1. Prescribed fire will be evaluated to mimic the natural disturbance process of sand

deposition by burning vegetation to expose bare soil. When timed properly, fire can be an effective site preparation tool for reducing thatch and the non-native seed bank—providing improved growing conditions for native seedlings and planted stock (Maret & Wilson 2005).

2. Topsoil inversion mimics active dune soil conditions by using a deep plow to bury the nutrient-rich topsoil and expose nutrient-poor mineral sand, therefore reducing surface fertility. Due to the nature of the sandy soils at the proposed sites, it will not be possible to isolate bare mineral sand, nor is it desirable. The plow will reach a depth of at least 20 inches—burying high-nutrient organics while bringing to the surface less-developed lower-nutrient soils. An added benefit of this site preparation method will be that the non-native seed bank will be buried in the process and no materials will need to be removed off-site, thereby reducing the long-term costs of this site preparation method.
3. Topsoil removal reduces soil fertility by removing the nutrient-rich surface and exposing low-nutrient sub-surfaces, while removing non-native vegetation and its seed bank. The top six inches of nutrient-rich surface soil will be removed and expose a less well-developed soil more suited to supporting coastal prairie species.
4. Herbicide (glyphosate) will be applied and tested for effectiveness over two years. This site preparation method has been found effective in wetland and upland prairie restoration throughout the Willamette Valley/Puget Sound/Georgia Basin ecoregion and is an effective tool for removing non-native vegetation and exposing bare ground. An ecoregion is an area that is similar in the characteristics of the ecosystem, including soils, vegetation, climate, and geology.



Early blue violet blooms on the Clatsop Plains

In addition to the test plots, a hedgerow of native shrub and nectar species will be planted at the field edges to provide food for the Oregon Silverspot Butterfly. Native plants for this project are being grown in the NRCS-Plant Materials Center in Corvallis, located a couple of hours away. Field border nectar plants will include Douglas aster, pearly everlasting, and yarrow.

A focused partnership of NRCS, NCLC, Willapa National Wildlife Refuge, Oregon and Washington U.S. Fish and Wildlife Service, The Nature Conservancy, Institute for Applied Ecology, Lewis and Clark College, Oregon State Parks, and Lewis and Clark National Historical Park has worked to improve the health of the lands and water in Clatsop Plains—a benefit for the plants, wildlife, and people that rely on these resources.

In 2020 the restored habitat will be ready and the Oregon Silverspot Butterfly caterpillars will be released in Clatsop Plains—reintroducing a native species that thrived here long before Oregon was settled. By 2021, the silverspot will be seen visiting plants and shrubs to find nectar, fulfilling its role as an important pollinator, and then laying eggs in the early blue violet plants within the sounds of the grazing cattle, the beachcombers, the Pacific Ocean, and the Western seagull gliding overhead.