

UC SANTA BARBARA

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## **Endangered Butterfly Needs Proper Habitat, Special Nectar**

Some might call them picky eaters, but this beautiful endangered butterfly, named Fender's blue, needs certain plants to complete its reproductive cycle -- and it requires different plants to flourish once it reaches the final, butterfly stage.

A new study by a University of California, Santa Barbara researcher, to be reported this week, details these needs.

It's not enough to simply declare the species endangered. Proper habitat must be restored if the species is to continue, according to ecologists.

Unfortunately, the nectar plants and larval food plants needed by this butterfly are in short supply, and they are difficult to re-establish. The native prairies where the plants once flourished have practically vanished due to agriculture and development. Survey records from the mid-1800s indicate that prairie covered more than a million acres in the Willamette Valley before settlement by European-Americans, according to researchers.

Ecologist Cheryl B. Schultz, a post-doctoral fellow at the National Center for Ecological Analysis and Synthesis (NCEAS) at the University of California, Santa Barbara, will present the findings of her latest study of the habitat of the Fender's blue butterfly at the annual meeting of the Society for Conservation Biology in Missoula, Montana on June 11th.

The Fender's blue butterfly, now found in only a few spots in the Willamette Valley of Oregon, was discovered in the 1920s and then presumed extinct by the 1930s. Then, in 1989, a few tiny populations of the butterfly were rediscovered. Eventually, eleven years later, the species was listed as endangered for the first time in January of this year.

Schultz has specialized in study of Fender's blue butterfly (*Icaricia icarioides fenderi*) for several years, and is one of the few experts on the species. Less than one half a percent of the native prairies of the Willamette Valley remain, said Schultz. "The native grasslands are essentially gone."

"This is one of the first studies to link quantitative resource needs of an endangered species to methods to re-establish key habitat components," said Schultz. Much of her work has been funded by the Bureau of Land Management and The Nature Conservancy.

In her study she assessed the relationship between butterfly population density and quantities of nectar sources and larval host plants at four sites to estimate the minimum amount of nectar and larval food plants that would be required to restore the Fender's blue habitat. She also began an experiment to test methods to restore the butterfly's habitat.

A threatened plant species, Kincaid's lupine, is the only available host plant (in the Eugene area where Schultz works) for the many months of the egg and larval stages of the Fender's blue. The butterflies lay their eggs on the underside of the leaves in May. The eggs hatch in June. The young larvae drop down into the soil a few weeks later and the following March, the caterpillars crawl up and eat the plant's young leaves. Then they molt several times before reaching the pupa stage and final metamorphosis into a butterfly. The butterflies live only a week to ten days, but as a population they are out for about four to six weeks.

During that time they need about 20 milligrams of wild flower nectar per square meter to support their population, according to the study by Schultz. At two experimental sites with over 300 plots, Schultz reported that none of the experimental treatments produced enough Kincaid's lupine, the larval host plant, to sustain the butterfly. However two of the four experimental treatments did produce enough nectar in 1999 from the flowering plants that she planted in 1995.

At NCEAS Schultz is part of a working group studying the effect of landscape context on restoration.

One case study focuses on how to select sites with high potential for Fender's blue habitat restoration based on the butterfly's dispersal behavior. The group is also studying how natural processes like floods and fires will affect restoration projects.

The blue butterfly was first described in 1931 by biologist Ralph Macy who discovered it on his farm in McMinnville, Oregon. He named it for his friend, Kenneth Fender, a McMinnville entomologist and mail carrier, who died in 1987, just two years before the species was rediscovered.

The remaining populations of Fender's blue can be found at only 13 sites with up to a few hundred butterflies each.

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