

SMITH'S BLUE BUTTERFLY

The Issue

Commercial and residential development have destroyed large segments of the species' range, primarily coastal habitat limited to parts of California. However, surveys have turned up many previously unknown sites of butterfly occupation, leading the U.S. Fish and Wildlife Service to consider downlisting the butterfly from endangered to threatened.

Natural History

Two University of California-Berkeley undergraduates, Rudi Mattoni and Claude Smith, collected a butterfly they had never seen before while hiking at the mouths of Buck and Dolan creeks on the Big Sur coast in 1948. A few years later, Smith was swept fatally to sea while fishing at Half Moon Bay. When Mattoni formally described the butterfly for science in 1955, he named it after his late friend. Subsequent research showed that the species lived along the California coast from Monterey Bay south through Big Sur almost to Point Gorda.

A subspecies of the Pacific blue-dotted butterfly, the Smith's blue is tiny, its wingspan less than an inch across. Males are a vivid blue color above, with black edges to the wings, while females are brown above with a thin white fringe and an orange bar across the hind wing. The underwings of both sexes are brown with black and orange spots.

Throughout their lives, Smith's blues are dependent on two plants, the coast buckwheat and the seacliff buckwheat. Adults feed on the nectar of these plants and lay their eggs on the flowers. Larvae feed on the flowers and seeds and pupate on or beneath the plants.

The species' life cycle is amazingly compressed. Males emerge first, starting in early June. Overall adult activity runs into September, but individual butterflies live only about a week, during which time they mate. Adults fly only by day, only when temperatures are above 60 degrees F and only when there are no strong winds. After mating, females lay single eggs in buckwheat flowers. A week later, the larvae, which are the same pinkish to creamy white color as the flowers, feed



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on petals and seeds. During this period, ants may tend the larvae, protecting them from predatory spiders and wasps while feeding on a sugary substance the larvae excrete. After three to four weeks, the larvae pupate in the flower or in the leaf litter below the plant. Some 47 weeks later they emerge as adults.

Restricted to coastal areas, the butterfly has faced the loss to development of nearly half of the dune habitat favored by buckwheat. Invasive, nonnative vegetation, such as ice plants, pampas grass, kikuyu grass and European beach grass, has crowded out buckwheat, which requires shifting sands and an open environment. Efforts to stabilize dunes and fire suppression also reduce buckwheat habitat—seacliff buckwheat seeds require low-intensity fires to germinate. Other threats include heavy grazing by livestock and maintenance of recreational trails. The northern end of the butterfly's range, subject to intensive development, is more jeopardized than is the southern portion.

Listing

The U.S. Fish and Wildlife Service added the Smith's blue to the federal endangered species list in 1976.

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Management

At the time of its listing, data indicated that the butterfly occurred only along the coastal dunes of Monterey Bay and in a few sites on the Big Sur coast. More recent information suggests the insect ranges more widely. Consultation between U.S. Fish and Wildlife and the U.S. Forest Service has located additional habitat and populations, with subsequent adjustments to grazing and other activities on these sites.

Restoration efforts focus on controlling invasive, nonnative vegetation. The U.S. Fish and Wildlife Service, the California Park Service and other organizations are removing invasive plants and replacing them with local dune natives in an attempt to connect smaller patches of buckwheat with restored corridors.

Efforts to restore and protect coastal dune habitat—which benefits many species, from native plants to shorebirds—probably would never have been implemented if the butterfly were not a listed species.

Because recent monitoring has revealed that the butterfly's range is larger than biologists believed it to be at the time of listing and because surveys have turned up numerous new occupied sites in the southern part of the range, the Service is considering downlisting this species from endangered to threatened.

Funding

Funding from all government sources for Smith's blue butterfly recovery ranks the species at 425 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.^{*} Total recovery funding for the butterfly from all government sources that year was about \$58,277, with \$48,227 coming from the Service. "The Smith's blue butterfly is a rare instance in which the bulk of recovery funding comes directly from Fish and Wildlife, and it is also one of the few listed insects moving in a positive direction, a possible candidate for downlisting from endangered to threatened," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife

Federation. "Only full, fair funding for endangered species management will save listed species from extinction and restore healthy ecosystems."

Local Contacts

National Wildlife Federation Northwest Natural Resource Center, 206-285-8707; Fish and Wildlife California/Nevada Operations Office, Endangered Species Program, 916-414-6464; California Department of Fish and Game, 916-653-4633.

Other Threats

In the northern part of the butterfly's range, along the Monterey Bay coast from Salinas River to Sand City, ongoing habitat degradation from invasive plants and from residential and industrial activities, combined with planned development in the already fragmented northern part of the butterfly's range, raises concern among U.S. Fish and Wildlife Service biologists that the species could be extirpated there. The threat is compounded because the beleaguered northern part is isolated by development from the larger southern part.

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.

THREATS FROM GLOBAL WARMING

The key danger from global warming is sea level, which will threaten the butterfly with extinction by submerging its habitat. A significant increase in the rate of sea-level rise due to melting glaciers and ice caps and to thermal expansion of the oceans is one of the most direct consequences of global warming. Scientists project an average sea level rise of 7 to 23 inches before this century ends and perhaps as much as 31 inches if the rate of ice melt from Greenland and Antarctica increases as some models predict. Along coasts with gradually sloped shores, such as Florida and the Gulf Coast, a 31-inch sea level rise translates into an advance of water inland by as much as 500 feet.

