The Palos Verde Blue: An Update

by Rudi Mattoni and
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Palos Verdes blue butterfly
Photo by Michael Ann Malzone and Zia Mehr/U.S. Army

When the last known habitat of the Palos Verde blue butterfly *(Glaucopsyche lygdamus paloverdesensis)* was destroyed in 1983, most observers feared the species had become extinct. Fortunately, however, a single colony survived without notice at the Defense Logistic Agency's Defense Fuel Support Point (DFSP) in San Pedro, California. The colony's eventual discovery in 1994 made it possible to plan for the eventual recovery of this unique creature.

The DLA facility contains an "island" of habitat in a regional sea of development and urbanization. Captive-reared butterflies produced since the 1994 rediscovery have been used to augment the existing colony and reintroduce the Palos Verde blue into another fragment of habitat. (See "Rediscovery of the Palos Verde Blue Butterfly" in *Endangered Species Bulletin* Vol. XIX No. 6, and "Teaming Up for PV Blues" in *Bulletin* Vol. XXII No 2.) The success of this project, led by a group of dedicated scientists, volunteers, and other partners, is due in part to funding support from the Legacy Resource Management Program. This program was established by Congress to provide funds for preserving natural and cultural resources on Department of Defense lands.

In 1994, a three-phase conservation program that ensures uninterrupted operation of the facility's military mission was developed in coordination with the Fish and Wildlife Service. The first phase of this conservation program focuses on field studies of the butterfly population, the second involves the breeding program, and the third centers on habitat conservation. The following is a brief update on the progress of the Palos Verde blue recovery effort.

Field Studies

Population monitoring, initiated in 1994, is conducted by standard transect walks throughout the butterfly's flight period in the spring. The total count in the wild was an estimated 214 individuals in 1994, increasing to 646 in 1999, followed by a reduction to 411 in the year 2000. The reasons for the fluctuation in numbers are not known at this time. However, the data revealed a complex metapopulation structure for the animal, with the densest subpopulations shifting among three centers during the 7-year study. Further study of movement of individuals showed that females are highly sedentary in comparison with males. The results are important to our adaptive management program.

In 2000, Palos Verde blues were reintroduced to a nearby natural area, known as the Chandler preserve, that has been set aside for conservation by the local community. The reintroduction resulted in 306 individuals emerging from pupae set out in the field. The butterflies were observed to mate, and females deposited eggs on over 1,000 larval food plants across the 6 acres (2.4 hectares). Although success cannot be gauged for several seasons, no further releases will be attempted until the next generation can be evaluated. Food plant establishment is encouraging and additional planting is underway.

Breeding Program

In the meantime, the captive rearing program has been refined to the point where virtually any number of individuals can now be produced. Anticipated costs of less than $5.00 per individual are forecast, down from the current $25.00. This year, 117 adults emerged from 629

pupae and were released at an apparently suitable but unoccupied site at DFSP. A second group of pupae were set out at the Chandler site. The remaining pupae were held as the residual breeding stock for 2001. A total of 968 pupae resulting from the 2000 breeding cycle are available for release and further breeding next year. The most significant event was the ease with which mating occurred in the captive population.

Habitat Conservation

Through the year 2000, over 17 acres (7 ha) at the DFSP have been enhanced by plantings of native vegetation. These have included attempts to establish 37 of the 63 extirpated plant species in order to reestablish, as closely as possible, the plant community found there historically. Mass propagation of most plant species for restoration of the habitat can now be done with ease. Over 12 individuals of *Catalina crossosoma* have been established and are now fruiting. Only two individuals of this endemic plant were present on the mainland prior to our efforts. Increasing plant diversity is the keystone of the program.

All efforts have involved several volunteer organizations. These groups donated significant help, from the labor of clearing non-native vegetation and nursery propagation to fine-scale work in captive rearing of the butterflies. In addition, educational programs have been developed involving Audubon YES (Youth Environmental Service) and the local Conservation Corps. Teaching institutes developed in cooperation with the UCLA Graduate School of Education for K-12 teachers demonstrate the utility of butterflies as teaching tools at those grade levels. Lastly, the site is used for conservation biology coursework for UCLA classes at both graduate and undergraduate levels.

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Volunteers clear an area at Army site in San Pedro, California, for replanting with host and food plans for the Palos Verdes blue butterfly.
Photo by Michael Ann Malzone and Zia Mehr/U.S. Army

Resarch into determining optimal conditions for rearing Palos Verdes blue butterflies has resulted in good breeding success.
Photo by Zia Mehr/U.S. Army