

***Apodemia mormo langei* J. A. Comstock, 1938**
Lange's Metalmark
(Riodinidae: Riodininae)



Photo by Larry Orsak.

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SUMMARY

Lange's Metalmark is currently found only at the Antioch Dunes in Contra Costa County, California. The butterfly has a very close relationship with naked buckwheat. The eggs are deposited on buckwheat leaves near the leaf petiole and the larvae are known to feed only on this buckwheat. The buckwheat is also an important nectar source for adults, along with Douglas' ragwort and San Joaquin snakeweed.

Most of the butterfly's original sand dune habitat has been lost. Stabilization of the remaining dunes is a major threat to Lange's Metalmark because naked buckwheat requires shifting sands for seed germination. Conservation efforts should revolve around protecting the remaining dunes and ensuring mobile dune systems for the hostplant.

CONSERVATION STATUS

Xerces Red List Status: Critically Imperiled

Other Rankings:

Canada – Species at Risk Act:	N/A
Canada – provincial status:	N/A
Mexico:	N/A
USA – Endangered Species Act:	Endangered
USA – state status:	None
NatureServe:	N/A
IUCN Red List:	N/A

SPECIES PROFILE

DESCRIPTION

Lange's Metalmark (*Apodemia mormo langei*) is a brightly colored butterfly in the family Riodinidae (Metalmark butterflies). Adult wingspan varies from 1 to 1½ inch (25 to 38 mm). Dorsal wings are largely black with white spots. Red-orange coloration extends through the inner forward half of the forewing, the hindwing bases, and a small central patch subtended by black. Ventrally, the wings have a more muted pattern of gray, white, black, and orange.

TAXONOMIC STATUS

Apodemia mormo langei J. A. Comstock, 1938.

LIFE HISTORY

All the life stages of Lange's Metalmark butterflies are found close to the larval food plant, naked buckwheat (*Eriogonum nudum* var. *auriculatum*). The eggs are deposited on buckwheat leaves near the leaf petiole throughout the mating flight period during August and September. Larvae hatch during the rainy months. Larvae are known to feed only on naked buckwheat. The adults may use buckwheat, butterweed (Douglas' ragwort; *Senecio flaccidus* var. *douglasii*) and San Joaquin snakeweed (*Gutierrezia californica*) for nectar. Lange's Metalmark butterfly also use silver lupine (*Lupinus albifrons*) for mating. Lange's Metalmark has only one generation a year. Fecundity of the wild individuals is low.

DISTRIBUTION

Lange's Metalmark butterfly was historically restricted to sand dunes along the southern bank of the Sacramento-San Joaquin River, and is currently found only at Antioch Sand Dunes in Contra Costa County. Most of the habitat is now part of the Antioch Dunes National Wildlife Refuge.

THREATS

Lange's Metalmark is known almost exclusively from the Antioch Dunes National Wildlife Refuge, established largely for the butterfly's protection in 1980. The butterfly's numbers began to decline early in the twentieth century as the growth of San Francisco led to the dunes being mined heavily for sand.

In the early 1900s, the isolated dune habitat in the San Joaquin delta began to experience a dramatic change as human development expanded. Large-scale sand mining and industrial development fragmented the sand dune habitat until only a small portion of the original ecosystem remained. Nonnative grasses and vegetation encroached on the sand dunes to crowd the few remaining endangered plants. By the time the Antioch Dunes Refuge was established, only a few acres of remnant dune habitat supported the last natural populations of the endangered Antioch Dunes evening-primrose (*Oenothera deltoides* var. *howellii*), Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*), and Lange's Metalmark.

But, ultimately, one of the biggest problems faced by Lange's Metalmark is a fundamental change in the dune structure. Formerly a dynamic mosaic of open sand and vegetation, the dunes have slowly been stabilized by the removal of sand and by the introduction of plants which have spread over the sand and now prevent much sand movement. Under these conditions, the butterfly's host plant, naked buckwheat, does not reproduce well. Its seedlings require open sand to become established.

CONSERVATION STATUS

Through intentional disturbance, efforts at encouraging the host plant have proven fruitful and the butterfly's numbers seems to be on the rise. Habitat improvement activities have included dune restoration, hand-clearing nonnative plant species, planting buckwheat seedlings, and restricting public access to avoid trampling and fire.

In the late 1990s, the butterfly population was around 2000 adults. A fire that burned about 40 percent of the reserve in 2000 devastated the population. More recent counts have recorded less than 450 butterflies. Reserve staff have an active program of replanting the buckwheat hostplant to augment natural recolonization across the burned areas and support recovery of the butterfly population.

Lange's Metalmark was designated as a federal endangered species on June 1, 1976 (*Federal Register* 41:22044). A draft of a recovery plan for the Antioch dunes ecosystem was submitted on April 25, 1984. This recovery plan—*Revised recovery plan for three endangered species endemic to Antioch Dunes, California*—was never finalized and is out of date.

Recovery Plan (ESA): *Revised recovery plan for three endangered species endemic to Antioch Dunes, California* 25/04/84

Critical Habitat (ESA): Proposed, 2/8/77. (*Federal Register* 42:7972-7976).

The California Endangered Species Act does not allow listing of insects, so despite its precarious status, Lange's Metalmark has no protection under state legislation. The California Department of Fish and Game includes this butterfly on its Special Animals list.

CONSERVATION NEEDS

Maintaining populations of naked buckwheat is imperative. This can be done via planting but creating the open, shifting dune conditions appropriate for natural regeneration would be preferable. The remaining dunes within the butterfly's range should be protected from development and damaging activities. (Currently, PG&E is the only private landowner with butterflies on their property and there is a conservation easement in place.)

RESEARCH NEEDS

Research should focus on habitat management, especially ways to maintain the shifting dune conditions required by the larval hostplant.

RESOURCES

CONTACTS

U.S. Fish & Wildlife Service: Don Hankins, Sacramento Fish and Wildlife Office 2800 Cottage Way, Room W-2605, Sacramento, California 95825, Phone (916) 414-6600; fax (916) 414-6713.

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