

***Euphydryas editha bayensis* Sternitzky, 1937**
Bay Checkerspot
(Nymphalidae: Melitaeinae: Melitaeini)



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The Xerces Society for Invertebrate Conservation

SUMMARY

Restricted to an ever-diminishing area of specialized habitat under pressure from development and inappropriate land management, the Bay Checkerspot is in long-term decline throughout its range. The larvae are dependent on two larval host plants adapted to seasonally dry conditions on serpentine-derived soils. Historically, the bay checkerspot was widely distributed to the east, west, and south of San Francisco Bay, but is now limited to six core areas on the west and southern edges of the Bay.

CONSERVATION STATUS

Xerces Society 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:	Threatened

USA – state status:	None
NatureServe:	G5T1
IUCN Red List:	N/A

SPECIES PROFILE

DESCRIPTION

The Bay Checkerspot is a medium-sized butterfly in the brush-footed butterfly family (Nymphalidae). It has a wing span of a little more than 2 inches. The dorsal surfaces of the wings have black bands along all the veins on the surfaces, contrasting sharply with bright red, yellow and white spots.

TAXONOMIC STATUS

Euphydryas editha bayensis Sternitzky, 1937.

LIFE HISTORY

All habitats for the Bay Checkerspot are on shallow, serpentine-derived or similar soils. These soils support the plants on which the caterpillars (larvae) feed. The primary larval host plant is dwarf plantain (*Plantago erecta*). In many years, the plantain dries up and the larvae transfer to a second host plant, exerted Indian paintbrush or purple owl's clover (*Castilleja exserta* spp. *exerta*), which remains edible later in the season.

Adults emerge in early spring. They feed on nectar, mate, and lay eggs during a flight season that typically lasts for four to six weeks between late February and early May. Males typically emerge four to eight days before females. Males can mate many times, while most females mate only once. The average life span for adults is about ten days. Eggs are typically laid in March and April. Females lay up to five egg masses of 5 to 250 eggs each, which they deposit near the base of the plantain, or, when dry conditions necessitate, the paintbrush. Larvae hatch from the eggs in about ten days. They grow for two weeks or more, shedding their skin three times.

Larvae that successfully reach the fourth instar enter a period of dormancy that lasts through the summer. They pass this time under rocks or in cracks in the soil. This diapause ends with the onset of the next rainy season and the germination of dwarf plantain. The larvae then resume activity, feeding and completing their development.

DISTRIBUTION

Historically, the Bay Checkerspot occurred east, west, and south of San Francisco Bay, from Twin Peaks in San Francisco and Mount Diablo in Contra Costa County south approximately to Hollister. Before the introduction of invasive Eurasian grasses and other weeds, which have reduced the abundance and distribution of its host plants, the distribution may have been wider.

Currently, the range is much reduced and patchy. There are six known core areas—one on the San Francisco peninsula, one in San Mateo County, and four in Santa Clara County. However, any site with appropriate habitat within the historic range should be considered potentially occupied.

THREATS

The Bay Checkerspot is in long-term decline throughout its range. Threats include loss and fragmentation of habitat due to suburban sprawl and degradation of remaining habitat by invasive species and inappropriate management, particularly grazing and fire. The spread of European grasses, first introduced by settlers, has been a major factor in the loss of suitable habitat. On fertile soils, the grasses quickly out-compete the native plants such as dwarf plantain and exerted Indian paintbrush. The reliance of the Bay Checkerspot on habitat on serpentine soils may be because the European grasses could not grow on these infertile soils rather than that these were the only areas the butterfly could live. In some serpentine sites, European grasses are now spreading due to increasing fertility levels caused by the fertilizing effect of ammonia and other nitrogen compounds settling out of smog.

CONSERVATION STATUS

It was listed as a federal threatened species on September 18, 1987 (*Federal Register* 52:35366). A recovery plan was published in September 1998 and critical habitat covering approximately 23,900 acres in San Mateo and Santa Clara counties was designated in April 2001.

Recovery Plan (ESA): *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area* (September 30, 1998).

http://ecos.fws.gov/docs/recovery_plans/1998/980930c.pdf

Critical Habitat (ESA): *Federal Register*, 4/30/01.

<http://endangered.fws.gov/frpubs/f010430.pdf>

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

CONSERVATION NEEDS

In Santa Clara County much of the butterfly's habitat is on property owned by a landfill corporation. An agreement worked out among the owner, the city of San Jose, and conservation advocates has resulted in the protection of much of this habitat in exchange for permitted, conscientious development of a small portion of it. In addition, the landowner has provided funding for the establishment of a butterfly preserve and for research towards successful management of the Bay Checkerspot.

RESEARCH NEEDS

Surveys throughout the historic range are needed to confirm current distribution and population levels.

RESOURCES

CONTACTS

USFWS Contact: Don Hankins, Sacramento Fish and Wildlife Office, 2800 Cottage Way, Room W-2605, Sacramento, California 95825. Telephone (916) 414-6600.

Entomological Consulting Services, Ltd.: Richard Arnold, 104 Mountain View Court, Pleasant Hill, California 94523-2188, Phone (925) 825-3784.

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San Jose Mercury-News, April 22, 2005; "Despite rescue efforts, local species dying," by Glenda Chui.

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