



U.S. Fish & Wildlife Service  
Sacramento Fish & Wildlife Office  
Species Account  
CALLIPPE SILVERSPOT BUTTERFLY  
*Speyeria callippe callippe*



CLASSIFICATION: Endangered  
Federal Register 62:64306; December 5, 1997  
[http://ecos.fws.gov/docs/federal\\_register/fr3183.pdf](http://ecos.fws.gov/docs/federal_register/fr3183.pdf)  
A 5-year review is scheduled to begin in January 2008.

CRITICAL HABITAT: None designated

RECOVERY PLAN:  
Draft Recovery Plan For The Callippe Silverspot Butterfly (Under development)

#### DESCRIPTION

The callippe (ca-LIP-ee) silverspot is a medium-sized butterfly in the brush foot family (Nymphalidae). It has a wingspan of about 5.5 centimeters (2.2 inches). The upper wings are brown with extensive black spots and lines, and the basal areas are extremely dark. The undersides are brown, orange-brown and tan with black lines and distinctive black and bright silver spots. The basal areas of the wings and body are densely hairy. The caterpillars are dark-colored with many branching sharp spines on their backs.

Identification of the subspecies is challenging in some parts of its range because it can hybridize with Lilian's and Comstock's silverspot butterflies, producing offspring that are intermediate in appearance.

#### *Life History and Ecology*

The callippe silverspot butterfly has one flight of adults per year. It undergoes complete metamorphosis (a structural transformation during the development of an organism) from egg to larval, pupal and adult stages.

#### *Egg Stage*

During the early summer flight season, females lay their eggs on the dry remains of the larval food plant, Johnny jump-up (*Viola pedunculata*), or on the surrounding debris.

#### *Larval Stage*

Larvae hatch from eggs following a 1-week developmental period. After hatching, larvae eat their eggshells, take shelter in ground litter, then enter diapause (a period of reduced activity and development). Most larvae remain in diapause from early summer until the following spring, but some briefly interrupt diapause by seeking shelter from adverse conditions during this period, followed by a return to diapause. After diapause, the larvae develop through five instars.

After diapause, larvae eat the foliage of their host plant, *V. pedunculata*, but not *V. adunca* (early blue violet), which occurs in the same area. *V. pedunculata* is a low-growing, yellow-flowered violet that blooms from early January through April.

Larvae experience a high rate of mortality during the first instar diapause stage (the overwintering stage). They also have a pronounced sensitivity to some pesticides. Plants exposed to pesticides 6 weeks earlier and subsequently washed before being fed to larvae still caused rapid death.

#### *Pupal Stage*

After metamorphosing through five instars, each callippe silverspot butterfly larva attempts to develop into a pupa. The pupal stage lasts about 2 weeks, which is average for the genus.

#### *Adult Stage*

On average, adults are seen from mid-May to mid-July. The period of the adult flight (*i.e.*, the time between first and last observation of adults) ranges from 46 to 95 days, depending on the number of individuals observed and the death rate. Adults feed on flower nectar. They have been observed feeding on several plant species.

Hilltops and ridges play an important role in breeding behavior. Most observations of adults are made on hilltops. Losing hilltops from habitat areas likely decreases mate location and genetic mixing over the long-term.

## DISTRIBUTION

The subspecies was known historically to occur in grassland habitat in the seven counties bordering San Francisco Bay in California. The historic range included the inner coast range on the eastern shore of San Francisco Bay from northwestern Contra Costa County south to the Castro Valley area in Alameda County. On the west side of the Bay, it ranged from San Francisco south to the vicinity of La Honda in San Mateo County. Five colonies, including the one located at Twin Peaks in San Francisco, were extirpated. The remaining colonies exist on mostly privately-owned land, but also on city, county, and State-owned land.

Since 1988, callippe silverspots have been recorded at San Bruno Mountain and Sign Hill near South San Francisco (San Mateo County), in the hills near Pleasanton (Alameda County), at Sears Point (Sonoma County), and in the hills between Vallejo and Cordelia.

## THREATS

Loss and fragmentation of habitat due to urban development has been the primary cause of the decline of the callippe silverspot butterfly. Urban development is likely to continue to be a threat. Other significant threats are degradation of its habitat due to invasive flora and trampling of host plants by hikers, equestrians, bicyclists and off-road vehicles.

Carefully controlled grazing has been proposed as a means to manage callippe silverspot habitat. Grazing may be able to arrest the invasion of scrub into grassland habitat, and decrease the spread of *Holcus lanatus* (velvet grass), a thatch-forming grass that chokes out native herbs. Grazing could also reduce the accumulation of annual grass biomass (*i.e.*, thatch) that may inhibit native herb growth.

## REFERENCES FOR ADDITIONAL INFORMATION

Arnold, R.A. 1981. Distribution, life history, and status of three California lepidoptera proposed as endangered or threatened species. California Department of Fish and Game, Sacramento, California.

Thomas Reid Associates. 1982. Final report to San Mateo County Steering Committee for San Bruno Mountain: endangered species survey (San Bruno Mountain), biological study - 1980–1981. Thomas Reid Associates, Palo Alto, California.

U.C. Berkeley, Essig Museum of Entomology. [California's Endangered Insects](#).

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