



## Yosemite's Alpine Butterflies

### What kinds of alpine butterflies live in Yosemite?

There are about 60 butterfly species that live in the high elevation (alpine) environments of the Sierra Nevada, including approximately 35 species found exclusively there. Different alpine species are associated with unique habitats and often depend on specific plants as egg laying sites and food sources for their larvae. For example, the Sierra Nevada Parnassian (*Parnassius behrii*) is closely associated with stonecrop growing high in granitic rock gardens and talus slopes. Other species, like the Ivallda Arctic (*Oeneis chryxus ivallda*), can be found only at the very tops of mountain ridges along the Tioga Crest. Emerging after snowmelt during the Sierra's warm summer months, most alpine butterflies live for only a short time as adults (2-4 weeks). Their eggs and caterpillar larvae survive the long, cold winters in a state of hormonally-controlled cessation of growth and metabolic processes known as diapause.



**California Tortoiseshell**  
(*Nymphalis californica*)

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### Why and how are scientists studying alpine butterflies?

Alpine butterflies are threatened in many parts of the world because they are rare, exist in small populations and cannot disperse across large distances. Declining butterfly populations may indicate decreased food sources or increased predators, and low populations of butterflies may effect the food chain for birds, spiders, and insects as well as result in decreased pollen dispersal. Due to recent and ongoing climate change, there is great concern that alpine butterflies will decline and begin to disappear. Although it is not yet clear how alpine butterflies in Yosemite are responding to climate change, they are a well studied insect group in the park and information about where and when they were found in the 1930-1960s provides a chance to study changes in their distribution. Additionally, the park is interested in how alpine butterfly populations are interconnected across the Sierra Nevada. Scientists are using genetic methods to characterize the relationships of populations inside and outside of Yosemite National Park.

Through a Yosemite Fund grant, scientists have surveyed butterfly populations in Yosemite through transect counts with butterfly nets in summer 2007. Additional field surveys in summer 2008 will involve 13 site surveys between July and September.

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### What trends do these studies suggest?

Some alpine butterflies are no longer found in historical sites within Yosemite National Park and there are very few individuals even when they are found at a site. It is natural for some butterfly populations to disappear and return to particular sites from year to year. However, there has to be a sufficient number of individuals in other populations in order to recolonize sites. Scientists are surveying a large number of sites, over multiple years, and collecting information on abundance to try to understand how the alpine butterflies are doing. Preliminary results from genetic studies suggest that some alpine species have very isolated populations across the Sierra Nevada. This means that they usually do not disperse across large distances and recolonization of large areas might take a long time or may not occur.

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## What can I do to help?

Information about many rare species of alpine butterflies is often difficult to obtain. The best way to see butterflies is to enjoy a walk along a mountain trail on a warm clear day and use a pair of binoculars or a zoom-lens camera to take a look when they settle down on a flower. If you see an unusual butterfly and can take a photograph, this could be valuable information on where and when they are active in the park. If you spot a butterfly in the park, email your findings including date and location to [Yose\\_Planning@nps.gov](mailto:Yose_Planning@nps.gov) to be forwarded to wildlife staff.



**Greenish Blue**  
(*Plebejus saepiolus*)



**Shasta Blue**  
(*Plebejus Shasta*)



**Sandhill Skipper**  
(*Polites sabuleti*)

## Public Participation

Public participation is essential for the success of this and all other park projects. Here are some ways to stay involved in the park:

- **Attend a National Park Service public open house** to talk with project specialists and obtain more information on this topic. Visit the park's planning website (listed below) for upcoming dates.
- **Add your name to the park's planning list** and receive the *Planning Update* newsletter as well as other planning-related notices. You can also submit your email address to receive the park's periodic electronic newsletter.

- **Additionally, you can submit comments with your thoughts about this topic or any other project in the park by any of the following means:**

**Mail:** Superintendent  
P.O. Box 577  
Yosemite, CA 95389

**Phone:** 209/379-1365; **Fax:** 209/379-1294

**E-mail:** [Yose\\_Planning@nps.gov](mailto:Yose_Planning@nps.gov)

- **Visit online:** [www.nps.gov/yose/parkmgmt/planning.htm](http://www.nps.gov/yose/parkmgmt/planning.htm) to find out about plans and projects or [www.nps.gov/yose/naturescience/index.htm](http://www.nps.gov/yose/naturescience/index.htm) to find out about science & nature in Yosemite National Park.



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