

# ZERENE FRITILLARY

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## TAXONOMY

**Scientific name:** *Speyeria zerene* (Boisduval, 1852)

**Common name:** zerene fritillary

**Family:** Nymphalidae

**Taxonomic comments:**

One of 13 species in the genus *Speyeria*, with at least 15 *S. zerene* subspecies (Emmel 1998). A new subspecies, *S. z. sitka*, was recently described with limited distribution in Southeast Alaska (Guppy and Shepard 2001).

## DESCRIPTION

**Basic description:** A medium-sized orange butterfly.



**General description:**

A medium-sized butterfly with sometimes highly variable coloration. Upper side of wings is bright to dull orange with heavy black markings, underside of hind wings is dark to pale reddish brown with silver spots and in some subspecies a yellow submarginal band; base of forewing underside is flushed with reddish orange. Often confused with other *Speyeria* species including the Great Basin fritillary (*S. egleis*) and the coronis fritillary (*S. coronis*), which also have low, rounded/oval silver spots on margin of the hind wing underside. This species is best identified by comparison to specimens or photographs in a key (Scott 1986, Layberry et al. 1998, Guppy and Shepard 2001). Eggs are 1.0x0.6 mm and dull cream color; mature larvae are black with spiny proturbances and 2 mid-dorsal, narrow yellow stripes or orange-brown to gray with black markings and a single black stripe down the side (Layberry et al. 1998, Guppy and Shepard 2001). Pupae hang vertically between silked-together leaves (Scott 1986).

**Length (mm):** 50-64 (wingspan)

**Reproduction:**

Mating occurs immediately after females emerge from pupa in spring. Males patrol all day seeking emergent females. During summer females retreat to high elevations and return to food-plant habitat to lay eggs when cooler weather returns in late summer/early fall. Eggs laid singly at base of host plants or nearby; in laboratory, hatched the following spring (Guppy 1956 in Guppy and Shepard 2001) but, Hardy (1958) observed hatching in the wild in late summer. Larvae begin feeding as soon as host plants leaf out in spring (Guppy and Shepard 2001).

**Ecology:**

One flight period from late May to late August/early September. The high variability in coloration within this species may be related to humidity levels; in moist habitats this species is darker orange with heavier dark markings than in drier habitats; seasonal humidity changes may also affect coloration (Layberry et al. 1998).

**Migration:**

Adults can disperse 2-3 km in Oregon (Scott 1986).

**Food:**

Larvae eat leaves of host-plant species in the Violet family including *Viola adunca*, *V. cuneata*, *V. lobata*, *V. nuttallii*, and *V. purpurea*; also *V. palustris* in the laboratory (Scott 1986, Guppy and Shepard 2001). Adults drink nectar from wildflowers.

**Phenology:**

Diurnal. Flight period is from late May to early September.

**Habitat:**

Varies with subspecies: includes coastal dunes and salt spray meadows, sagelands, meadows, and open coniferous woods. On southern Vancouver Island and the Gulf Islands, B.C., found in mesic and xeric meadows with permanent springs; in southcentral B.C., in the Cariboo and eastern slope of the Cascade Mountains, associated with mesic meadows in Douglas-fir woodlands; farther east in B.C., utilizes dry meadows in sagebrush, ponderosa pine and Douglas-fir forests (Scott 1986, Guppy and Shepard 2001). Hosts are plant species in the Violet family, see Food comments.

## STATUS

**Global rank:** G5 (01Sep1998)

**Global rank reasons:**

Overall, species is common and widespread but subspecies *myrtilae* is apparently extinct (in accordance with taxonomy used herein) and *behrensii* and *hippolyta* are federally listed. Other subspecies were included under *myrtilae* at time of its listing.

**State rank:** S2 (09Nov2005)

**State rank reasons:**

Known distribution in Alaska (subspecies *S. z. sitka*) is restricted to a very small area in vicinity of Haines in Southeast Alaska; range is likely incompletely known. Population size unknown, but species has been observed consistently in the Haines area during its flight period. Threats are minimal, although habitat loss to development or wildfires is a concern. This butterfly has very specific food requirements for violet host-plants.

## DISTRIBUTION AND ABUNDANCE

### **Range:**

#### **Global range:**

Found from the top of the Alaska panhandle (Haines area) and from southern British Columbia east to southwestern Saskatchewan and south to central California, New Mexico, Utah, and southern Nevada (Guppy and Shepard 2001).

#### **State range:**

In Alaska, subspecies *S. z. sitka* known only from the Haines area. Collections have been made around the town of Haines and nearby at miles 18 and 26 on the Haines Highway (Guppy and Shepard 2001, Philip pers. comm.). Some researchers wonder if the Haines population may actually be a distinct population of the Atlantis fritillary (*S. atlantis*, also known as *S. hesperis*) instead of *S. zerene* (Philip pers. comm.). *Speyeria atlantis* occurs in Alaska at a number of sites along the Alaska Highway from Fairbanks eastward. The nearest *S. zerene* population outside of Alaska is very remote, on Vancouver Island (subspecies *S. z. bremnerii*; Guppy and Shepard 2001).

### **Abundance:**

#### **Global abundance:**

Generally abundant throughout range although subspecies *S. z. behrensii* and *S. z. myrtleae* (central coastal California) are currently listed as endangered and *S. z. hippolyta* (Washington, Oregon and northern California) is listed as threatened (Black and Vaughan 2005a, 2005b).

#### **State abundance:**

Alaska subspecies, *S. z. sitka*, is known from one localized population in Southeast Alaska (Guppy and Shepard 2001). Population size unknown, but this species has been consistently observed flying near Haines in low numbers (Philip pers. comm.).

### **Trends:**

#### **Global trend:**

Unknown. Decreases in population size and range have occurred for 3 subspecies: *behrensii*, *myrtleae*, and *hippolyta* (Black and Vaughan 2005a, 2005b). The historical distribution of *S. z. behrensii* covered much of California's north coast, but is now known only from a single population of around 100 individuals (Black and Vaughan 2005a). Subspecies *myrtleae* was formerly widespread on the San Francisco and Marin peninsulas; now known from only 4 populations of several thousand individuals in northwestern Marin County and southwestern Sonoma County (Black and Vaughan 2005a, 2005b). No declines noted for other subspecies.

#### **State trend:**

Unknown, but no apparent decline noted in the short-term (Philip pers. comm.).

## EXISTING PROTECTION

### **Global protection:**

Subspecies *behrensii* and *myrtleae* of California are listed as Endangered under the federal Endangered Species Act. Subspecies *hippolyta* of California, Oregon and Washington is listed as Threatened.

### **State protection:**

Species receives no specific protection within its Alaska range.

## CHALLENGES

### **Global challenges:**

Potentially threatened by any land use practices that degrade species' habitat and more specifically, remove violets. These include development, excessive livestock grazing, pesticide use and plant collections by humans.

Subspecies from declining populations are sensitive to habitat loss due to encroachment of commercial and residential development, spread of introduced plant species which exclude violet host plants, human recreational activities, and fire suppression/successional vegetation change (Black and Vaughan 2005a, 2005b).

### **State challenges:**

Although no immediate threats exist, land use practices such as development or pesticide application, which degrade habitat and remove violets, are of potential concern.

## RESEARCH AND INVENTORY NEEDS

### **Global research needs:**

See State research needs.

### **State research needs:**

Clarify taxonomy of this species in Alaska using genetic and morphological techniques to compare individuals from the Haines area to individuals of nearest *S. zerene* population on Vancouver Island. Study habitat associations and identify violet host plant species in Alaska.

### **Global inventory needs:**

See State inventory needs.

### **State inventory needs:**

Determine geographic distribution of this species in Alaska by surveying suitable habitat outside of the Haines area; focus on sites south of Haines in Alaska and British Columbia to possibly identify more proximal populations. Monitor population at Haines annually to identify trends in abundance and/or local distribution.

## CONSERVATION AND MANAGEMENT NEEDS

**Global conservation and management needs:**

See State conservation and management needs.

**State conservation and management needs:**

No imminent threats to this species, so research on life history and inventory/monitoring to determine range and identify population trends are the priority. Surveys for adults and larvae could be combined with vegetation surveys in Southeast Alaska to learn more about this small population.

## LITERATURE CITED

- Black, S.H. and D.M. Vaughan. 2005a. Species profile: *Speyeria zerene behrensii*. In: Shepherd, M.D., D.M. Vaughan and S.H. Black (Eds.). Red list of pollinator insects of North America. CD-ROM Version 1 (May 2005). The Xerces Society for Invertebrate Conservation, Portland, OR.
- Black, S.H. and D.M. Vaughan. 2005b. Species profile: *Speyeria zerene myrtleae*. In: Shepherd, M.D., D.M. Vaughan and S.H. Black (Eds.). Red list of pollinator insects of North America. CD-ROM Version 1 (May 2005). The Xerces Society for Invertebrate Conservation, Portland, OR.
- Emmel, T.C. (Ed.). 1998. Systematics of western North American butterflies. Mariposa Press, Gainesville, FL. 878 pp.
- Guppy, C.S. and J.H. Shepard. 2001. Butterflies of British Columbia. UBC Press and The Royal British Columbia Museum, Vancouver, BC.
- Hardy, G.A. 1958. Notes on the life histories of three species of Lepidoptera from southern Vancouver Island, British Columbia. Proc. Ent. Soc. Brit. Columbia 55:27-30.
- Layberry, R.A., P.W. Hall and D.J. Lafontaine. 1998. The butterflies of Canada. University of Toronto Press, Toronto, ON. 280 pp.
- Philip, K. 2005. Personal communication between Kenelm Philip, University of Alaska, Fairbanks, AK and Jodi McClory, Alaska Natural Heritage Program, Anchorage, AK.
- Scott, J.A. 1986. The butterflies of North America: a natural history and field guide. Stanford University Press, Stanford, CA.

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## Acknowledgements

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Life history and global level information were obtained from the on-line database, NatureServe Explorer ([www.natureserve.org/explorer](http://www.natureserve.org/explorer)). In many cases, life history and global information were updated for this species account by Alaska Natural Heritage Program zoologist, Tracey Gotthardt. All global level modifications will be sent to NatureServe to update the on-line version.

*Zerene fritillary*

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**NatureServe Conservation Status Factors Edition Date:** 06Jun2000

**NatureServe Conservation Status Factors Author:** Schweitzer, D.F.; Opler, P.A.

**Global Element Ecology & Life History Edition Date:** 17May2001

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