

Glauopsyche lygdamus ruidoso (Sacramento Mountains Silvery Blue Butterfly)



Steve Cary,

Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** LYCAENIDAE
- **Genus:** Glauopsyche
- **Scientific Name:** *Glauopsyche lygdamus ruidoso* R. Holland, 2011
- **Common Name:** Sacramento Mountains Silvery Blue Butterfly
- **Synonyms:**
- **Taxonomic Name Source:** Holland, R. 2011. Lepidoptera of North America 10. Review of *Plebejus icarioides* and *Glauopsyche lygdamus* in New Mexico with four new subspecies (Lycaenidae, Lycaeninae, Polyommataini). Contributions of the C.P. Gillette Museum of Arthropod Diversity Colorado State University, Fort Collins, Colorado. 29 pp.

Agency Status

- **NMDGF:**
- **Federal Status:**
- **BLM Sensitive:**
- **USFS:**
- **IUCN Red List:** [Not Evaluated](#)
- **Nature Serve Global:** [TNR](#)
- **NHNM State:** S1
- **NM Endemic:** YES

Description

The Sacramento Mountains Silvery Blue is a subspecies of the Silvery Blue Butterfly, which is named for the dorsal color of the wings. The ventral wings are gray with bands of white spots. **Comments.** New Mexico has four named subspecies of which the two best known are Rocky Mountain subspecies *Glauopsyche lygdamus oro* (Scudder 1876) in north-central New Mexico and Mogollon Rim subspecies *Glauopsyche lygdamus arizonensis* McDunnough 1936 in southwest New Mexico mountains. Richard Holland (2011) described Sacramento Mountains and Sierra Blanca (Li,Ot) subspecies *Glauopsyche lygdamus ruidoso* (R. Holland 2011).

Comments courtesy of Steven J. Cary, [Butterflies of New Mexico](#), 2024

Habitat and Ecology

The parent species the Silvery Blue lives mostly in boreal North America with populations from northern Alaska ranging south to New Mexico (Cary and Toliver 2023). Many of the subspecies specific life history information is still unknown however, the Silvery Blue is known to use legumes (*Fabaceae*) as host plant, including plants such as silvery lupine (*Lupinus argenteus*), Purple Locoweed (*Oxytropis lamberti*), Spreadfruit Goldenbanner (*Thermopsis divaricarpa*) and Milkvetch (*Astragalus spp.*) (Cary and Toliver 2023). It is unknown specifically which of these or which taxa are being utilized as host plants by this subspecies and more research is needed on this topic. Silvery Blues are broadly univoltine across New Mexico with extreme flight dates in New Mexico stretching from March 22nd to July 27th (Cary and Toliver 2023).

Geographic Range:

This subspecies is restricted to the Sacramento Mountain complex in Lincoln and Otero Counties of southern New Mexico, with the type locality in the Capitan Mountains to the north end of the complex (Holland 2011).

Conservation Considerations:

There are no known conservation actions being taken for this butterfly and no previous conservation assessments that we know of. Due to lack of information, research is urgently needed on the complete range of this subspecies, as well as on its habitat requirements and larval host plant.

Threats:

This butterfly is a New Mexico endemic species with a very restricted geographic range bounded by elevation. High elevation subspecies are threatened by increased temperatures, drought conditions, and biotic interactions resulting from climate change. Documented changes in climate variables across the southwestern United States and Mexico include increased average surface and soil temperatures as well as reduced rainfall, reduced snowpack, increased evaporation, lengthening and more frequent heatwaves, increased spread of introduced plant species, lengthened fire season, and prolonged droughts (McRoberts and Nielsen-Gammon 2010, Abatzoglou and Kolden 2011, Fincher 2012, Abatzoglou and Williams 2016, Vose *et al.* 2017, Perkins-Kirkpatrick and Lewis 2020, Pörtner *et al.* 2022). Many butterflies respond to climate change by moving to higher elevations or latitudes however, this is not an option for taxa on isolated mountain ranges where there are no higher elevation habitats to shift to, so even a small amount of warming could place this subspecies on the “elevator to extinction” (Forister *et al.* 2010, Holland 2010, Rødder *et al.* 2021). Phenological mismatch with the host plant or nectar sources is also a potential consequence of climate warming (Singer and Parmesan 2010).

A threat to this species is fire management, including the potential for catastrophic wildfire as a result of historic fire suppression. Fire suppression has been a key component of forest management in this region since the early 1900s, resulting in dense conifer growth and increased fuel loads (Kaufmann *et al.* 1998). At least nine large fires have burned over 34,000 acres of land in the Sacramento Mountains in the last 50 years (Kaufmann *et al.* 1998). The impacts of fire on this species may depend on the intensity and size of the fire, as well as seasonal timing (USFWS 2004). For example, if a small amount of meadow habitat was burnt, but adjacent forests were cleared, larval host and nectar plants may benefit from the disturbance caused by the fire, and butterflies may be able to disperse more readily

between meadows. Such disturbances are necessary to support the metapopulation dynamics of this sub-species, where small, discrete sub-populations rely on regular recolonization from neighboring patches. However, if a fire that was too hot or too widespread were to burn in the area, direct impacts may include mortality of adults, pupae, larvae, or eggs, depending on the time of year, and indirect effects might include loss of host plants and nectar sources. The impacts of land use on fire intensity and spread may also be consequential. For example, grazing may temper a fire, as grazed meadows carry less fuel load, but the presence of some invasive grasses which are more abundant in grazed areas, such as Kentucky Blue Grass (*Poa pratensis*), may cause fire to burn deeper and hotter, due to the formation of mats (USFWS 2004).

Pesticide use in the Sacramento Mountains may have also adversely impacted this subspecies. For example, in 1983 and 1984 carbaryl pesticides were sprayed using aerial application over 240,900 acres in the Sacramento Mountains at elevations between 1829 and 3353 meters (6,000 and 11,000 feet), to control an outbreak of Western Spruce Budworm (Bennett and Linnea 1985). Most of the inhabited areas and waterways, including the area around Cloudcroft as well as some of the surrounding meadows were instead sprayed with biocontrol bacterial agent *Bacillus thuringiensis* (*Bt*) (Bennett and Linnea 1985). In another example, in 2007, Cloudcroft again sprayed *Bt* var. *kurstaki*, which targets lepidopterans specifically, to control a Janet Fir Looper (*Nepytia janetae*) outbreak (Holland 2007).

Identification of the host of this subspecies is needed for more complete estimation of the threats to this species.

Population:

The population size is not known for the Sacramento Mountains Silvery Blue, although there are some signs that the parent species the Silvery Blue may be declining across its range. Edwards *et al.* (2024) analyzed count data collected over the last two decades by numerous butterfly monitoring programs, at sites throughout the range of the species. To estimate changes in total abundance, the number of butterflies observed in each survey was summed and data was fit to a generalized additive model. Survey effort was also accounted for. From this model, a reduction of 41.39% was estimated across the sites. The count data utilized data across the range of the species coming from many sites, and is therefore likely representative of the entire distribution. In a related effort Forister *et al.* (2021) also found declines in abundance of most of 272 widespread butterfly species. Using Bayesian Poisson regression to model trends in long term butterfly monitoring data across the United States, these declines were estimated to be a continual 1.6% decline in abundance per year.

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More Information