

## Callophrys affinis apama (Apama Bramble Hairstreak)

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Steve Cary,

### Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** LYCAENIDAE
- **Genus:** Callophrys
- **Scientific Name:** *Callophrys affinis apama* (W. H. Edwards, 1882)
- **Common Name:** Apama Bramble Hairstreak
- **Synonyms:** *Thecla apama* W. H. Edwards, 1882  
W. H. Edwards, 1882
- **Taxonomic Name Source:** Pelham, J. P. 2008. A catalogue of the butterflies of the United States and Canada with a complete bibliography of the descriptive and systematic literature. *The Journal of Research on the Lepidoptera*. Volume 40. 658 pp. Revised 14 February, 2012.

### Agency Status

- **NMDGF:**
- **Federal Status:**
- **BLM Sensitive:**
- **USFS:**
- **IUCN Red List:** [Not Evaluated](#)
- **Nature Serve Global:** [TNR](#)
- **NHNM State:** S2
- **NM Endemic:** NO

### Description

Bramble Hairstreaks are green below and rust-brown above, compared to the gray of Sheridan's (see comparison at <https://peechnature.org/butterflies-of-new-mexico/hairstreaks-lycaenidae-theclinae/#affinis>). An irregular band of brown-edged, white spots crosses the tailless ventral hindwing. The ventral white spots (when present) tend to be more disconnected in *affinis* compared to *sheridanii*, although the Sacramento Mountains version of *sheridanii* approaches the *apama* version of *affinis* in this character. Since the two species are distinct in that mountain range, observers should be able to tell them apart (see comparison figure to be sure, <https://peechnature.org/butterflies-of-new-mexico/hairstreaks-lycaenidae-theclinae/#affinis>). Gorelick (2005) showed that *Callophrys apama* (W. H. Edwards) is a subspecies of *Callophrys affinis*. Western New Mexico has *Callophrys affinis apama* (W. H. Edwards 1882) with a prominent white hindwing band. South-central New Mexico (Li,Ot) adults have a nearly immaculate hindwing and are *Callophrys affinis albipalpus* Gorelick 2005. The two forms converge in our north-central mountains where the hindwing

spot band is variable and adults are placed with subspecies *Callophrys affinis homoperplexa* W. Barnes & Benjamin 1923.

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

## Habitat and Ecology

This butterfly resides in the mountains of western New Mexico and along the Mogollon Rim to central Arizona. It is found on rocky mountain slopes, or in montane foothills where its sole host plant, Fendler's Buckbrush (*Ceanothus fendleri*), can be found (Bailowitz and Brock 2022, Cary and Toliver 2024). This host plant is a post burn colonist and thrives in landscapes with frequent fires. As such the Apama Bramble Hairstreak is considered a fire-climax butterfly (Cary and Toliver 2024). It has two flights a year with extreme dates stretching from late April or May to late August, with peaks in May and July, at least in New Mexico (Cary and Toliver 2024). Extreme flight dates range from May 12th to August 1st (GBIF.org 2024). As with many other Lycaenidae, larvae seem to be ant tended (Cary and Toliver 2024). During flight adults can often be seen perching on and nectaring at their host plants (Cary and Toliver 2024).

## Geographic Range:

This butterfly is found from the Gila region of southwestern New Mexico, west across the Mogollon Rim and White Mountains, to central Arizona (GBIF.org 2024). This butterfly was once found in southern Arizona, but it apparently became slowly extirpated in the region with no records since 1930, 1958, 1960, and 1964 in the Huachuca, Chiricahua, Santa Catalina, and Pinaleno Mountains, respectively (Bailowitz and Brock 2022). In New Mexico this butterfly is generally found at high elevations between 2,000 and 2,750 meters (6,500 and 9,000 feet) (Cary and Toliver 2024).

## Conservation Considerations:

There are no known conservation actions in place for this butterfly. Due to the many possible threats, restricted range, and the fact that it is a mountaintop species at the south of its range this subspecies, it is unlikely to persist without direct conservation intervention. These conservation actions should include determining the number of populations, the threats to each population and the population trend. Additionally, habitat restoration focusing on making populations more resilient or reconnecting isolated metapopulations will be crucial for this butterfly's long term survival.

## Threats:

Threats to this species are not well understood, though as a mountaintop endemic subspecies at the southern extreme of the range of the species, climate change is likely the primary threat to this butterfly. For example, many butterflies respond to climate change by moving to higher elevations or latitudes (Forister *et al.* 2010, Rödder *et al.* 2021). However, this is not an option for this taxa, as there are no higher elevation habitats to shift to. As a result, just a small amount of warming may be detrimental for this subspecies (Holland 2010). As such, the likelihood that this butterfly survives until 2100 without conservation intervention is unlikely, as the western United States is expected to continue to get hotter and drier over the next century (Cook *et al.* 2009, Cook *et al.* 2015, Williams *et al.* 2022). Drought may be particularly problematic, as drought has been known to impact availability and quality of host plants in some studies (Carnicer *et al.* 2018). Phenological mismatch with the host plant or nectar sources is also a potential consequence of drought and climate warming (Singer and Parmesan 2010, Patterson *et al.* 2019).

Fire suppression is also a major threat to this butterfly. Fire suppression has historically been a major part of forest management in the White Mountains and Mogollon Rim of Arizona, resulting in dense conifer growth. As the host plant

is a post burn colonist that tolerates only light shade, fire suppression practices have likely severely limited the available habitat (Miller *et al.* 2018). Fire suppression also contributes to increased fuel loads, increasing the chance of catastrophic wildfires. The two largest wildfires in Arizona's history both occurred in the White Mountains within the last two decades, with the largest burning 538,049 acres (Warnick 2016). These catastrophic wildfires may lead to lower host plant availability or cause direct mortality to butterfly adults, larvae, or eggs. The presence of invasive species can also intensify these wildfires (Fusco *et al.* 2019).

Inbreeding depression may be another threat to this sub-species, as it may exhibit mountaintop metapopulation dynamics. This can affect butterflies in two ways. First, in species exhibiting metapopulation dynamics, mountain top colonies frequently go extinct and are recolonized by neighboring occurrences. However, as this butterfly is pushed to higher elevations by climate change, there is less opportunity for recolonization of these sites extirpated by environmental stochasticity. Second, isolated metapopulations are at risk of inbreeding depression as deleterious alleles can begin to accumulate, resulting in a reduction in heterozygosity, which has been shown to reduce survival rates at several important life stages in butterflies, including those that have an effect on population stability and persistence, even after just one generation of mating between full-siblings (Saccheri *et al.* 1998, Nieminen *et al.* 2001).

## Population:

The population size and trend are not known for this subspecies. Determination of population size and monitoring of population trends is necessary to ensure the population is stable. This is especially important as several widespread, relatively common species of butterfly are in decline across the American west (Forister *et al.* 2021) and this species has become extirpated from some parts of its range.

## References:

- U.S. Fish and Wildlife Service (USFWS), Otero County, The Village of Cloudcroft, and U.S. Forest Service. 2004. Conservation Plan for the Sacramento Mountains Checkerspot Butterfly (*Euphydryas anicia cloudcrofti*). Albuquerque, NM : (80).
- [ITIS. 2021. Integrated Taxonomic Information System \(ITIS\). https://www.itis.gov/](https://www.itis.gov/)
- [Cary, S.J. and Toliver, M.E. . 2024. Butterflies of New Mexico.. Pajarito Environmental Education Center \(PEEC\). https://peechnature.org/butterflies-of-new-mexico/](https://peechnature.org/butterflies-of-new-mexico/)
- [GBIF.org. 2024. GBIF Occurrence Download . https://doi.org/10.15468/dl.fqwu7n](https://doi.org/10.15468/dl.fqwu7n)
- Bailowitz, R. and Brock, J. . 2022. Southeastern Arizona Butterflies. Wheatmark Publishing Company, Tucson .

## More Information

