Adopaeoides prittwitzi (Sunrise Skipper)

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Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: HESPERIIDAE
- **Genus**: Adopaeoides
- **Scientific Name**: *Adopaeoides prittwitzi* (Plotz, 1884)
- **Common Name**: Sunrise Skipper
- **Synonyms**: Apaustus prittwitzi Plotz, 1884 Plotz, 1884
- **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**: G3
- **NHNM State**: S1
- **NM Endemic**:NO

Description

Sunrise Skipper is the rarest of our tiny orange skippers, at least in New Mexico. It is distinguished by black scaling along the upperside forewing veins from the margin inward. It also has a pale band running from base to margin of the hindwing below. Range and Habitat. Adopaeoides prittwitzi is distributed from central Mexico northward, barely entering the US in southeast Arizona, west Texas, and southwest New Mexico. New Mexico colonies occur only along the lower reaches of Cloverdale Creek and Clanton Draw in the Animas Valley (county: Hi). Look for it in adjacent slack-water streamside habitats below 5200? elevation. Life History. Paspalum disticum (Poaceae) is reported as a larval host in southeast Arizona (Bailowitz and Brock 1991). Flight. Adults patrol weakly over host stands and rarely wander from marshy habitats. There appear to be two annual flights: spring brood records span May 20 to June 22; our sole autumn brood record is September 24. Comments. This skipper was first seen in New Mexico by legendary prolific southwestern lepidopterist Kilian Roever on 22 June 1991.

Description courtesy of Steven J. Cary, Butterflies of New Mexico, 2024

Habitat and Ecology

This species is restricted to wetlands habitats in otherwise arid areas of southern Arizona, southern New Mexico, and central Mexico (Scott 1986, Opler and Wright 1999). This species is confined to the few remaining upland marshes and cienegas, where the sole larval host plant, Knotgrass (*Paspalum distichum*), can be found (Opler and Wright 1999, Glassberg 2001, Lotts and Naberhaus 2021, Bailowitz and Brock 2022, Cary and Toliver 2024). It is additionally reported that the plants that females choose to lay eggs on, are nearly always fully submerged in water at the base (Bailowitz and Brock 2022).

Adults of this species appear to be double brooded, with one brood in the spring and then a more abundant brood in the summer. Records extend from April to mid October, with the first flight generally happening between May and June and the second from August to October (Opler and Wright 1999, Glassberg 2001, Lotts and Naberhaus 2021, Bailowitz and Brock 2022, Cary and Toliver 2024). During flight, adults of this species nectar at Watercress (*Nasturtium officinale*) as well as at Spanish Needles (*Bidens* spp.) and other low growing flowers (Opler and Wright 1999, Lotts and Naberhaus 2021, Bailowitz and Brock 2022). Adults of this species are apparently exceptionally weak fliers and as a result rarely leave their marshy habitats (Scott 1986, Opler and Wright 1999, Cary and Toliver 2024). During flight, males can be seen patrolling weakly over flowers and grasses at springs, in the morning hours (Scott 1986, Lotts and Naberhaus 2021, Cary and Toliver 2024). The early life history stages of this species have not been reported, as it is difficult to access them in marshy areas; however, overwintering probably occurs as larvae within a nest on the host plant, but more research is needed on the life history of this species (Opler and Wright 1999, Glassberg 2001, Bailowitz and Brock 2022).

Geographic Range:

This species is found in southern Arizona and southern New Mexico, and also in central Mexico (Opler and Wright 1999, Lotts and Naberhaus 2023, Bailowitz and Brock 2022, Cary and Toliver 2024). There are no records from northern Mexico, though it is unclear if this gap is due to lack of survey effort or if the populations in the United Sates are truly disjunct from those in central Mexico. There is also one historical record of this species in west Texas, though the species is likely not extant there, as it has not been recorded recently (Scott 1986, Opler and Wright 1999, Brock and Kaufman 2003, Bender et al. 2005, Bailowitz and Brock 2022). The species can generally be found between 1,220 and 1,830 meters (4,000 and 6,000 feet) (Brock and Kaufman 2003).

Conservation Considerations:

There few conservation actions in place for this species. This species underwent a NatureServe conservation assessment in 2019 and was found to be globally vulnerable to extinction (NatureServe 2024). Although the species was found to be critically imperiled in the United States (NatureServe 2024). This species is also on the United States Forest Services regional list of sensitive species (USFS 2021) and was recommended as a conservation priority in a Nature Conservancy Report on the Sonoran desert ecosystem (Marshall *et al*. 2000).

Colonies and habitats of this species should be conserved wherever they are found. Protection from draining of wetlands and capping springs is also needed (Lotts and Naberhaus 2021). While light cattle grazing may be okay for this species, heavy grazing can kill this species and destroy the habitats. As a result, care should be taken to limit grazing in Sunrise Skipper habitats. Habitat restoration may also be required and should focus on enlarging existing patches of habitat. Larger habitat areas will be more resistant to threats and can help combat inbreeding depression.

Research is needed for this species. Almost nothing is known of the populations in Mexico and their status. The

population size and trend for this species are also not known although anecdotally many sources report it as declining. Additionally, we know very little about this species life history or direct threats. Filling these gaps in our knowledge will be crucial for any conservation strategy. This species is one of only two members of its genera which makes it especially taxonomically valuable for conservation as well (Pelham 2024).

Threats:

This species is tied very closely to cienegas and upland marshes in otherwise xeric areas (Bailowitz and Brock 2022, Cary and Toliver 2024). These habitats have been in steady decline and are threatened across the range of the species. For example, from the 1780s to the 1980s, an estimated 36% of the wetlands in Arizona were lost (Dahl 1999), largely due to increased demand for water from agriculture, urbanization, and industry (Fretwell *et al*. 1996). Surface and groundwater resources are important of this species, and there are no regulations on groundwater use in the state of Arizona (Ferris and Porter 2021). As such, in rural areas, which cover 80% of the state, there is no limit on the number of new wells drilled, or on the amount of water that can be pumped from a well (Holmes 2022). This unmanaged pumping has led to wells going dry, ground fissures, and land subsistence. Similarly, in Mexico, unsustainable agricultural practices and the increased water demands of expanding urbanization, have contributed to depletion of underground aquifers with severe impacts the integrity and availability of freshwater habitats. For example, across the arid and semi-arid lands of northern Mexico, Contreras-Balderas & Lozano-Vilano (1993) identified 92 springs and 2,500 linear km of river habitat that completely dried, due to overuse by agriculture and livestock production. In addition to water overuse, climate change will likely further stress the water resources this species depends on. The southwestern United States is forecast to continue getting hotter and drier as the climate warms. This will increase the likelihood that the springs and marshes this species relies on will dry out, potentially leading to steady declines in this species population and in the amount of habitat available (NatureServe 2024).

Overgrazing may also be a threat, as the sole host plant can only tolerate very light grazing, and is easily uprooted and killed (Carr 2010, USFS 2021, NatureServe 2024). Draining of wetlands, capping of springs, and habitat loss due to agriculture have also caused a large amount of habitat loss for this species in the past, leading to extirpations in several localities (Hendrickson and Minckley 1984, Marshall *et al.* 2004, USFS 2021, NatureServe 2024).

This species is now found on the small scattered remnants of its' former habitat. Colonies are extremely localized and rare and neighboring colonies are isolated by expanses of inhospitable deserts (Hendrickson and Minckley 1984, Opler and Wright 1999, Glassberg 2001, Brock and Kaufman 2003, Marshall *et al*. 2004, Bailowitz and Brock 2022). This issue is exacerbated by the fact that this butterfly is an extremely weak flier and would have trouble reaching even a relatively close colony (Scott 1986, Opler and Wright 1999, Cary and Toliver 2024). Due to this isolation of small colonies, inbreeding depression may be another threat to the species (Hedrick et al. 1994, Lynch et al. 1995, Saccheri et al. 1998, Nieminen *et al*. 2001, Nonaka *et al*. 2018).

Flooding, either natural or unnatural, poses an additional threat to the species, as it can destroy host plants and kill larvae or eggs (USFS 2021, NatureServe 2024). Lastly, having a single host plant increases extinction risk, as any threats reducing host plant populations, will also result in population declines for this butterfly. In addition, having a single host plant also puts taxa at higher risk of phenological mismatch, especially if they have a single brood (Kotiaho *et al*. 2005, Palash et al. 2022, Forister *et al.* 2023, Patterson *et al*. 2019, USFS 2023).

Population:

The population size and trend are not known for this species. Near Mexico City, the species is reportedly quite common (A. Warren pers. comm. 2024). However, in the United States the species is found in small colonies (Opler and Wright 1999) and is reportedly quite rare (Brock and Kaufman 2003). There are very few recent collection records (GBIF.org 2024) and decline is inferred due to habitat loss and degradation (USFS 2021, NatureServe 2024).

Determination of population size and monitoring of population trends is necessary to ensure the population is stable, especially as several widespread, relatively common species of butterfly are in decline across the southwestern United States (Forister *et al.* 2021, Crossley *et al.* 2021, Edwards *et al.* 2023).

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