

Pyrgus xanthus (Mountain Checkered Skipper)



Steve Cary,

Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** HESPERIIDAE
- **Genus:** Pyrgus
- **Scientific Name:** *Pyrgus xanthus* W. H. Edwards, 1878
- **Common Name:** Mountain Checkered Skipper
- **Synonyms:** *Syrichtus macdunnoughi* Oberthur, 1914 Oberthur, 1914
- **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:** S3
- **NM Endemic:** NO

Description

This and the next species are tiny and hard to distinguish from each other. Mountain Checkered-Skipper has bolder contrasting marks; the hindwing above has a white basal dot and strong white bands. Bold black checks on the hindwing fringe extend all the way to the edge. The hindwing underside also is more boldly marked.

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

Habitat and Ecology

This species lives in high alpine forest clearings, especially those with grasses and Aspen (*Populus tremuloides*) groves, in the Southern Rockies and New Mexico/ Arizona Mountains ecoregions (Scott 1986, Tilden and Smith 1986,

Cary and Toliver 2023). Usually found at elevations between 2,400 and 3,200 m (Scott 1975, 1986; Ferris and Brown 1981; Lotts and Naberhaus 2021), the species can also be found in high elevation meadows along streams, as well as in grassy roadside gullies (Scott 1975, 1986, Ferris and Brown 1981). This species' host plants are Cinquefoils, *Potentilla* spp., (Family: Rosaceae), especially *Potentilla gracilis* var. *pulcherrima* also referred to as *Potentilla pulcherrima*, *P. hippiana*, and *P. ambigens* (Scott 1975, 1986, Ferris and Brown 1981, Lotts and Naberhaus 2021, Cary and Toliver 2023). However, the species has also been recorded ovipositing on *P. subviscosa* (Scott 1986, Cary and Toliver 2023). The adults feed on nectar, especially that of yellow flowers such as Dandelions (*Taraxacum* spp.) and Cinquefoils, but can also be seen visiting moist sand, mud, or dung to puddle (Scott 1986, Ferris and Brown 1981, Lotts and Naberhaus 2021). This species is univoltine and has one brood from April or early May to June (Lotts and Naberhaus 2021), though extreme flight dates in New Mexico stretch from March 25th to June 26th (Cary and Toliver 2023). During flight, males can be seen patrolling around host plants or perching in gullies watching for females (Lotts and Naberhaus 2021, Cary and Toliver 2023). After mating, eggs are laid singly on flowers or leaves of host plants (Scott 1986, Lotts and Naberhaus 2021). Once the eggs hatch, the caterpillars form a webbed shelter in which they rest and feed until they are ready to pupate; they then overwinter as pupae (Lotts and Naberhaus 2021, NatureServe 2023).

Geographic Range:

This species occurs in the southwestern United States, where it is found in high elevation mountains from southern Colorado, south to southern New Mexico, and east to central Arizona (Cary and Toliver 2023, GBIF.org 2023, NatureServe 2023, SCAN 2023). One specimen was collected in Clark County, Nevada, in 1939, but there are no further records in that state (GBIF.org 2023). There are also two historical reports from Utah, though no recent observations (Lotts and Naberhaus 2021). Records in Utah and Nevada likely represent vagrant occurrences. This species is found at elevations between 2,400 and 3,200 m (Cary and Toliver 2023; Scott 1975, 1986; Ferris and Brown 1981; Lotts and Naberhaus 2021).

Conservation Considerations:

This species is assessed as Vulnerable at the global and state level, in Colorado (NatureServe 2023). It was included a Species of Greatest Conservation Need on the Colorado State Wildlife Action Plan (Colorado Division of Wildlife 2006). This makes some resources available for protections in Colorado. Management actions, including preserving clearings and alpine meadows, managing the impacts of overgrazing, and prescribing an appropriate fire regime to maintain forest openings, should be taken to prevent continued habitat loss (NatureServe 2023). Population and habitat monitoring and research on threats is also needed to better understand the status of this species.

Threats:

Threats to this species are not well understood. This species is a habitat specialist, using only subalpine forest clearings and montane meadows (Scott 1986, Tilden and Smith 1986, Cary and Toliver 2023). The main threats to these habitats include forest encroachment due largely to fire suppression, livestock grazing, and climate change.

Forest encroachment into montane and subalpine grasslands has recently occurred in the Rocky Mountains and other mountain ranges across the region. For example, between 1935 and 1996, grasslands in the Jemez Mountains of northern New Mexico, decreased by nearly 18%, from 11,747 to 9,336 ha (Coop and Givnish 2007). The extent of grassland habitat lost to tree invasion varies with topography, climate, fire history, and grazing history, but fire frequency was historically likely the primary factor in maintaining grass dominated plant communities in montane areas. The legacy of fire suppression has also made crown fires more likely in Ponderosa pine forests, which are adjacent to this butterfly's habitat. Large crown fires in Ponderosa pine forests lead to long term alteration of species composition,

with about a third of forests recovering, a third being converted to overly dense forests as risk of repeat crown fires, and the other third being converted to grass or brush dominated systems (Savage and Mast 2005). Livestock grazing may be problematic because it often promotes the spread of invasive species, which outcompete host plants and changes the composition of vegetation communities (Souther *et al.* 2019). Grazing also limits host plant availability, in some cases, and can cause direct mortality to butterflies. For example, mortality of post-diapause larvae has been observed in the Sacramento Mountains Checkerspot Butterfly, due to trampling by cattle and other ungulates (Pittenger and Yori 2003).

Climate change and drought may also adversely impact this species. The southwestern United States saw its driest 22-year period from 2000 to 2021 since at least 800 CE (the time period used in previous climatic reconstructions) (Williams *et al.* 2022) and droughts are projected to become more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). The impacts of drought on butterfly populations is not well understood, though advanced timing to adulthood has been observed in species both at low and high elevations (Forister *et al.* 2018). This may lead to phenological mismatch with plant resources (Singer and Parmesan 2010). Drought may also adversely impact larval host plants and nectar sources; in warmer and drier years the optimal window for herbivory is shortened (Pettorelli *et al.* 2007) and plant productivity is lower (Gottfried *et al.* 2012). Other climate change related impacts could include shifting to higher elevations or latitudes (RÅdder *et al.* 2021, Forister *et al.* 2010). This is not an option for this species as there are no higher elevation habitats to shift to.

Recreational disturbance may also be a threat to this species. Its meadow habitats are attractive areas for recreational activities such as camping, hunting, hiking, mountain biking, and off-highway vehicle (OHV) use. This could cause direct mortality due to trampling, and may indirectly impact the species due to habitat disturbance.

This species also exhibits several biological factors that may contribute to elevated extinction risk. This species is univoltine; having a single brood annually typically lowers dispersal abilities, which limits the area the species can utilize, in turn making them less resilient to stressors (Eskildsen *et al.* 2015). The species also only feeds on Cinquefoils (*Potentilla* spp.) as larvae, and reliance on a single host plant magnifies sensitivity to habitat loss and increases the risk for phenological mismatch (Kotiaho *et al.* 2005, Palash *et al.* 2022).

Population:

This species is reportedly uncommon throughout its range (Ferris and Brown 1981, Tilden and Smith 1986). Typically when recorded, observers report seeing only solitary individuals (Ferris and Brown 1981, Tilden and Smith 1986). The species has not been recorded recently in several historical sites at the periphery of its range (GBIF.org 2023). This could indicate population declines, though more research is needed to verify this possibility.

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