Euphydryas anicia brucei (Tundra Anicia Checkerspot)

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Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: NYMPHALIDAE
- **Genus**: Euphydryas
- **Scientific Name**: *Euphydryas anicia brucei* (W. H. Edwards, 1888)
- **Common Name**: Tundra Anicia Checkerspot
- **Synonyms**: M[elitaea] brucei W. H. Edwards, 1888 W. H. Edwards, 1888
- **Taxonomic Name Source**:Pohl, G.R. and S.R. Nanz (eds.). 2023. Annotated taxonomic checklist of the Lepidoptera of North America, north of Mexico. Wedge Entomological Research Foundation, Bakersfield, California. xiv + 580 pp.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: TNR
- **NHNM State**: S1
- **NM Endemic**:NO

Description

Anicia Checkerspot is checkered all over with bands of red, white and black spots. Many different geographic races have been described based on local variations.

'Tundra' Anicia Checkerspot (*Euphydryas anicia brucei* (W. H. Edwards 1888)) is a tundra creature that flies in mid-summer, June 30 to July 28, above 10,000 in the Sangre de Cristo Mountains (counties: Co,RA?,Ta). It is usually small and rather dark, though some individuals can be orangish like ssp. *eurytion* or even whitish, but all consistently and uniquely have dorsal wing bases that are black and furry. On the hindwing upperside, the submarginal row is almost always redded out, compared to adjacent subspecies *eurytion*, which flies at somewhat lower elevations. Males are strong hilltoppers that defend territories atop our highest summits, including Wheeler Peak. Larval hosts in southern Colorado, per Jim Scott, are principally Alpine Besseya (formerly *Besseya alpina,* now *Veronica besseya*] and secondarily Western Indian Paintbrush (*Castilleja occidentalis*). We expect those relationships to prevail in our northern

mountains, too.

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

Habitat and Ecology

This taxa is a tundra specialist found only on high mountain tops in the southern Rocky Mountains (Edwards 1888, Cary and Toliver 2024). Little is known about the specific life history of this subspecies and more information is needed in some areas. However, we do know that the habitat for this taxa is montane meadows covered in flowers especially yellow composites which are at high elevations (Edwards 1888, Cary and Toliver 2024). This subspecies was described as flying from early June to Early July in its original description however extreme flight dates for the taxa in New Mexico range from June 30th to July 28th, and in Colorado ranging from June 27th to August 12th (Edwards 1888, Cary and Toliver 2024, GBIF.org 2024). Due to this short emergence time the taxa is likely univoltine however, it has not been determined. During flight males are strong hilltoppers and often defend territories on mountain summits (Cary and Toliver 2024). During flight this subspecies also readily nectars on yellow composites and likely other sources as well and can often be seen gathering on nectar sources (Edwards 1888). The larval host has not been identified for this taxa (Cary and Toliver 2024).

Geographic Range:

The Tundra Anicia Checkerspot is a tundra subspecies which is endemic the Sangre de Cristo Mountains in New Mexico and Colorado the subspecies is generally recorder above 3,350 m (11,000 ft). The original description stated that the taxa is never found below 3,660 m (12,000 ft)(Edwards 1888, Cary and Toliver 2024), but recent evidence seems to support that the taxa is usually found above 3,350 m (11,000 ft). In addition, there are some historical records as low as 3,050 (10,000 ft) (Brown 1966, Cary and Toliver 2024).

Conservation Considerations:

There are no known conservation actions being taken for this subspecies nor any known conservation assessments. Another nearby subspecies of the Anicia Checkerspot the Sacramento Mountains Checkerspot Butterfly was recently listed as endangered and is extremely close to extinction due to the impacts of climate change on the taxa (USFWS 2023, Cary and Toliver 2024). Currently due to being a mountain top specialist most of this subspecies habitat does lie within federal land and is protected by the United States Forest Service and National Park Service (GBIF.org 2024). However, no specific management is being done for this subspecies in those areas. Currently more research is needed on this butterfly with determination of its population size and trend being the most pressing as well as further identification of threats and refinement of host plants.

Threats:

The threats to this subspecies have not been researched and research is needed to ensure the stability of this taxa however, as a mountain top specialist almost certainly the main threat to this subspecies is climate change. This is also seen in several other Anicia Checkerspot subspecies including the Sacramento Mountains Checkerspot Butterfly and the Chuska Mountains Anicia Checkerspot (*E.a. chuskae*) which are both very threatened by drought and climate warming (USFWS 2023). As temperatures get warmer this subspecies will likely be pushed to higher elevations and seeing it already lives just on mountain tops it will soon have nowhere else to go. However, this subspecies does have a larger range than the Sacramento Mountains Checkerspot and the Chuska Mountains Anicia Checkerspot and so it may be able to hold out for some time. This taxa is also likely univoltine although it has not been confirmed officially.

Being univoltine magnifies many threats to a species and can be used as a key indicator of extinction likelihood (Forister *et al.* 2023). This subspecies is also separated from *E.a. carmentis* and *E.a. capella* by elevation with the Tundra Anicia Checkerspot flying at higher elevations however, as climate change warms and dries out the western United States these subspecies may be pushed to higher elevations threatening the Tundra Anicia Checkerspot (Cook *et al.* 2009, Cook *et al.* 2015, Williams *et al.* 2022, Cary and Toliver 2024).

The Anicia Checkerspot also exists in a metapopulation dynamic where patches regularly go extinct and rely on recolonization from sub-populations in neighboring patches (USFWS 2004). This balance between extinction and recolonization is key in a metapopulation however, with climate change and fire suppression this balance is getting much more difficult to maintain and when populations go extinct like usual they are no longer being recolonized (USFWS 2004).

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. Especially as several widespread, relatively common species of butterfly are in decline across the American west (Forister *et al.* 2021).

References:

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More Information