Tharsalea rubidus ferrisi (Ferris's Copper)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: Lepidoptera
- **Family**: Lycaenidae
- **Genus**: Tharsalea
- **Scientific Name**: Tharsalea rubidus ferrisi (K. Johnson and Balogh, 1977)
- **Common Name**: Ferris's Copper
- **Synonyms**:
- **Taxonomic Name Source**:Pelham, J.P. 2023. A catalogue of the butterflies of the United States and Canada. Revised 15 February 2023. http://butterfliesofamerica.com/US-Can-Cat.htm

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: T2
- **NHNM State**:
- **NM Endemic**:NO

Description

From Butterflies of New Mexico: "This may be the flashiest of all New Mexico coppers. Dorsally, male Ruddies are iridescent dayglo vermilion with a vague suggestion of dark spots. Females are brown and spotted above, with an orange hindwing border. Undersides are gray to white with bold forewing dark spots and reduced hindwing dark spots (Cary and Toliver 2025)".

Habitat and Ecology

This species is restricted to wet meadows in otherwise forested areas of east-central Arizona, (Johnson and Balogh 1977, Scott 1986, NatureServe 2025). This species is confined to the few remaining wet meadows where its sole known larval host plant Curly Dock (Rumex hymenosepalus) but it is speculated other Docks are used as hosts (Johnson and Balogh 1977, Cary and Toliver 2024, NatureServe 2025). Females lay eggs at or near the base of host plants, while eggs overwinter (Scott 1979; 1986; 1992, James and Nunnallee 2011, Montana Natural Heritage 2025). In captivity the parent species hatches 4-6 days after exposure to late-spring temperatures and pupates in 19-22 days, adults emerge from pupae in 10-17 days. Larvae are solitary and will retreat to the base of host plants to hide and feed on leaves (James and Nunnallee 2011, Montana Natural Heritage 2025). It is additionally reported that eggs are associated with ants (Formica altipetens), possibly overwintering in ant nests (Funk 1975, Montana Natural Heritage 2025). Adults of this butterfly have one brood in mid summer with records extending from June 28th to August 22nd (Cary and Toliver 2024, GBIF.org 2025). Little is known about the subspecies but during flight, adults of the parent species nectar at Yarrow (Achillea), Everlastings (Anaphalis), Dogbane (Apocynum), Milkweed (Asclepias), False Madworts (Berteroa), Knapweeds (Centaurea), Rabbitbrush (Chrysothamnus), Plume Thistles (Cirsium), Spider Flowers (Cleome), Fleabane (Erigeron), Wild Buckwheats (Eriogonum), Spurges (Euphorbia), Sunflowers (Helianthus), Camphorweed (Heterotheca), Medick (Medicago), Sweet Clover (Melilotus), Cinquefoils (Potentilla), fountainbrush (Psoralea), Coneflowers (Rudbeckia), Stonecrop (Sedum), Ragwort (Senecio), Goldenrod (Solidago), American Asters (Symphyotrichum) and mud (Pyle 2002; Scott 2014, Montana Natural Heritage 2025). Males territorial, perch conspicuously throughout the day on vegetation

Geographic Range:

This butterfly's entire known range is in east-central Arizona within the Apache-Sitgreaves National Forests' White Mountains (Scott 1986, Glassberg 2017, Cary and Toliver 2024, NatureServe 2025). Most locations are near McNary, Maverick, and Greer, in Apache County Arizona (Johnson and Balogh 1977, NatureServe 2025). A majority of the occurrence records surround Mt Baldy (GBIF.org 2025). Although currently only known from Arizona it has been located within 10 miles from the New Mexico border, and there is suitable habitat for it on the New Mexico side. Few if any attempts have been made to explore the remote Gila National Forest and Gila Wilderness in Catron County, on the New Mexico side and future efforts are likely to reveal occurrence records for this butterfly in New Mexico (Cary and Toliver 2024).

Conservation Considerations:

This butterfly underwent a NatureServe conservation assessment in 2019 and was found to be an Imperiled subspecies (NatureServe 2025). This butterfly is also on the United States Forest Services regional list of sensitive species (USFS 2013). This butterfly was up for a listing decision in 2025 under the Endangered Species Act by the United States Fish and Wildlife Service but no decision was made (USFWS 2025). However, currently and most importantly more information is needed on this species. 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 butterfly's life history and our knowledge on the threats to this species and how they are affecting it are also severely lacking. Filling these gaps in our knowledge will be crucial for any conservation strategy and the first priority for this species should be researching some of these topics of which the answers may change this species rank.

Threats:

This butterfly is tied very closely to the few remaining wet meadows in an otherwise very xeric habitat (Johnson and Balogh 1977, Cary and Toliver 2024, NatureServe 2025). This habitat association puts the species at a very high level of threat from drying due to climate change the southwestern United States and northern Mexico are forecasted to continue getting hotter and drier as climate change continue to take its course which will lead to steady declines in this species population and in the amount of habitat available (NatureServe 2025). Draining of wetlands, capping of springs, and habitat loss due to agriculture and climate change have also caused a large amount of habitat loss for this species extirpating it in several localities (USFWS 2009, NatureServe 2025). Inbreeding depression may also be a threat to this species. Inbreeding depression results when slightly deleterious alleles accumulate in a small population, reducing the likelihood of population persistence (Hedrick 1994, Lynch et al. 1995). The accumulation of deleterious alleles and reduction in heterozygosity have 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). Nieminen et al. (2001) also suggests that inbreeding depression may pose an even greater problem in populations currently experiencing rapid habitat fragmentation but with minimal inbreeding in the past. A reduction in fitness resulting from the loss of genetic diversity significantly increases the risk of extinction when populations are subject to environmental stress. Saccheri et al. (1998) found that microclimatic conditions combined with inbreeding caused the extinction of a checkerspot population in Finland, while Singer and Ehrlich (1979) found a combination of drought, fragmented habitat, and low dispersal rates contributed to the extinction of several checkerspot populations in California Another threat facing this butterfly is catastrophic fire or lack of fire. The impacts of fire on this species may depend on the intensity and size of the fire, as well as seasonal timing (USFWS et al. 2004). With population numbers in small areas one fire, controlled or wild, could wipe out a large percentage of what's left of this species and potentially cause its extinction (Cary et al. 2004, Wasserman et. al 2023). However, at the same time with no fire these grasslands may grow senescent or be succeeded which will also drive the taxa towards potential extinction (Cary et al. 2004, Wasserman et. al 2023). 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 Cheatgrass (Bromus tectorum), may cause more frequent fires due to invasive grasses adding novel and continuous fuels (USFWS et al. 2004, Fusco et al. 2019). This species also only has a single host plant which puts it at significantly higher risk of extinction as any threats reducing its host plant will also result in population declines in this species (Kotiaho et al. 2005, Palash et al. 2022, Forister et al. 2023). As a result, host specificity is a key indicator of extinction risk in butterflies; it also makes species more prone to phenological mismatch if they have just a single brood (Patterson et al. 2019, Forister et al. 2023). On top of all of this several sources have also reported that this species is either imperilled or decreasing (USFS 2021, Fish and Wildlife Service 2025).

Population:

The population size and trend are not known for this species. Edwards et al. (2025) however, analyzed count data collected over the last two decades from 35 monitoring programs, which included records of 12.5 million individual butterflies from 91,963 surveys, in order to characterize species-level trends across the contiguous United States for species with sufficient data. To estimate changes in total abundance, the number of butterflies observed in each survey was fit to a generalized additive model that accounted for seasonality of activity (the phenology), differences between regions, monitoring programs, sites, and differences in survey effort. From this model, a ten-year reduction of 56% was estimated across the sites for Tharsalea rubidus. The count data utilized came from over forty sites however, only one of these sites was within the distribution of Ferris's Copper. As a result, it is unknown if these species wide declines are being seen in the subspecies as well. As a result, determination of population size and monitoring of population trends is necessary to be able to quantify the declines this species may be experiencing.

References:

- Scott, J.A.. 1986. The Butterflies of North America, A Natural History and Field Guide. Stanford University Press, Stanford, California .
- Glassberg, J.. 2017. A Swift Guide to Butterflies of North America. Princeton University Press, New Jersey .
- Cary, S.J. and Toliver, M.E.. 2024. Butterflies of New Mexico. Pajarito Environmental Education Center (PEEC). https://peecnature.org/butterflies-of-new-mexico/
- NatureServe. 2025. Tharsalea rubidus ferrisi Ferris's Copper. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.117893/Tharsalea_rubidus_ferrisi
- Johnson, Kurt and George Balogh. 1977. Studies in the Lycaeninae (Lycaenidae). 2. Taxonomy and evolution of the nearctic Lycaena rubidus complex, with descriptions of a new species. Bulletin of the Allyn Museum. https://www.floridamuseum.ufl.edu/mcguire/publications/allyn-bulletin/
- GBIF.org. 2025. GBIF Occurrence Download. https://doi.org/10.15468/dl.tzrzfa
- Edwards et al.. 2025. Rapid butterfly declines across the United States during the 21st century. Science: (1090-1094). https://www.science.org/doi/10.1126/science.adp4671
- Scott, J.A.. 1979. Hibernal diapause of North American Papilionoidea and Hesperioidea.. Journal of Research on the Lepidoptera18: (171-200).
- Scott, J.A.. 1992. Hostplant records for butterflies and skippers (mostly from Colorado) 1959-1992, with new life histories and notes on oviposition, immatures, and ecology.. Papilio new series6.
- James, D.G., and Nunnallee, D.. 2011. Life Histories of Cascadia Butterflies. Oregon State University Press, Corvallis, Oregon .
- Montana Natural Heritage Program. 2025. Ruddy Copper — Tharsalea rubidus.. Montana Field Guide. https://fieldguide.mt.gov/speciesDetail.aspx?elcode=IILEPC1080
- Funk, R.S.. 1975. ssociation of ants with ovipositing Lycaena rubidus (Lycaenidae).. Journal of the Lepidopterists' Society29: (261-262).
- Warren, A.D.. 2005. Lepidoptera of North America 6: Butterflies of Oregon: Their Taxonomy, Distribution, and Biology. Oregon State University, Corvallis, OR .

- Hedrick, P.W.. 1994. Purging inbreeding depression and the probability of extinction: full-sib mating. Heredity73: (363-372).
- Lynch, M., Conery, J. and Burger, R.. 1995. Mutation accumulation and the extinction of small populations. American Society of Naturalists146: (489-518).
- Saccheri, I., Kuussaari, M., Kankare, M., Vikman, P., Fortelius, W. and Hanski, I.. 1998. Inbreeding and extinction in a butterfly metapopulation. Nature392: (491-494).
- Nieminen, M., Singer, M.C., Fortelius, W., Schlops, K. and Hanski, I.. 2001. Confirmation that inbreeding depression increases extinction risk in butterfly populations. The American Naturalist157: (237-244).
- Singer, M.C. and Ehrlich, P.R.. 1979. Population dynamics of the checkerspot butterfly Euphydryas editha.. Population Ecology35: (53-60).
- 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*).
- Wasserman T.N. and Mueller S.E.. 2023. Climate influences on future fire severity: a synthesis of climate-fire interactions and impacts on fire regimes, high-severity fire, and forests in the western United States. Fire Ecology19.
- Cary, S.J., Johnson, K. and Pierce, L.. 2004. Alberta Arctic Butterfly Surveys in the Capulin Volcano National Monument Area 2003-2004 Final Report. http://www.npshistory.com/publications/cavo/butterfly-2004.pdf
- E. J. Fusco, J. T. Finn, J. K. Balch, R. C. Nagy, B. A. Bradley. 2019. Invasive grasses increase fire occurrence and frequency across US ecoregions. Proc. Natl. Acad. Sci. (PNAS)116. https://www.pnas.org/doi/10.1073/pnas.1908253116#bibliography
- Kotiaho, J. S., Kaitala, V., Komonen, A. and Päivinen, J.. 2005. Predicting the risk of extinction from shared ecological characteristics. Proceedings of the National Academy of Sciences102. https://doi.org/10.1073/pnas.0406718102
- Palash, A., Paul, S., Resha, S. K. & Khan, M. K.. 2022. Body size and diet breadth drive local extinction risk in butterflies. Heliyon8. https://doi.org/10.1016/j.heliyon.2022.e10290
- Forister, M.L., Grames, E.M., Halsch, C.A., Burls, K.J., Carroll, C.F., Bell, K.L., Jahner, J.P., Bradfod, T., Zhang, J., Cong, Q., Grishin, N.V., Glassberg, K., Shapiro, A.M. and Riecke. T.V.. 2023. Assessing risk for butterflies in the context of climate change, demographic uncertainty, and heterogenous data sources. Ecological Monographs93.
- Patterson, T.A., Grundel, R., Dzurisin, J.D., Knutson, R.L., and Hellmann, J.J.. 2019. Evidence of an extreme weather?induced phenological mismatch and a local extirpation of the endangered Karner Blue butterfly. Conservation Science and Practice2. https://doi.org/10.1111/csp2.147
- United States Forest Service. 2013. USFS R3 REGIONAL FORESTER'S SENSITIVE SPECIES: ANIMALS. https://www.fs.usda.gov/sites/nfs/files/r03/publication/regional-foresters-sensitive-species-animals-2013.pdf
- United States Fish and Wildlife Service. 2025. National Domestic Listing Workplan. https://www.fws.gov/sites/default/files/documents/2024-05/national-domestic-listing-workplan-2024.pdf

More Information