

## Euphilotes rita coloradensis (Colorado Rita Blue)

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Steve Cary,

### Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** LYCAENIDAE
- **Genus:** Euphilotes
- **Scientific Name:** *Euphilotes rita coloradensis* (Mattoni, 1966)
- **Common Name:** Colorado Rita Blue
- **Synonyms:** *Philotes rita* ssp. *coloradensis* Mattoni, 1966
- **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:** [T3](#)
- **NHNM State:** S1
- **NM Endemic:** NO

### Description

Rita's Blue follows the general *Euphilotes* look, but minor differences are apparent. The topside orange band on female hindwings is rather broad. On males, the dorsal hindwing pink/orange aurora is more fully expressed and is accompanied by four or five well-defined, circular black spots in the submargin. The dorsal forewing black margin is thin, no more than 10% of the wing radius, as in Ellis' Blue but not Central Blue. Fringe checkering is weak. Ventral forewing black spots are prominent, less smeared. **Comment 2.** The southern Rocky Mountains subspecies, *Euphilotes rita coloradensis* (Mattoni [1966]), inhabits shrublands and savannas of encircling our north-central mountains and northwestern foothills (counties: Gu,MK,Qu,Sv,SJ,SF,So), 5500 to 8000' elevation. Larvae of eat *Eriogonum effusum*, *E. rotundifolium*, perhaps *E. lonchophyllum* and others.

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

## Habitat and Ecology

The Colorado Rita Blue is found mostly in transition zone prairies especially undisturbed virgin prairies which seem to be its preferred habitat (Ferris and Brown 1981, USFS 2015, NatureServe 2024). While being found in shortgrass prairie across the vast majority of its range in northern New Mexico and southern Colorado the butterfly has been observed in grasslands and some Pinyon Juniper woodlands that contain its host plant (Cary and Toliver 2024, NatureServe 2024).

The host plants for this butterfly are recorded as Buckwheats (*Eriogonum spp.*) especially Effuse Buckwheat (*E. effusum*) however, it is also recorded as using Roundleaf Buckwheat (*E. rotundifolium*) and Yellow Wild Buckwheat (*E. flavum*) in southern Wyoming (Scott 1986, Opler and Wright 1999, Cary and Toliver 2024, NatureServe 2024). This butterfly potentially also uses Spearleaf Buckwheat (*E. lonchophyllum*) (Cary and Toliver 2024).

This butterfly is univoltine with a single flight coinciding with the blooming of its host plant this generally occurs from middle to late July to early September although most individuals fly in August (Ferris and Brown 1981, Pyle 1981, Scott 1986, USFS 2015, NatureServe 2024). During flight males patrol around host plants all day searching for females and both sexes nectar on the flowers of their host plants as well as mud (Ferris and Brown 1981, Scott 1986). The larvae of this butterfly are tended by ants and do not form nests they also overwinter as pupae (Scott 1986).

## Geographic Range:

Due to this subspecies' preference for undisturbed habitats and the microhabitat requirements that support its food plant, this butterfly is thought to be very localized and patchily distributed across isolated sites in eastern and southern Colorado, northern New Mexico, and southern Wyoming (Scott and Scott 1978, Ferris and Brown 1981, Scott 1986, USFS 2015, Cary and Toliver 2024, NatureServe 2024). Historically this butterfly has been observed in the Nebraska panhandle however, there are only two occurrences there and the last known sighting was in 1998 as such we do not consider the taxa to be extant there (Schneider *et al.* 2011, Lotts and Naberhaus 2023, NatureServe 2024). This taxa lives between 1,675 and 2,500 meters (5,500 and 8,000 feet) in elevation (Cary and Toliver 2024).

## Conservation Considerations:

This subspecies has previously undergone one conservation assessment completed by NatureServe in 2017 they found this butterfly to be globally vulnerable to extinction at the time however, it was also assessed in three states Wyoming where it was found to be vulnerable, Colorado where it was found to be imperiled and Nebraska where it was found to be critically imperiled although the population there is likely extirpated (NatureServe 2024). Right now the main conservation action needed for this butterfly is research as there are several confusing aspects to this taxa and its conservation. For example most sources report that the Colorado Rita Blue is a specialist on undisturbed or virgin prairies and yet it utilizes Pinyon Juniper woodlands in the south of its range (Ferris and Brown 1981, Cary and Toliver 2024). Additionally, sources report grazing as a major threat to this butterfly and its habitat but also that removing cattle from landscapes has caused its extirpation due to a reliance on a small amount of grazing to reduce competition with its host plant (Ferris and Brown 1981, NatureServe 2024). Teasing out the specifics of these issues and getting a better understanding of this taxa will pave the way for more proper conservation of it and as such should be the first step. More information is also needed on other aspects of the butterfly's life history and how it's being affected by threats or even just determining what the actual threats are. Determination of population size and trends to confirm if this butterfly is still declining and how small the populations actually are will also be crucial moving forward.

However, if after research conservation actions are required then starting by protecting areas of undisturbed transition zone prairie is likely first priority. Determining connectivity between populations and surveying to see which populations

are still extant should also be a priority to gauge population health and the threat of inbreeding depression.

## Threats:

More research is needed on the threats to this subspecies. However, this subspecies is thought to be declining as it is no longer found in some areas where it used to be abundant (NatureServe 2024). These declines are thought to be due to habitat disturbance which is likely the main threat to this butterfly due to its habitat preference of undisturbed virgin prairies (Ferris and Brown 1981, NatureServe 2024). Undisturbed prairies are a rarity now in the western United States and the conventional thought on the matter is that this butterfly has been declining since European settlement began in its habitat due to heavy grazing, agriculture, and development (NatureServe 2024). Now this taxa is only found in localized isolated microhabitats that still support its host plants and preference for little disturbance (Ferris and Brown 1981, NatureServe 2024). Little disturbance is of note here as this butterfly appears to also decline in areas with no disturbance due to its host plants being outcompeted by more aggressive species and so light grazing or occasional healthy wildfires are likely to the benefit of this butterfly although more research is needed on this subject (Ferris and Brown 1981, USFS 2015, NatureServe 2024).

These small isolated populations which still survive on remaining minimally disturbed prairie fragments are highly susceptible to localized extinctions by environmental stochasticity, disturbance, or habitat alteration (Panzer 1988, NatureServe 2024). These habitat islands are also still quite threatened by invasive species, over or under grazing, land use change, climate change, and catastrophic wildfires (USFS 2015, NatureServe 2024).

Wildfires and extreme weather events are especially detrimental for this butterfly as this taxa generally does not move very far from its host plant during its life. This limited dispersal range due to their sedentary nature reduces the likelihood of recolonization of areas extirpated by wildfire or environmental stochasticity (USFS 2015). With climate change making areas drier and invasive species increasing fuel loads across the western United States hotter fires are expected to happen more frequently than they previously did to the likely detriment of this butterfly's host plant (Abatzoglou and Kolden 2011, Fusco *et al.* 2019). Drought and warming temperatures have also been shown to cause declines in many other butterfly species across the western United States with Forister *et al.* 2021 finding a decline in abundance of most of 272 widespread western butterfly species. These declines were estimated to be a continual 1.6% decline in abundance per year which were primarily correlated with warming temperatures (Forister *et al.* 2010, 2021). Climate warming may also put this butterfly at increased risk of phenological mismatch especially as this taxa is univoltine (Singer and Parmesan 2010, Patterson *et al.* 2019). Being univoltine also puts this taxa at higher risk of extinction not only by making it more prone to phenological mismatch but also by reducing this butterfly's already low dispersion range (Eskildsen *et al.* 2015, Forister *et al.* 2023). This butterfly is also fairly host specific, currently being documented on only three host plants all of which are Buckwheats and the majority of the populations have only been observed using two species (Scott 1986, Opler and Wright 1999, Cary and Toliver 2024). Host specificity is a key indicator of extinction risk in butterflies as butterflies with limited numbers of host plants or very similar host plants are susceptible to the threats to those species (Kotiaho *et al.* 2005, Palash *et al.* 2022, Forister *et al.* 2023).

As the remaining populations of this butterfly are small, regional endemic, and isolated inbreeding depression is also a major threat. 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. Thus just increasing isolation by itself may pose a major threat to this sedentary butterfly.

Additionally, in Colorado's 2015 State Wildlife Action Plan they remark that this butterfly has low population numbers and that its trend is declining (CPW 2015). This makes sense as many experts have remarked at how naturally rare this butterfly is despite its widespread distribution. Also due to the many threats still affecting this butterfly and its habitat it is logical that the taxa is continuing to decline and will do so into the future however, data is needed to corroborate this.

## Population:

The population size and trend are not known for this taxa. However, this butterfly is no longer found in many areas where it was formerly abundant and due to its preference for undisturbed prairies it has undoubtedly been losing habitat since European settlement began (NatureServe 2024). As a result, of these long term declines the populations that are left are reported to be small, isolated, declining, and subject to local extinctions (Panzer 1988, CPW 2015). As a result, the population is assumed to have declined over the long term and to still be declining; however, more formal determination of population size and monitoring of population trends is necessary to ensure the longevity of this butterfly. Especially as several widespread, relatively common species of butterfly are in decline across the American west (Forister *et al.* 2021).

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## More Information

