

Nemoria subsequens (Sacramento Mountains Emerald Moth)



Rob Klotz, 2021

Taxonomy

- **Class:** INSECTA
- **Order:** LEPIDOPTERA
- **Family:** GEOMETRIDAE
- **Genus:** *Nemoria*
- **Scientific Name:** *Nemoria subsequens* Ferguson, 1969
- **Common Name:** Sacramento Mountains Emerald Moth
- **Synonyms:**
- **Taxonomic Name Source:** Scoble, M. J. (ed.), M. S. Parsons, M. R. Honey, L. M. Pitkin, and B. R. Pitkin. 1999. Geometrid moths of the world: a catalogue. Volumes 1 and 2: 1016 pp. + index 129 pp. CSIRO Publishing, Collingwood, Victoria, Australia.

Agency Status

- **NMDGF:**
- **Federal Status:**
- **BLM Sensitive:**
- **USFS:**
- **IUCN Red List:** [Not Evaluated](#)
- **Nature Serve Global:** [GNR](#)
- **NHNM State:** S1
- **NM Endemic:** YES

Description

Nemoria subsequens is a small geometrid moth (Ferguson, 1985). Moths in the genus *Nemoria* are one of the "emerald moths" because they are green in color (Canfield *et al.* 2008). The males have feathery antennae (Ferguson 1985). This species is completely bright green except for a pink and brown abdomen and a pair of thin white bands across both wings (Ferguson 1985). Larval *Nemoria* are brown inchworms with projecting tubercles along the back, but the immature stage of this species in particular is unknown (Ferguson 1985).

Habitat and Ecology

The habitats and ecology of this rare species are not well understood. So far, all specimens have been observed in

montane forests at mid to high elevations. Adult *Nemoria subsequens* were collected in early July in New Mexico (Ferguson 1985). Geometrid moths are floral visitors and transport pollen (Van Zandt *et al.* 2020). Larvae in this subfamily, Nemoriini, are solitary leaf-feeders (Ferguson 1985). The larval habits and host plant of this species are unknown.

Geographic Range:

This emerald moth is known from southeastern New Mexico, where it has been recorded from three localities on the western slope of the Sacramento Mountains, in Otero County and one locality in the Guadalupe Mountains, in Eddy County (GBIF.org 2024, Heckard 2023). Two specimens collected outside of Big Bend National Park, in Texas, in 1972 and 1973, were identified as *Nemoria subsequens* (Ferguson 1985). However the Texas specimens are described as being “quite different from New Mexican examples, both in morphological characters, and in flight period (Ferguson 1985). The Texas collection locality is almost 1,000 m lower in elevation. There are no other records of *N. subsequens* from Texas. Though this suggests that the *Nemoria* of the two localities may not be a single species, it cannot be confirmed, and there are some *Nemoria* species that are documented as being seasonally dimorphic.

Conservation Considerations:

There are no targeted conservation actions for this species and it is unknown if it is found in any protected areas. Research is needed on the distribution, population size and trend, habitats and ecology, and threats to this species.

Threats:

The threats to this species are not well understood, though many invertebrate populations in the Sacramento and Guadalupe Mountains are declining due to the threats of climate change, overgrazing by cattle and feral horses, broad scale pesticide use, and altered fire suppression regimes. It is inferred that these threats are degrading habitat for *Nemoria subsequens* as well.

Historical fire suppression regimes have altered plant community structure and created forests more prone to catastrophic wildfire (Kaufmann *et al.* 1998). The entire range of this species is at high risk for catastrophic wildfire and the incidence of stand replacing fires has increased in the western US, due to climate warming to some extent (Turco *et al.* 2023) but primarily due to the legacy of forest management practices, which have changed forest structure.

Overgrazing by livestock grazing is also problematic because it promotes the spread of invasive species and limits nectar and host plant availability (McIntyre 2010, Souther *et al.* 2019). There are also several examples of large scale, broad spectrum pesticide use within the range of the species. For example, in 1983 and 1984 during peak flight of many insect species, including this one, carbaryl pesticides were sprayed using aerial application over 240,900 acres in the Sacramento Mountains, at elevations between 6,000 and 11,000 feet, to control an outbreak of Western Spruce Budworm (Bennett and Linnea 1985).

Lastly, climate change may cause several adverse impacts to this species, including increasing drought incidence and severity and shifting habitat. The southwestern U.S. 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). Droughts are projected to become

more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). Drought may negatively impact pollinators and herbivores by reducing floral resources and host plant availability (Phillips *et al.* 2017). In addition to drought impacts, many montane lepidopterans respond to the warming temperatures by moving to higher elevations or latitudes (Forister *et al.* 2010, Holland 2010). However, this is not an option for this species, as there are no higher elevation habitats to shift to.

Population:

This species is rare and known from very few collections, potentially within an extremely restricted range (Ferguson 1985). Population size and trends have not been accessed.

References:

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More Information

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