Culoptila moselyi (a saddlecase caddisfly)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: Trichoptera
- **Family**: Glossosomatidae
- **Genus**: Culoptila
- **Scientific Name**: Culoptila moselyi Denning, 1965
- **Common Name**: a saddlecase caddisfly
- **Synonyms**:
- **Taxonomic Name Source**:Denning, D. G. (1965). New Trichoptera from United States and Mexico. The Pan-Pacific Entomologist, 41, 262--272. https://www.biodiversitylibrary.org/part/240384

Agency Status

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

Description

Habitat and Ecology

The species is known from seven locations in the United States and Mexico (Blahnik and Holzenthal 2006, GBIF.org 2024). The caddisfly uses montane streams during the early stages of their lifecycle before emerging (Blahnik and Holzenthal 2006) and has been found between elevations of 1,587 to 2,600 m (Blinn and Ruiter 2006), a 2006 survey found them in streams with an average embeddedness of 6.9, meaning this species needs clear water with very little litter and rocks at the bottom of streams (Blinn and Ruiter 2006). Not much is known about the ecology of the caddisfly. It is known to use uniform grains of sand for case materials (Wiggins 1996, Blahnik and Holzenthal 2006) but it is not known when they emerge into adulthood, however, all occurrence data is from May to August (GBIF.org 2024). More research is needed on the ecology of this species.

Geographic Range:

The species is known in the Southwestern United States to central Mexico (Blahnik and Holzenthal 2006, GBIF.org 2024). The species uses clear montante streams as habitat in the early stages of its life cycle (Blinn and Ruiter 2006). The northernmost part of the species range begins in central Arizona north of Sedona, Arizona, it then stretches south to southwest of San Rafael, Chihuahua, Mexico (Blahnik and Holzenthal 2006, GBIF.org 2024). The range continues east to New Mexico with all occurrences coming within the Gila National forest; there are no occurrences recorded west of Sedona, Arizona (Blahnik and Holzenthal 2006, GBIF.org 2024). The Caddisfly is known from seven locations across its range. There is one location in Chihuahua, Mexico, it is found southwest of San Rafael, Chihuahua, Mexico using the Rio Urique as habitat. There are four locations in Arizona, United States, there is one location surrounding Senora, Arizona using Oak Creek as habitat, there is one location west of the Linden Draw Ravine, one location is near the South Fork Trailhead using the South Fork Little Colorado river as habitat, there is one location in the Chiricahua mountains using East Turkey Creek as habitat. There are two locations in New Mexico all within the Gila National Forest, one locations is near Whitewater Canyon and the Catwalk Picnic Area using Whitewater creek as habitat, one locations is near the Willow Creek campground using the Willow Creek as habitat (Blahnik and Holzenthal 2006,

GBIF.org 2024).

Conservation Considerations:

There are no known range-wide conservation actions in place for this caddisfly but the species. The caddisfly was given the rank of “Critically Imperiled” in a 2009 NatureServe assessment (NatureServe 2024).

Threats:

This caddisfly’s range includes the Southwestern United States. which 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). Drought conditions over the last few years have severely limited food and resources (Hughes 2020) and environmental stochasticity, especially variation in plant quantity, quality, and phenology (Ehrlich and Murphy 1987). Another threat facing this caddisfly 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 this species (Cary et al. 2004, Wasserman et. al 2023). On the other hand, with no fire this habitat 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). Research in Kremer and Caldwell (2022) showed wildfires also affect the mass and temperature resiliency of caddisfly instars in southwest United States montane grassland streams. They studied the Oslar’s Net-spinning Caddisfly (Hydropsyche oslari), a generalist caddisfly using montane streams in New Mexico. Wildfires affect the thermal maxima and temperature range of montane streams (Kremer and Caldwell 2022), streams with a higher thermal maxima and a wider temperature range led to reduced mass as larvae, extended instar periods, and reduced mass entering winter dormancy which leads to adults with reduced mass (Kremer and Caldwell 2022). This lowering of mass is associated with altering other vital rates and can lead to reduced survival and lower fecundity (Ruel and Ayres 1999, Angilletta 2009, Dallas and Ross-Gillespie 2015, Kremer and Caldwell 2022), this could alter benthic assemblage structure and function (Kremer and Caldwell 2022). Additionally. catastrophic fires leave the soil with burn scars that create a hydrophobic layer that makes an affected area more susceptible to flash floods (NOAA 2024). In the larval and pupal stages of life the Cadisfly makes use of streams (Blinn and Ruiter 2006). These Riparian habitats are threatened by drought, riparian corridor severance, damage due to cattle grazing, and hydrological modification for farming, ranching, and industry. In Arizona, for example, From the 1780s to the 1980s, an estimated 36% of wetlands were lost (Dahl 1990), largely due to increased demand for water from agriculture, urbanization, and industry (Fretwell et al. 1996). Many of the major rivers have been dammed, diverted, or otherwise modified and many perennial streams and wetlands have been lost due to groundwater drawdown of aquifers and altered hydrology of drainages (Fretwell et al. 1996). Spending the first stages of their life as an aquatic species leaves them with limited mobility, exposing them to environmental stochastic events such as wildfires and predation. The species range in the United States is within the Colorado River Basin (Blahnik and Holzenthal 2006, GBIF.org 2024). Blinn and Ruiter (2006), surveyed 93 streams within the Colorado River Basin, Moseley’s Caddisfly was found in 8.6% of streams and was found in an average stream embeddedness of 6.9% (Blinn and Ruiter 2006). Requiring low embeddedness for habitat leaves this species vulnerable to obstructions of streams such as rockslides or being diverted for human use. However, more research is needed on the threats to this caddisfly.

Population:

The population size and trend are not known for this species. Determination of population size and monitoring of population trends is necessary to ensure the population is stable.

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More Information