Cheumatopsyche pinula (a hydropsychid caddisfly)

No Photo Available

Taxonomy

- **Class**: INSECTA
- **Order**: Trichoptera
- **Family**: Hydropsychidae
- **Genus**: Cheumatopsyche
- **Scientific Name**: Cheumatopsyche pinula Denning, 1952
- **Common Name**: a hydropsychid caddisfly
- **Synonyms**:
- **Taxonomic Name Source**:Denning DG. Descriptions of Several New Species of Caddis Flies. The Canadian Entomologist. 1952;84(1):17-22. doi:10.4039/Ent8417-1

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 10 locations in Arizona and New Mexico. The caddisfly uses montane streams during the early stages of their lifecycle before emerging (Denning 1952, GBIF.org 2024). There are also occurrence records around large bodies of water (GBIF.org 2024). Not much is known about the ecology of the caddisfly, there is no known information about their case materials or when they emerge into adulthood, however all occurrence data is from May to September (GBIF.org 2024). More research is needed on the ecology of this species.

Geographic Range:

The species range stretches from Arizona to New Mexico, the northernmost part of its range starts south of Flagstaff, Arizona in the Coconino National Forest then heads southeast along the Sitgreaves National Forest. The range ends near the Arizona and New Mexico border in the Apache and Gila National Forests (GBIF.org 2024). The Caddisfly is known from ten locations, it is found near streams and lakes in areas of high elevation. There are eight locations in Arizona: one is near Sedona, Arizona using Oak Creek as its habitat, one is found west of Mormon Lake, one is found west of Rimrock, Arizona using wet Beaver Creek as its habitat, one is found near the Clear Creek campground using the West Clear Creek as its habitat, one is found north of lake Dirtyneck tank near Clover Creek, one is surrounding the Diamond Rock campground using the East Fork Black River as its habitat, one is found north of Blue, Arizona using the Blue River as its habitat, one is northwest of the Black Jack campground near Sixshooter Tank. There are two locations in New Mexico: one near Glenwood, New Mexico using the San Francisco River and Whitewater Creek as its habitat, one is found west of Lake Roberts using Sapillo Creek and Copperas Creek as its habitat (GBIF.org 2024, Google Maps 2024).

Conservation Considerations:

There are no known range-wide conservation actions in place for this caddisfly but the species. The Southwest Caddisfly was given the rank of “Vulnerable” in a 2005 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 (Denning 1952). 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. 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