

***Agapetus montanus* (Denning 1949)**
An agapetus caddisfly
Trichoptera: Glossosomatidae

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SUMMARY

Agapetus montanus is a saddle case- or tortoise case-making caddisfly endemic to Montana and Idaho; it may also occur in Manitoba. This species is found in moderate gradient, fast flowing, open canopy foothill and mountain streams, where it inhabits the upper surface and sides of cobbles and boulders. Livestock grazing, logging, mining, and extensive recreational use in the national forests where this species occurs may threaten *A. montanus* habitat. Global climate change could also threaten this species' habitat in the long-term. Research should focus on understanding the biology of this species and establishing the distribution and population status.

CONSERVATION STATUS

Rankings:

Canada – Species at Risk Act: N/A

Canada – provincial status: Manitoba SNR Not ranked

Mexico: N/A

USA – Endangered Species Act: N/A

USA – state status: Idaho S1 Endangered; Montana S2 Vulnerable

NatureServe: G2 Imperiled

IUCN Red List: N/A

SPECIES PROFILE

DESCRIPTION

Agapetus montanus is a caddisfly in the family Glossosomatidae (saddle case- or tortoise case-makers). Larvae, which reach up to 6 mm (0.24 inches), construct a case from small pebbles and sand grains that resembles a tortoise shell. The case has a domed top and a transverse strap beneath that creates two opening on the ventral surface (underside). The larva clings to the substrate and carries the case with it by extending its thoracic legs through the opening at one end and its anal claws through the opening at the other end. At each successive larval instar, larvae in this family construct a new, larger case; final instar larvae remove the transverse strap, attach the case to the substrate, and pupate within it. Larvae of *Agapetus* generally construct cases that have larger rocks along the edge. *Agapetus* larvae can be distinguished from other genera in this family by the presence of 2 small hardened plates (sclerites) on the dorsal surface of the 2nd thoracic segment (mesonotum), instead of 3.

Adults are also called “little dark caddisflies”; they are small and moth-like with dark hairy wings held rooflike over their bodies, and long slender antennae.

TAXONOMIC STATUS

Agapetus montanus Denning. The taxonomy of this species is accepted as valid.

LIFE HISTORY

Agapetus montanus larvae occur on the upper surfaces and sides of cobbles and boulders in moderate gradient, fast flowing, foothill to mountain streams. Members of this genus appear to prefer streams that are intermediate between higher elevation, cold mountain streams and large warmer transitional rivers downstream. They are also usually found in stream reaches where the riparian canopy is partially open and less shaded than in forested mountain streams. *Agapetus* larvae graze beneath the protection of their domed case, scraping algae, diatoms, and fine detritus from the surfaces of rocks (Wiggins 1996).

Adults of this species emerge from mid-June to mid-August. Adult caddisflies have reduced mouthparts and lack mandibles, but may ingest liquids.

DISTRIBUTION

Agapetus montanus is known from Idaho, Montana, and Manitoba. *Agapetus montanus* appears to be the only known species in this genus in Montana, where it has been reported from ~30 streams in western and south-central Montana, including Missoula, Mineral, Gallatin, Granite, Powell, Meagher, Flathead, Deer Lodge, Lewis and Clark, Lincoln, Beaverhead, and Sanders Counties. The occurrences in Montana include at least one site in almost every National Forest, including Beaverhead-Deerlodge, Flathead, Gallatin, Helena, Kootenai, Lewis & Clark, and Lolo. In Idaho, *A. montanus* has been collected from 2 locations at a small mountain stream in the Targhee National Forest around 1800 m (5905 feet) elevation (Beaver Creek, Clarke County). Most of the sites in which this species occurs are managed by the U.S. Forest Service or Bureau of Land Management.

THREATS

Specific threats to Montana & Idaho populations of *A. montanus* have not been identified. In Idaho, the Beaverhead Mountain region is a significant portion of this species range, and *A. montanus* is ranked as a Species of Greatest Conservation Need by the Idaho Department of Fish & Game. The dominant land use in this area is livestock grazing, along with logging, mining, and recreational use such as climbing, biking, hiking, and camping. All of these activities, when unregulated or not subjected to strictly enforced Best Management Practices, can result in impaired water quality due to increased siltation from erosion and runoff, pollutants, increased water temperature, and decreased dissolved oxygen. As a species that requires clean cobble substrate in clear cold streams, *A. montanus* would be negatively impacted by these types of aquatic habitat degradation.

Global climate change could also pose a long-term threat to the survival of this species. Assessment of climate change trends in North America has already revealed changes in precipitation patterns, stream hydrology, and plant bloom time. Overall, annual mean air temperature increased in North America from 1955-2005, and streamflows in the central Rocky Mountain region have decreased throughout the past century (Rood *et al.* 2005). The effects of global climate change are projected to include warming in the western mountains, causing snowpack and ice to melt earlier in the season (Field *et al.* 2007). This could lead to increased flooding early in the spring and drier summer conditions, particularly in arid western areas where

snowmelt sustains stream flows. Spring and summer snow cover has already been documented as decreasing in the western United States, and drought has become more frequent and intense (Intergovernmental Panel on Climate Change 2007). Floods and droughts are projected to increase in frequency and intensity; erosion is also projected to increase due to decreased soil stability from higher temperatures and reduced soil moisture, and increases in winds and high intensity storms. The projected cumulative effects of continuing global climate change including increased frequency and severity of seasonal flooding and droughts, reduced snowpack to feed stream flow, increased siltation, and increasing air and water temperatures could seriously impair *A. montanus* habitat.

CONSERVATION STATUS

Agapetus montanus has no federal status. It is currently a US Forest Service Species of Concern (SOC) in the Bitterroot, Flathead, and Lolo National Forests in Montana, and is listed as endangered in Idaho and vulnerable to extirpation in Montana.

CONSERVATION NEEDS

Additional surveys should be conducted to assess population abundance and stability at known sites, and to determine if *A. montanus* is found at additional sites in similar habitat areas in adjacent National Forests.

RESEARCH NEEDS

Little is known about the biology of this species. Research into life history as well as current and needed habitat management in the area would be valuable.

RESOURCES

CONTACTS

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