



Grylloblattid

Family Grylloblattidae

October 2017

Field Notes

General Description

What lives in the cold, dark recesses of an ice cave, or prowls over high-mountain snowfields in the dark? Grylloblattids, of course! You've probably never heard of them, for good reason. Also called "ice crawlers," "rock crawlers," or "icebugs," these creatures are rare denizens of ice caves, alpine snowfields, and other cold, moist habitats—typically out of sight.

The family, Grylloblattidae, comprises only 32 known species in 5 genera, 4 of which occur in Northeast Asia. The single North American genus, *Grylloblatta*, contains 13 species scattered in small populations along the western coast, from northern California to Alberta and British Columbia, Canada.

A grylloblattid's slender body is yellowish brown to gray, stretching 15 to 30 mm. Long, segmented appendages protrude from the front (antennae) and the back (cerci) of its body. The female has a sword-shaped egg-laying organ (ovipositor) between the cerci. Its eyes are reduced, and unlike most insects, it lacks wings. The name reflects its blend of cricket-like (gryllo) and cockroach-like (blatta) traits.

Behavior and Feeding

Grylloblattids are both predators and scavengers in the cave environment. They feed on dead plant and animal organic matter, but may also eat hapless invertebrates that come too close.

Habitat

Grylloblattids are often found under leaf litter or under moist rocks. One of their most unusual features is a love of cold temperatures—they are cryophilic. Most are active at near-zero temperatures and cannot survive outside a fairly narrow range (-6 to 10–20 °C). Just holding one in your hand



Left: *Grylloblatta siskiyouensis* (female) from Oregon Caves National Monument and Preserve. Middle: *Grylloblatta oregonensis* from Oregon Caves National Monument and Preserve. Right: *Grylloblatta gurneyi* – endemic to Lava Beds National Monument. All photos NPS

could kill it! Their distribution today tracks the edge of past glaciation in the area, suggesting that they are relicts of those cold environments.

Two new grylloblattid species recently discovered in Oregon Caves National Monument and Preserve occupy different habitat niches. *Grylloblatta oregonensis* appears to need the deeper, dark zone of caves, whereas *Grylloblatta siskiyouensis* lives closer to the surface and may forage aboveground on cold winter nights. Both species are thought to have taken refuge in caves at the end of the last glacial period, initially diverging from their Sierra Nevada cousins as warming landmasses separated them. Over the slow course of time, this newer species evolved further into 2 species with different ecological preferences.

Life Cycle

Grylloblattids go through a simple metamorphic cycle, from egg to nymph to adult. Nymphs may go through several instar stages (shedding their outgrown skin), but generally look similar to adults as they grow. This process can take several years before a fully mature adult is ready to lay its eggs. Females lay single eggs in the soil or moss. Eggs may take months to a few years to hatch and begin the cycle again.

Conservation

Three new species of grylloblattids were just discovered in North America in 2012, and more species very likely exist. Because they are rare and hard to find, big gaps exist in our knowledge of these unusual creatures, including the extent of their populations. Their close association with snow and ice, however, makes climate change a potential concern.

Where to See

In the Klamath Network, grylloblattids have been documented in and near caves at Lava Beds and Oregon Caves.

More Information

<https://projects.ncsu.edu/cals/course/ent425/library/compendium/grylloblattodea.html>

<https://bugguide.net/node/view/244863>

Elliot, W.R. et al. 2017. The Cave Fauna of California. Proceedings of the California Academy of Sciences, Series 4, Vol. 64, Suppl. 1.

Schoville, S. 2017. Ice-crawlers. Pp. 283-286 in J. Roth, ed., The Klamath-Siskiyou: Timely Treasures of an Iconic Bioregion. National Park Service.