

STATE
ENDANGERED

Roaring Brook Mayfly

(*Epeorus frisoni*)



Mark McCollough

Description

The Roaring Brook mayfly is less than ½ inch long. Its upright wings are of a similar length. Two long cerci, or tails, protrude from the abdomen. The body is light yellowish tan, and the thorax (midsection) is light golden-brown. It can be distinguished from other flat-headed mayflies by a complex pattern of veins in its wings and the structure of its genitalia. The nymph has not been described.

Range and Habitat

The Roaring Brook mayfly is currently known only from Roaring Brook at the base of Mt. Katahdin. It is a high-gradient, clear mountain stream characterized by cascades, large boulders, and coarse granite bottom. The stream is subject to annual flooding from snowmelt, and flows year-round. Although it is believed this mayfly may be endemic to this locality, it could be present in other cold subalpine streams in the Katahdin area. A recent statewide survey of mayflies failed to locate

this species in similar streams in mountainous regions of Maine.

Life History and Ecology

Mayflies have three life stages: nymph (aquatic phase), subimago (pre-adult that emerges from the stream), and imago (adult). The life history of the Roaring

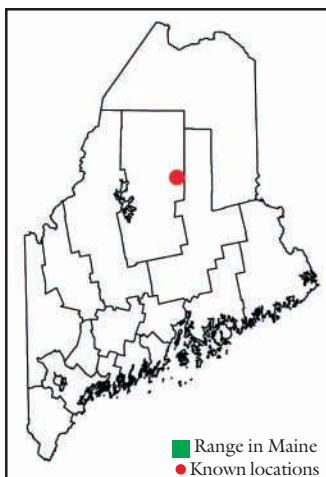
Brook mayfly is poorly known. It likely has a single-year life cycle. Adults emerge in late August. Subimagos probably remain close to the stream, where they cling to streamside vegetation and molt into final adult form. Adults only live for a few days and do not feed. Males and females gather over the brook in mating swarms. Females lay their eggs over the water surface. Eggs likely overwinter in the stream bottom and hatch the following spring. Nymphs undergo several instars, or size classes, as they molt and grow. Nymphs occur in stream bottoms scoured by the currents and ice. Mayfly nymphs feed on leaf detritus that fell into the stream the previous fall and has been broken down by other aquatic insect larvae and bacteria. Nymphs travel to the surface and emerge as adults, usually on summer evenings. Mayflies in Roaring Brook are likely an important source of food for brook trout, bats, dragonflies, and other wildlife.

Threats

There are no known threats to the species other than the inherent vulnerability of potentially being located at only a single site in the world, which is why this species is state-listed as endangered. Roaring Brook is protected for its entire length in Baxter State Park.

Conservation and Management

In 1946, Dr. B.D. Burks of the Illinois Natural History Survey described five new species in the family Heptageniidae, or flat-headed mayflies. Among these was a mayfly discovered by T.H. Frison on August 26, 1939 in Roaring Brook at the base of Mt. Katahdin in Baxter State Park. To date, it has been found nowhere else. Despite being one



of the rarest mayflies in the world, it is notable that no one has visited Roaring Brook to look for it since its initial discovery. Therefore, its current status and populations are unknown. Biologists are initiating surveys in 2003 to reconfirm the existence of this rare insect. Additional high-elevation streams need to be surveyed also to determine whether this mayfly may occur at other locations. Because its location is well-protected, there are no specific conservation recommendations except maintaining the water quality of Roaring Brook. 🦋



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The icy waters of Roaring Brook in Baxter State Park are habitat for the Roaring Brook mayfly.