

## **Blackwater Sallfly**

### *Alloperla furcula* Surdick

Contributor (2012): Boris C. Kondratieff  
(Colorado State University)

#### DESCRIPTION

#### **Taxonomy and Basic Description**

Rebecca F. Surdick described *Alloperla furcula* in 1981 from a large series of specimens collected in 1977 from Upper Three Runs Creek at the Savannah River Site in Aiken County, South Carolina. Currently, 35 species of *Alloperla* (DeWalt et al. 2011) are recognized from North America. *Alloperla furcula* is included in the *A. leonarda* Group (Willett and Stark 2009) and is closely related to a subgroup of species known only from the Southeastern Coastal Plain including *A. natchez* Surdick and Stark from Mississippi, *A. lenati* Kondratieff and Kirchner from North Carolina, and *A. prognoides* Surdick and Stark from Alabama and Florida. The adult male of this subgroup can be recognized by an enlarged epiproct cowl whose lateral lobes extend along either side of the epiproct and the bifurcate epiproct tip (Willett and Stark 2009).



Epiproct of male, dorsal view. Courtesy of B.P.

The Blackwater Sallfly adult male is pea green in life but whitish in alcohol preserved specimens. Dark coloration is confined to the distal segments of the antennae, ocellar rings, and lateral edges of the pronotum. The length of the forewing is 5.5 mm (0.22 in.), and the body length is 6.5 mm (0.26 in.). The epiproct of the male is described by Surdick (2004) and Willett and Stark (2009) in detail, measuring 146 µm from base to fork. The strong, laterally directed arms of the fork are “fish tail” in appearance. The female is similar in coloration with a forewing length is 6.5 mm (0.26 in.), and body length of 7 mm (0.28 in.). The subgenital plate has sides steeply sloping to an acute median projection about one-half the length of sternum 8.

The larva of the Blackwater Sallfly was described by Stark and Kondratieff (2010) and shares a reduced number of cercal segments with *A. natchez* and *A. prognoides* and presumably with *A. lenati*, the larvae of which is undescribed.

#### **Status**

The Blackwater Sallfly is globally ranked as imperiled (G2) which means it is at a high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors) NatureServe 2011). The species is currently not ranked in South Carolina.

## POPULATION SIZE AND DISTRIBUTION

The Blackwater Sallfly is apparently restricted to the Upper Three Runs Creek watershed including Cedar Creek and Tinker Creek in Aiken County. Population size has not been determined, but in the 1980s adults could still be collected from Upper Three Runs Creek within the boundaries of the Savannah River Site. However, collecting stoneflies in an adjacent watershed, Lower Three Runs drainage, failed to detect any populations of this stonefly.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The larvae are apparently associated with clean shifting sand substrate of the blackwater stream watershed of Upper Three Runs. Larvae are usually difficult to collect. Using a shovel to reach into the sandy substrate at least to a depth of 0.5 m as described by Ray et al. (2010) would be necessary to sample larvae.

## CHALLENGES

Over the last 25 years, much new residential and other types of land use development has occurred, especially in the area of Cedar Creek. It is anticipated that land use changes will continue in this area in the future. Typical anthropogenic impacts other than watershed hydrology changes include channelizing, clearing streamside vegetation, siltation, chemical pollution, and eutrophication.

The aquatic insects of Upper Three Runs have been documented by Morse et al. (1980, 1983) revealing as remarkable and diverse an assemblage of taxa found anywhere in North America. Throughout the Southeastern Coastal Plain region, blackwater stream systems are imperiled (Benke 1990).

## CONSERVATION ACCOMPLISHMENTS

Currently, much of the lower watershed of the Upper Three Runs Creek is within the Savannah River site and remains mostly protected from development.

## CONSERVATION RECOMMENDATIONS

- Evaluate and develop a long-term management program for water quality of the Upper Three Runs watershed.
- Encourage long-term best management practices in land use planning of the entire Upper Three Runs watershed to prevent habitat degradation.
- Monitor population dynamics of the Blackwater Sallfly.

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