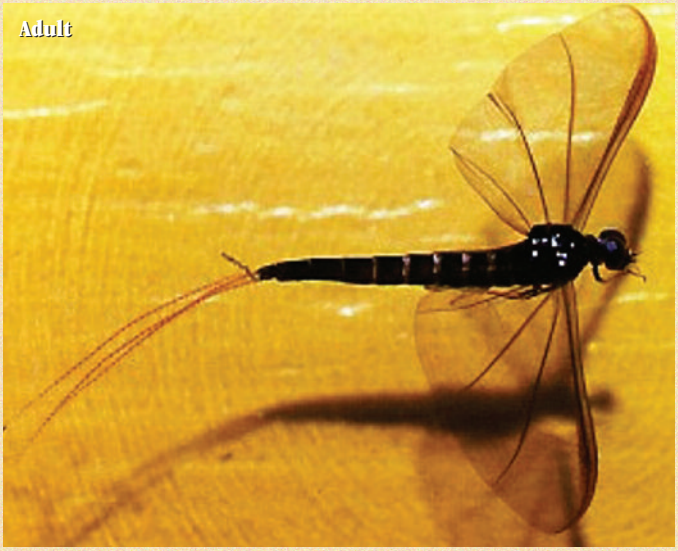
Ongoing research providing information on an imperiled guild of aquatic insects.

Sand-Inhabiting Mayflies

Photos By Dawn Dockter

Mayflies are aquatic insects classified in the order Ephemeroptera—a name of Greek origin, with *ephemeros*, meaning living only a day, and *pteron*, for wing. Although mayflies have lived on the planet for more than 300 million years, they still display ancestral characteristics in the form of their upright and unfolding wings. Illinois streams and lakes historically have supported 107 mayfly species but the current status of mayflies in Illinois is unknown.

The sand-filtering mayfly (*Homoeoneuria ammophila*), once thought extirpated from Illinois but recently "rediscovered" in the Sugar River in Winnebago County, presents an opportunity to study the biology of a rare and usually difficult-to-collect mayfly.


Adult

This species thrives in fast-flowing, sandy rivers and can be found from late June to early September. Lying in fine sand, nymphs raise their thorax, creating a vortex that concentrates food particles in the water. Hatching starts in August with male nymphs rising to the surface of the stream before dawn—struggling from the nymphal skins while riding the waves and searching for females just an inch above the water. By 7 a.m., females leave the water, are grabbed by a male and they mate on the wing. Females then fly back to the stream, belly smacking the surface, and collectively expel millions of eggs. By 10 a.m., all is done and only the carcasses, floating down the river, remain.

Nymphs

These behaviors are largely unknown even to the scientific community. Few others, perhaps only fisherman, ever witness this brief event. Locating additional populations and genetic analyses are needed to form protection strategies so others can witness the amazing annual emergence.

—**Dr. R. Edward DeWalt** and **Ms. Dawn Dockter**, Illinois Natural History Survey, Champaign