

CONODOGUINET CREEK WATERSHED ASSOCIATION WINTER STONEFLY WALK THOSE AMAZING WINTER STONEFLIES

By Jane Earle

It was a dark and dreary morning with off and on drizzle on March 5, 2011, the day of our scheduled winter stonefly walk. That afternoon, however, our group of 12 CCWA members and visitors arrived at Acri Meadows, one of the several East Pennsboro Township parks along the Conodoguinet Creek to find a wonderful hatch of several winter stoneflies. Adult willowflies, the larger of the two winter genera at $\frac{3}{4}$ to 1-inch long, were gathered for their mating rituals on guard rails along the edge of the parking lot, on picnic tables, flying over the creek, on tree trunks, and on small bushes along the edge of the creek. Nymphs were also collected with a dip net on streamside bushes. Several nymphs that were collected and placed in clear containers split their nymphal skin down their backs and started to emerge. The smaller winter stoneflies, the snowflies, could be seen on tree trunks and sign posts.

Winter stoneflies are among the few groups of insects that emerge in the dead of winter. A warm spell will get them on the move on sunny winter afternoons. Two families of stoneflies (Plecoptera) emerge only during the winter or early spring, the tiny black Capniidae and the larger black Taeniopterygidae. In the most common Capniidae genus, *Allocapnia*, males have very short, non-functional wings or no wings; females have longer wings and fly very little. But they sure can walk! Capniidae are extremely abundant. I have collected as many as 5 species emerging at the same time from one stream. Hundreds can be seen along streams on the snow, on tree trunks and bridges. Adults are often found more than 50 yards away from creeks, in people's yards, and on houses.

Adults of the other winter stonefly family, the larger Taeniopterygidae, are also extremely abundant. Thousands of adults can be seen flying over downtown Harrisburg on warm sunny afternoons. Peak emergence is usually mid-March; however, during warm winters, you can see the delicate fliers high over the city of Harrisburg and the Susquehanna River in mid-February. Four species of the genus *Taeniopteryx* and one species of the genus *Strophopteryx* emerge from the Susquehanna River from January through early April. Winter stoneflies often get into buildings in downtown Harrisburg. They even ride up in elevators of the tall buildings. But most often they fly to the windows outside the upper floors where spiders catch them and wrap them up in their webs. Gulls sit on rocks or on the water in the river and scoop them up and eat them.

All stoneflies are aquatic in the immature or nymph stage, living only in streams of all sizes and in springs. After emergence, adults lay their eggs in the stream edge. The eggs hatch soon after they are laid and turn into tiny nymphs. After a few molts, the nymphs become inactive (diapause) and move beneath the creek bottom, roll up in a ball, and spend the entire spring and summer. They wake up in October or November and begin to feed. All their feeding and nymphal growth is packed into a few months in late fall and early winter when streams are their coldest. They crawl out of the water to emerge, mate and lay their eggs. The females live longer than males and feed on lichens or mosses while their eggs develop. They return to the creek to lay their eggs. The adults hide under bark or in leaves when not active. The adults emerge over a period of several months, which helps overcome severe winter weather conditions.

Close observation of the large winter stoneflies reveals their method of attracting a mate, drumming. The males tap the tip of their abdomen on a log, bridge or the ground; the females will drum back if they have not mated. Each species has its own drumming pattern. This helps ensure that the correct males and females mate. The Capniidae are also believed to drum, but because of their size are difficult to observe. Stonefly drumming has been studied by Dr. Ken Stewart of North Texas University. He has recorded drumming patterns of stoneflies from most families. Web sites to check for more information on drumming: <http://acp.eugraph.com/insects/stonefly.html>. For a more scientific presentation with video and sound, visit <http://www.ias.unt.edu/~StoneflyHome/Home/>.



Large Winter Stonefly or Willowfly



Small Winter Stonefly or Snowfly



Winter Stoneflies on Snow