Intrepid Insects: Capniids in Cootes

by Carl Rothfels

Monday February 2nd was a beautiful brisk winter day, as was Tuesday, Wednesday, and Thursday. I awoke Friday, however, to a grey landscape of freezing rain and general miserableness. Guess which day I had set aside for fieldwork?

But even the least appealing days can bring pleasant surprises when one works outdoors. My task for the day was to walk the perimetre of Cootes Paradise with a GPS (Geographic Positioning System – allows me to make maps) so that I could map out the limits of all the marshland vegetation in order to track the restoration of Cootes Paradise.

The first pleasant surprise was the quiet majesty of Cootes in the haze. It was a warm day (a few degrees above freezing), so everything was slushy and the air was murky with moisture. No one else was around, or certainly not slogging through all the slush, so I was in my own world.

The second surprise was the true thriller, though. There, at the west end of Cootes near the still-open water of Spencer Creek (open for a short stretch between West Pond and Cootes proper), I found a small dark insect crawling across the snow. So I wasn't the only one foolish enough to be out on a day like this!

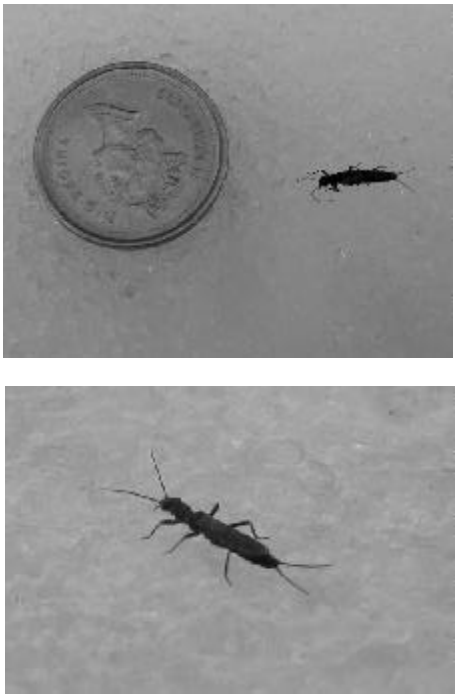
The insect was a type of stonefly, a strange order (Plecoptera) of important aquatic insects. They spend most

of their lives underwater, as nymphs, only coming onto land for a short time, as adults, to breed.

Some species, like the one I found, are unusual in that they emerge on warmer days in the middle of the winter. Steve Marshall, the insect guru at University of Guelph, tentatively identified my stonefly (from photographs) as a member of the Capniidae – the Winter Stonefly or Snowfly family.

This is quite a diverse family, with over 200 species in North America, and Steve has found members of *Allocapnia* (the most common eastern genus) in Ontario in February.

Even more exciting than finding an insect actively pursuing its life above the snow in the middle of winter (always a cool thing!) is what the presence of this species suggests about Cootes Paradise.



The Cootes Capniids. The one at top has dropped a penny. Photos courtesy of Royal Botanical Gardens.

Stoneflies are nearly all dependent on clear well-oxygenated waters. As Ethan Bright writes in the "Aquatic Insects of Michigan," stoneflies "are primarily associated with clean, cool-to-cold running waters ... [they] are often associated with clean water qualities, and their presence or unnatural absence is often a key component of water quality indices" (Bright 2004).

Capniids, in particular, inhabit the "hyporheic zone," the area where flowing water penetrates beneath the rocks and gravel on the bottom of streams and rivers (Nelson 2004). They tend to have narrow tolerances for cold environments, and are frequently wing-

less as adults. Their presence in Cootes is thus a very promising sign – perhaps the restoration of Cootes has progressed sufficiently to allow these clean-water specialists to return. A sign of things to come?

Over the course of the day I found five individual stoneflies – four near the outlet of Spencer Creek and one near Hickory Island, hundreds of metres from any open water – as well as a few other winter invertebrates including a few long-legged flies which were almost certainly winter craneflies (Trichocerids) which look superficially like true craneflies (Tipulids) but are, in fact, in a different family, and some snowfleas (Collembola), primitive miniature pseudo-insects which are among the most abundant (and overlooked) organisms on Earth.

So next time you're out on a warm winter day, keep your eyes on the snow! You never know what you might find.

References:

Bright, E. 2004. Aquatic Insects of Michigan. University of Michigan. Available at: http://insects.ummz.lsa.umich.edu/~ethanbr/aim/Keys/Plecoptera/id_pom.html.

Nelson, C.R. 2004. Tree of Life Web Project: Capniidae. Available at: http://tolweb.org/tree?group=Capniidae&contgroup=Plecoptera.