

Exoskeleton Safari: Caddisfly larvae

Go to the boardwalk at Moose Hill in spring, and peer into the shallow water. What do you see? Nothing unexpected: leaves, twigs, other debris.

Keep looking. There's a truism in nature: keep looking and you will be rewarded. That little clump of twigs and leaves is waving slowly in the current, except: there's no current in the marsh! So *why's it moving?*

We're going to back up a bit. The caddisflies (Latin name: Trichoptera) are an order of insects mostly closely related to moths and butterflies. The adults are very easy to confuse with moths, which can be frustrating when you spend a lot of time poring through guidebooks trying to identify what kind of moth an insect is, only to realize that it is no kind of moth. Not just the adults, though, the larvae are also similar to moth caterpillars, except for one large difference. Namely, many caddisfly larvae live underwater.

I would guess that the reason for evolving to live underwater is to escape predators, because the larvae are slow moving and good eating. But there are still dangers, and the caddisfly larvae have come up with their own way to improve their odds. Just like their lepidopteran cousins, caddisfly larvae are capable of excreting silk to form casings to protect themselves. Remarkably, they then crank up the level of protection by adding any of the available twigs and leaves into their casing.

Do you see how this casing may be difficult to see? Once you see your first one, you start seeing more and more of them; the caddisflies are doing pretty well for themselves at Moose Hill. This is good news, because the presence of caddisfly larvae is an indicator of good water quality and not too much pollution. Mayflies, stoneflies and dragonflies are similar water quality indicators.

The larva protrudes its head from the casing, and uses its legs to pull itself around, eating debris and growing fatter. I think the one in this photo may be in Limnephilidae, based on the structure of the casing.

There's a saying: a chicken is an egg's way of making another egg. This saying is especially true in the world of insects. The adults of the caddisfly often do not even have mouths, because eating would be a distraction from what really matters: finding a mate and creating another generation. There are lots of insects in lots of different orders who are similarly focused on this very clear priority.

Here's a coda: humans have taken advantage of the larva's architectural prowess. There are artists [wikipedia mentions the French artist Hubert Duprat as the first to do this, but there are many others now] who take caddisfly larvae and rear them in an environment of gold flakes and semi-precious stones. The larvae, of course, construct their casings with the materials at hand. The artist then sells the casings as jewelry – but there's no record of the caddisflies getting a cut of the profits.

