

## Bugs on the Big Hole

### Spotted Sedges – More Than You've Ever Wanted to Know

When you look at the hatch chart of most trout streams - the Big Hole included - you'll notice a plethora of specific stonefly and mayfly hatches listed to occur throughout the Spring and Summer. You'll see March browns (*Rhithrogena spp.*) in March and April, salmonflies (*Pteronarcys californica*) in June, golden stones (*Hesperoperla pacifica*) and green drakes (*Drunella grandis*) in July, tricos (*Trichorythodes spp.*) in August, and mahogany duns (*Paraleptophlebia bicornuta*) in September. But what about caddis? Besides the possibility of a large October caddis (*Dicosmoecus spp.*) hatch in late-Fall or the Mother's Day Caddis (*Brachycentrus occidentalis*) hatch in May, caddisflies, or Trichoptera, if you prefer Latin, are usually listed as if they were just a single species emerging for months on end – e.g., "Caddis: May-October". What many anglers don't realize is that caddisflies represent a massive Order of thousands of species, and the oversimplification of the hatch charts' "caddis hatch" actually represents the emergences of *many* species.

At present, there are over 17,000 described species of caddisflies, worldwide – nearly three-times that of stoneflies and mayflies combined. Caddisflies too are more species-rich than either mayflies or stoneflies on the Big Hole. How many are there? Unfortunately, no one knows for certain, though there are likely at least 50. They include large groups of species that most anglers have never heard of, including purse-making microcaddis (family: Hydroptilidae), mottled and dotted sedges (family: Uenoidae), green rockworm sedges (family: Rhycophilidae), and many others, some of which don't even have common, non-Latin names. However, on most of the Big Hole River, like many other trout streams, the most abundant caddisflies are those in the family **Hydropsychidae** - the **spotted sedges**.



The juvenile larva (left) are somewhat maggot-like in appearance, except that they have three sets of jointed legs, whereas true maggots (i.e., larval members of the true fly Order, Diptera) do not. They can range in body

color - greens, browns, and tans - and can vary in sizes from #18-8, depending on species and age. Other identifying features: the tops of the thoracic segments are hardened, and the abdomen contains many short filamentous gills and a notable fanlike structure on the last segment.

Adult spotted sedges (right) loosely resemble moths (like most caddis adults), with long slender antennae and tent-like, usually (but not always; see photo above) spotted wings that are covered in fine hairs. Like the larvae, they also range in size about #18-8. Other important features: ocelli (small rudimentary eyes found between compound eyes) absent; maxillary mouthparts with more than 5 segments, the terminal segment being long and flexible; antennae about as long as body; lacking hairy warts on the top of the thorax.



On the Big Hole, there are at least seven species of spotted sedges from three genera (*Actropsyche*, *Hydropsyche*, and *Cheumatopsyche*). However, because many closely related species co-occur and because the adults are hard to identify, it's difficult to determine one species' hatch from the next without a microscope. Thus, in this article, I won't be able to fix the industry's general problem of lumping caddis hatches together, and alas, the old habit will continue. However, even if we must flounder with our taxonomy, the biology of the spotted sedges remains second to none. So, what follows is an ode to the spotted sedge – more information than you've ever wanted to know about this, abundant difficult-to-identify bug.

Despite being relatively common, spotted sedges are one of the most fascinating groups of aquatic insects. Like most other caddisflies, spotted sedges spin silk – just like moth or butterfly caterpillars (to which all caddisflies are closely related) – out of glands near their mouths. But instead of using their silk to adhere rocks or sticks to make cases in which to live, as other species, they use the silk to make net-like feeding apparatuses. Nets are usually cone shaped, their exact dimensions depending on the species, with a large opening facing the current and a small flow-exhaust port towards the rear. Much like funnel-weaving spiders, each caddisfly lurks inside their silken retreat waiting for food to wash in – algae, bits of leaves, feces, or other invertebrates. As flows and water-borne sediment levels change, spotted sedges alter the shape and mesh-size of their nets to optimize their catch rate. Cumulatively, the filter-feeding behavior of spotted sedges helps keep excess waste from building up in streams and rivers. The abundance of silken nets that connect the streambed together also slows down flows within the substrate, creating microhabitats for species that prefer slow-moving water. In turn, they also adhere the streamed together, making it more resilient to floods by increasing the forces required to overturn each rock. Go spotted sedges!



However, if washed from a net (or if a net is crushed by your boot), a new net becomes a necessity – they can't procure food without one. Thus, individuals will either build a new net (a laborious task) or try to steal one from a smaller sedge nearby. Spotted sedges are known to defend their retreats vehemently. They bite, claw and attempt to push intruders out of their nets, while the intruder simultaneously tries to evict the current resident into the current. Quite the show! Defenders also seem to intimidate their opponents by stridulating – a shrill, screeching sound made by rubbing their legs across the ridges on their chins.

Experiments have shown that the more they stridulate while fighting, the more likely they are to successfully defend their nets. No one knows why exactly this seems to work, but it does!

Once fully grown – after several months to one year, depending on the species and local conditions – larvae molt within their nets into their pupal forms - a less mobile, pre-flight stage of many insects' lifecycle. Soon after, they drift in the current, metamorphose on the water's surface, and take flight as winged adults. Like many caddisflies, spotted sedge adults are relatively long-lived, surviving for several days to weeks. During this period, males and females mate near vegetation on the bank. After mating, males are quite useless and soon dry up and die. Females, however, must make the risky trek back to the water. Unlike most aquatic insects, which release their eggs at the water's surface, spotted sedge females often *dive* under the water and adhere clusters of eggs to submerged rocks or woody debris. Females have wider legs than males, an adaptation that makes them faster, more efficient swimmers. If she's lucky, within a couple weeks, hundreds of baby spotted sedge larvae will hatch from her carefully placed egg masses to build their own nets and restart the cycle. If she's unlucky, she'll be trout food before she ever gets to the bottom of the stream.

If you've made it this far and still wanting more on this often overlooked group aquatic insects, we suggest you read *Caddisflies* by the late great fisherman and author, Gary LaFontaine.