

BEHAVIOR

## Effects of Suspended Particles on Net-Tending Behaviors for *Hydropsyche sparna* (Trichoptera: Hydropsychidae) and Related Species

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**ABSTRACT** Laboratory experiments using small artificial streams were performed on 3rd-5th instars of the net-spinning caddisflies *Hydropsyche sparna* (Ross), *H. betteni* Ross, *H. morosa* (Hagen), and *H. slossonae* (Banks) to examine the effects of suspended particle transport on their behavior, drift, and mortality. Larvae were exposed to suspended particles 0.4–500  $\mu\text{m}$  in diameter at suspended concentrations between 667 and 6000 mg/liter for 24 h. Water velocity was held constant at 23 cm/s in all experiments to eliminate the confounding effects of flow on net-tending. Drift and mortality rates were also measured but did not occur in the experimental or control populations. Four net-tending behaviors occurred that varied in the degree of filter net modification. One behavior was to clean the net of particles and leave it intact. Three other behaviors, involving modification of the filter net strands, were detachment of one side, cutting a hole in the middle of the filtering surface, and total removal of the net. For particles  $>64 \mu\text{m}$  in diameter, the frequency of net modification increased with increased particle size and load. Intraspecific differences in net-tending behaviors occurred in only 1 instance, and there were no interspecific differences. We speculate that *H. sparna* individuals modify their nets to change the local hydrology and therefore prevent excessive fine particle transport into their retreats. Observed net-tending behaviors might represent adaptations to frequent exposures to suspended sediment transport. Fine suspended particle transport of the duration and magnitude studied represents a sublethal disturbance to hydropsychids.

**KEY WORDS** *Hydropsyche sparna*, suspended sediment, sediment transport, stream

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