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### The living case of *Silo pallipes* (Fabricius, 1781)

Edyta SERAFIN, Robert STRYJECKI

**Abstract.** During hydrobiological studies in the River Szum (SE Poland) we discovered one *Silo pallipes* larva in an unusual case. Instead of one of the lateral sand grains or pebbles, a water mite, *Hygrobatas calliger* PIERS., (Acari, Hydrachnidia) was found.

The relationships between caddisflies and water mites have not been described very often in detail but according to the present state of knowledge and our own experiences we can point out three aspects of these relationships. Water mite larvae are often ectoparasites of larval caddisflies (FAIRCHILD & LEWIS 1987). In nearly all cases water mites are attached to the soft cuticle between gills of the abdomen, sometimes in large numbers. FAIRCHILD & LEWIS 1987 mentioned the families Limnephilidae and Leptoceridae. We observed this phenomenon in Limnephilidae and Molannidae. The second aspect is connected with the feeding of carnivorous caddis larvae. Although water mites are regarded as tasteless for many aquatic predators, mites or parts of them were found in alimentary canals of caddis larvae such as *Drusus discolor* (KAWECKA 1977), *Ecnomus tenellus* (WIBERG-LARSEN 1993) and *Brachycentrus subnubilus* (WALLACE at al. 1990), so they may be part of their food.

The last and the most interesting aspect was discovered in 2002 when we studied rivers of the Roztocze Region in SE Poland. At every site the samples were taken from lotic and lentic habitats. On October 16 in Górecko Kościelne in the River Szum in the lotic habitat we found two larvae of *Silo pallipes*, among *Chaetopteryx villosa* (2 specimens), *Hydropsyche saxonica* (80), *Lasiocephala basalis* (6), *Rhyacophila tristis* (4) and *Sericostoma personatum* (1) larvae. After segregating the larvae under the binocular we found that one lateral "sand grain" of the 5 mm case of a *Silo pallipes* larvae was not a grain but a still rigid and firm water mite. It was a young male of the second annual generation of *Hygrobatas calliger*.

In the study area the fauna of water mites was extremely poor. Only two species, the above mentioned dominating with 18 specimens, and *Hygrobatas nigromaculatus* with 7 specimens, were found. Moreover, in the lotic habitat only *H. calliger* occurred which corresponds with the known rheobiontic habitat preferences of this species. The second water mite species was caught only in lentic habitats. *S. pallipes* larvae were found only in the lotic habitat. It can be concluded that the caddis larva incorporated "a living grain" into its case because such "grains" were the most numerous in studied area and more often met in the current habitat than near the river banks.

It seems to us that some morphological features of *H. calliger* could be responsible for the *S. pallipes* larva to accept it for its case: the shape – the idiosoma of this species is almost round, the hardness – this species is quite hard, and the colouring pattern imitating a sand grain (Fig. 2 a, b). It may be important that young specimens of *H. calliger* are bright and semitranslucent, not so strongly sclerotized as the adults, generally grayish with green and brown spots. The size of the water mite was also crucial, as this specimen fits in the empty place in the whole construction.

It was by chance that we observed this because a mite would soon decompose. Probably the mite had been glued to the case alive because its body was undamaged with no trace of biting, smashing or lacking of legs etc. The living creature must have been treated as a fitting object and glued to the case quite soon after been caught. The feeding behavior of *Silo pallipes* was also deciding because only a non-predatory scraper may use the mite as a temporary particle for making a case which is a potential prey to predatory caddis larvae. However, the most interesting question remains without an answer: why did *S. pallipes* use a living water mite in the presence of tons of sand grains and pebbles?

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Address of authors: University of Agriculture, Department of Zoology, Akademicka 13 Street, PL - 20-033 Lublin, Poland. E-mails: eserafinek@wp.pl; robstry@wp.pl

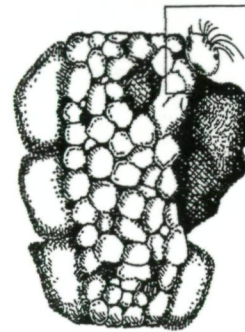


Fig. 1 *Silo pallipes* case with a water mite, *Hygrobatas calliger*

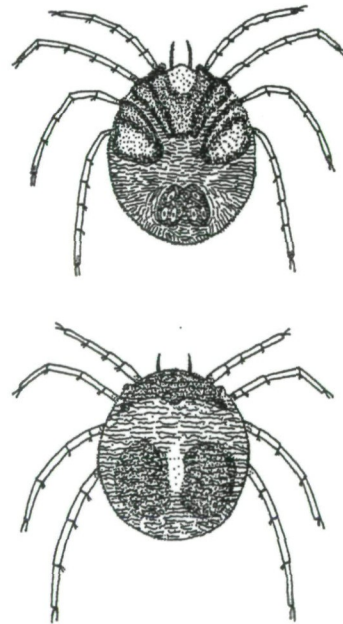


Fig. 2 *Hygrobatas calliger*, ventral and dorsal



#### Research workers on Trichoptera

Kari-Matti Vuori, PhD, Taavetintie 4, SF - 40800 VAAJAKOSKI, Finland. Occupation: Central Finland Regional Environment Centre. Research subject: General ecology, ecotoxicology. Trichoptera previously studied: Larval Hydropsychidae, Rhyacophila, Limnephilidae: responses to toxic substances. Areas: Finland, Russian Karelia. Other interests: Biomonitoring and ecological risk assessment.

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