Creatures Amongst Waterweed in the River Severn

ROSEMARY WINNALL

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Every Monday in term-time I walk across the River Severn footbridge at Arley in north Worcestershire to collect my grand-daughter from school. We always stop to peer down over the bridge and comment on the river's character of the day. In the summer of 2018, after a spell of good weather, the water was clear and we could see a lot of waterweed (Figure 1). It was then that I hatched my plan; I would canoe down the river and sample some of this weed and record the creatures associated with it.



Figure 1. View from Arley bridge, 15 July 2019. Rosemary Winnall

So, on the morning of 30th July 2018 I launched my canoe alongside Arley footbridge armed with several plastic bags each numbered with indelible ink, a Dictaphone, a waterproof camera, lunch and my iPhone (in a waterproof pouch) with an App. for recording grid references.

I soon found that, although the waterweed was easily visible from above, it was not so conspicuous from a canoe! It might have been better to choose a day when the sun wasn't shining. Also, the weed only grew where the water was relatively shallow, and as I found it impossible to collect and paddle at the same time, I had to choose my sites carefully and avoid a capsize on the fast-flowing sections. But I managed to collect some weed without mishap from four sites between Arley and Blackstone just south of Bewdley (Figures 2 and 3), and back at home spent an interesting time looking through the weed with the aid of a microscope (Figure 4).



Figure 2. Collecting weed, Site 1 Arley footbridge. Rosemary Winnall



Figure 3 Collecting weed, Site 1 Arley footbridge. Rosemary Winnall



Figure 4. A selection of weed fauna, 30 July 2018. Rosemary Winnall



Figure 5. *Brachycentrus subnubilis*. Rosemary Winnall



Figure 6. *Athripsodes cinereus*. Rosemary Winnall

The results can be seen on Table 1. The weed was mainly River Water-crowfoot *Ranunculus fluitans* as expected, but I was surprised by the large number of *Brachycentrus subnubilis* caddis larvae present (Figure 5) along with other caddis species including *Athripsodes cinereus* (Figure 6) found in smaller numbers. Two other caddis were found in smaller numbers.

Attached to the weed there were also a number of strange tiny tubes about 6mm in length with arm-like extensions made out of fine mud particles. As I watched through the microscope a worm-like creature emerged and I had no idea what it was (Figures 7 and 8). Subsequent enquiries with Mick Blythe enabled me to record it as a Chironomid larva.

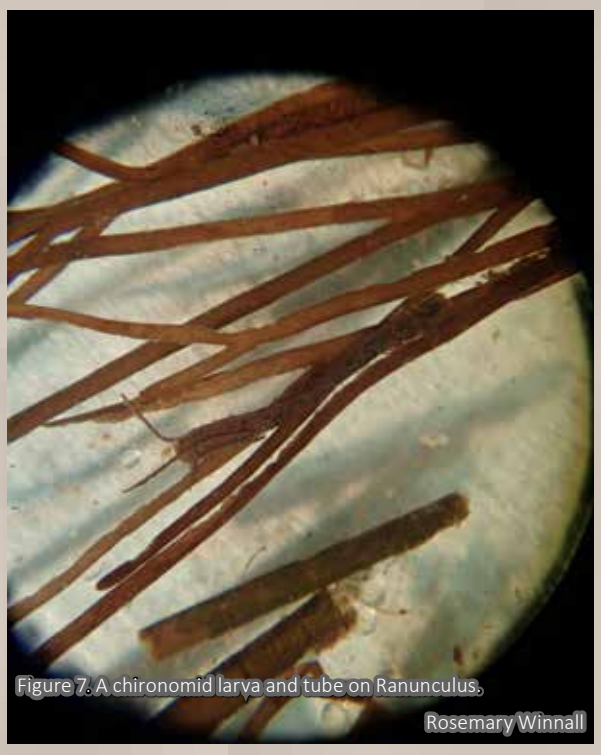


Figure 7. A chironomid larva and tube on Ranunculus. Rosemary Winnall



Figure 8. *Rheotanytarsus chironomid* larva and tube on *Ranunculus*. Rosemary Winnall

Molluscs were present in all samples with nine species identified, most of them juveniles. In addition, at one site, I recorded two river bugs *Aphelocheirus aestivalis* (Figures 9 and 10) not far from where we'd found them in this part of the River Severn in 2009 (Green 2009). This wingless bug never leaves the water, instead swims rapidly and can also be seen walking along stony riverbeds searching for its prey of small invertebrates. It may be under-recorded in our county, and it's worth searching for in rivers where there is fast flowing water and a stony substrate.

One thing I learned during this sampling trip was that this part of the River Severn passes through three different vice-counties 37, 39 and 40 and the boundary is often the centre of the river. I had to carefully check the location of each sampling site and record on which side of the central line I had collected! This is something to bear in mind for future trips.



Figure 9. The river bug *Aphelocheirus aestivalis* dorsal view Blackstone, 29 July 2017. Rosemary Winnall

Table 1. Species recorded during sampling of waterweed in the River Severn.

River Severn, 30th July 2018, Rosemary Winnall	SITE 1	SITE 2	SITE 3	Site 4
Location	Arley footbridge	Victoria bridge	Trimpley island	Folly point
Grid reference	SO7657 8010	SO7664 7924	SO7737 7855	SO7757 7845
FLORA				
River Water-crowfoot *Ranunculus fluitans*	•	•	•	•
Spiked Water-milfoil *Myriophylum spicatum*		•		
Flowering-rush *Butomus umbellatus*			•	
FAUNA				
Molluscs				
Freshwater Nerite *Theodoxus fluviatilis*	•		•	•
Jenkins' Spire Snail *Potomopyrgus antipodarum*	•		•	•
River Snail *Viviparus viviparus*	•		•	
Common Bladder Snail *Physa fontinalis*	•	•		
Wandering Snail *Radix bathica*		•	•	
Pisidium sp.	•			
Common Bithynia *Bithynia tentacula*	•		•	•
Keeled Ramshorn *Planorbis carinatus*			•	
Ear Pond Snail *Radix auricularia*		•		
Caddis				
Brachycentrus subnubilus	•	•	•	•
Athripsodes cinereus	•	•		•
Hydropsyche sp.		•	•	•
OTHER RECORDS				
Aphelocheirus aestivalis			2	
Rheotanytarsus Chironomid larvae		•		
Damselfly larvae				•
small fish fry				•



Figure 10. The river bug *Aphelocheirus aestivalis* ventral view Blackstone, 29 July 2017. Rosemary Winnall

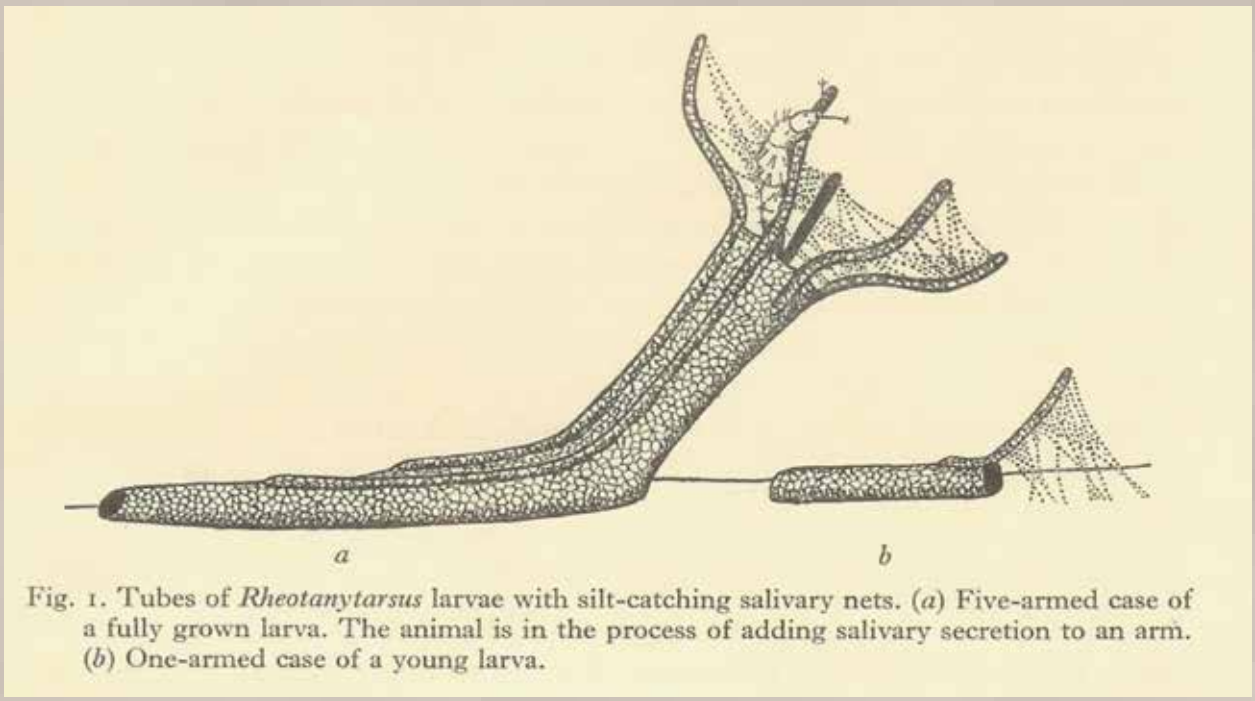


Fig. 1. Tubes of *Rheotanytarsus* larvae with silt-catching salivary nets. (*a*) Five-armed case of a fully grown larva. The animal is in the process of adding salivary secretion to an arm. (*b*) One-armed case of a young larva.

Figure 11. Fig 1. *Rheotanytarsus* larval tube from Walshe, B. M. 1950.

There was an interesting follow-up involving the Chironomid larvae. I sent Figures 7 and 8 to Patrick Roper who runs the Chironomid Study Group for Dipterists Forum, and he agreed it was a chironomid but didn't know which one. He suggested that I put them on iSpot which I did, and meanwhile he put them onto an international Chironomidae group internet site. Within hours I'd heard from Minnesota USA, and Patrick had received emails back from all over the world including University of Michigan, Russian Academy of Sciences St Petersburg, Zoologische Staatssammlung Munchen, University of Dublin, Henk J, Vallenduuk in the Netherlands, Australian National University, University of Roehampton, Hydrobiologisch Adviesburo Klink in The Netherlands, and EcoAnalysts Moscow. They provided some fascinating information and gave me the genus name *Rheotanytarsus*. Mick Blythe had also completed some internet research in the meantime and also come up with the same genus.

Much of what we know about the larvae of flies from this genus come from Barbara M. Walshe from the University of London whilst working in Denmark in 1948/49 (Walshe 1950). She found that the adult midges lay their eggs on the emerging weed and, on hatching, the tiny larvae begin to construct an open tube on the weed, the wider front opening facing into the flowing water current. Using silt particles each larva then starts to build tube 'arms' (one to start with and up to five as it grows) which are anchored along the side of their tube and extended out above the open front end (Figure 11). It then constructs a saliva net slung between these arms to collect organic particles on which it feeds. Later it gathers up the net, or part of it, into a ball and draws it into the tube to eat it. Any spare is used to extend the tube. The saliva must be very sticky as all this is completed in a fast-flowing current.

I am continually amazed at what flies get up to, and what a marvellous resource the internet is for information and communication!

Reference

Green, G. H. (2009) *Aphelocheirus aestivalis*, a caseless caddis and a couple of bivalves from the River Severn at Bewdley. *Worcestershire Record* 27: 19-20.

Walshe, B. M. (1950) Observations on the Biology of larvae of the midge *Rheotanytarsus*. *Journal of the Quekett Microscopical Club*, Series 4 (1) No 3 pp 171-178.