Experiments with a Berlese Funnel

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Trying to figure out what to call a Berlese (or Tullgren) Funnel takes more time than describing what it does. It is an apparatus for collecting microfauna from soil or leaf litter samples. The history is hard to pin down, but the earliest mention seems to be from Berlese (1905) and Tullgren (1917). It appears that Berlese was the first to describe the apparatus, using a water bath as a heater. Tullgren later simplified the overall arrangement by substituting an electric lamp as a source of heat. For now, I'm going to stick with "Berlese Funnel."

The general principle involves providing a funnel with a fine-mesh lid, an inner coarse mesh upon which the sample material is laid, and a slippery funnel leading to a receptacle with a liquid preserving agent. The use of a lamp to warm and dry the sample is an optional extra in these days of high energy costs, especially if you keep the apparatus in a warm, dry place. In my setup, I placed the apparatus in the greenhouse with a small lamp to dry the material (See Figure Figure 1) and a tube filled with 100% Mono Propylene Glycol (MPG) to catch the microfauna. I'm a fan of MPG as it is a good preservative, slow to evaporate, non-toxic, preserves colors, and keeps specimens fairly supple. I found that most of the catch appeared after three days, and little ever appeared after a week.

For my experimental trial, all the material came from locations on the nature reserve at Rutland Water: So what did I find?

My favourite and a personal first was the Pseudoscorpion *Chthonius ischnocheles* (Common Chthonid) Figure 2. It turned out that the keys to woodlice are quite easy to use so Figures 3 and 4 show the common woodlice *Trichoniscus pusillus* Ag. and *Philoscia muscorum*. All the by-catch was separated and logged and thanks to Graham Finch I have a list of the beetles too. Of note were *Ochthebius pusillus* with just one previous record in 1936, and *Dacrila fallax* with just three previous records, with the last Rutland Water record in 2021. The current list of species recorder is in Table 1.

After this encouraging start I shall be expanding use of the Berlese Funnel in 2024.

Table 1: Species recorded by family.

taxon	Count	FamilyCount
Carabidae		
Acupalpus dubius	1	
Agonum fuliginosum	1	
Oxypselaphus obscurus	1	
Stenolophus mixtus	1	
Number of records for this family:		4
Staphylinoidea		
Dacrila fallax	1	
Habrocerus capillaricornis	1	
Lathrobium brunnipes	1	
Ochthebius pusillus	1	
Number of records for this family:		4
Trichoniscidae		
Trichoniscus pusillus	3	
Number of records for this family:		3
Chthoniidae		
Chthonius ischnocheles	1	
Number of records for this family:		1
Coccinea		
Unknown	1	
Number of records for this family:		1
Linyphiidae		
Tenuiphantes tenuis	1	
Number of records for this family:		1
Philoscia		
Philoscia muscorum	1	
Number of records for this family:		1
Philosciidae		
Philoscia muscorum	1	
Number of records for this family:		1
Staphylinidae		
Anotylus rugosus	1	
Number of records for this family:		1

References

Berlese, Antonio. 1905. “Apparecchio Per Raccogliere Presto e in Gran Numero Piccoli Arthropodi.” *REDIA – Journal of Zoology*, 85–89.

Tullgren, A. 1917. “En Enkel Apprat För Automatiskt Vittjande Av Sällgods.” *Entomologisk Tidskrift* 38: 97–100. https://www.biodiversitylibrary.org/item/42375#page/124/mode/1up.

Figure 1: Berlese Funnel set up in the greenhouse.

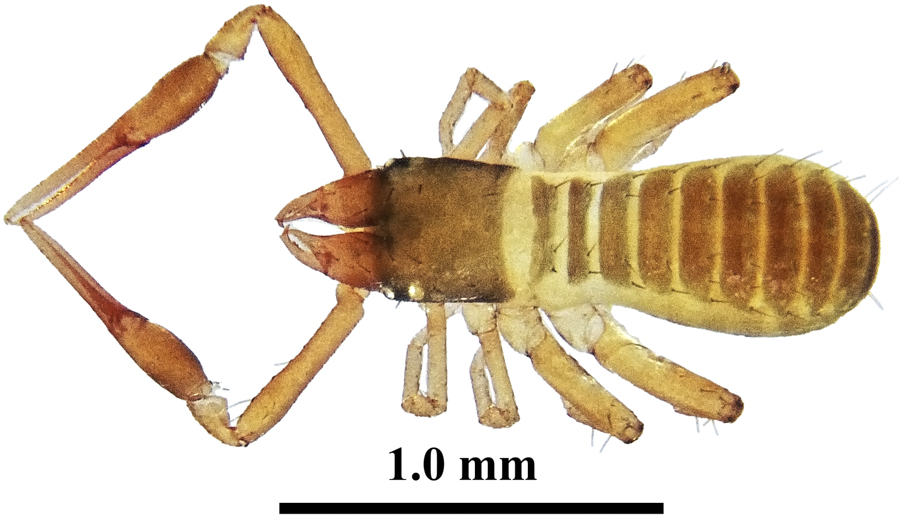

Figure 2: *Chthonius ischnocheles* Common Chthonid

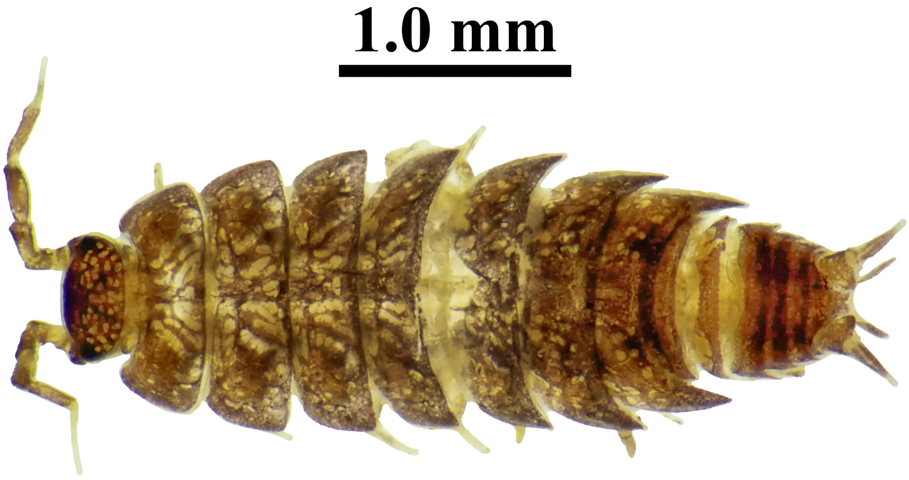

Figure 3: *Trichoniscus pusillus* Ag. Common Pygmy Woodlouse

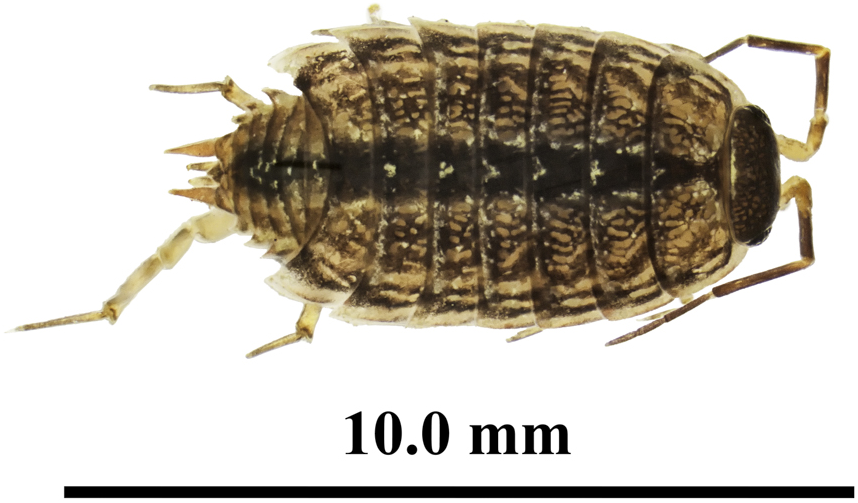

Figure 4: *Philoscia muscorum* Common Striped Woodlouse

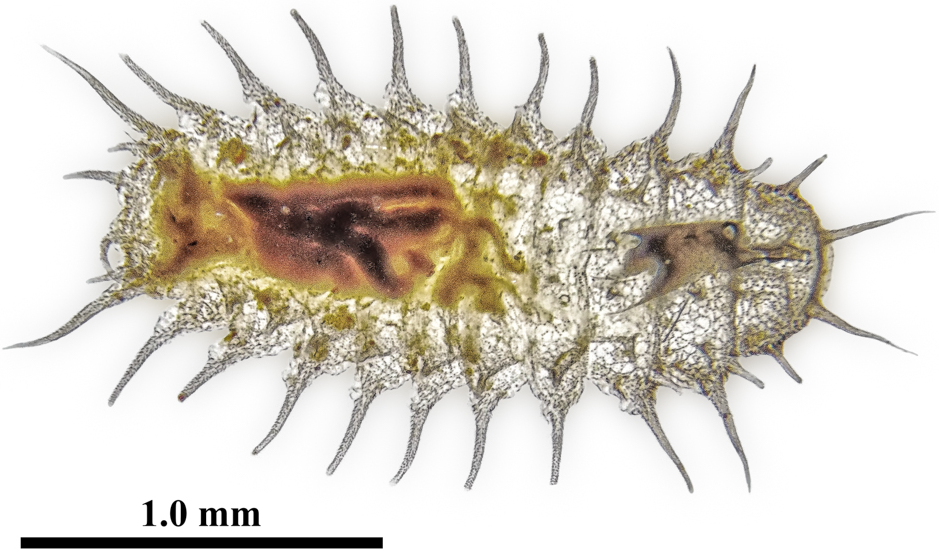

Figure 5: Unknown *Coccinid* Scale Insect, mobile stage.