

## ***Rhaphium suave* (Loew) (Diptera, Dolichopodidae) new to Britain**

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### **Summary**

*Rhaphium suave* (Loew, 1859) was collected from three riverside sites in Gwent, Cheshire and Northumberland. The habitat was wet sandy shores with nearby tall vegetation. Characters to differentiate it are figured.

### **Introduction**

Surveys of the flies using exposed riverine sediment (ERS) have yielded a number of species new to Britain or science, for examples see Parker (2006) and Hewitt and Chvala (2002). In 2005 and 2006, surveys of flies of predominantly sandy ERS on a number of rivers in Britain recorded several more new species. This note discusses the moderately large dolichopodid *Rhaphium suave* (Loew, 1859), which was recorded at three widely separated sites (Bates *et al.* 2006; Drake *et al.* 2007). An aim of the surveys was to investigate the small-scale distribution of flies at ERS, so each sample was confined to discrete patches of habitat having fairly uniform conditions. This approach allowed some possible habitat preferences to be detected.

### **Results**

On 9 July 2005, the River Dane was surveyed at Byley Hill Farm just downstream of Middlewich, Cheshire (SJ708673). The river here is about 10m wide and flows through pasture on sandy alluvium overlying boulder clay. Three males of *R. suave* were swept from a narrow bare wet sand shore with only sparse colonisation by the invasive alien Himalayan balsam (*Impatiens glandulifera*). Two more males were taken nearby from the tall dense balsam and low willow (*Salix*) scrub that backed onto this shore.

The River Usk at Great Hardwick, Gwent (SO315107), downstream of Abergavenny, was surveyed during the following week (16 July 2005). The river around Abergavenny is wide (c. 25m) and flows on glacial drift but has deposits of sand as well as stony ERS. The site at Great Hardwick was a long gravel bar densely vegetated with willow scrub and separated from high steep wooded banks by a silty back channel. Four males of *R. suave* were swept from the sandy tail end of this long bar in conditions that were unusual for this stretch of river since the shore was almost entirely sand with some silt, whereas most of the shores were more pebbly. The shore was mostly bare of vegetation apart from sparse yellow-cress (*Rorippa sylvestris* or *R. palustris*) and redshank (*Polygonum persicaria*), as well as a backdrop of willow scrub that cast light shade.

The final record was from the River Till, Northumberland, at Doddington Bridge (NY994308) on 15 July 2006. The Till here flowed through pasture and arable farmland of low conservation interest in a wide sandy floodplain. The river itself was about 5m wide and had cut a deep channel with nearly vertical sand banks but leaving occasional gravelly shores.

A single male of *R. suave* was swept from the downstream end of one such shore next to almost still water, and which was typical of the tail ends of shores and bars in this stretch of river in being almost entirely sand with tiny amounts of silt. The shore was bare of vegetation but there was flote grass (*Glyceria fluitans*) at a water's edge and some nearby sparse willows cast light shade on part of the shore.

These records indicate a preference for wet sandy shores, which in two cases were next to almost still water, which had allowed the sand and some silt to be deposited, and thus made the stretches slightly atypical of most of the shores of these rivers. The sites also had nearby tall herbs or willows so the flies may have a requirement for shelter around sunny wet shores. Some other species that require sandy river banks were present in the samples, notably the limoniid crane flies *Hoplolabis areolata* (Siebke) at all three sites and *H. yezoana* (Alexander) at the Usk and Dane. It seems likely that *R. suave* is restricted to wet sandy river banks. Vaillant (1967) listed five *Rhaphium* species with aquatic larvae and it is likely that *R. suave* has similar biology.

### Identification

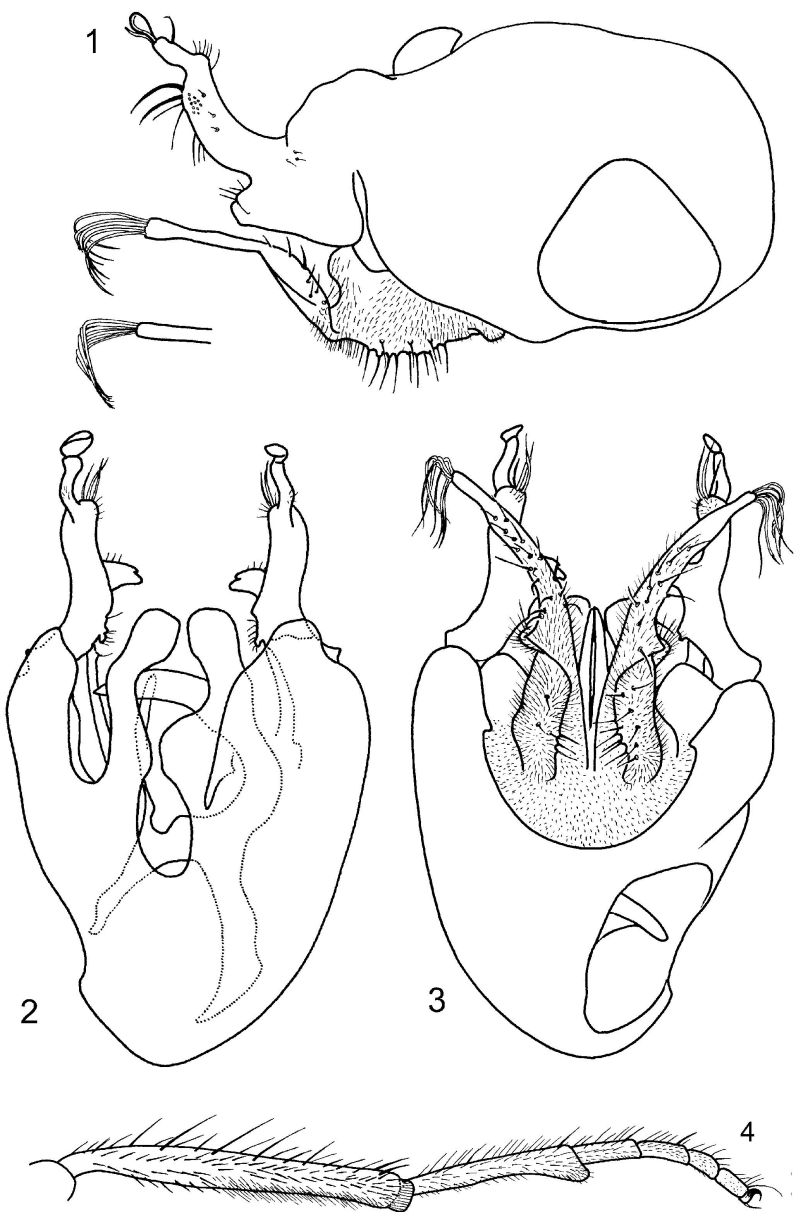
*Rhaphium suave* is one of a small group of species that are most reliably separated by reference to the genitalia. The specimens were identified from the genitalia figures given by Negrobov (1979). The key by Parent (1938) could not be used to identify them, even when their identity had been ascertained, as the relevant couplet (25) in his key to *Porphyrops* does not describe the genitalia well. Two specimens from Great Hardwick (R. Usk) are illustrated (Figs 1–4). The hairs at the tip of the brown and slightly twisted external appendages (Assis-Fonseca's (1978) genital lamellae) are pale (not black as stated in Parent), and vary in shape from a closely grouped right-angled cluster to the more diffuse group, as shown in two examples in Fig. 1. The internal appendages are black and have a sharp bend towards the tip, so giving them a characteristic zigzag appearance; the tip itself bears a pale spoon-shaped appendage.

In the key by Assis-Fonseca (1978) the specimens run to *R. gravipes* Haliday (couplet 14), from which *R. suave* can be distinguished by its front and mid tibiae being pale rather than black as in *R. gravipes*. The state of other characters, as they appear in Assis-Fonseca's key, are: third antennal segment long-oval and broader than the second segment, no hind coxal seta, arista simple (nearly twice as long as third antennal segment), 'whiskers' (post-occipital hairs), coxal hairs and face white, mid tarsus simple, and mid coxa without modified hairs. In common with several other species of *Rhaphium*, the first tarsal segment of the front leg is swollen ventrally at the tip (Fig. 4). The body is just over 5mm long and the wing just over 4mm long.

No attempt was made to identify females although large specimens that may have included *R. suave* were collected at the same sampling points.

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**Figs 1 – 4. *Rhaphium suave* (Loew). 1, male genital capsule, lateral view; 2, male genital capsule, dorsal view; 3, male genital capsule, ventral; 4, male front tibia and tarsus, anterior view.**



## Distribution

*Rhaphium suave* appears to be restricted to central and eastern Europe. The Palaearctic Catalogue (Negrobov 1991) listed Austria, Hungary, Poland, France and the north, central and south territories of the USSR. Olejníček (1984) included it for Slovenia, and gave its ecological groups as hygrophilous and at lakes and flowing water. Negrobov (1979) synonymised *R. magnini* Vaillant (1970), described from France, with *R. suave*.

## Acknowledgements

The survey that included the Usk and Till was undertaken for Buglife – The Invertebrate Conservation Trust and was funded by the Environment Agency, Natural England and the John Spedan Lewis Trust; the survey of the Dane was funded by the Environment Agency. I thank the staff of the Environment Agency and Countryside Council for Wales for help in gaining access permissions. Andy Godfrey provided help with some literature.

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## ***Hilara tenella* (Fallén, 1816) (Diptera, Empididae) new to Britain and the Channel Islands**

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### **Summary**

*Hilara tenella* (Fallén, 1816) is recorded as new to Britain from two sites in southern England, and new to Jersey in the Channel Islands. The three habitats where it was found were a shaded stream in lowland pasture, a marshy margin to a large pond, and marshy ground with nearby willows and stream. The male genitalia and fore leg are illustrated.

### **Introduction and results**

A single male of *Hilara tenella* (Fallén) was collected at Tilford on the River Wey, Surrey (SU869442) on 20 July 2005, during a survey of the flies of exposed riverine sediments (Drake *et al.* 2007). The river here was about 4m wide and flowing through pasture with nearby copses, and was partly shaded by alders. The underlying geology was Lower Greensand giving rise to completely sandy banks and shores. The specimen was swept below trees in dense tall vegetation consisting mostly of Himalayan balsam *Impatiens glandulifera*, nettle *Urtica dioica* and reed canary grass *Phalaris canariensis* growing on a low shelf of deposited sand at the river's edge. At the time this sampling point was noted for its dull fauna, with the field notebook entry 'very poor' - appearances can be misleading! The only other species of interest at this sampling point was the limoniid crane fly *Limonia trivittata* (Schummel), although other scarce species were present elsewhere along the 1km stretch of river surveyed here. The keys by Collin (1961) clearly did not include the species so it was forwarded to Adrian Plant (national recorder) for identification. Chvála's (2005) monograph had only just been published but neither of us had seen a copy at the time, so were unable to name the fly, but Milan Chvála kindly did so.

Jon Cole identified another male of *H. tenella* among flies collected by Ken and Rita Merrifield during a Dipterists Forum summer field meeting. The site was Burton Pond, near the village of Duncton, West Sussex (SU977178) visited on 28 June 2006. The old mill pond was several hectares in area and had a marshy margin with reeds and other emergent plants where the *H. tenella* was almost certainly taken (nearby drier heathy grassland was also visited). Wet alder *Alnus glutinosa* woodland surrounded the pond. Like the Tilford site, the pond also lay on Lower Greensand near the edge of the River Rother's sandy floodplain. The two sites were almost 30 km apart and were in different river catchments although their headwaters rose within a few kilometres of each other in the Hampshire Downs.

Among unidentified non-British material in my collection was a single male *H. tenella* collected in a Malaise trap run by Dr A.C. Warne at Waterworks Valley (also called La Vallée de St Laurens), Jersey, in the Channel Islands (WV6350), emptied on 21 July 1993. This specimen was amongst material in alcohol sent for identification many years ago. Once its

genitalia had been mounted, it was clear that the species was non-British so had been put to one side, but the mounted genitalia allowed it to be reliably identified. The trap in which it was caught was sited in a patch of open marshy ground at the end of a garden with willows along one side and a stream nearby. Further upstream, the valley's steep flanks were wooded, and there were two linear reservoirs collecting water from the small stream.

### Identification

Chvála (2005) provided a key that includes this species. He separated *H. tenella* and the much larger *H. thoracica* (Macquart) from all other *Hilara* on the basis of their yellow colour in the first couplet. *Hilara tenella* is differentiated from *H. thoracica* by its grey-brown thoracic dorsum having quadriserial acrostichal bristles; the dorsum is sub-shining yellow in *H. thoracica* and has irregularly bi- to triserial acrostichal bristles. The male genitalia are illustrated (Figs 2-4). The base of the hypandrium has a small but conspicuous knob that interrupts its smooth curved profile, visible without dissection, and the process on the lateral lamella is small and irregularly shaped.

The front basitarsus is long and spindle-shaped, being about two-thirds the length of the front tibia (Fig. 1). In lateral view, as illustrated, it is slightly flattened below but it is more obviously swollen in dorsal view.

### Habitat preference and distribution

Chvála (2005) stated that the species is most often swept from meadows and the flooded woodland biotopes along rivers. The habitats of the English and Jersey specimens agree broadly with this description, although the Burton Pond site was characterised more by still water rather than by the small inflow and outflow streams.

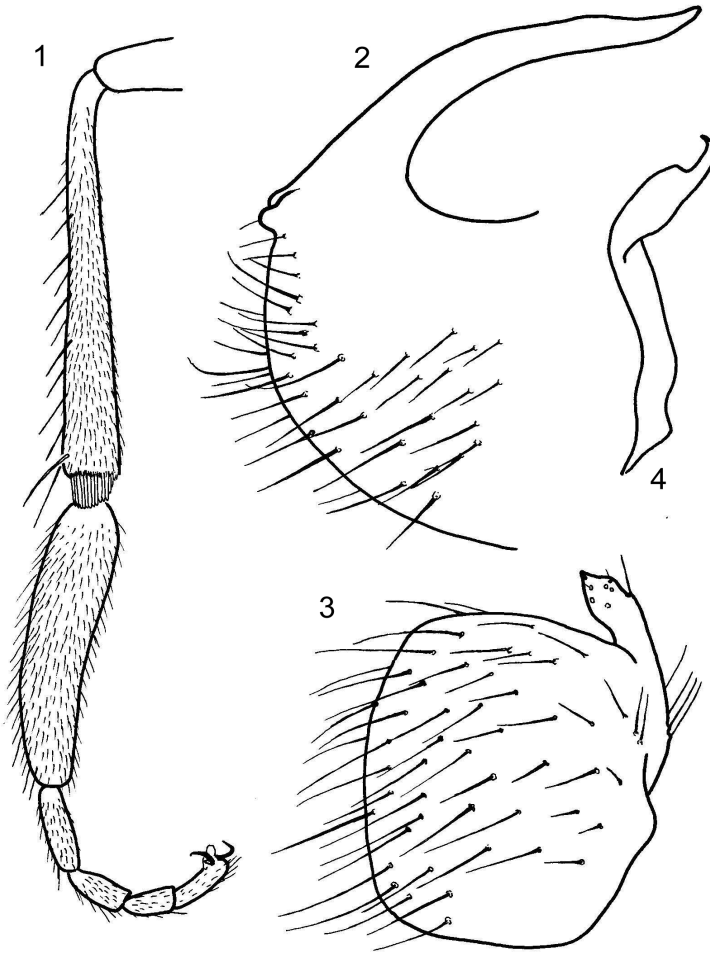
Chvála (2005) gave a wide range from southern Sweden to the French Pyrenees but implied that *H. tenella* was frequent only in a belt in central Europe south of Berlin in Germany. Early records have not been repeated in Scandinavia or in the Netherlands where it is thought to be extinct. The English and Jersey records indicate that it is not confined to the warm central lowlands of Europe.

### Acknowledgements

I am grateful to Adrian Plant for forwarding the Wey specimen to Prof. Milan Chvála who kindly identified it, and to Ken and Rita Merrifield and Jon Cole for allowing me to publish their record and for their comments on the draft. Dr Tony Warne provided information on the Jersey site. The survey of exposed riverine sediments was undertaken for Buglife – The Invertebrate Conservation Trust and funded by the Environment Agency, English Nature and the John Spedan Lewis Trust. Burton and Chingford Ponds SSSI is a Sussex Wildlife Trust reserve, and the Dipterists Forum is grateful for permission to collect here during their 2006 summer meeting.

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**Figs 1-4. *Hilara tenella* (Fallén) male. 1. Fore leg, anterior face. 2. Hypandrium. 3. Lateral genital lamella. 4. Postgonite, posterior view.**



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## ***Hilara aartseni* Chvála, 1997 (Diptera, Empididae) new to Britain**

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### **Summary**

*Hilara aartseni* Chvála, 1997 (Diptera, Empididae) was recorded as new to Britain from several sites along the River Wey in Hampshire and Surrey and River Rother in Hampshire and West Sussex, during a survey of exposed riverine sediments in July 2005. The empid was one of the more frequently occurring species of *Hilara* at these sites and occurred mostly in shaded stretches of stream bank.

### **Introduction**

The flies inhabiting sandy exposed riverine sediment were surveyed in 2005 and 2006 at several rivers in Britain (Drake *et al.* 2007). Two lowland rivers in southern England, the Rother and the Wey, were selected for survey primarily because of the presence of the therevid *Clorismia rustica* (Panzer). Among several species recorded as new to Britain was the empid *Hilara aartseni* Chvála from these two rivers.

### **Results**

Both rivers originate in the Hampshire Downs but are in different catchments, the Rother flowing eastward to join the Arun in West Sussex, and the Wey flowing north-eastwards to join the Thames. They originate on or close to the Upper Greensand and their upper reaches have a cobbly bed and shores of pebbles or gritty particles. For most of their lengths, both rivers flow on the Lower Greensand so that their banks are sandy and some of the exposed shores contain a moderate proportion of sand. Six sites were sampled along about 25km of the Rother from just upstream of Petersfield, where it is a small woodland stream, to shortly upstream of Fittleworth where the river is up to about 15m wide. Five sites were sampled along about 20km of the Wey, from Bordon where it is a small woodland stream, to Eashing where the river is up to about 8m wide. A number of subsamples were taken at each site using sweep-netting and suction sampling. Estimates were made of environmental features such as vegetation cover and shade. The proportions and dimensions of particles of different sizes at each location were estimated by eye; the cut-off between pebbles and cobbles was technically 64mm along their longest axis.

*Hilara aartseni* was recorded at three of the six sites on the Rother and at four of the five sites on the Wey, and on both rivers these included the uppermost to lowermost of the sites visited (Rother: Upper Adhurst SU765254, V.C. 11, 22 July 2005; Habin SU793233, V.C. 13, 21 July 2005; Woolbeding SU873220, V.C. 13, 22 July 2005; Shopham Bridge SU985184; V.C. 13, 22 July 2005, Wey: Bordon SU801357, V.C. 11, 19 July 2005; Frensham SU838417, V.C. 17, 19 July 2005; Tilford SU870439, V.C. 17, 20 July 2005; Eashing SU947438 V.C.17, 20 July 2005). *Hilara aartseni* was present in 17 of the 49 sweep-net samples and seven of the 19 suction samples, so making it among the commoner

species on both rivers, ranking 22nd out of 238 species on the Rother and 35th out of 263 species on the Wey. Of 15 species of *Hilara* recorded on these two rivers, *H. obscura* Meigen and *H. manicata* Meigen were consistently more frequent than *H. aartseni*; *H. rejecta* Collin and *H. chorica* (Fallén) were similar in frequency, and *H. nigrina* (Fallén) was less frequent. The other nine species of *Hilara* were considerably less frequent than *H. aartseni*. There were rarely more than a few individuals in each sample, whereas the other common *Hilara* were often numerous.

### Habitat preference

The samples were taken from wet, flat shores with simple topography, and always at the water's edge. The fly occurred on cobbly or pebbly shores at the upper sites on the Rother and on sandy shores of most of the other sampling sites, so its occurrence did not appear to be influenced by particle size. It may, however, prefer sandy soil since this was the dominant soil type along all stretches surveyed. Most sites where it was found were heavily shaded by trees or sometimes scrub, and only two sampling points were entirely unshaded indicating a preference for shaded shores. Consequently although the banks themselves were often well vegetated there was often not much understorey vegetation, consisting at most of a low percentage cover of ruderals and very rarely any tall herbs.

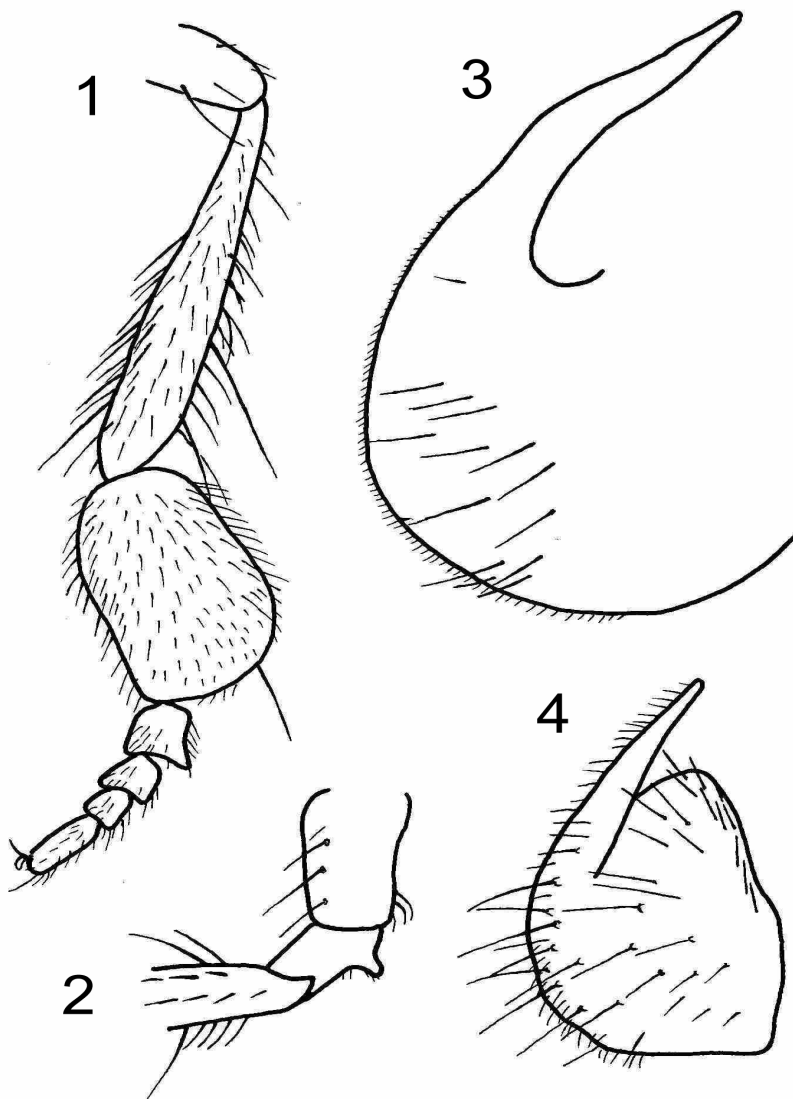
Chvála (2005) suspected that the species is widely distributed in Europe where it is frequent in Bohemia in the Czech Republic, and is known from France and the Netherlands and Chvála (*in prep.*) refers to the distribution as central and western Europe, including the French coast. The species appears to be found exclusively along streams, and males have been seen swarming in the shade over very narrow streams partly covered by the overhanging high bank vegetation. This description of the habitat agrees with that at the sites where *H. aartseni* was found along the Wey and Rother.

### Identification

It was realised during identification of the samples from the survey that the species was not included in Collin's (1961) monograph, but was distinguished as a morpho-species that was later named by Adrian Plant using Chvála (1997).

It is a small species, slightly larger than *H. chorica* which it superficially resembles. Its thorax is almost glossy and has biserial acrostichal bristles that diverge posteriorly; the pleura are decidedly grey-pollinose, and the abdomen is dull black. The front basal tarsal segment is conspicuously swollen and only slightly longer than broad, and the second segment has a forward projection at its tip (Fig. 1). The front coxae are yellow, as are the base of the front femora and the front knees.

Males have a small blunt projection on the front of the hind trochanter (Fig. 2), as is also found in *H. apta* Collin and rather less conspicuously in two other species of the *H. chorica* group: *quadriseta* Collin and the non-British *H. woodiella* Chvála (Chvála, 2005). The genitalia are unremarkable (Figs 3 and 4). Females are similarly coloured and have stout, compressed and slightly sinuous hind tibiae, figured by Chvála (2005).



Figs 1-4. *Hilara aartseni* Chvála male. 1. Fore leg. 2. Hind coxa, trochanter and base of femur. 3. Hypandrium. 4. Lateral genital lamella.

When trying to identify *H. aartseni* using Collin (1961), it runs to *H. chorica* if the legs are regarded as mainly black at couplet 112, but differs obviously from this species in having yellow coxae in both sexes (among other characters). It runs to *H. manicata* if the legs are regarded as mainly yellow at couplet 112, but *H. manicata* males differ in the front basal tarsal segment being only slightly swollen, having the conspicuous fan of bristles on the eighth sternite and lacking the projection on the hind trochanter of *H. aartseni*.

### Acknowledgements

I am grateful to Adrian Plant for naming the species. The survey was undertaken for Buglife – The Invertebrate Conservation Trust and funded by the Environment Agency, Natural England and the John Spedan Lewis Trust. Alan Stubbs made useful comments on an early draft.

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