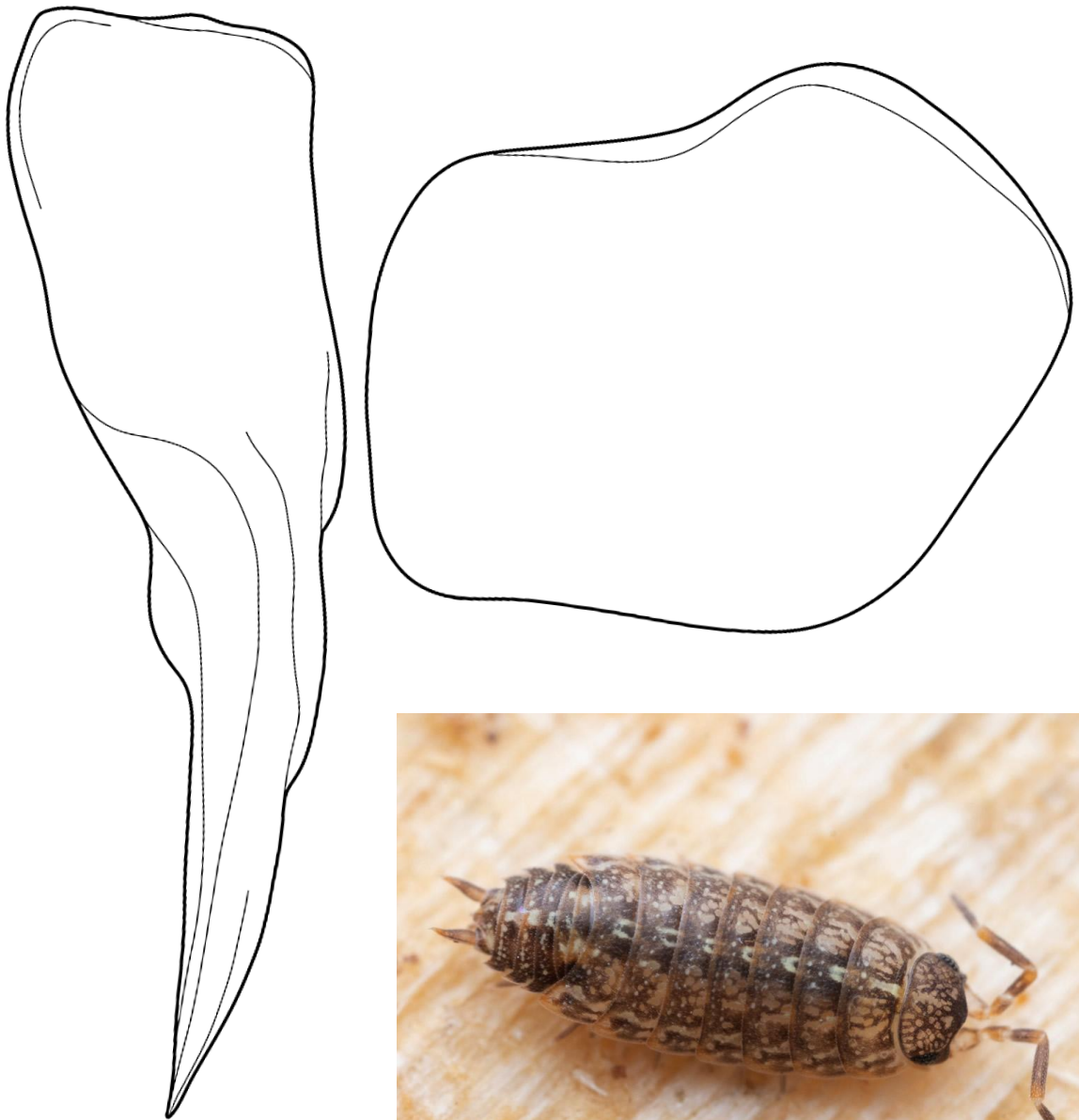


**Bulletin  
of the  
BRITISH MYRIAPOD  
and  
ISOPOD GROUP**



**Volume 36 (2024)**

# Bulletin of the British Myriapod & Isopod Group: Volume 36 (2024)

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Cover illustration: *Ctenoscia minima* male pleopod 1, new for the British Isles © Thomas D. Hughes

Cover photograph: *Acaeroplastes melanurus*, a woodlouse new for Britain © Lloyd Davies

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## Editorial

In this edition of the *Bulletin* we celebrate a new atlas and provide extensive updates to an old one. The publication of the centipede atlas was a milestone in our knowledge of British centipedes, not only in their distribution across Britain and Ireland but also providing insights into their ecology and phenology. The review of the Atlas in this Bulletin also provides an opportunity to celebrate a lifetime of work on centipedes by its author, Tony Barber.

The woodlouse atlas (Gregory, 2009) was published 15 years ago and there have been many changes to the fauna since. As running the woodlouse recording scheme has passed over from Steve Gregory to Thomas Hughes, this has provided a moment to take stock of these changes and publish some updated maps. Much of this Bulletin has been taken over to this aim and Steve provides a fantastic resource for us to continue to build upon in the future. Thomas has made a great start in taken up the reins of the recording scheme by finding a species of woodlouse, *Ctenoscia minima*, new to Britain and by monitoring the ongoing colonisation by *Armadillidium arcangelii*; both of which are also reported herein.

Also, a good few years ago, it seems (1996), Philip Wheater and Helen Read published a little book in the Naturalists' Handbook series called *Animals under Logs and Stones*, looking at the range of what may be called the "cryptozoa". In 2023 a very much enlarged and very welcome second edition by the same authors (plus Charlotte Wheater) became available. As before, this includes our myriapods and woodlice in a wider context and is reviewed in this *Bulletin*.

Prompted by Paul Harding who had, himself, written an account of BMG's (slightly older) sister organisation BISG (Harding, 2018) and reflecting back on the early years of the British Myriapod Group, Tony Barber reminisces on BMG's development and, in particular, the people involved in its early years. We continue to build our knowledge by standing on the shoulders of those that went before us and remembering their part in the formation of BMIG.

Sadly, in this volume we also remember the passing of some key scientists working on our groups. Stephen Sutton was an important figure in the world of woodlice in Britain despite living and working abroad for many years and his early work helped inspire a generation of future Isopodologists. Desmond Kime was a true European, starting his working life in England, he moved to Brussels and then southern France continuing to maintain his interest in millipedes throughout. Although his best known work will probably be his massive achievement of the three volumes of the European atlas of millipedes, co-authored with Henrik Enghoff, he also provided insights into the ecology of these interesting animals. For those who knew him, he was also renowned for his ability to know the best places to eat in any town!

We are also indebted to the work of Jean-Paul Mauriès of the Museum national d'Histoire naturelle de Paris for his studies on the taxonomy of millipedes. He described very many species including some found by British workers and some that are now being found in this country. We continue to remain grateful to all those people upon whose shoulders we stand.

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## ***Ctenoscia minima* (Dollfus, 1892): a woodlouse new for the British Isles from a Garden Centre in Essex (Isopoda: Oniscidea: Philosciidae)**

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### **Abstract**

The dwarf running woodlouse *Ctenoscia minima* (Dollfus, 1892) is reported new to Britain from a Garden Centre in Essex. A large population was found in the pot of a European Fan Palm (*Chamaerops humilis* Linnaeus, 1753) likely imported from a Mediterranean grower. A description with illustrations is provided to enable identification, in addition to a discussion on anthropochory via the horticultural trade.

**Key words:** Oniscidea, *Ctenoscia minima*, Garden Centre, Essex, Mediterranean Plants, Importation.

### **Introduction**

The secretive and edaphic nature of many terrestrial Isopods (Isopoda: Oniscidea), make them particularly prone to dispersal by the horticulture industry. In the British Isles there are approximately 25 non-native woodlouse species that have arrived in this way. 18 of these species are recorded solely from “indoor” settings, particularly within heated glasshouses and are not known to survive “outdoors” due to our changeable climate. Of these non-natives, the “Philosciidae” represents the most speciose group.

The “Philosciidae” is a large family of predominately epigeal taxa, where they are found living in leaf litter and are often encountered moving quickly and erratically on elongated legs, hence their common name as “running woodlice”. Although the status of the family has had a convoluted history and is very likely paraphyletic (Schmidt, 2003), it is still possible to identify it with relative ease (with the exception of the Halophilosciidae, see Schmidt, 2003), due to the presence of two major plesiomorphic characteristics. These are the combination of the ‘runner-type’ eco-morphological strategy (Schmalfuss, 1984), with a slender profile, smooth, shiny tegument, in addition to the antennal flagellum comprising three segments.

In Britain the “Philosciidae” are represented by eight species. Five of which (*Anchiphiloscia pilosa* (Budde-lund), *Burmoniscus meeusei* (Holthuis), *Chaetophiloscia sicula* Verhoeff, *Pseudotyphloscia alba* (Dollfus) and *Setaphora patiencei* (Bagnall)) are “indoor” species restricted to heated glasshouses (Bagnall, 1908; Gregory, 2014; Holthuis, 1946; Telfer & Gregory, 2018), two (*Philoscia affinis* Verhoeff and *P. muscorum* (Scopoli)) are native (Segers *et al.*, 2018), and one (*C. cellaria* (Dollfus)) is a recent colonist of the Channel islands (Gregory & Marquis, 2019). There is also an unverified record of a *Chaetophiloscia* species from Tresco, Isles of Scilly between 1985-86 (Jones & Pratley, 1987).

### **Discovery**

During a passive survey of non-native invertebrates at a garden centre in Essex, several small, slender “Philosciid”-like woodlice were spotted in soil that had spilled out the bottom of a pot containing a large European Fan Palm (*Chamaerops humilis* Linnaeus) (Fig. 1A, B). The first examined specimens clearly showed the diagnostic three segmented flagella and ‘runner-type’ body form of the “Philosciidae”, but its smaller size, presence of short erect setae on the tegument (akin to *Chaetophiloscia*) and the eyes being comprised of a single ommatidium, clearly indicated that it was a new species and genera for the British Isles. The specimens were readily identified as *Ctenoscia minima* (Dollfus), through comparison

to the updated species figures in Taiti and Rossano (2015). The initial collection was undertaken on 15.vii.2023, and during a return visit on 19.vii.2023 the plant was purchased so a thorough study of its soil content could be undertaken. In total 27 individuals of *C. minima* were collected from the pot, including 6 ovigerous females.

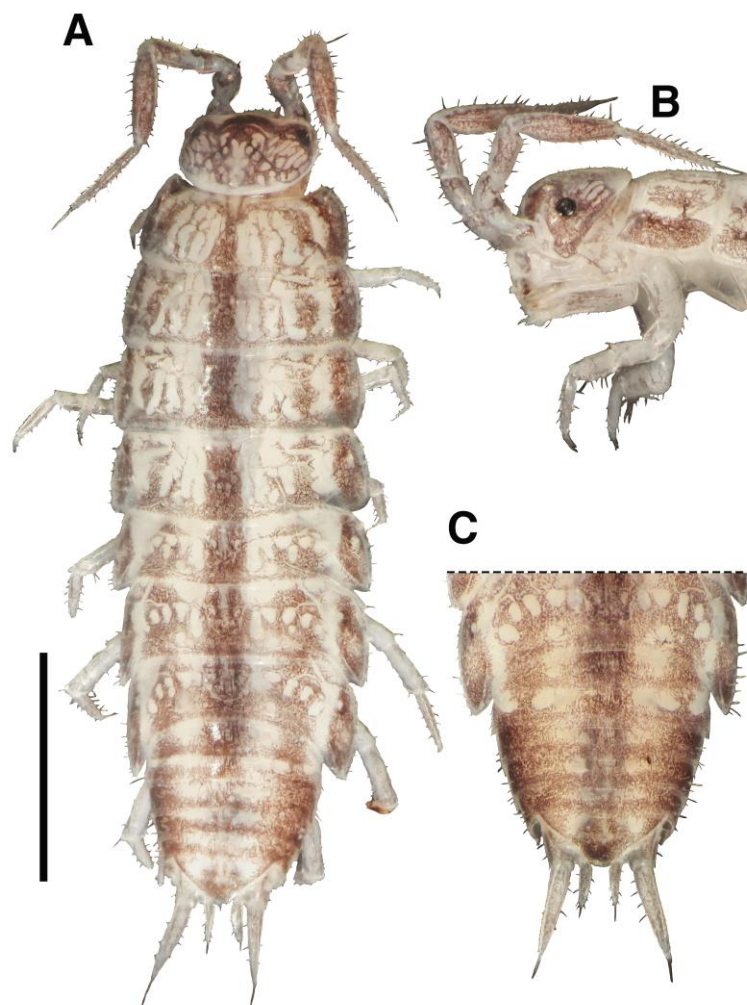


**Figure 1:** A) The author examining the *Chamaerops humilis* plant at the garden centre;  
B) *Ctenoscia minima*, live female.

*Ctenoscia* Verhoeff, 1928 is a monotypic genus, containing only the species *C. minima*. It previously contained a second species *C. dorsalis* (Verhoeff), but this was identified as a junior synonym (Taiti & Rossano, 2015). This is because *C. dorsalis* was distinguished only by a singular characteristic: the distal part of the male pleopod one endopod being straight rather than bent outwards, which was proven to be a product of ontogeny. Both forms of the male pleopod one exopod were present within the same population and were dependent on the size and age of the individuals (ibid). Therefore, with the assimilation of *C. dorsalis* under *C. minima* the singular species can be regarded as having a broad western Mediterranean distribution from Italy to Spain (encompassing the Balearic Islands, Canary Islands, Corsica, Malta, Sardinia and Sicily) in addition to Morocco in North Africa (ibid). Despite its wide distribution, the species has only recently been recorded outside of the western Mediterranean region and a species capable of human-mediated dispersal via the horticultural trade. As such, the discovery presented here is the first confirmed observation of *C. minima* for the British Isles and the most northerly record globally for the species.

## Identification

**Material examined:** 11 ♂ (1 microprep), 11 ♀ (6 ovig.) — England (United Kingdom), Garden Centre, Essex (co-ordinates withheld), 15-19.vii.2023 leg. T. Hughes & A. Northfield (Authors personal collection). 3 ♂, 2 ♀, same data (Natural History Museum, London: NHML no. NHM UK 2024.6).

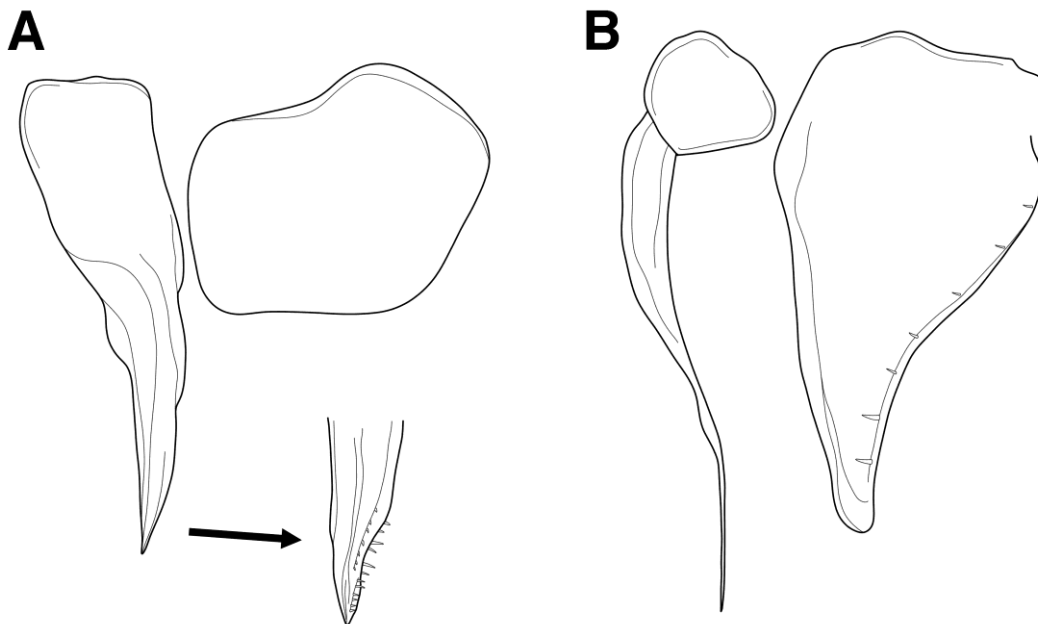


**Figure 2:** *Ctenoscia minima*, female: A) Habitus, dorsal view; B) Cephalon, lateral view; C) Pleotelson, dorsal view.

## Description

Maximum size examined: ♂ 3.5mm, ♀ 5mm. Body (Fig. 1B & 2A) smooth with numerous, prominent setae. Colour light to dark brown with conspicuous muscle scars, a central dark stripe, a narrow dark stripe delineating the boundary of the epimeron and a dark patch bordering the muscle scars. The cephalon is slightly darker than the first body segment and the pleon has a darkened edge. Antenna, pereopods and uropods well pigmented. The cephalon (2A & 2B) lacks median and lateral lobes, the eyes are comprised of a single large pigmented ommatidium and the antenna are of three flagella segments. The posterior-lateral corner of pereonites 1-4 are obtusely rounded, 5 is right angled and 6-7 are acutely angled and projecting posteriorly. Pleonite 1-5 without projections; the telson is broader than long and with a rounded tip (Fig. 2C).

**Male:** Pereopod 7 (Fig. 3A) without distinct sexual modification, sternal margin of the ischium convex and with abundant setae on the sternal margin of the merus and carpus. Pleopod 1 (Fig. 3B) exopodite sub-rounded; endopodite tapering, approximately 4 times as long as wide and with a brush of setae at its apex. Pleopod 2 (Fig. 3C) exopodite triangular with a rounded apex; endopodite flagelliform.



**Figure 3:** *Ctenoscia minima*, male: A) Pleopod 1; B) Pleopod 2.

## Remarks

*Ctenoscia minima* is a well pigmented, relatively fast moving “Philosciid” with a discontinuous (stepped) body outline and an antenna comprised of three flagella segments. It is the only “outdoor” species of the “Philosciidae” to have the eye comprised of a single ommatidium. In the standard British identification resources (i.e. Hopkin (1991) and Oliver & Meehan (1993)), it will key readily to Philosciidae and Halophilosciidae, but will not progress comfortably onto the following couplets, although the rounded telson and setose tegument may lead you into the Halophilosciidae.

Confusion is most likely to occur with the recently discovered species *Chaetophiloscia cellaria* which is also absent from the aforementioned identification resources. The two species look superficially similar due to their small size and setose tegument, but *C. minima* can be readily differentiated from it by the lack of orange patches on the posterior-lateral corner of the last pereonite, shape of the male 1st

pleopods and number of ommatidia; for a more detailed description of this species see Gregory & Marquis (2019).

## Discussion

In addition to *Ctenoscia minima* several other non-native species were found within the plant pot, including the millipede *Oxidus gracilis* (C.L. Koch), the woodlouse *Armadillidium* cf. *arcangelii* Strouhal, the earwig *Euborellia annulipes* (H. Lucas) and the ant *Hypoponera eduardi* (Forel). These soil invertebrates are cosmopolitan throughout the Mediterranean region and have all previously been identified as anthropochoric species associated with the horticultural industry (Lee, 2006; Noël *et al.*, 2022; Kocarek *et al.*, 2015; BWARS, 2024). The large number of *C. minima* individuals found, and representing the most abundant soil macroinvertebrate within the pot, indicates that this species also has the propensity to be distributed outside of its natural range through plant material in large quantities. Additionally, the presence of 6 ovigerous females suggests that this was a viable and reproducing population.

No supplier details or country of origin data could be found on the attached plant labels, but as *Chamaerops humilis* is an endemic palm of the Mediterranean region, with the addition of the pot containing other Mediterranean species (with the exception of *O. gracilis*), it is strongly assumed the plant originated from a supplier within this region. This is also supported by the fact that the adjacent Mediterranean plants at the garden centre, which likely arrived through the same plant shipment, were labelled as originating from nurseries in Italy or Spain.

There are only three brief mentions on the species being recorded outside of its native range. Vandel (1954) suggests that *C. minima* could have been introduced to the Canary Islands, as it was found in non-native eucalyptus forests on the island of Tenerife. However in a subsequent publication, the species was discovered living within the native laurisilva on the island of La Gomera, which led these authors to consider it a native to the archipelago (Rodríguez & Barrientos, 1993). More recently from France, Cuypers (2024) recorded it from Periac-de-Mer, Aude, whilst Noël (2024), notes its occurrence at a garden centre near Dijon, Burgundy-Franche-Comté alongside other Mediterranean taxa. These later two observations were the first continental observations for France, and it is interesting to note its occurrence at an addition garden centres too.

In the context of the British Isles, There have been 7 previously recorded Mediterranean woodlouse species, including; *Agabiformis lentus* (Budde-Lund), *Armadillidium arcangelii* Strouhal, *Chaetophiloscia sicula*, *C. cellaria*, *Cordioniscus stebbingi* (Patience), *Lucasius pallidus* (Budde-Lund) and *Porcellionides sexfasciatus* (Budde-Lund) (Gregory, 2014; Gregory *et al.*, 2021). However, these records are almost entirely from the Mediterranean Biome at the Eden Project, with the exception of *C. stebbingi* which has been found at several other tropical houses in the British Isles (Edney, 1953; Patience, 1907), *A. arcangelii* which was recorded from the Eden Project and “outdoors” at garden centres (Gregory, 2014; Hughes, Northfield & Maguire, 2024) and *C. cellaria* as a recent colonist of the Channel Islands (Gregory & Marquis, 2019).

Furthermore, and quite unexpectedly, during the final stages of this publication, the author was made aware of some small Philoscids that had been collected by Mark Telfer at Ventnor Botanic Garden, Isle of Wight as far back as September 2016, which corresponded with *C. minima*. Therefore, *C. minima* is currently known from two disjunct sites in Britain. The discovery and recent confirmation of this population is discussed in a complementary note published alongside this one (Telfer, 2024).

Despite the high diversity of Mediterranean species recorded in the British Isles, only *A. arcangelii* and *C. cellaria* have been recorded from “outdoor” situations, the former only being found to do so in the British Isles as a result of the same sampling campaign that resulted in the discovery of *C. minima*



(Hughes, Northfield & Maguire, 2024 in press). Although we have much more widespread records of *A. arcangelii* from northern latitudes (Noël *et al.*, 2022), we still lack evidence that this species is capable of persisting “outdoors” year round and be able to develop viable populations under current climate conditions. In contrast, *C. cellaria* is a recently spreading species that has been expanding its range northwardly over the past few decades and has become well established in northern France, so its discovery in the Channel Islands was not unexpected (Gregory & Marquis, 2019; Noël *et al.*, 2014; Séchet & Noël, 2007; 2015). However, the mode of expansion and naturalisation of *C. cellaria* on the Channel Islands differs quite markedly from the sporadic origins of *A. arcangelii* and *C. minima*, suggesting the latter species may be less likely to survive and establish long term, having not experienced a gradual acclimatisation to northern latitudes. This assumption is based solely on the deficit of year round observations, so it still remains unclear whether *A. arcangelii*, *C. minima* or any of the other Mediterranean woodlouse species has the capacity to naturalise “outdoors” within the British Isles.

## Conclusion

Through the combination of its small size and ability to develop large colonies within pots, *C. minima* could potentially be a common but under-recorded anthropochoric species in Northern Europe. Therefore, it is strongly encouraged that recorders from across the country document the introduction of non-native species via the horticultural industry.

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## ***Ctenoscia minima* (Dollfus, 1892) (Isopoda: Oniscidea: Philosciidae): the earliest British record from Ventnor Botanic Gardens, Isle of Wight**

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On 3<sup>rd</sup> September 2016, three specimens of an unfamiliar philosciid woodlouse were collected by looking under stones in the hothouse at Ventnor Botanic Gardens, Isle of Wight (SZ546768, VC 10). It was recognised that they were a species new to Britain, and the eye composed of a single large ommatidium suggested that they were *Ctenoscia minima*. However, the sample contained no adult males, and a comparison with specimens from Galicia, Spain, donated by Steve Gregory was inconclusive. On a return visit on 12<sup>th</sup> February 2019, no further specimens could be found, but since moving to Ventnor in August 2022, the woodlouse has been seen frequently in the hothouse, sometimes in good numbers.

In June 2024, a female specimen from Ventnor Botanic Gardens was sent to Thomas Hughes, who was able to confirm it as *Ctenoscia minima* by comparison with specimens from the Essex population he had discovered in 2023 (Hughes, 2024), remarking that the tegumental setae, single ommatidium and body colouration are reasonably diagnostic of *Ctenoscia minima*.

There can be little doubt that the Ventnor Botanic Gardens population of *Ctenoscia minima* has a non-native origin, presumably imported accidentally with plants.

### **Acknowledgements**

I am very grateful to Steve Gregory for assistance with identifying this woodlouse, and to Thomas Hughes for finally confirming its identity.

### **Reference**

Hughes, T.D. (2024). *Ctenoscia minima* (Dollfus, 1892): a woodlouse new for the British Isles from a Garden Centre in Essex (Isopoda: Oniscidea: Philosciidae). *Bulletin of the British Myriapod & Isopod Group*, **36**: 2-8.

## ***Acaeroplastes melanurus* (Budde-Lund, 1885) (Isopoda: Oniscidea: Porcellionidae) new to Britain from the Isles of Scilly**

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### **Discovery**

On 21<sup>st</sup> October 2019, while searching primarily for beetles on Tresco, Isles of Scilly, Darren Mann brought my attention to some woodlice which he regarded as unfamiliar. I immediately agreed and was able to collect a few specimens (Figure 1) before we had to leave to catch a boat. The specimens were collected at the south-easternmost point of Tresco, on the south side of Skirt Island (SV901139, VC 1), from an area of sandy dune grassland with granite boulders.



**Figure 1: *Acaeroplastes melanurus* photographed in the field.**

### **Identification**

It was not until January 2020 that I attempted to identify the Tresco specimens to species. It was clearly a species belonging to the family Porcellionidae. Using Vandel (1962), *Acaeroplastes melanurus* (Budde-Lund) soon became the prime candidate. I sent photographs of the Tresco specimens to Roy Anderson in Belfast, who broadly concurred and gave me three male specimens of *A. melanurus* from the population at Howth Head, Co. Dublin, Ireland. A number of small differences were evident between Tresco and Howth Head specimens which caused both Roy and I to doubt whether this fell within the range of variation of *A. melanurus*. However, more recently, photographs of the Tresco specimens (Figures 2, 3) have been examined by Franck Noël, who has considerable experience of studying this species in western France and has been able to confidently identify the Tresco specimens as *Acaeroplastes melanurus* (Steve Gregory, *in litt.*, July 2024).



Figure 2: Two *Acaeroplastes melanurus* specimens from Tresco.



Figure 3: Auto-montage images of a male *Acaeroplastes melanurus* from Tresco.

## A second British locality

Though *Acaeroplastes melanurus* has been known from Howth Head in Ireland since 1909 (Anderson, 2007), there had been no subsequent records from elsewhere in Ireland, nor any from Britain, until the discovery on Tresco. Then on 9<sup>th</sup> April 2023, Lloyd Davies discovered a population of unfamiliar woodlice on the shingle ridge of West Bexington, Dorset (VC 9) and posted photographs to the Isopods and Myriapods of Britain and Ireland facebook group. There they were identified as *A. melanurus* by Steve Gregory. Lloyd Davies recorded *A. melanurus* again at this site on 7<sup>th</sup> October 2023.

## Geographical range

*Acaeroplastes melanurus* appears to have a native range as a largely coastal species in the western Mediterranean, being known from Spain, France, Italy, Croatia and Algeria, as well as from several islands including Sicily, Malta, Corsica and the Balearic Islands. Vandel (1962) notes that the range extends from the Mediterranean coast of France inland into the Aude and Haute-Garonne departments. Records of *A. melanurus* were also known to Vandel (1962) from three islands off the Atlantic coast of north-west France: Île d'Aix, Île d'Yeu and Île de Noirmoutier. He interpreted these as native populations, relicts of a formerly wider distribution during a period of warmer, drier climatic conditions in the post-glacial period (Noël *et al.*, 2009). With regard to the outlying population at Howth Head, the suggestion is that it may also be an outlying relict population and it should not be assumed that it is a non-native occurrence. However, that *A. melanurus* has an ability to be spread by trade and to establish beyond its native range is indicated by its occurrence on the Azores.

## New records in western France: expanding or overlooked?

Since 2001, there have been many new records of *Acaeroplastes melanurus* in western France, mostly as a result of targeted surveys for woodlice, along the coast and extending up to 120 km inland (Noël *et al.*, 2009). The authors questioned whether *A. melanurus* had recently colonised this part of France or had been overlooked, concluding that further research would be required. The known range now extends to the north-western extremities of France, on the Brittany coast (MNHN, 2024).

That *Acaeroplastes melanurus* has sometimes proved hard to find even at known sites, does lend some credence to the hypothesis that it could be overlooked. The Howth Head population went unseen for 68 years despite targeted searches during this period (Anderson, 2007), and even the West Bexington population could not be found in April 2024, just a year after its discovery.

## Native or non-native in Britain?

The Tresco population of *Acaeroplastes melanurus* was discovered less than a kilometre from the Tresco Abbey Gardens, which have been the source of a number of invertebrate introductions to Britain including the landhopper *Arcitalitrus dorrieni* (Hunt), described new to science from the Abbey Gardens in 1925 (and named after the Dorrien-Smith family who are the leaseholders of Tresco) (Gregory, 2016), and a species of *Chaetophiloscia* found as females only in 1985 (Jones & Pratley, 1987). Although the West Bexington locality is more remote from human influence, it is still only 3 – 4 km from the Abbotsbury Subtropical Gardens, which might be a source of introduction.

It seems likely that *Acaeroplastes melanurus* is a non-native species in Britain, though the alternative hypothesis, that it is an overlooked native in Britain, is plausible and should not be dismissed. The Tresco and West Bexington populations may be part of a native range which extends up the Atlantic coast of France and north-westwards as far as Howth Head.

## Acknowledgements

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# The Conquest Continues: First Outdoor Records of *Armadillidium arcangelii* Strouhal, 1929 in the British Isles (Isopoda: Oniscidea: Armadilliidae)

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## Abstract

The pillbug *Armadillidium arcangelii* Strouhal, 1929 is reported from seven garden centres from across the British Isles, as a result of passive surveying of imported plants for non-native invertebrates. These records represent the first outdoor observations for the species across the region, and indicate a potentially large-scale introductory pathway for the species. A brief summary of the species identification against the British members of the Armadilliidae is provided, in addition to a detailed discussion on the plants potentially responsible for its introduction and its implications for British agriculture.

**Key words:** Isopoda, Oniscidea, *Armadillidium arcangelii*, non-native, tropical plants, Mediterranean.

## Introduction

Extensive surveying of the Eden Project during 2003 and 2010 by various researchers resulted in the discovery of a new pillbug (*Armadillidium*) for Britain, which was collected from within the Mediterranean biome glasshouse (Gregory, 2014). The specimens were provisionally attributed to the widespread western Mediterranean endemic species *A. assimile* Budde-Lund by Gregory (2010), but was later cited as an indeterminate taxon, under “*Armadillidium* sp.” due to clear morphological differences, in addition to the difficulty in identifying a corresponding specific taxon (Gregory, 2014). From 2014 to 2021 numerous records of an identical unidentified *Armadillidium* were being collated across Europe and the Mediterranean, from Iberia to the Levant, indicating that this species was undergoing a recent and rapid range expansion (Garcia & Cabanillas, 2021; Noël *et al.*, 2022; De Smedt & Van Dijck, 2023). The majority of these records were from outdoor settings in synanthropic habitats, particularly gardens and parks, and in one case from a green roof (De Smedt & Van Dijck, 2023), indicating the dispersal to be anthropochoric via the horticultural industry.

The species *A. arcangelii* Strouhal, an Italian endemic, was given as a proposed identity for these observations after extensive literary examination by Georgios Agapakis in Noël *et al.* (2022). The similarity between the newly recorded *Armadillidium* and the literary descriptions for *A. arcangelii* indicates that this is the most appropriate identification for these observations, but with close morphological affinities to other species, notably *A. apenninorum* Verhoeff and *A. marmoratum* Strouhal, and an unknown point of origin, it is still considered a provisional identification until examination of type/topotypic material or phylogenetic analysis is undertaken. As such, the taxon is tentatively treated as *A. arcangelii* like those of other recent publications (De Smedt & Van Dijck, 2023; Fusaro *et al.*, 2024).

Despite the large and ever-growing dataset of *A. arcangelii* records from across mainland Europe, the observation from the Eden Project remained as the only record for the species in Britain. Here we report the first outdoor records for the British Isles from seven garden centres across England, Northern Ireland and Scotland, with further evidence linking its dispersal to plant material.



## Records

During 2022 and 2023 the authors visited garden centres, where possible, to sample for non-native invertebrates accidentally introduced on plant material. An additional site was added in 2024. The presence of a country of origin code (D) on EU plant passports incorporated on plant labels or affixed/printed directly onto the pots allowed for easy identification of plants originating from the Mediterranean region, for example Italy (IT) and Spain (ES), or from large horticultural producing regions in northern Europe such as the Netherlands (NL). Specimens were collected by hand by searching the underside of potted plants and the surfaces around them.

**Table 1: Records of *Armadillidium arcangelii* from Garden Centres**

Specimens retained and preserved in 70% Isopropanol/Bioethanol\*, maintained in culture\*\*

County	Country	Date	Plant	Origin	Specimens
Suffolk	England	2.viii.2022	<i>Trachycarpus fortunei</i>	Spain	1♀
Essex	England	29.iv.2023	<i>Melaleuca</i> ( <i>Callistemon</i> ) <i>citrinus</i>	Spain	1♀, 1♂*
Suffolk	England	6.v.2023	<i>Olea europaea</i>	Italy	2♀*
Suffolk	England	8.v.2023	-	-	1♂*
Midlothian	Scotland	21.vi.2023	-	-	1♀*
Essex	England	19.vii.2023	<i>Chamaerops humilis</i>	-	Several observed (none collected)
Fermanagh	N. Ireland	21.vii.2023	-	-	1♀**, 1♂**
Hertfordshire	England	13.viii.2023	<i>Nerium oleander</i>	Portugal	Several observed (none collected)
Northumberland	England	30.vi.2024	<i>Griselinia littoralis</i>	Spain	2♀** (one gravid)

## Identification

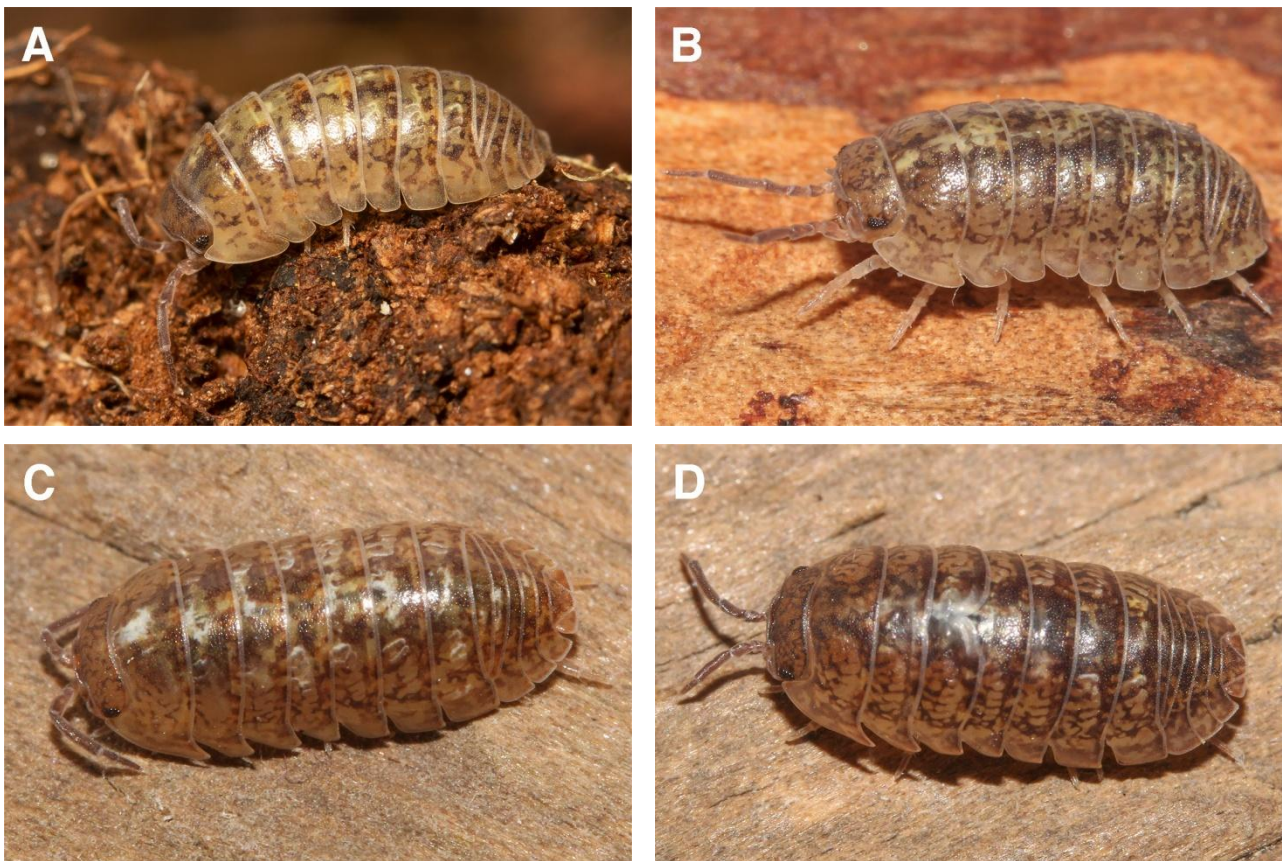
The specimens examined here correspond to the diagnoses and illustrations provided by Gregory (2014), Garcia & Cabanillas (2021) and Noël *et al.* (2022) for the recently expansive species assigned to *A. arcangelii* (Fig. 1). The main external characteristics that enables this species to be separated from the seven Armadillidiid species currently found in Britain is the combination of its small size, <8mm, mottled brown body colouration with paler epimeron and prominent muscle scars, weakly projecting scutellum, eyes comprising numerous ommatidia and the telson being triangular. Confusion is most likely to occur with immature specimens of *A. vulgare*, which can exhibit a similar dorsal colouration, but separation can easily be achieved through examination of the telson which is broadly trapezoidal in *A. vulgare* and triangular in *A. cf. arcangelii* (well figured in, De Smedt & Van Dijck, 2023).

### Male sexual characteristics - First Pleopod

The first pleopod endopodite is linear, narrowing posteriorly with a slight outwards curve. Although subtle, this characteristic is only shared with *A. album* and *A. nasatum*, whereas in the other species the endopodite is entirely linear or has a more pronounced curve or bend at its tip. The first pleopod

exopodite is triangular, with a sharp, approximately 60° angle to its apex. The proximal margin is weakly curved and adorned in prominent spines that surpass the apex, extending to just over the posterior margin. The posterior margin has a weak obtuse angle at the internal edge of the tracheal field. The form of the first pleopod exopodite is unlike those represented by any of the British Armadillidiidae. Some species have similar triangular projections, such as *A. album*, *A. depressum* and *A. pictum*, but none have a pronounced sharp angle to the apex, this being more rounded in the other species.

Although *A. arcangelii* can be differentiated from British Armadillidiids based on the aforementioned somatic characteristics, examination of male specimens is considered desirable in confirming species identification, especially for records intended for the BMIG Woodlouse and Waterlouse Recording Scheme.



**Figure 1: *Armadillidium cf. arcangelii*, live individuals: A) Female, Suffolk, England; B) Female, Midlothian, Scotland; C) Female, Fermanagh, Northern Ireland; D) Male, Fermanagh, Northern Ireland.**

## Discussion

*Armadillidium arcangelii* was collected in association with other non-native invertebrates including the ants *Hypoponera eduardi* (Forel), *H. ergatandria* (Forel), *Pheidole pallidula* (Nylander) and *Tapinoma nigerrimum*-complex (Nylander), the weevil *Otiorhynchus cribricollis* (Gyllenhal), the centipede *Lamyctes africanus* (Porat), the millipede *Oxidus gracilis* (C.L. Koch) and the earwig *Euborellia annulipes* (H. Lucas). Sympatric woodlice include native species such as *A. nasatum* Budde-Lund, *A. vulgare* (Latrielle), *Cylisticus convexus* (De Geer), *Oniscus asellus asellus* Linnaeus, *Porcellio scaber* Latreille, *Trichoniscus pusillus* agg. Brandt, in addition to the imported new species *Ctenoscia*

*minima* (Dollfus) (Hughes, 2023; Hughes, 2024; Northfield, 2024). Population densities of *A. arcangelii* were not significantly larger than any of the associated species, but in some circumstances was found to the exclusion of others. Whether this is an indication of competitive exclusion, better survivability under unsuitable conditions, or just coincidence is not determinable from our small sample size. De Smedt & Van Dijck (2023), in contrast, documented a clear rise in the population size of *A. arcangelii* on a green roof in Belgium over a 10 year period, and found that *P. scaber*, the previously dominant species, was gradually replaced by *A. arcangelii*. Noël *et al* (2022) from their large dataset, also speculated that *A. arcangelii* could have a competitive edge over other common, drought-tolerant synanthropic species like *A. nasatum* and *A. vulgare*.

We have presumed a Mediterranean nursery origin for these British outdoor records, evidenced by the thorough searching of both plants of Mediterranean origin and those from British growers. We hypothesised that the ability of *A. arcangelii* to freely move around the plant stages means that they may not be associated with the pots they were originally imported on; however, all finds have been concentrated on or around the pots of plants of Mediterranean origin, and so far none have been found associated with British-grown plants. This could indicate low dispersibility rates in the garden centres, or that these animals are unable to survive our comparably harsher winters so are only ever associated with freshly imported plant material. This is supported by the fact that no outdoor records have been submitted from the British Isles from private gardens, unlike the large numbers from the rest of Europe in recent years.

### Origin of Plant Material

*Armadillidium arcangelii* was found beneath the pots of *Melaleuca (Callistemon) citrinus* (Curtis) Dum.Cours., *Chamaerops humilis* Linnaeus, *Griselinia littoralis* Raoul, *Nerium oleander* Linnaeus, *Olea europaea* Linnaeus and *Trachycarpus fortunei* (Hook.) H.Wendl. Of the six plant associations, five had country codes indicating that they were grown in Italy, Portugal or Spain. Although the *C. humilis* lacked country codes, the plant is assumed to have arrived from Mediterranean imports alongside adjacent plants that did have origin data. Previously surveyed *C. humilis* plants showed their country of origin as being Spain. The observations of *A. arcangelii* without plant or origin data were found directly on the wooden stages, in close association with Mediterranean plants.

In addition to these observations, there is a record from Poland in 2019 from a *Lavandula* Linnaeus pot that had been imported from the Netherlands, which later led to the confirmation of specimens that had previously been collected from a garden centre in the Netherlands in 2012 (Noël *et al.*, 2022). The observation in 2019 was, prior to this publication, the only direct record linking *A. arcangelii* to plant importation from abroad. However, the original record from the Eden Project as far back as 2005, and those from a green roof in Belgium which was constructed and planted out in 2012 would indicate that the species has been present within the horticultural industry for a long time, possibly over two decades (De Smedt & Van Dijck, 2023; Gregory 2010; 2014). The significant increase in observations during the past five years could be attributed to the species increase within these horticultural growing regions, allowing it to access more plant material intended for export.

### Implications as an Agricultural Pest

As demonstrated by Fusaro *et al.* (2024) this species has the capacity to become a threat to agriculture, particularly small-scale organic vegetable producers. Substantial damage to tomatoes, cabbages, and especially melons was reported by organic greenhouse growers, who had also noticed a significant increase in populations of woodlice within their greenhouses. The feeding habits of the woodlice on the stems of seedlings, sometimes in large numbers, typically caused wilting of the plants. On both farms sampled, loss of predominantly melon crops as a result of isopod feeding was estimated at between 40% and 50%. The authors conclude that a number of factors could be responsible for the proliferation of

isopods such as *A. arcangelii* in greenhouse environments. These factors included increases in soil moisture (also a factor influencing isopod reproduction rates outside of artificial environments), external factors such as drought, and population increases exhausting typical food sources such as detritus, prompting the woodlice to utilise secondary food sources.

Reports of woodlouse damage to crops from mainland Europe makes the new observations of *A. arcangelii* presented here of significance to British growers, particularly those that use protected cultivation, such as growers of strawberries. The propensity of this species to colonise anthropogenic habitats, as well as its potential to become a significant crop pest under optimal conditions, indicates that its spread is worth monitoring within the British Isles. However, this may be practically complicated, as the inconspicuous appearance and small size of *A. arcangelii* make it difficult for non-experts to distinguish in the field, particularly when compared with small specimens of *A. vulgare* and *A. nasatum* which can often be found in the same environments. Further awareness within certain key groups such as soil ecologists and plant health controllers, as well as encouragement of casual recording at garden centres, may provide increased awareness and more useful data regarding the population trends of this species within the UK.

## Conclusion

The woodlouse *A. arcangelii* is reported outdoors from across the whole breadth of the British Isles, found in association with Mediterranean plants. From this, it can be concluded that *A. arcangelii* is very likely to be present at every garden centre that regularly imports plants from this region. The ability to competitively exclude other species in synanthropic habitats, in addition to its propensity to become an agricultural pest, makes this species of potential concern for British plant and vegetable growers, and wider ecological impacts on native species. As such, this species should be on the radar of all invertebrate and plant health surveyors (eg; APHA), particularly at interception sites such as point of entry (PoE) and place of destination (PoD), including border control posts (BCPs), garden centres, nurseries and tropical houses. Although we have no records from domestic dwellings, public parks and gardens (as seen elsewhere in Europe) it is possible under current climate predictions (IPCC, 2022) that we can expect more outdoor records to appear from across the British Isles in the coming years.

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# 15 years on: An update to Woodlice and Waterlice in Britain and Ireland, part 1 ~ Native and Naturalised Species

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## Abstract

In 2009 the ‘Woodlouse Atlas’, *Woodlice and Waterlice of Britain and Ireland*, was published. Since that date three native or naturalised species of terrestrial woodlice (Isopoda: Oniscidea), *Philoscia affinis* Verhoeff, *Chaetophiloscia cellaria* (Dollfus) and *Hyloniscus riparius* (C. Koch), have been added to the British and Irish checklist. In addition our understanding of the distribution and habitat requirements of other woodlouse species has improved significantly, of which eleven species are highlighted in this paper. These are: *Buddelundiella cataractae* Verhoeff, *Metatrichoniscoides celticus* Oliver & Trew, *M. leydigii* (Weber), *Oritoniscus flavus* (Budde-Lund), *Trichoniscoides sarsi* Patience, *Stenophiloscia glarearum* Verhoeff, *Porcellio laevis* Latreille, *Acaeroplastes melanurus* (Budde-Lund), *Trachelipus rathkii* (Brandt), *Armadillidium depressum* Brandt and *Armadillidium nasatum* Budde-Lund. Changes in species conservation status are highlighted and an updated checklist of the waterlice and woodlice (Isopoda; Asellota & Oniscidea) occurring in Britain and Ireland is given.

## Introduction

Fifteen years ago *Woodlice and Waterlice in Britain and Ireland* (Gregory, 2009) (hereafter referred to as WWIBI) was published. This was compiled from 85,950 records of terrestrial woodlice (Isopoda: Oniscidea) and 69,633 records of aquatic waterlice (water slaters or hoglice) (Isopoda: Asellota) that had been submitted to the Non-marine Isopod Recording Scheme. At the time WWIBI provided up-to-date distribution maps and notes on habitat preference, species biology and conservation and collecting methods for four species of waterlouse and 40 species of native or naturalised woodlouse then known from Britain and Ireland (an additional 12 species, restricted to heated glasshouses, such as those of botanic gardens, are briefly mentioned).

The Non-marine Isopod Recording Scheme remains active (<https://bmig.org.uk/page/woodlice-waterlice-recording-scheme>) and as predicted by Harding (2018) the distribution maps are gradually becoming ‘out-of-date’ (as was hoped!). Such publications not only provide a snap-shot of current knowledge, but inevitably encourage further species recording. In the 15 years since publication of WWIBI that has certainly been the case. Thus, this would seem to be an opportune moment to highlight some of the more significant discoveries in the distribution and habitat preferences of the British and Irish non-marine Isopods. The current British and Irish checklist remains at four species of waterlouse, but there are now 43 known species of native or naturalised woodlouse (see Appendix I).

## The species accounts

For many woodlouse species we now have a much better understanding of their distribution and habitat requirements across Britain and Ireland. Since the publication of WWIBI, three species capable of maintaining viable breeding populations outdoors have been discovered for the first time in Britain and Ireland: *Philoscia affinis* Verhoeff, *Chaetophiloscia cellaria* (Dollfus) and *Hyloniscus riparius* (C. Koch). An additional eleven native or naturalised species have shown a significant change in distribution, either due to previous under-recording or due to natural or human assisted dispersal to new areas, and are highlighted in the species accounts below. These are: *Buddelundiella cataractae* Verhoeff, *Metatrichoniscoides celticus* Oliver & Trew, *M. leydigii* (Weber), *Oritoniscus flavus* (Budde-

Lund), *Trichoniscoides sarsi* Patience, *Stenophiloscia glarearum* Verhoeff, *Porcellio laevis* Latreille, *Acaeroplastes melanurus* (Budde-Lund), *Trachelipus rathkii* (Brandt), *Armadillidium depressum* Brandt and *Armadillidium nasatum* Budde-Lund.

The species accounts summarise the known information of species distribution, species biology, field techniques, etc, which has been compiled from as many sources as possible. This includes published articles, including those in the *Bulletin of the British Myriapod & Isopod Group*, and more informal accounts, such as found in the *BMIG Newsletter*. The original sources, which are cited, will provide much more detailed information. The species distribution maps show the hectads (10km squares) of the British and Irish National Grids in which a given species has been recorded. These are shown in two date classes: Post 2008 records (made since the publication of WWIBI) are shown as solid red dots. Pre 2008 records (which are plotted in WWIBI) are shown as solid yellow dots. In the case of ‘uncommon’ species with very few records if it has been recorded from the same hectad in both date classes (i.e. both pre and post 2008) this is indicated by a red circle with a yellow centre.

### Sources of records

All woodlouse and waterlouse records included in this updated account have been submitted to the BMIG Non-marine Recording Scheme via a number of sources. Records up until the end on March 2024 (unless noted in the species accounts) are included. By far the greatest majority, 24,2116 records, have been submitted and verified by the recording scheme via Biological Records Centre’s iRecord website (<https://irecord.org.uk>). This includes a number of records that have been extracted from publications, for example from the *Bulletin of the British Myriapod and Isopod Group*. An additional 11,981 records have been submitted via the iNaturalist platform (<https://www.inaturalist.org>), which independently filter into iRecord to be verified by the recording scheme. A few additional (verified) records from Ireland have been gleaned from the National Biodiversity Data Centre (NBDC) (<https://biodiversityireland.ie>). In addition a small quantity of records have been submitted directly to the author via email, for example as a spreadsheet.

Records have not been taken from the National Biodiversity Network (NBN; <https://nbnatlas.org>) since this includes a large proportion of records (from many datasets) that have not been verified by the recording scheme. Some of these records are clearly erroneous. For example records of *Ligidium hypnorum* from north-east England (hectads NZ18, NZ26, NZ29, NZ41, NZ51, NZ61) and Fife, south-east Scotland (NO10, NO3, NO60) are almost certainly based on misidentifications. That from Orkney (HY30) refers to *Ligia oceanica* (Gordon Corbet, pers.comm.). Records of *Trachelipus rathkii* from West Lancashire (hectads, SD21, SD31, SD30) were shown by Harding (1977) to be based on misidentifications. Also doubtful is the 1968 record of *Trachelipus ratzeburgi* (Brandt) from Cambridgeshire, a central European species that has been frequently misidentified in Britain (ibid).

### Introduced non-naturalised ‘glasshouse’ species

This update only includes native or naturalised woodlice that have proved capable of establishing long-term populations outdoors under natural British and Irish climatic conditions. Additional unintentionally introduced species have been recorded from inside heated glasshouses, such as those found at botanic gardens or horticultural plant nurseries. Although such species are dependent upon artificially maintained conditions some may establish ephemeral ‘outdoor’ populations, for example at garden centres. However, they may not be able to survive outdoors through the relatively cold British and Irish winters. These introduced species were only given cursory coverage in WWIBI, and are not included within current identification guides, i.e. the AIDGAP key (Hopkin, 1991) nor the Linnean Synopsis (Oliver & Meehan, 1993), which only include native or naturalised species. Our knowledge of these introduced woodlice has also substantially improved since the publication of WWIBI, with 20 species now recorded (Appendix I). These will be the subject of a second paper (Gregory, in prep.).

## Native or Naturalised Woodlice new to Britain and Ireland

Since the publication of WWIBI three species of woodlouse have been discovered living and successfully breeding outdoors in the British Isles. These are listed chronologically below.

### Family Philosciidae

#### *Philoscia affinis* Verhoeff, 1908

The discovery of the woodlouse *Philoscia affinis* in the UK in 2017, in West Sussex, is reported by Segers, Boeraeve & De Smedt (2018). On current evidence this seems to be a long overlooked native species, or possibly an ancient introduction and therefore the first native or naturalised woodlouse to be discovered in Britain or Ireland since the discovery of *Trichoniscoides helveticus* (Carl) almost three decades earlier (Hopkin, 1990).

### Identification

*Philoscia affinis* is similar in size and appearance to *P. muscorum* (Scopoli), hence the past confusion. In current identification guides (Hopkin, 1991; Oliver & Meechan, 1993) it will readily key to *P. muscorum*. Although typical examples of either species differ subtly in head and body pigmentation patterns this does not work for all specimens and the only reliably way to separate the two species is by microscopic examination of male pereopod 7. Brief descriptions with figures to enable identification are provided by Segers *et al.* (2018), Hughes (2019) and Gregory (2020a).

### Distribution

*Philoscia affinis* appears to have a predominantly western distribution across Britain from south Devon northwards to the Isle of Skye, western Scotland. Interestingly this is a considerable 700 km north of the former ‘northern-most’ observations in Belgium (Boeraeve *et al.*, 2017). Although a large proportion of the British records are from western coastal areas, there are also widely scattered, possibly relict, populations discovered far inland. This includes Wyre Forest, Worcestershire (Farmer, 2019), Wenlock Edge, Shropshire (Gregory, 2024), Sherwood Forest, Nottinghamshire (Pendleton & Pendleton, 2023), Derbyshire and Yorkshire (e.g. Gregory, 2021). In Northern Ireland *P. affinis* has proved widespread (e.g. Anderson, 2019) and it may prove to be widely dispersed across Ireland.

### A previously overlooked species

Examination of reference collections of ‘*P. muscorum*’ has revealed misidentified *P. affinis* from Wales and south west Scotland dating back to 2004 (Gregory, 2020a). During BMIG’s 2019 field meeting held in south west Scotland, targeted surveys found *P. affinis* to be numerous at several rural coastal and woodland sites, but *P. muscorum* was only found in one ornamental garden (Gregory *et al.*, 2023). Unfortunately, during BMIG’s previous field meetings to this area (Ayrshire in 2006 and 2007; Kintyre in 2010) the two species were not differentiated and one voucher specimen has been shown subsequently to be *P. affinis*. Also of note is that *P. affinis* has been recorded recently from the well-worked Isles of Scilly (in December 2023) and on Lundy (in April 2024) where numerous previous surveys had only noted *P. muscorum*. Thus, it seems highly likely that many records from rural habitats in western Britain and across Ireland that are mapped in WWIBI may actually refer to *P. affinis*.

### Habitat and microsities

Primarily *P. affinis* is a woodlouse of rural sites with records from semi-natural habitats such as open deciduous woodland, unmanaged coastal grassland, calcareous fen, heathland and even limestone pavement. It occurs on both acidic and calcareous substrates and up to an altitude of 240 m asl in north Wales and 370 m asl in Northern Ireland (Hughes, 2019; Anderson, 2019). It inhabits the ‘usual’



woodlouse places, under stones and dead wood, among accumulations of leaf litter, among carpets of moss or within grass tussocks.

Although the evidence suggest that *P. affinis* does not favour synanthropic sites (in which its congener *P. muscorum* thrives), specimens have been found in garden centres in South Northumberland and Edinburgh (Maguire, 2023). And, interestingly, the distinctively marked form *P. affinis trifasciata* (typically found in Italy) has been recorded from a street-side planter in Birmingham city and a domestic garden in Swindon (both det. Frank Noël) (Gregory, 2023).

### Associated species

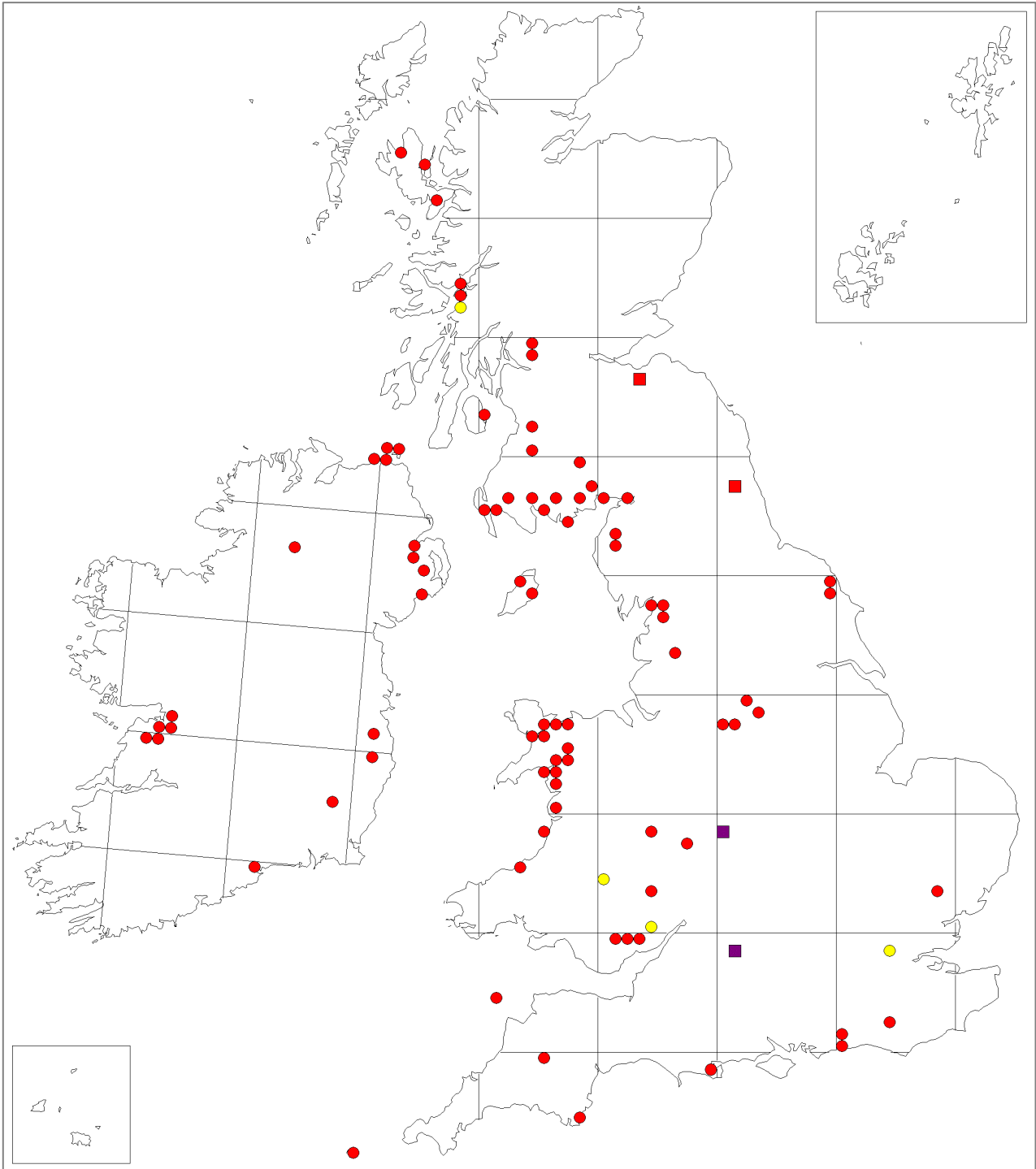
In woodlands *P. affinis* is typically associated with the ubiquitous *Oniscus asellus* Linnaeus, *Porcellio scaber* Latreille and *Trichoniscus pusillus* agg. Brandt. In coastal habitats it has been found with *Porcellionides cingendus* (Kinahan) and *Armadillidium pulchellum* (Zencker). On several occasions *P. affinis* has been found with its congener *P. muscorum* (e.g. Hughes, 2019; Nicola Garnham, pers. comm.).

### Worldwide distribution

*Philoscia affinis* has a widespread European distribution from northern Spain, France, Germany, Italy to Croatia and also known from Northern Algeria (Schmalfuss, 2003). Relatively recently *P. affinis* has proved to be locally distributed in countries adjacent to the UK such as northern France (Séchet & Noël, 2015) and Belgium (Boeraeve *et al.*, 2017). In these countries it is thought that *P. affinis* has been long present, but overlooked. This also appears to be true in Britain and Ireland.



*Philoscia affinis* female from Lancashire, north-west England © Nicola Garnham



**Distribution map of *Philoscia affinis***

● hectad records 2008 to March 2024; ■ garden centre records; ■ *P. affinis* form *trifasciata*;  
 ● records made before 2008 (erroneously mapped as *P. muscorum* in WWIBI).

## Family Philosciidae

### *Chaetophiloscia cellaria* (Dollfus, 1884)

The discovery of the woodlouse *Chaetophiloscia cellaria* on Guernsey, Channel Islands by Andy Marquis is reported by Gregory & Marquis (2019). This is an extension of known range from north-west France either by natural dispersal or by accidental introduction.

#### Identification

*Chaetophiloscia cellaria* is a small darkly pigmented species, with specimens from Guernsey up to 6mm in length. It is reminiscent of *Philoscia* sp., and the speckled brown head could cause confusion with *Philoscia affinis* Verhoeff. However, the conspicuous orange corners to the posterior angles of the last pereonite (most obvious in live specimens) are characteristic of *C. cellaria*. In current identification guides (Hopkin, 1991; Oliver & Meechan, 1993) it is likely key to *Philoscia muscorum* (Scopoli). A brief description with figures to enable identification is provided by Gregory & Marquis (2019).

#### Distribution

Currently, *C. cellaria* is known from four widely separated sites on Guernsey, Channel Islands. The original discovery was from a domestic garden in May 2018, with repeated sightings documented there including 2024. During 2019 it was also found at three coastal sites. In recent years it has undergone a north-west expansion of range within France (Séchet & Noël, 2015), where its colonisation is thought to have been aided by human activity (Séchet & Noël, 2007). Thus, it is probably a relatively recent colonist of the Channel Islands and it is possible that it may soon reach the south coast of England.

WWIBI noted the occurrence of an unidentified *Chaetophiloscia* sp. on the Isles of Scilly in the 1980s. Although these could be *C. cellaria*, two other likely species, *C. elongata* (Dollfus) and *C. sicula* Verhoeff, also occur widely in north-west France (MNHN, 2024).

#### Habitat and microsites

At the garden site specimens of *C. cellaria* were found among leaf-litter in a dark damp corner, under dead wood and under stones. Of the coastal sites, two are shingle/pebble beaches, with specimens found under stones above the high water mark; the third is sand dunes (Andy Marquis, pers. comm.).



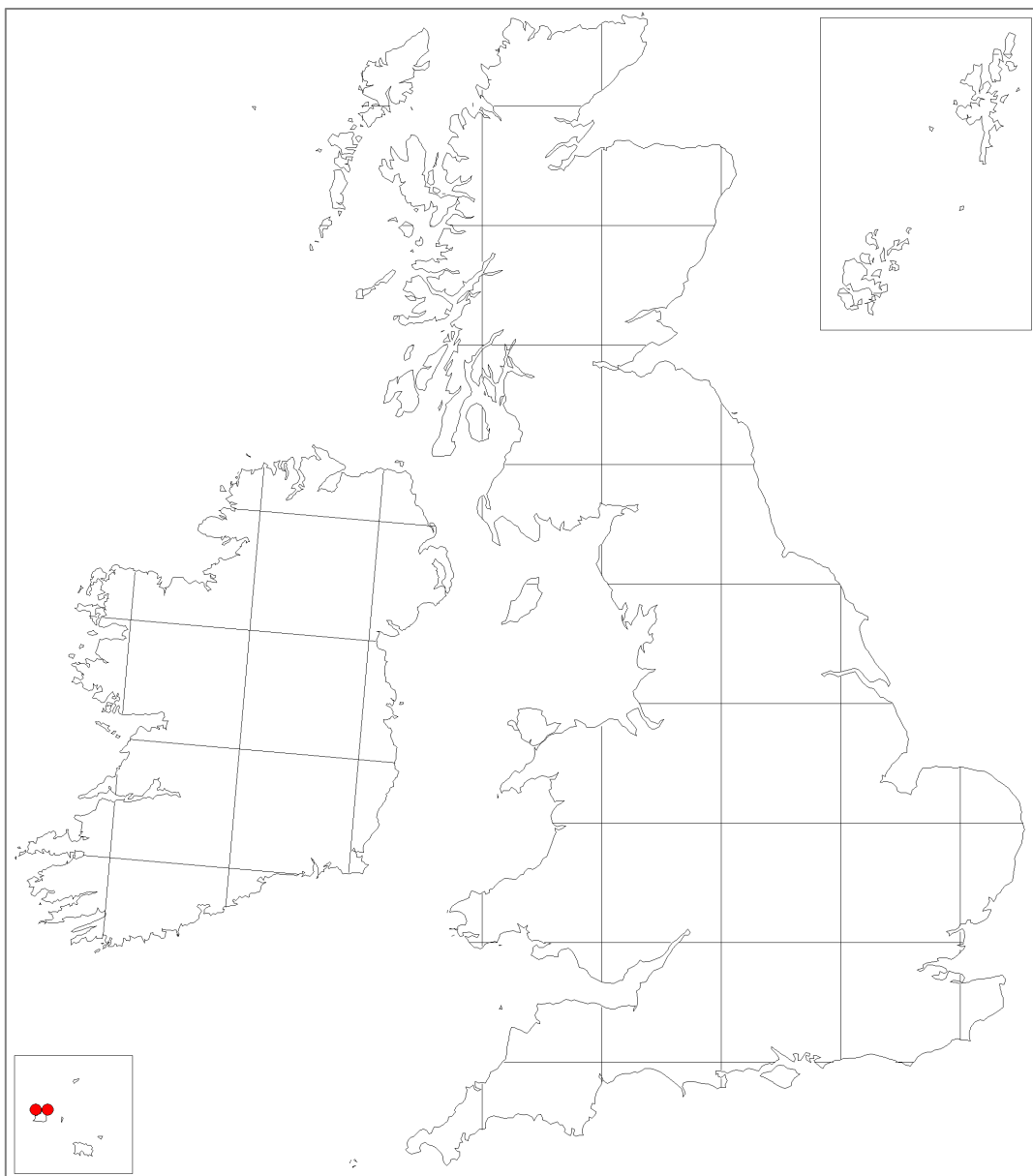
*Chaetophiloscia cellaria* from Guernsey © Andy Marquis

### Associated species

Associated woodlice simply reflect the broad habitats in which *C. cellaria* has been found. At the domestic garden site ubiquitous woodlouse species predominated, but also *Haplophthalmus danicus* Budde-Lund, *Platyarthrus hoffmannseggii* Brandt, *Porcellionides pruinosus* Brandt and *P. cingendus* Kinahan. On the shingle beach the sea-shore specialists *Ligia oceanica* Linnaeus and *Halophiloscia couchii* Kinahan were recorded, along with *P. cingendus*.

### Worldwide distribution

*Chaetophiloscia cellaria* is widespread across the northern Mediterranean region from Spain to Greece (Schmalfuss, 2003). However, in recent years it has undertaken a marked northwards expansion of range within France and now occupies many areas in north of the country, both on the coast and inland (Séchet & Noël, 2015; MNHN, 2024).



### Distribution of *Chaetophiloscia cellaria*

● hectad records 2018 to March 2024

## Family Trichoniscidae

### *Hyloniscus riparius* (C. Koch, 1838)

The discovery of the woodlouse *Hyloniscus riparius* from the Vale of Evesham, Worcestershire, is reported by Farmer (2023). Following its discovery in The Netherlands in 1991 Bilton (1993) suggested “a strong possibility that the species may be ‘hiding’ in the UK”. After three decades it was finally discovered. This is almost certainly a non-native unintentional introduction.

### Identification

*Hyloniscus riparius* looks very similar to, and easily overlooked as, *Trichoniscus pusillus* agg. Brandt. It is slightly larger and darker in colour, and has the eye comprising a single ommatidium (as seen in *Oritoniscus flavus* (Budde-Lund)). In *Trichoniscus* spp. there are 3 ommatidia. In the current identification guides (Hopkin, 1991; Oliver & Meechan, 1993) it will erroneously key to *O. flavus*. A brief description with figures to enable identification is given by Gregory & Farmer (2023).

### Distribution

Currently *H. riparius* is known from an 8km stretch of the river Avon in the Vale of Evesham, Worcestershire. It was first recorded in April 2022 near Wick, with additional sites discovered nearby. In April 2023 a second population, in an adjacent hectad, was discovered at Evesham Country Park about 8km upstream. It may be just a matter of time before it is found in the catchments of other lowland rivers such as the Severn (of which the Avon is a tributary) or the Thames.

### Habitat and microsites

Specimens of *H. riparius* have been found, often in large numbers, under riverside flood debris, mainly comprising dead wood. It is tolerant of seasonal inundation and in the Netherlands and Belgium, where it is a relatively recent colonist, it is a characteristic woodlouse of riverine flood plains (Berg *et al.*, 2008; Smedt *et al.*, 2020). However, it is apparent that in both countries *H. riparius* is also readily spread by human activity, such as the horticultural trade.



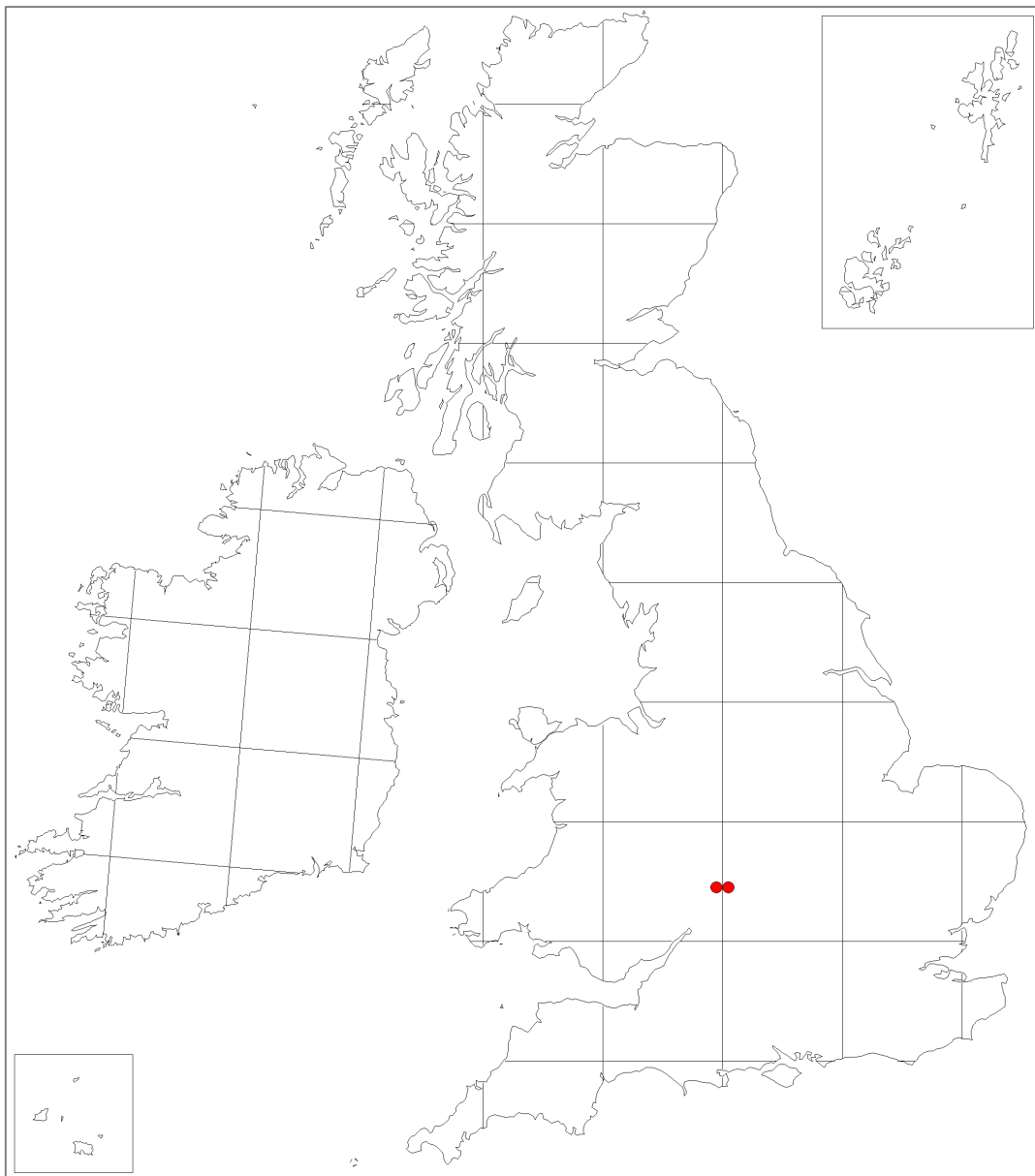
*Hyloniscus riparius* from the Vale of Evesham © Gary Farmer

### Associated species

At all known sites *H. riparius* is associated with *Trachelipus rathkii* (Brandt), another species tolerant of seasonal inundation and characteristic of riverside flood plains (as noted in WWIBI). Other woodlice present were *Trichoniscus pusillus* agg. Brandt, *Philoscia muscorum* (Scopoli), *Oniscus asellus* Linnaeus and *Porcellio scaber* Latreille.

### Worldwide distribution

*Hyloniscus riparius* has a very widespread distribution across central and eastern Europe and has been introduced into North America (Schmalfuss, 2003). In recent decades *H. riparius* has expanded its range into north-west Europe, notably rapidly colonising the Netherlands and Belgium (Berg *et al.*, 2008; De Smedt *et al.*, 2020) and now it has arrived in England.



**Distribution map of *Hyloniscus riparius***

● hectad records 2022 to March 2024

## Native and naturalised woodlice showing significant changes in distribution

### Family Trichoniscidae

#### *Buddelundiella cataractae* Verhoeff, 1930

WWIBI plots records from just eight widely scattered hectads, from the English south coast northwards as far as south Wales and Norfolk. Several of the known sites are designated SACs, NNRs and/or SSSIs and due to its restricted area of occupancy *B. cataractae* is listed as Nationally Rare (Lee, 2015).

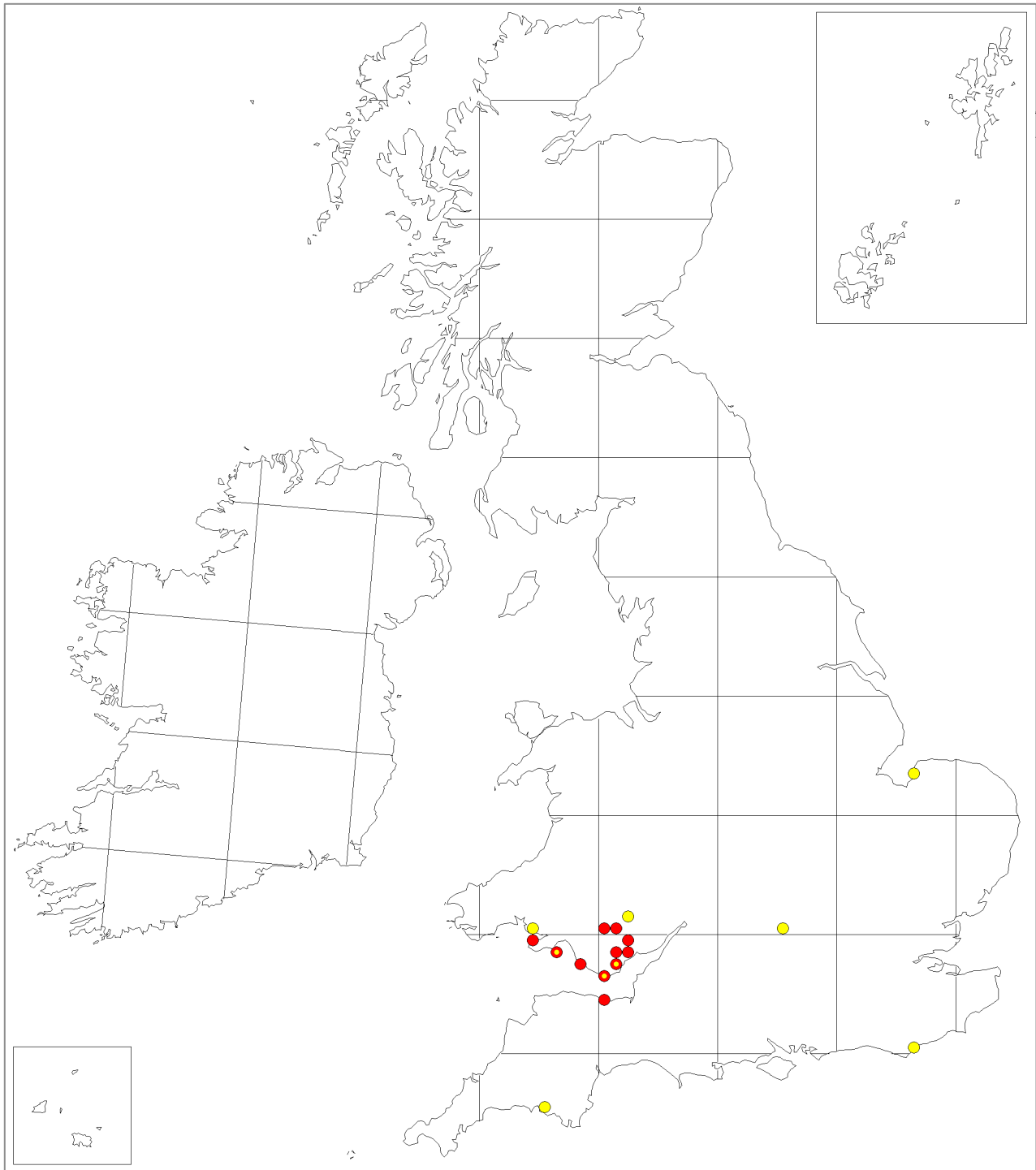
Recent field work has shown *B. cataractae* to be relatively widespread in south Wales (e.g. Harper, 2010; Morgan, 2011, Christian Owen, pers. comm.) where it has been recorded from seven new hectads and refound within three hectads from which it was previously recorded (though some are new sites). In May 2023, during BMIG's annual field meeting, several specimens of *B. cataractae* were collected from inside a tropical glasshouse in Somerset on the opposite side of Bristol Channel. Here it was associated with typical tropical glasshouse species, including *Trichorhina tomentosa* (Budde-Lund) and a single specimen of *Reductoniscus costulatus* Kesselyák. The latter species is of very similar appearance to *B. cataractae* and highlights potential confusion between the two species in the field.

Although favouring coastal habitats, it is apparent that *B. cataractae* also inhabits a wide range of inland synanthropic sites, including domestic gardens, an ornamental garden and disused quarries. As reported in WWIBI, many of the records are from beneath stones, especially larger ones that are partly embedded in friable and/or peaty soil. At Ogmores-by-Sea a specimen was collected along with a specimen of *Metratrichoniscoides celticus* Oliver & Trew (pers. obsv.).

On several occasions specimens have been collected in association with *Haplophthalmus* species (which share a similar 'haplophthalmoid' sculpturing) and its true identity only discovered upon microscopic examination. This is another example where *B. cataractae* may be easily overlooked in the field and combined with its subterranean habits and small size means it undoubtedly remains under recorded.



*Buddelundiella cataractae* from South Wales © Christian Owen



**Distribution of *Buddelundiella cataractae***

- new hectad records, 2008 to March 2024; ● records both post 2008 and pre 2008;
- records made before 2008 (mapped in WWIBI).



***Metatrichoniscoides celticus* Oliver & Trew, 1981**

In WWIBI this species was known from several sites falling within just four hectads along a 63km stretch of south Wales. Several sites are designated SACs, NNRs and/or SSSIs and all are underlain by limestone. Due to its restricted area of occupancy and due to the potential threat of stochastic events, such as pollution or storm damage, *M. celticus* is listed as Nationally Rare and Vulnerable by Lee (2015). In light of post 2015 records (highlighted below) it has been downgraded to Near Threatened by Macadam (2022).

Although this has proved to be a notoriously elusive species, targeted surveys undertaken between 2003 and 2007 refound the species at many of its known coastal sites (this data included within WWIBI). More recently, targeted surveys at Ogmore-by-Sea has repeatedly refound *M. celticus* with relative ease in 2016 (Gregory, 2017), 2017 (pers. obsv.) and 2018 (Christian Owen, pers. comm.). However, no additional localities in south Wales have been discovered since 1986.

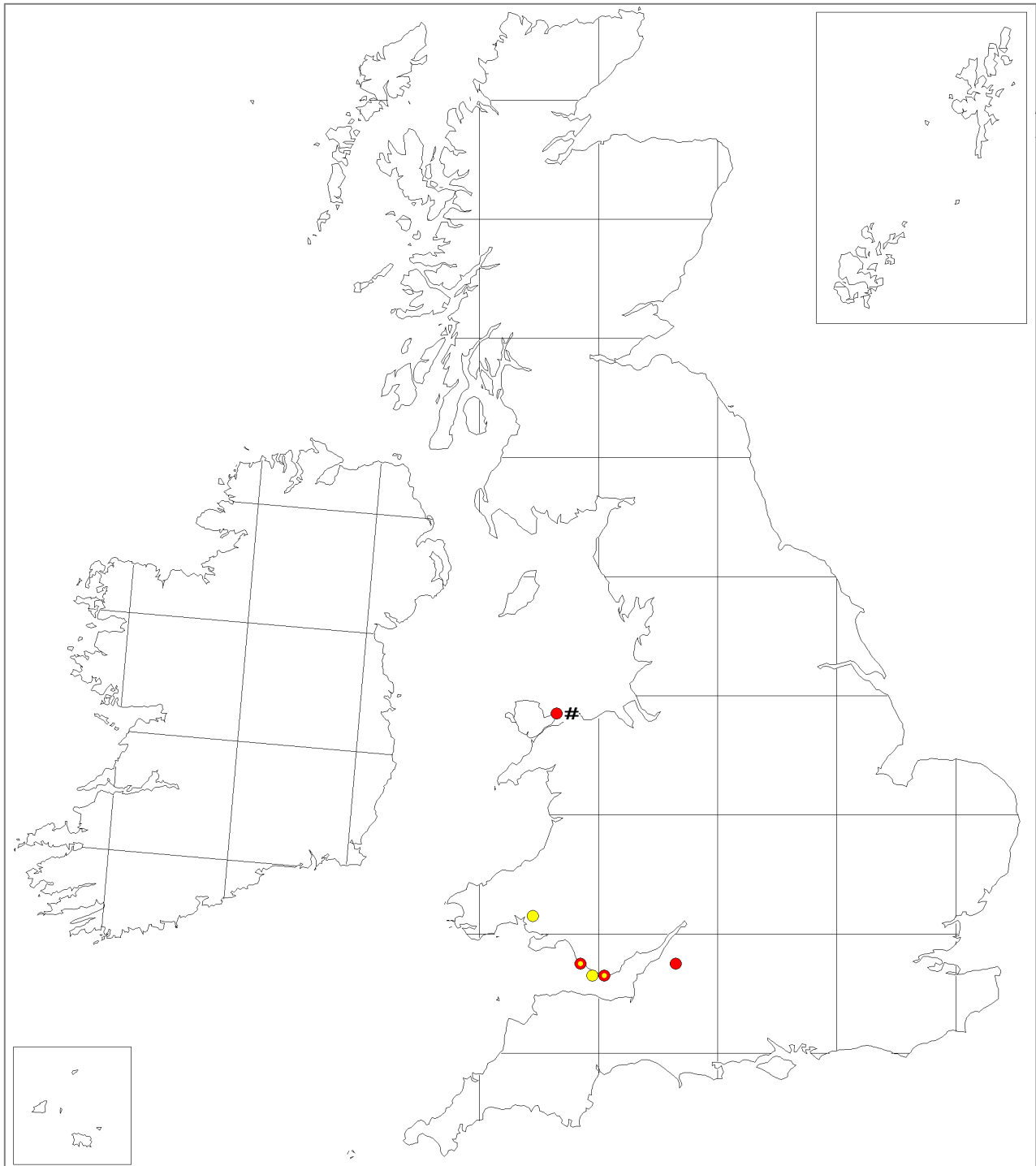
In February 2019 a new site was discovered on Anglesey, north Wales (Hughes, 2019) when specimens were found under embedded limestone blocks, alongside *Haplophthalmus mengii* (Zaddach) and *Trichoniscus pygmaeus* G.O. Sars. This extends the known range by a further 170km north. Hughes (2019) also reports the collection of a female *Metatrichoniscoides* sp. from limestone on Great Orme, Llandudno some 16 km north east of the Anglesey site (plotted as ‘#’ on the map).

Most recently, *M. celticus* was unexpectedly found in an allotment in Bristol in December 2020 (Ashwood & Gregory, 2021a), the first English record. Several specimens, including males, were collected by breaking open clods of organic-rich clayey top soil. In keeping with other known sites, the underlying geology is also limestone. Interestingly *Trichoniscoides sarsi* (Patience) was also recorded at his site (another elusive soil dwelling woodlouse).



*Metatrichoniscoides celticus* from Ogmore-by-Sea © Steve Gregory

On current evidence *M. celticus* has a preference for humus rich soil overlying calcareous geology on or near the coast. However, WWIBI reports the collection of female *Metatrichoniscoides* sp. from St Bees Head, Cumberland and Giant's Causeway, Co. Antrim, Ireland, both on non-calcareous geology. These may prove to be a different species and are not mapped.



#### Distribution of *Metatrichoniscoides celticus*

- new hectad records, 2008 to March 2024; # female only recorded  
● records both post 2008 and pre 2008; ● records made before 2008 (mapped in WWIBI).

***Metatrichoniscoides leydigii* (Weber, 1880)**

In WWIBI *M. leydigii* was known from just one site, a garden centre in Oxford, where it was almost certainly an accidental introduction. However, in 2011 a single male specimen was collected from semi-natural habitat bordering the lower tidal reaches of the River Medway in Kent (Gregory, 2012). This specimen was found on the underside of a large partly embedded stone in peaty soil on the edge of a *Phragmites* reedbed, with *Trichoniscoides albidus* (Budde-Lund) and *T. sarsi* Patience found in adjacent areas. In light of this discovery, it was designated Nationally Rare but Data Deficient by Lee (2015).

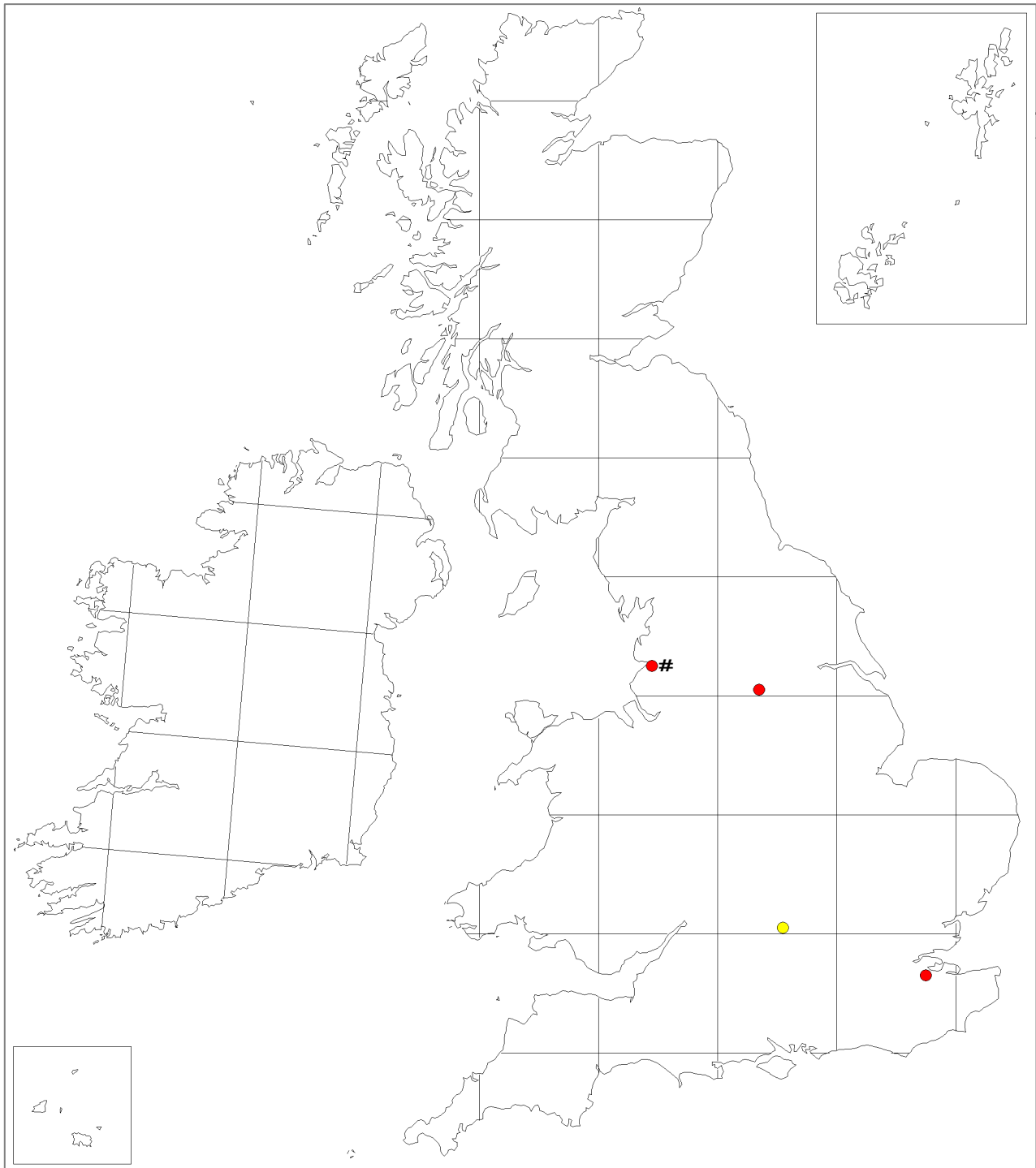
Subsequently, there have been two additional sightings of *M. leydigii*. In 2016 a single male specimen was collected from an ornamental garden (Wentworth Castle Gardens) in Derbyshire (Richards, 2016a). This specimen was found under large, embedded 'paving' slab near a plant nursery potting area, a habitat reminiscent of the original 1989 'non-native' Oxford city site. Then in 2019 several specimens (including males) were collected from under embedded rocks on the storm strand line beside the Ribble Estuary in Lancashire (Hughes, 2020). Here *Trichoniscus pygmaeus* G.O. Sars, *Philoscia muscorum* (Scopoli) and *Porcellio scaber* Latreille were also present. This habitat is reminiscent of the 2011 River Medway site.

In terms of both habitat and associated species, the 2011 Kent site (a designated SSSI) is strikingly similar to that described for the native populations of *M. leydigii* in the Netherlands on the opposite side of the North Sea, where both this species and *T. sarsi* are widespread and frequent (Berg *et al*, 2008). Thus, Gregory (2012) suggested that *M. leydigii* may be an overlooked native species in at least south-eastern England. However, both the River Medway and the Ribble Estuary have an extensive industrial history (Gregory, 2012; Hughes 2020), so a synanthropic introduction cannot be completely ruled out.

Addition populations of this elusive species must await discovery in semi-natural estuarine habitats along the eastern coasts of Kent and East Anglia and perhaps more widely around the British, and possibly also the Irish, coastlines. In addition it should be expected in synanthropic sites inland.



***Metatrichoniscoides leydigii* from Ribble Estuary © Thomas Hughes**



**Distribution of *Metatrichoniscoides leydigii***

- new hectad records, 2008 to March 2024; # female only recorded;
- records made before 2008 (mapped in WWIBI).

***Oritoniscus flavus* (Budde-Lund, 1906)**

WWIBI shows this species to occur widely across southern Ireland where its distribution is centred on an area known to support thermophilous species (Doogue & Harding, 1982), suggesting it favours the moist climate and mild winters found in southern Ireland. In 1994 a population of *O. flavus*, presumed to be introduced, was discovered in south Wales (Morgan, 1994), but otherwise it was unknown from the British mainland.

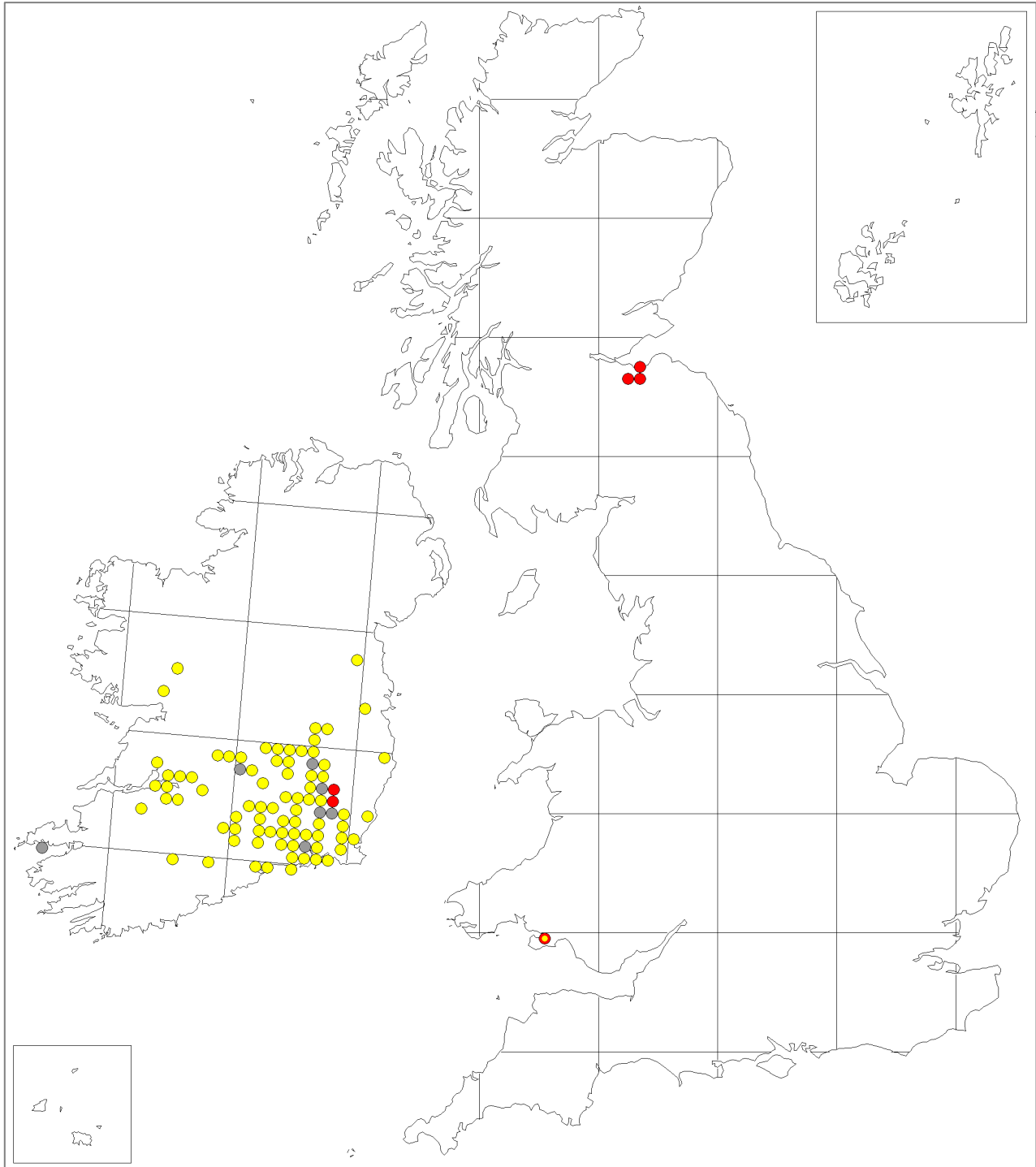
In September 2010 Duncan Sivell recorded *O. flavus* in Scotland from Melville Castle, near Edinburgh. Targeted surveys in 2011 showed the species to be well established in three widely separated sites along an 8km stretch of the River North Esk (Sivell & Gregory, 2015). In July 2017 an additional population was discovered by Warren Maguire close to the River Esk at Inveresk, extending the known range several kilometres north and close to the Scottish coastline (Maguire, 2020). Subsequently, this species has been shown to be well established along the valley of the River North Esk (Maguire, 2020), with known sites falling within 3 contiguous hectads. Here it is typically found close to the river among damp leaf litter or under stones and dead wood. This species may have been present along the North Esk, unnoticed, for many decades.

Given the isolated nature of the Scottish populations, some 500 km north of the other known British site in south Wales, it also seems highly probable that *O. flavus* has been unintentionally introduced. Considering the wide difference in latitude, and climate, between south Wales and eastern Scotland there is no obvious reason why *O. flavus* should not occur at other sites throughout Britain.

Interestingly there appear to have been very few post 2009 records of *O. flavus* in Ireland. The two records shown on the map were obtained from the National Biodiversity Data Centre (NBDC) (<https://maps.biodiversityireland.ie>) and were made by Ciarán Byrne in 2023. Although the lack recent records suggest a massive decline of this species across Ireland it is perhaps more plausible that this simply reflects the lack of current recording in Ireland relative to that of Britain.



***Oritoniscus flavus* from the River North Esk, Scotland © Warren Maguire**



**Distribution of *Oritoniscus flavus***

- new hectad records, 2008 to March 2024; ● records both post 2008 and pre 2008;
- records made before 2008 (mapped in WWIBI); ● records made before 1968 (in WWIBI).

***Trichoniscoides sarsi* Patience, 1908**

In WWIBI the distribution map for this elusive woodlouse shows a distinct band of records stretching across eastern England from Kent to Suffolk and then extending westwards across central England through Leicestershire and into Shropshire, with a cluster of records across the Irish Sea near Dublin, eastern Ireland. Many records are from synanthropic sites, such as old gardens or churchyards in the environs of towns and villages, which was taken as evidence that *T. sarsi* is a well-established introduction in Britain.

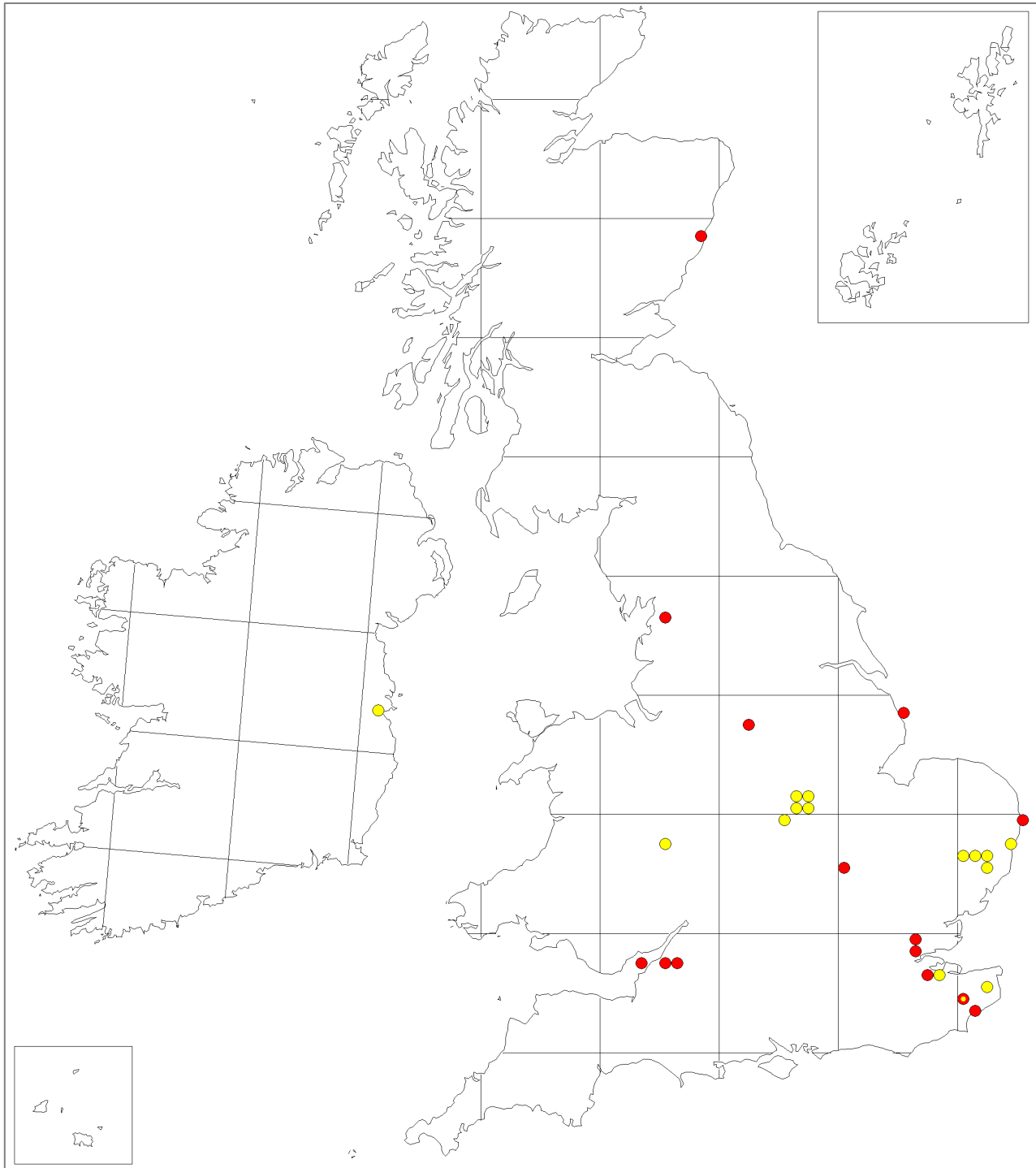
However, in 2011 specimens of *T. sarsi* were collected from beside the tidal estuary of the River Medway in Kent, (Gregory, 2012), beneath stones embedded in clayey soil covered with strandline debris. This is similar to the coastal habitats in the Netherlands where it occurs as a native species (Berg *et al.*, 2008). This raises the possibility that *T. sarsi* may be a post-glacial native species that first colonised semi-natural coastal habitats in eastern Britain and has subsequently colonised synanthropic habitats inland. Due to its restricted area of occupancy it is designated Nationally Scarce by Lee (2015).

Its distribution pattern and synanthropic habitat preferences have been reinforced by the recent discovery of *T. sarsi* in gardens and churchyards by Paul Richards in Bedfordshire and Derbyshire (Richards, 2016b); in North Lincolnshire (by Jon Daws; in Gregory, 2018), Essex (Christian Gaster, in Gregory, 2019b) and in East Suffolk (Stephen Youell). However, it has become apparent that this elusive species has a much wider distribution than previously thought. In 2010 specimens were collected from two contrasting sites on the eastern coast of Kincardineshire, Scotland; a cliff top cemetery and at the base of the sea cliff below (Davidson, 2011). This is some 400 km north of previously known records. In 2019 specimens were found by Nicola Garnham in a domestic garden in West Lancashire (Gregory, 2019a). Then in December 2020 *T. sarsi* was recorded from two contrasting sites in Gloucestershire by Frank Ashwood; a synanthropic allotment in Bristol city and a semi-natural coastal habitat on limestone at Clevedon (Ashwood & Gregory, 2021b), and subsequently found beside a railway line in Bristol (by Maico Weites).



***Trichoniscoides sarsi* from Lancashire © Nicola Garnham**

This species is clearly elusive by nature and consequently remains very under-recorded. The discovery of *T. sarsi* at widely separated coastal sites in Scotland and western England (in addition to those in south-east England) indicates that it cannot be assumed that all small white ‘red-eyed’ woodlice found around the coast of Britain are its typically coastal congener *T. saeroeensis* Lohmander. They could be *T. sarsi*. Interestingly, there are still no records of *T. sarsi* from central southern England where its congener *T. helveticus* (Carl), which favours rural habitats, has been recorded.



**Distribution of *Trichoniscoides sarsi***

- new hectad records, 2008 to March 2024; ● records both post 2008 and pre 2008;
- records made before 2008 (mapped in WWIBI).



## Family Halophilosciidae

### *Stenophiloscia glarearum* Verhoeff, 1908

This small woodlouse is a notoriously elusive specialist of coastal shingle with just five sites reported in WWIBI. Although originally discovered at Slapton Ley, Devon in 1974, the other four then known sites lie along the East Anglian coast (Essex, Suffolk and Norfolk). Despite intensive repeat surveys at Slapton Ley in the late 1970s *S. glarearum* was not refound. Similarly repeated targeted surveys at Colne Point, Essex, where the species was found in 2000, failed to refind it (Keith Lugg, pers. comm.). Due to its restricted area of occupancy and due to the potential threat of stochastic events such as pollution or storm damage, *S. glarearum* is listed as Nationally Rare and Vulnerable by Lee (2015).

It was some four decades later before *S. glarearum* was refound at Slapton Ley in December 2015 (and additional dates into 2016) by John Walters and Mark Telfer who repeatedly found specimens by hand-sorting shingle well above the high water mark. Also in 2016 two new sites were discovered in Dorset by Steve Trewella using baited pitfall traps, sited among sparse vegetation also well above the high water mark. At Ringstead Bay several specimens were trapped on several occasions during repeated sampling. In 2019 a single specimen was found at Looe Beach, Cornwall by Thomas Hughes, beneath a large flat rock lying on shingle on the upper shore below steep laminated cliffs (Gregory, 2019c).

These recent Dorset and Cornish records extend the known range of this elusive woodlouse further eastwards and westwards along the south English coast and reinforces the suspicion that it is likely to prove more widespread in appropriate coastal shingle habitat along the coastline of at least in southern Britain. These recent observations suggest that *S. glarearum* favours sparsely vegetated shingle typically well above the strandline. It is, however, clearly a genuinely elusive species with repeated surveys at known sites failing to find it. It is also of note that two sites for this notoriously elusive woodlouse have been found on the Atlantic coast of north-west France (Noël *et al.*, 2014).



*Stenophiloscia glarearum* from Dorset © Keith Lugg



## Family Porcellionidae

### *Porcellio laevis* (Latreille, 1804)

Although never common, in WWIBI *Porcellio laevis* was widely recorded throughout the 20th Century across Britain and Ireland with about 50 hectad records. However, there were relatively few modern records: dairy farms in the Wirral in 1995; Glasgow in 1996; Margate, Kent in 2007; and no post 1982 sites for Ireland. It is designated Nationally Scarce by Lee (2015), but Harding (2016) highlights that *P. laevis* appears to have undergone a dramatic decline throughout the 20th century.

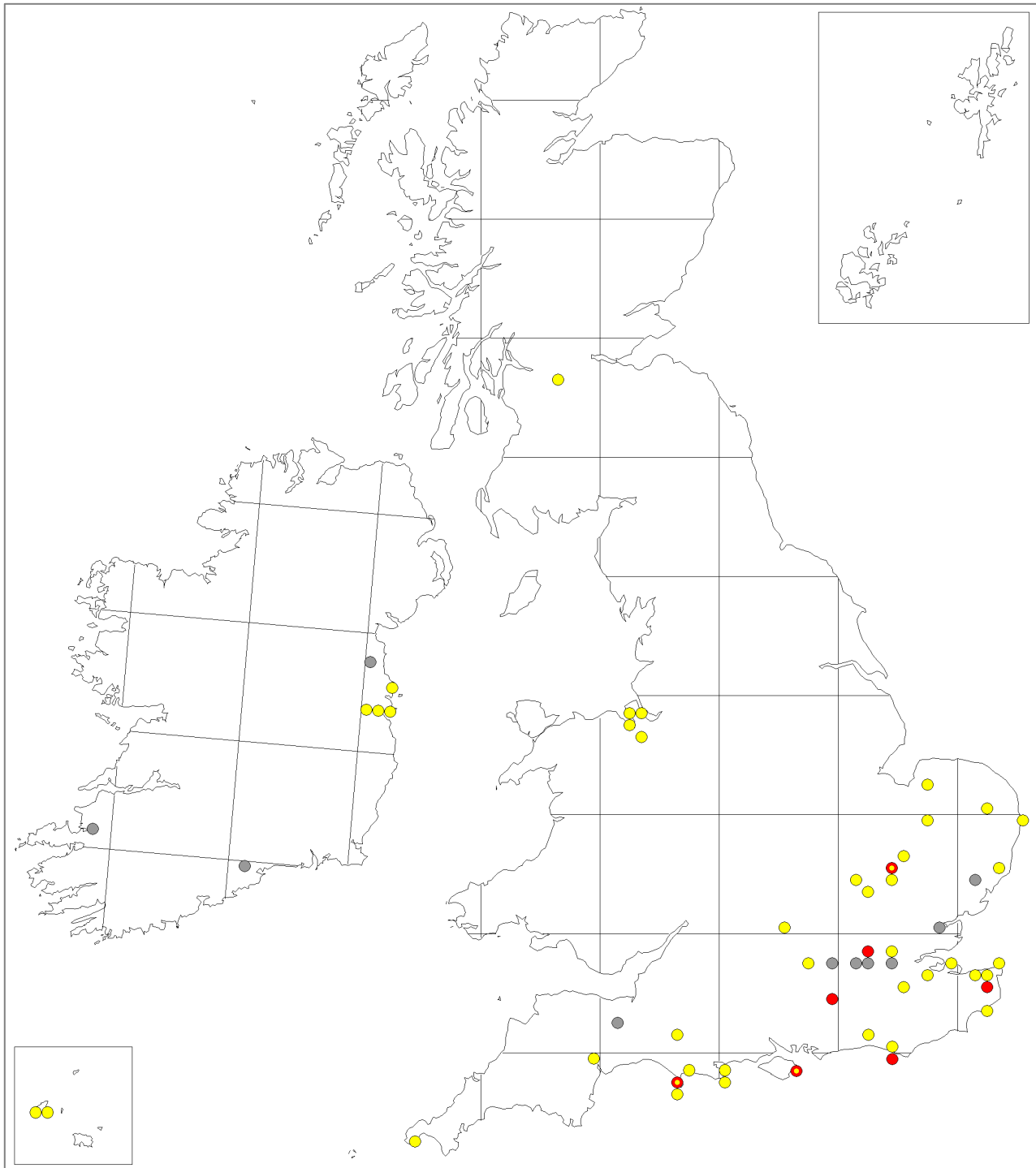
This observation is supported by the fact that there are just seven post 2008 records submitted to the recording scheme and none from Ireland. Three are from hectads where it has been recorded previously; Portland Bill, Dorset; Isle of Wight; and Cambridge city (where it was found in two college compost heaps about 0.5 km apart in 2021 and 2022). In 2016 a population was discovered in a public park in Guildford, Surrey (Flanagan, 2016). In 2023 specimens were found in an ornamental garden in East Kent by Stephanie Skipp. In the same year the ‘orange’ morph was photographed in a domestic garden in East Sussex. Most recently in May 2024 numerous specimens were found by Max Barclay in a series of compost heaps in Greater London. All these known extant sites lie in south east England.

This is a woodlouse primarily associated with synanthropic habitats, such as stables and dairy farms and also in compost heaps of old mature gardens. Harding (2016) suggests its decline may reflect that in the use of horses (which have now been replaced by cars and tractors) and the modernisation of livestock husbandry (with increased use of ‘worming drugs’, etc.). Today, old, traditionally-managed gardens with established compost heaps may be an important habitat for this declining species. Also it seems that *P. laevis*, especially in various colour morphs, is very popular with ‘hobbyists’ who keep woodlice in culture and it is possible that on occasions these may be released ‘into the wild’.

Whilst reviewing records submitted to the BMIG woodlouse recording scheme it is apparent that *Cylsticus convexus* (De Geer) (Cylisticidae) is frequently mis-identified as *P. laevis* (pers. obsv.).



*Porcellio laevis* male from Guildford © Jim Flanagan



**Distribution of *Porcellio laevis***

- new hectad records, 2008 to May 2024; ● records both post 2008 and pre 2008;
- records made before 2008 (mapped in WWIBI); ● records made before 1968 (in WWIBI).

***Acaeroplastes melanurus* (Budde-Lund, 1885)**

In WWIBI *Acaeroplastes melanurus* was only known from a single locality in Ireland, Howth Head near Dublin, where it was first discovered in 1909. Following its rediscovery there in 2002 it was subsequently found in good numbers under lichen covered rocks on steep sparsely vegetated slopes near the cliff tops, but its long term future was thought uncertain due to scrub encroachment (Anderson, 2007). Indeed, a search there by Thomas Hughes in 2023 failed to re-find the species (pers. comm.).

In October 2019 *A. melanurus* was discovered on the Isles of Scilly (Telfer, 2024), the first British record. Several specimens collected from coastal sandy dune grassland with granite boulders. Subsequently, in April 2023 *A. melanurus* was found by Lloyd Davies on the English south coast, a shingle beach at West Bexington, Dorset, with additional specimens observed in October the same year. These were found at several locations, under drift wood and stones, along the landward side of a sparsely vegetated shingle bank (with Sea Kale *Crambe maritima*, Sea Campion *Silene uniflora*, etc). A return visit to look for the species in April 2024 proved unsuccessful.

This species was not included in the species status review undertaken by Lee (2015), which only considers native species occurring in Britain (not Ireland). Although it is possible that the two recently discovered English populations of *A. melanurus* may be the result of unintentional introductions, there is a possibility that they (and indeed the Irish site) may represent relict native populations (Telfer, 2024); a natural extension of those seen in north-west France (Noël *et al.*, 2009). This species is in urgent need of a review of its conservation status and until evidence is provided to the contrary then Nationally Rare; Data Deficient would seem appropriate.

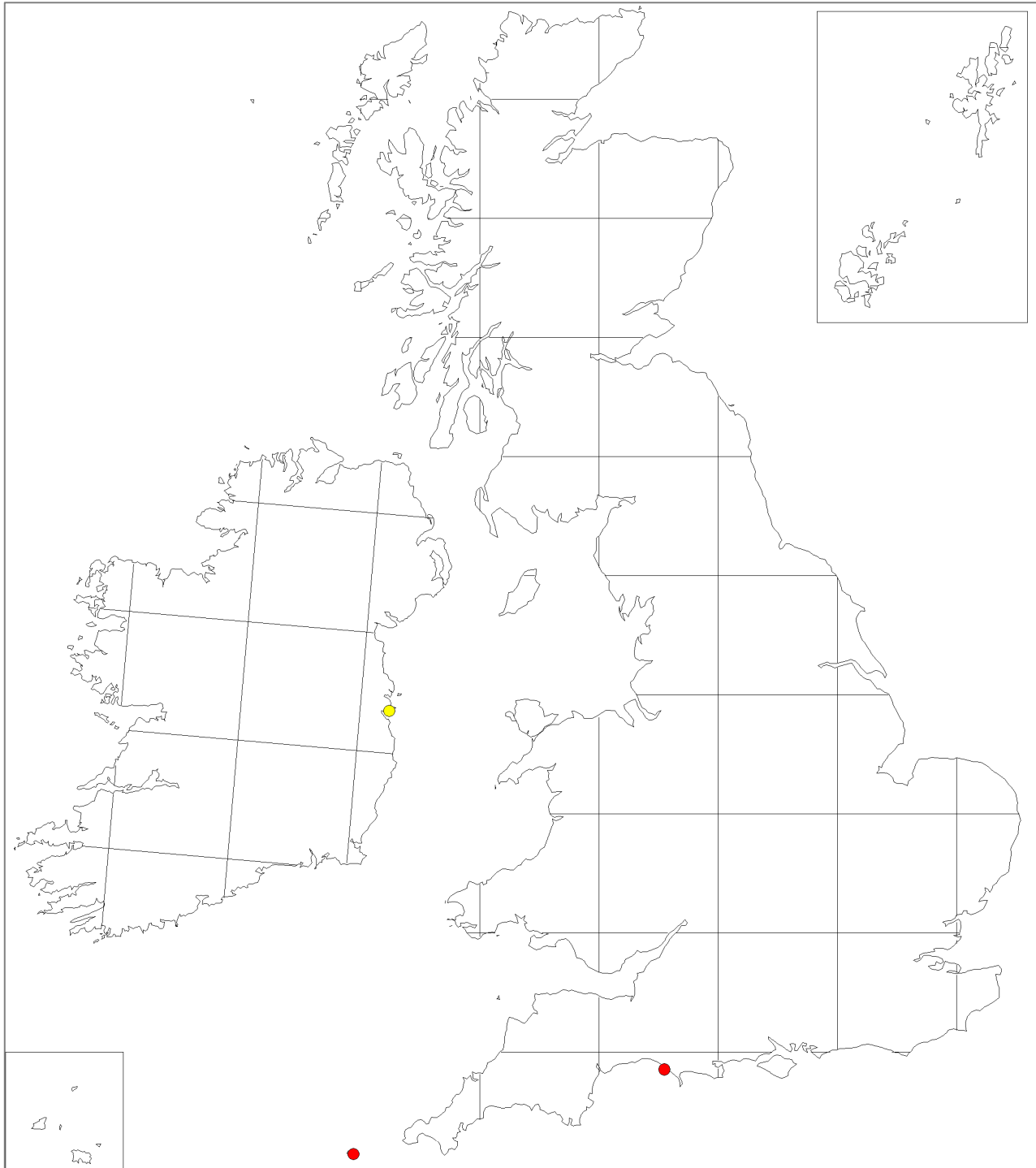


***Acaeroplastes melanurus* from Dorset © Lloyd Davies**

This is primarily a species of the western Mediterranean from Spain, across southern France and into Italy (Schmalfuss, 2003). However, it has been known from a discrete area along the Atlantic coast of north-west France (départements Loire-Atlantique and Maine-et-Loire) since at least the 1950s, which

may represent a relict population (Noël *et al.*, 2009). Here it occurs in coastal habitats (as seen in England and Ireland), but in recent decades has penetrated far inland often associated with stands of Plane *Platanus x hispanica* trees in town centres (beneath loose bark). Although not so widely planted in England, it is perhaps worth examining plantings of Plane trees in coastal areas of southern England.

*Acaeroplastes melanurus* is a morphologically variable species, with the north-western populations referable to subspecies *melanurus*. The subspecies *Acaeroplastes melanurus sardous* Verhoeff 1918 occurs in the south-east of the species range (e.g. on Corsica; Taiti & Ferrara, 1996).



#### Distribution of *Acaeroplastes melanurus*

● new hectad records, 2008 to March 2024; ● records made before 2008 (as mapped in WWIBI).

## Family Trachelipodidae

### *Trachelipus rathkii* (Brandt, 1833)

The distribution map in WWIBI showed a distinct block of records across south east England north as far as The Wash and as far west as the catchment of the river Severn, with a single outlying record from south Wales. Many of these records are associated with river valleys, notably the Thames and the Great Ouse (and their tributaries), and also the Severn. This ‘block’ of records remains apparent, but there are now additional records further north and west, including several isolated outlying records.

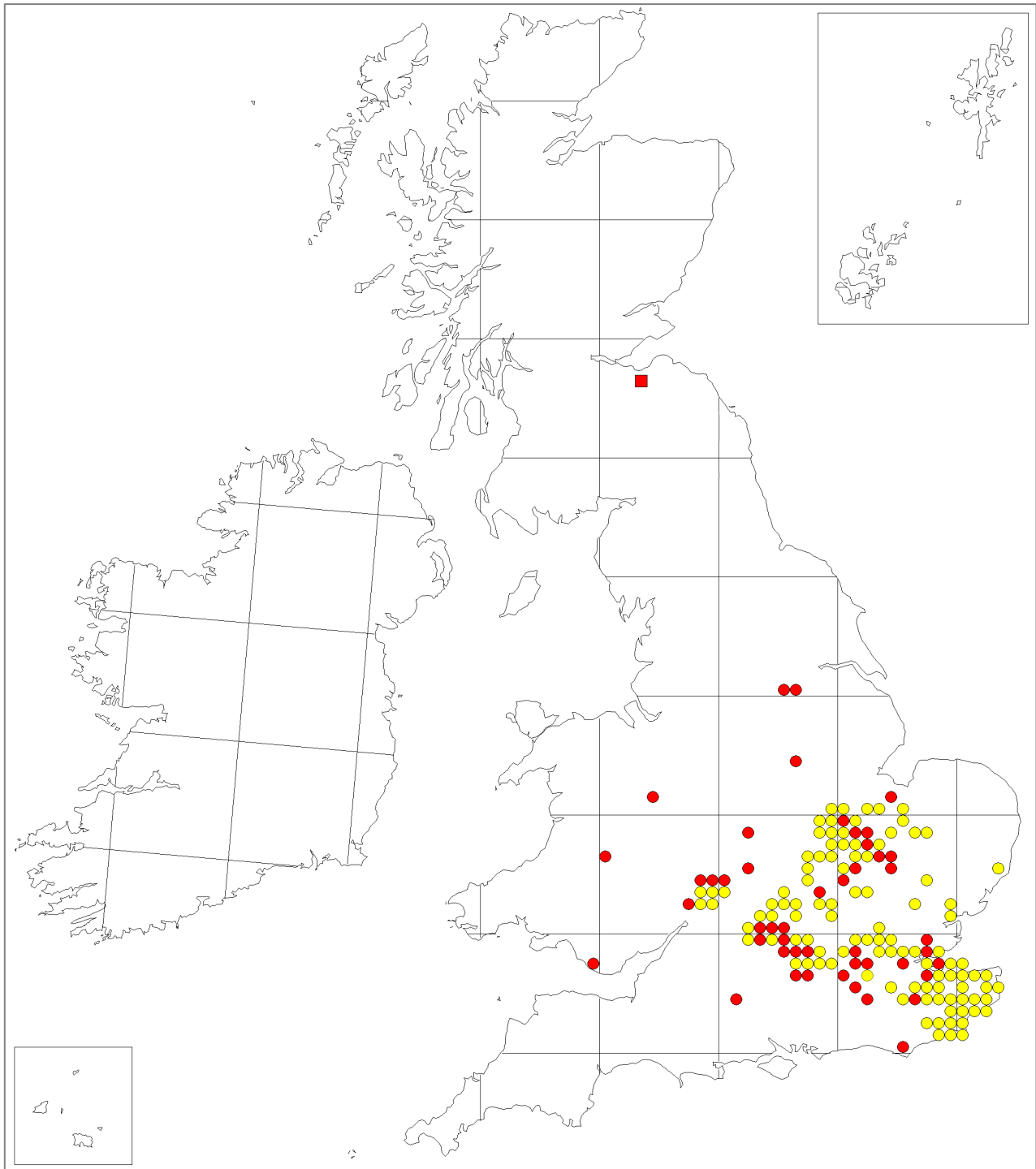
As early as 2012 *T. rathkii* was discovered as far north as Yorkshire, with specimens found at two sites (in two hectads) beside the River Don, north of Doncaster, South Yorkshire (Daws, 2014). Despite additional searches in the area no further localities were found. A second northern English record is from Stoke Bardolph, Nottinghamshire where the species was first recorded in 2021 from under flood debris beside the River Trent (Pendleton & Pendleton, 2023). Also in 2021 *T. rathkii* was found at several sites along a 10km stretch of River Avon (a tributary of the Severn) in the Vale of Evesham, Worcestershire (Farmer, 2021) and subsequently some 20 km upstream at several sites at Stratford upon Avon (records via iNaturalist). Another isolated record, from beside the River Severn at Shrewsbury, Shropshire lies some 50km upstream of the well-defined southern block of Severn Valley records. In 2015 an outlying southern population was found on Salisbury Plain, Wiltshire (pers. obsv.) with many specimens seen beneath dried cowpats and dead wood beside the (Wiltshire) River Avon.

A second Welsh locality, Llandrindod, Radnorshire, was added in 2013 by Joe Botting, with specimens collected from a churchyard and a nearby Oak *Quercus* woodland, close to the River Ithon. Meanwhile *T. rathkii* was refound in 2018 by Christian Owen at its original south Wales site at Bridgend, Glamorganshire, where it was first recorded in 2007. Despite south Wales being a well-worked area for woodlice it is of note that no further localities for this species have been found there.



*Trachelipus rathkii* male from a garden centre in Edinburgh © Warren Maguire

The first Scottish record for *T. rathkii* was made in 2023, when a single male specimen was collected from a garden centre in Edinburgh, Midlothian (Maguire, 2023). This is a central European species, where the winters are cold, so it will be interesting to see if this species can survive outdoors through the Scottish winters.



**Distribution of *Trachelipus rathkii***

- new hectad records, 2008 to March 2024; ■ record from garden centre;
- records made before 2008 (mapped in WWIBI).



## Family Armadillidiidae

### *Armadillidium depressum* Brandt, 1833

In WWIBI *Armadillidium depressum*, the then aptly named Southern Pill Woodlouse, was known to be locally frequent in parts of south west England, south Wales and along parts of the south coast, albeit with isolated sites as far north as Yorkshire and as far east as Norfolk. There were also a few known localities from south eastern Ireland.

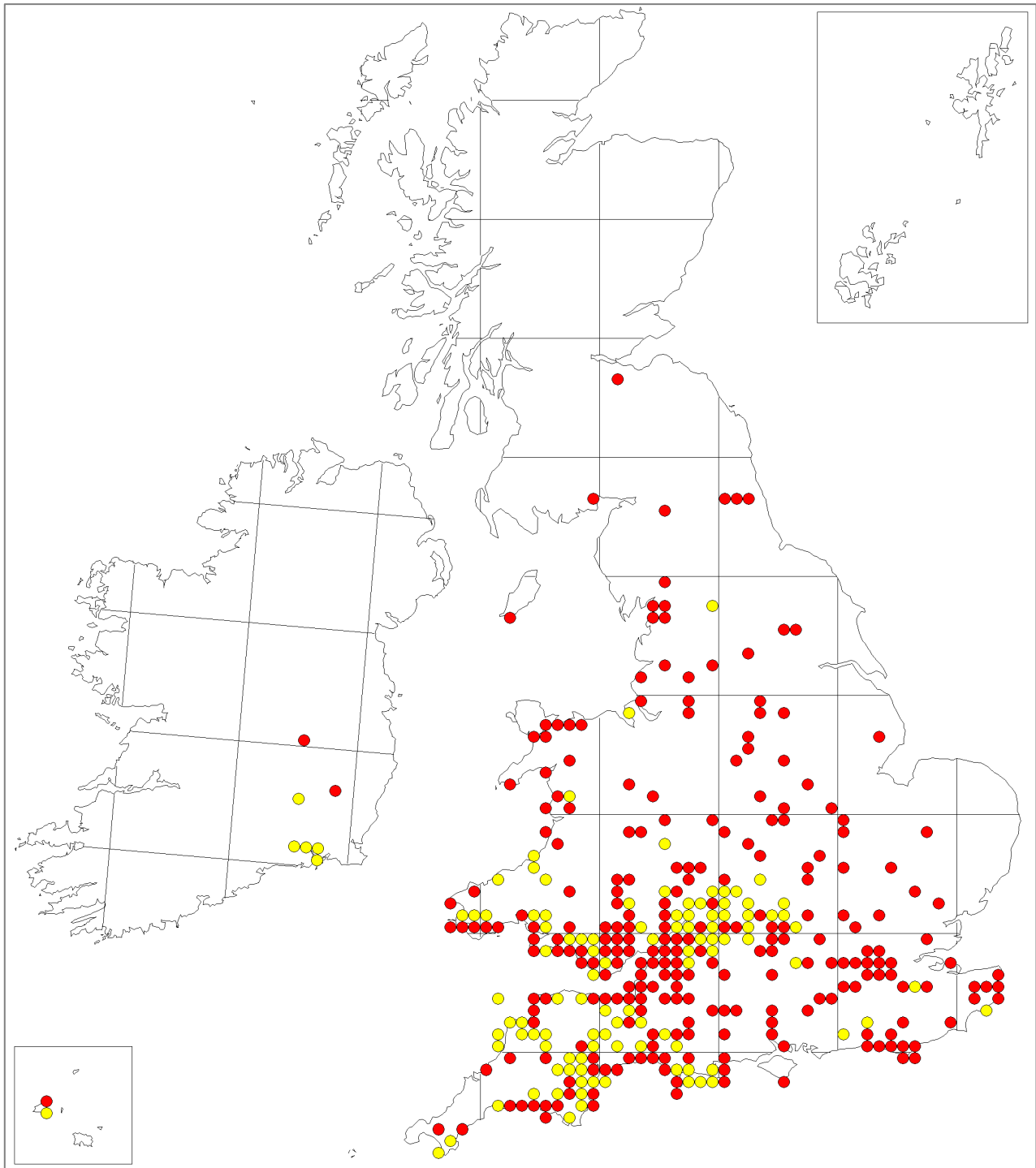
In the last decade it has become apparent that the distribution of this species has expanded considerably north and east with a wide scattering of records across much of England and Wales. This includes numerous new county records; including Hertfordshire, Cambridgeshire and Essex in the south-east; Caernarvonshire and Flintshire (Barber & Gregory, 2011) in North Wales; and Nottinghamshire (Pendleton & Pendleton, 2023) and West Lancashire in northern England. In 2023 *A. depressum* was also recorded from two new sites in Ireland in Co. Laois (in a house) and Co. Carlow (on a wall) by Ciarán Byrne.

In 2020 *A. depressum* was recorded from Scotland for the first time, inside a house “walking across the living room carpet” in Glencaple, south-west Scotland (Gregory, 2020b). At that date this was about 75km north of previous English records. Then, in 2023 and 2024 it was recorded from three sites in the Newcastle area in north-east England; a garden and two graveyards. Then in May 2024 *A. depressum* was recorded from a graveyard on the outskirts of Edinburgh, a jump of another 100km further north.

Although there remains a vague southern and western bias to the distribution map, on current evidence *A. depressum* could be expected to occur anywhere throughout England and Wales and it will be interesting to see how far it penetrates into Scotland. Many of these more recent records are from synanthropic habitats (gardens, inside houses, graveyards, etc.) suggesting that it has been primarily spread by human activity, possibly via the horticultural trade and/or by the movement of stone for construction. Interestingly, this species is rarely recorded from garden centres (where its congener *A. nasatum* thrives).



*Armadillidium depressum*, including an immature, from Lancashire © Nicola Garnham



**Distribution of *Armadillidium depressum***

● new hectad records, 2008 to May 2024; ● records made before 2008 (mapped in WWIBI).

***Armadillidium nasatum* Budde-Lund, 1885**

In WWIBI the distribution map shows concentrations of records across south Wales, south-west England and south-east England, with a thin scattering of modern (post 1968) records north to southern Yorkshire. There is an historical (1917) glasshouse record from Fife, south-east Scotland, the northern-most known locality. There were also a few known localities from eastern Ireland.

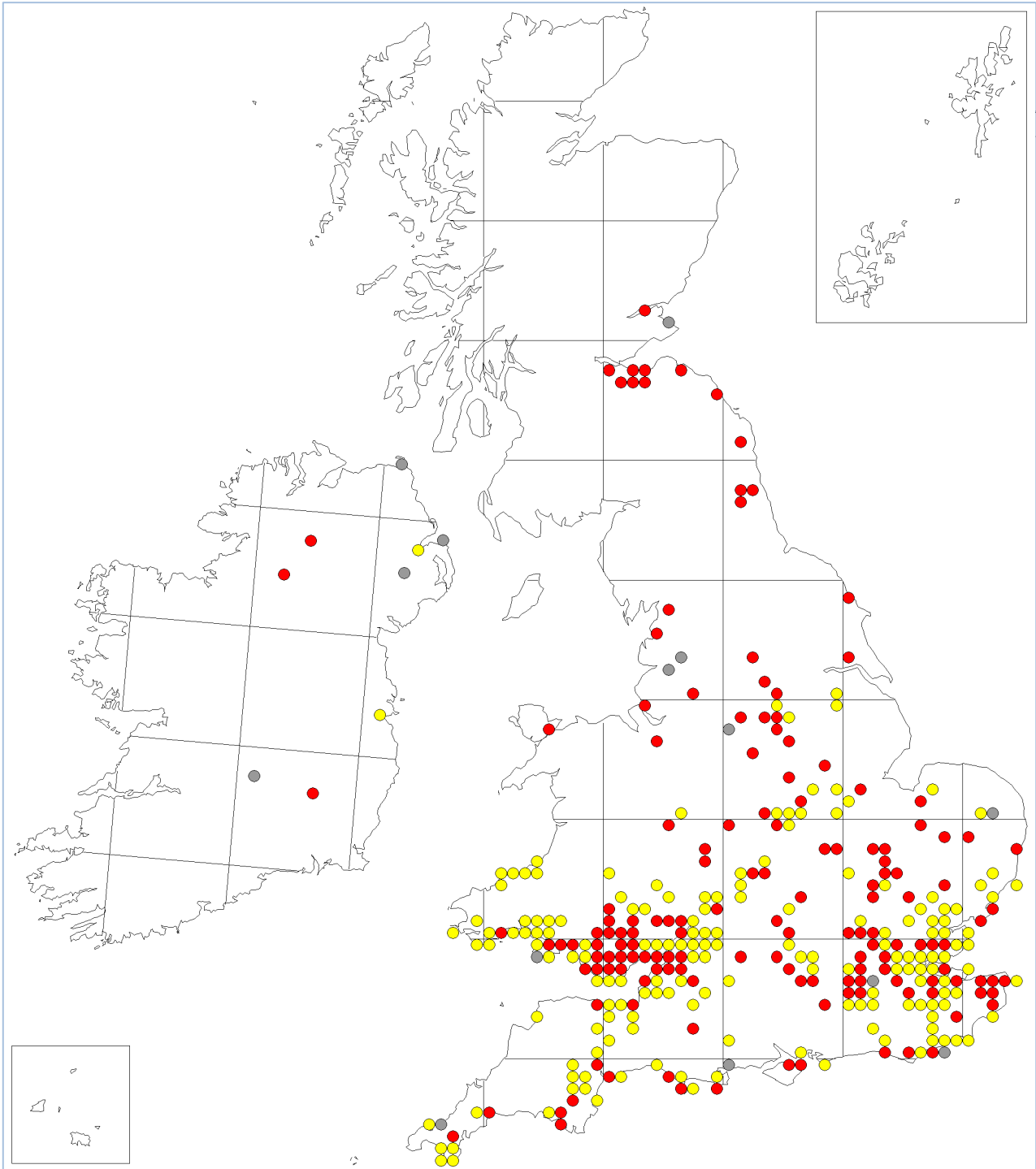
Although this basic distribution pattern remains, it is apparent that in the last decade its distribution has drifted further north, with scattered ‘outdoor’ records north to West Lancashire (first recorded in 2019) and north-east Yorkshire (in 2023), with an outlying record from ‘waste ground’ near a garden centre in Northumberland (in 2024). These northern outdoor records are typically from synanthropic sites such as gardens or reclaimed industrial sites, with additional ‘indoor’ records from inside glasshouses.

In 2021 *A. nasatum* was refound in Scotland by Helen Bell inside a glasshouse at Dundee Botanic Gardens, Angus, about 10km north of the 1917 Fife record. Seven additional Scottish sites were added in 2023 by Warren Maguire, whilst undertaking casual surveys of garden centres across the Lothians of south-east Scotland. It was also found at five garden centres in Northumberland and Tyneside, north-east England; and two in Cos. Tyrone and Fermanagh, Northern Ireland (Maguire, 2023). It is of note that *A. nasatum* was found with relative ease in ‘outdoor’ displays at every garden centre visited, with specimens typically found beneath potted plants either on the ground or situated on damp absorbent mesh on trestles. Inspired by the two Irish observations a third garden centre site was found by Ciarán Byrne in Co. Carlow. These are the first modern records of *A. nasatum* in Scotland, the first ever for north-east England, and all would appear to be new vice-county records (in Britain and Ireland).

It is of note that almost all of the northern-most records are from garden centres, suggesting that *A. nasatum* is readily dispersed via the horticultural trade and therefore likely to be found across the entire length and breadth of Britain and Ireland. However, in more northern locations it is unlikely that populations will be able to survive ‘outdoors’ through the cold winter months and in these areas established breeding populations may prove to be confined within heated glasshouses.



***Armadillidium nasatum* from Co. Tyrone, Ireland © Warren Maguire**



**Distribution of *Armadillidium nasatum***

● new hectad records, 2008 to June 2024; ● records made before 2008, but after 1968 (mapped in WWIBI); ● records made before 1968 (mapped in WWIBI).

## Changes in species conservation status

Decisions about the priority to be attached to the conservation of species should be based upon objective assessments of the degree of threat to native species. Since the publication of WWIBI a review of the national threat status of native British woodlice has been undertaken by Lee (2015) using up-to-date information on species distribution and population trends. This identifies those species that are rare and/or under threat, those typically more widespread species that are not threatened and those that are non-native ‘introduced’ species. Only species considered to be native are assessed (see Table below).

Four species are designated as Nationally Rare (i.e. known or likely to occur in 15 or fewer hectads). *Metatrichoniscoides celticus* Oliver & Trew and *Stenophiloscia glarearum* Verhoeff are considered Vulnerable due to the potential threat of stochastic events at coastal sites such as pollution or storm damage. Due to its broad habitat preferences *Buddelundiella cataractae* is considered Least Concern. These have been upgraded from RDDK (Insufficiently Known) for *M. celticus* and Scarce/Nb for the latter two. Due to lack of knowledge about its requirements, *M. leydigii* is considered Data Deficient.

Ten species are designated as Nationally Scarce (i.e. known or likely to occur in 100 or fewer hectads). All except one are considered of Least Concern. The exception, *Oniscus asellus occidentalis* Bilton, is considered Near Threatened due to its remaining populations being severely fragmented and showing continuing declines in the extent of its occurrence due to hybridisation with the common *Oniscus asellus asellus* Linnaeus.

Two uncommon species, *Oritoniscus flavus* (Budde-Lund) and *Eluma caelatum* (Miers), are excluded as the evidence (as assessed by Lee, 2015) suggests they are introduced non-natives. *Trichoniscoides albidus* (Budde-Lund) is omitted since recent field work has shown this elusive species to be more widespread than previously thought.

**National threat status of native British woodlice**

Species	Status cited in WWIBI	GB Rarity Status after Lee 2015	GB IUNC Status after Lee 2015
<i>Buddelundiella cataractae</i>	Scarce/Nb	Nationally Rare	Least Concern
<i>Metatrichoniscoides celticus</i>	RDBK	Nationally Rare	Vulnerable
<i>Metatrichoniscoides leydigi</i>	needs revision	Nationally Rare	Data Deficient
<i>Stenophiloscia glarearum</i>	Scarce/Nb	Nationally Rare	Vulnerable
<i>Proasellus cavaticus</i>	Scarce/Nb	Nationally Scarce	Least Concern
<i>Haplophthalmus montivagus</i>	needs revision	Nationally Scarce	Least Concern
<i>Miktoniscus patiencei</i>	Scarce/Nb	Nationally Scarce	Least Concern
<i>Trichoniscoides helveticus</i>	Scarce/Nb	Nationally Scarce	Least Concern
<i>Trichoniscoides sarsi</i>	none	Nationally Scarce	Least Concern
<i>Halophiloscia couchii</i>	Scarce/Nb	Nationally Scarce	Least Concern
<i>Oniscus asellus occidentalis</i>	needs revision	Nationally Scarce	Near Threatened
<i>Porcellio laevis</i>	needs revision	Nationally Scarce	Least Concern
<i>Armadillidium pictum</i>	RDB3	Nationally Scarce	Least Concern
<i>Armadillidium album</i>	Scarce/Nb	Nationally Scarce	Least Concern
<i>Oritoniscus flavus</i>	needs revision	Naturalised	n/a
<i>Eluma caelatum</i>	Scarce/Nb	Naturalised	n/a
<i>Trichoniscoides albidus</i>	Scarce/Nb	none	Least Concern
<i>Trichoniscoides saeroeensis</i>	Scarce/Nb	none	Least Concern
<i>Armadillidium pulchellum</i>	Scarce/Nb	none	Least Concern

## Acknowledgements

A large number of individuals over the past 15 years have freely committed their time to contribute their records to the woodlouse and waterlouse recording scheme. Some have submitted just a few records, some numerous records, and some seem to have a knack for finding unusual species. However, all records help build the bigger picture of what species occur where and in what habitats, and whether populations are stable, increasing or under decline. The role of all persons that have contributed to this process is gratefully acknowledged.

Key active recorders with numerous observations include many familiar names, but also, encouragingly, many new people since the publication of WWIBI. I thank the following for keeping me updated, either directly or via 'social media', of their (often) unexpected discoveries: Frank Ashwood, Joe Botting, Ciarán Byrne, Joss Carr, Richard Comont, Duerden Cormack, Mike Davidson, Lloyd Davies, Jon Daws, Kay Dinsdale, Gary Farmer, Jim Flanagan, Nicola Garnham, Seth Gibson, Malcolm Haddow, James Harding-Morris, Sue Harvey, Finley Hutchinson, Thomas Hughes, Angela Lidgett, Keith Lugg, Garret Maguire, Warren Maguire, Andy Marquis, Liam Olds, Jane Orgee, Christian Owen, Trevor Pendleton, Sam Rice, Paul Richards, Duncan Sivell, Stephanie Skipp, Per Smiseth, Mark Telfer, Jane Thomas, Steve Trewella, John Walters, Maico Weites, Derek Whiteley and many more who, over the years, have contributed records to the recording scheme.

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## Appendix I: Updated systematic check list of Woodlice and Waterlice in Britain and Ireland

Nomenclature follows the World List of Marine, Freshwater and Terrestrial Isopod Crustaceans (<https://www.marinespecies.org/isopoda>).

Synonyms that can be found in some earlier publications are included.

\* Indicates introduced non-naturalised ‘glasshouse/garden centre’ species not yet established outdoors. [these will be included within Gregory (in prep.)].

Subphylum CRUSTACEA

Class MALACOSTRACA

Superorder PERACARIDA

Order ISOPODA

Suborder ASELLOTA – Aquatic Waterlice

Superfamily Aselloidea

Family Asellidae

*Asellus aquaticus* (Linnaeus, 1758)

*Proasellus cavaticus* (Leydig, 1871)

=*Asellus cavaticus* Leydig, 1871

*Proasellus meridianus* (Racovitza, 1919)

=*Asellus meridianus* Racovitza, 1919

*Caecidotea communis* (Say, 1818)

=*Asellus communis* (Say, 1818)

Suborder ONISCIDEA – Terrestrial Woodlice

Section Diplocheta

Family Ligiidae

*Ligia oceanica* (Linnaeus, 1767)

*Ligidium hypnorum* (Cuvier, 1792)

Section Synocheta

Family Trichoniscidae

*Androniscus dentiger* Verhoeff, 1908

*Buddelundiella cataractae* Verhoeff, 1930

*Haplophthalmus danicus* Budde-Lund in Meinert, 1880

*Haplophthalmus mengii* (Zaddach, 1844)

=*Haplophthalmus perezii* Legrand, 1943

*Haplophthalmus montivagus* Verhoeff, 1941

*Hyloniscus riparius* (C. Koch, 1838)

*Metatrichoniscoides celticus* Oliver & Trew, 1981

*Metatrichoniscoides leydigii* (Weber, 1880)

\**Miktoniscus linearis* (Patience, 1908)

*Miktoniscus patiencei* Vandel, 1946

*Oritoniscus flavus* (Budde-Lund, 1906)

*Trichoniscoides albidus* (Budde-Lund in Meinert, 1880)

*Trichoniscoides helveticus* (Carl, 1908)

*Trichoniscoides saeroeensis* Lohmander, 1924

*Trichoniscoides sarsi* Patience, 1908

***Trichoniscus provisorius* Racovitza, 1908**= *Trichoniscus pusillus provisorius* Racovitza, 1908***Trichoniscus pusillus* Brandt, 1833**= *Trichoniscus pusillus pusillus* Brandt, 1833***Trichoniscus pygmaeus* G.O. Sars, 1898**

Family Styloniscidae

**\**Cordioniscus stebbingi* (Patience, 1907)****\**Styloniscus mauritiensis* (Barnard 1936)****\**Styloniscus spinosus* (Patience, 1907)**

## Section Crinocheta

Family Halophilosciidae

***Halophiloscia couchii* (Kinahan, 1858)*****Stenophiloscia glarearum* Verhoeff, 1908**= *Stenophiloscia zosterae* Verhoeff, 1928

Family Philosciidae

**\**Anchiphiloscia pilosa* (Budde-Lund, 1912)****\**Burmoniscus meeusei* (Holthuis, 1947)**= *Chaetophiloscia meeusei* Holthuis, 1947***Chaetophiloscia cellaria* (Dollfus, 1884)****\**Chaetophiloscia sicula* Verhoeff, 1908****\**Ctenoscia minima* (Dollfus, 1892)**= *Ctenoscia dorsalis* Verhoeff, 1928***Philoscia affinis* Verhoeff, 1908*****Philoscia muscorum* (Scopoli, 1763)****\**Pseudotyphloscia cf alba* (Dollfus, 1898)**= *Pseudotyphloscia* sp. Eden A**\**Setaphora patiencei* (Bagnall, 1908) [uncertain status]**

Family Platyarthridae

***Platyarthrus hoffmannseggii* Brandt, 1833****\**Trichorhina tomentosa* (Budde-Lund, 1893)**

Family Oniscidae

***Oniscus asellus* ssp. *asellus* Linnaeus, 1758*****Oniscus asellus* ssp. *occidentalis* Bilton, 1994**

Family Porcellionidae

**\**Agabiformius lentus* (Budde-Lund, 1885)****\**Lucasius pallidus* (Budde-Lund, 1885)*****Porcellio dilatatus* Brandt in Brandt & Ratzeburg, 1831*****Porcellio laevis* Latreille, 1804*****Porcellio scaber* Latreille, 1804*****Porcellio spinicornis* Say, 1818**= *Porcellio pictus* Brandt in Brandt & Ratzeburg, 1831***Acaeroplastes melanurus* (Budde-Lund, 1885)**= *Metoponorthus melanurus* Budde-Lund, 1885***Porcellionides cingendus* (Kinahan, 1857)**= *Metoponorthus cingendus* (Kinahan, 1857)***Porcellionides pruinosus* (Brandt, 1833)**= *Metoponorthus pruinosus* (Brandt, 1833)**\**Porcellionides sexfasciatus* (Budde-Lund, 1885)**

## Family Trachelipodidae

*\*Nagurus cristatus* (Dollfus, 1889)

*\*Nagurus nanus* (Budde-Lund, 1908)

*Trachelipus rathkii* (Brandt, 1833)

## Family Cylisticidae

*Cylisticus convexus* (De Geer, 1778)

## Family Armadillidiidae

*Armadillidium album* Dollfus, 1887

*\*Armadillidium arcangelii* Strouhal, 1929

*Armadillidium depressum* Brandt in Brandt & Ratzeburg, 1831

*Armadillidium nasatum* Budde-Lund, 1885

=*Armadillidium speyeri* Jackson, 1923

*Armadillidium pictum* Brandt, 1833

*Armadillidium pulchellum* (Zenker in Panzer, 1799)

*Armadillidium vulgare* (Latreille, 1804)

*Eluma caelatum* (Miers, 1878)

=*Eluma purpurascens* Budde-Lund, 1885

## Family Armadillidae

*\*Gabunillo* Schmalfuss & Ferrara, 1983 sp.

=*Gabunillo* sp. Eden A

*\*Reductoniscus costulatus* Kesselyák, 1930

*\*Venezillo parvus* (Budde-Lund, 1885)

## Early years of the British Myriapod Group

Anthony D. Barber

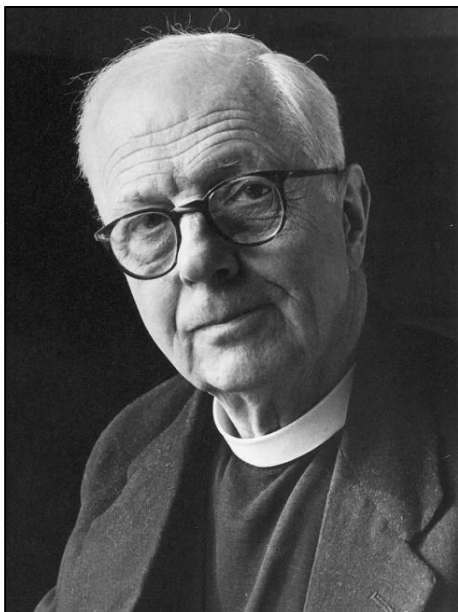
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### Introduction

More than twenty years ago the British Isopod Study Group (BISG) and the British Myriapod Group (BMG), after informal collaboration since the early 1980s, amalgamated to form the present British Myriapod and Isopod Group (BMIG). An account of the earlier years of BISG was given by Harding (2018). A retrospect on myriapod studies and recording in Britain and Ireland up to 2003 was given by Barber (2003) and there are also accounts in the both the millipede atlas (Harding, 2006) and in the more recent centipede one (Barber, 2022) and elsewhere.

This present account describes some of the activities and personalities involved in the foundation of BMG and its work up until roughly the mid-1980s. Many hundreds of individuals sent in records to the



**Rev. Canon S.G. Brade-Birks,**  
**Manchester Congress, 1972**  
[Photo Dr Hilda Brade-Birks]

two recording schemes over the years, many attended the BMG and the subsequent joint BMG/BISG annual field meetings or workshops and so on. It would be impossible to list them all but some of the results of their efforts can be seen in the Atlases, Newsletters and Bulletins that have been produced and their contributions are very much appreciated.

Amongst important names for the first half of the twentieth century were R.I. Pocock (Natural History Museum), A.R. Jackson (NW England), H.K. & S.G. Brade-Birks (NW England, Kent) and R.S. Bagnall (Northumberland & Durham). By the 1930s it would have been possible to draw up species lists for Britain (and Ireland) with some indication of where the species had been found. In his last few *Notes on Myriapoda* S.G. Brade-Birks ("BB", 1887-1982) had covered both nomenclature (1934) and sources for description (1939), a valuable base for later studies. There were also published keys to French centipedes and part of their millipede fauna in the *Faune de France* series (Brolemann, 1930, 1935) but, as yet, none in English for our species.

### The scene is set

In a review of the Zoological Society symposium volume *Myriapoda*, J.L. Cloudsley-Thompson (1975) wrote "When the reviewer began a Ph.D. thesis on the sensory physiology and behaviour of millipedes in 1947, under the supervision of Sir Vincent B. Wigglesworth, nobody in the British Isles, apart from Gordon Blower, was carrying out active research on myriapods, and there were only a couple of British zoologists then living who had previously studied these animals at all seriously".

Almost certainly, a key step in the progress of myriapod studies in these islands and in the formation of BMG was the publication of good identification keys. In 1958, Gordon Blower's *British Millipedes* was issued as a Linnean Society Synopsis (Blower, 1958), being a readily available, relatively easy to use, modern key including excellent quality illustrations. Edward Eason's *Centipedes of the British Isles* (Eason, 1964) was of similar quality but published as a hardback volume by Warne. A new and much

revised version of the millipede key was produced in 1985 (Blower, 1985a). Not only did we now have identification keys/descriptions with high quality illustrations but the two authors were both incredibly approachable and helpful to those of us who sought information or verification of specimens.

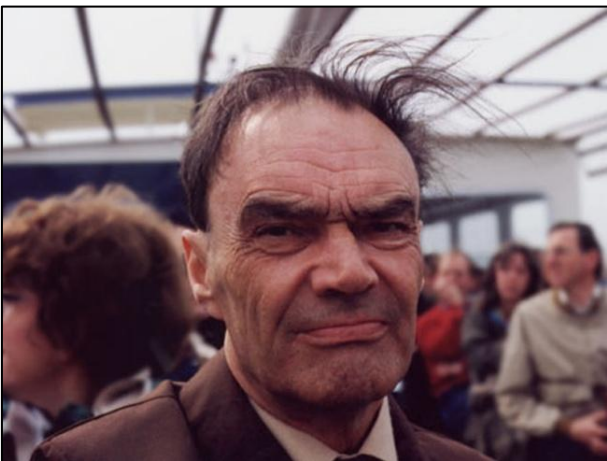
## The 1970 Meeting

### a) People

During the afternoon and evening of 15<sup>th</sup> October 1970, a dozen people assembled at Millslade Guest House, Brendon, North Devon (under the hospitality of Mr Brealey) for a meeting convened by Gordon Blower to talk about, and search for, myriapods. The location was found by John Lewis (recently back from Nigeria) and was deliberately chosen to be one in, what was, at the time, a poorly recorded area. Also present were Adrian Baker (Brooms Barn Experimental Station), Tony Barber (Notts), Charles Brookes (Manchester), Edward Eason, (Moreton-in-the-Marsh), Colin & Joan Fairhurst, Desmond Kime (Guildford), Peter Miller (Manchester), Sholto Rolfe (ADAS) and Richard Williams (UMIST). An account of the meeting and of a subsequent one at Kington, Herefordshire in 1971 was given in the first volume of the *Bulletin of the British Myriapod Group* (Blower, 1972a).

**S.W. (Bill) Rolfe** was a link to what might be called the Brade-Birks era (though BB himself was still around for the 1972 Manchester Congress). Bill, originator of some interesting discussions, was soon to retire and did not come to the 1971 meeting. He was author of a series of *Notes on Diplopoda* published just before the Second World War and co-author with Gordon Blower of the description of *Metaiulus pratensis* (Blower & Rolfe, 1956).

**J.G. (Gordon) Blower** (1923-2001) became, via Bolton Municipal Technical College, Manchester University and 18 months as a Sub-Lieutenant in the Royal Navy Mobile Malaria Control Unit successively a Demonstrator, Assistant Lecturer, Lecturer and finally Reader in Ecology at Manchester University, retiring in 1982. John Cloudsley-Thompson (Read, 2002) tells how he first made contact



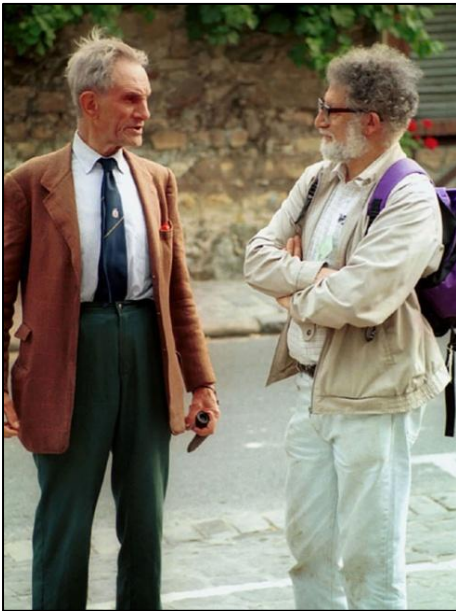
**Gordon Blower. 6th ICM, 1984,  
Amsterdam** [Photo Jean-Jacques Geoffroy]

with Gordon who was then completing his MSc and how they agreed that Gordon would work on millipedes and he would stick to centipedes but that he (Cloudsley-Thompson) subsequently switched to activity rhythms in woodlice. Gordon went on to publish his first myriapod papers, on the cuticle of centipedes and millipedes in the early 1950s (Blower, 1950, etc.), and continued his studies on millipedes, looking at both the ecology and life histories of these animals, amongst other topics. His papers on Yorkshire millipedes and centipedes (Blower, 1952; 1955), both of which listed species not just from that county, represented an update on the Brade-Birks work and a valuable list of references.

Gordon and his research students, including those named here, became effectively an informal “school of myriapod studies” at Manchester and, as described in his obituary (Read, 2002), for many, he was “the father of modern myriapodology in Britain”. It is interesting to recall that when Miss H.K. Brade MSc and Rev. S. Graham Birks MSc, as they then were, began their *Notes on Myriapoda* (Brade & Birks, 1916) more than 25 years or so before Gordon started his degree course there, gave their address as the Victoria University of Manchester. A special memorial version of this *Bulletin* (Volume 19) for

Gordon and Ted was published in 2003. A list of the myriapod publications by Ted was given in Blower (2000) and those by Gordon in Read (2002).

**E.H. (Ted) Eason** (1915-1999) was born at Holmes Chapel, Cheshire and was keen on natural history from an early age (Blower, 2000). He attended Malvern College where he came under the influence of

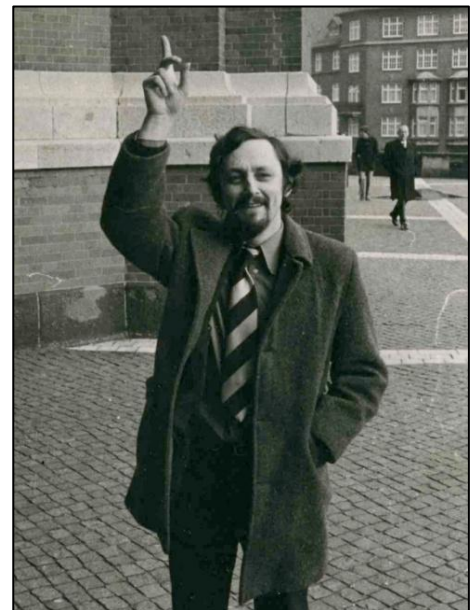


**Ted Eason and John Lewis,  
Innsbruck Congress, 1990**  
[Photo Zoltán Korsós]

Theodore Savory, the biology master, well known naturalist and student of Arachnida. Reading medicine at Cambridge and completing his studies at London University, he served in the RAMC in India and Burma during the Second World War and afterwards worked as a pathologist. His deafness, exacerbated by his wartime experiences, precluded general practice and in 1948 he took up farming at Bourton Far Hill in the Cotswolds. Continuing his interests in natural history, he also began publishing myriapod work in the early 1950s with a paper on the centipedes of Warwickshire and Worcestershire (Eason, 1951). He went on to author further articles on British centipedes, on type specimens described by various authors and on collections from various parts of the world. Gordon Blower was first in touch with Ted soon after the latter published his account of the discovery of *Lithobius aulacopus* (now known as *L. macilentus*) from the Lake District (Eason, 1953; Blower, 2000). In 1980 Ted was awarded the Stamford Raffles Prize by the Zoological Society of London for distinguished work on the taxonomy of centipedes.

**J.G.E. (John) Lewis's** postgraduate studies were on the littoral centipede *Strigamia maritima* on the Sussex coast. He published accounts of three centipede species new to Britain and on *S. maritima* life-history and ecology, halophilic centipedes and his studies of *Lithobius forficatus* and *L. variegatus*. Going on to work in the Sudan and in Nigeria, by 1970 he was back in Britain. John became a leading expert on the Scolopendromorpha and in 1981 published his *Biology of Centipedes* (Lewis, 1981). He had worked in Khartoum with Cloudsley-Thompson who had authored a number of papers referring to myriapods and several books including *Spiders, Scorpions, Centipedes and Mites* (Cloudsley-Thompson, 1958). Now more or less retired from myriapod work, a list of John's British related publications is found in Barber (2021)

**C.P. (Colin) Fairhurst** (1942-1994), who had been one of Gordon's research students, was a man of many interests and great enthusiasm and very encouraging to others. He studied schizophylline millipedes, and worked with the British Isopod Study Group on the design and establishment of the centipede, millipede and woodlice recording schemes. He established the millipede scheme (and, indirectly, in a number of ways, that for centipedes also) placing the millipede scheme on a firm footing and acting as its organiser until 1983 when pressure of work forced him to hand this over to Doug Richardson. As well as millipedes, his research interests included tropical disease vectors, tree disease (including Dutch elm disease) and environmental survey and education. After teaching in Manchester, Keele and Stockport he went on to Salford. His



**Colin Fairhurst**  
Possibly Berlin in the 1980s  
[Photo courtesy Joan Lewis Jones]

wife Joan had also been one of Gordon's students.

**C.H. (Charlie) Brookes** (d. 1983) another of Gordon's former research students, Charlie had a special interest in blaniulids. Taking his PhD in 1963 and working in various higher and further education colleges, he became Assistant Director of Manchester Polytechnic in 1980 but was unfortunately killed in a rail accident in 1983.



**Des & Kathleen Kime. Hamburg Congress, 1975** (John Lewis in background) [source unknown]

**R.D. (Des) Kime** (1932-2023) had been a biology teacher at the Royal Grammar School Guildford since 1954 when in 1964 he was joined by recently-qualified A.D. (Tony) Barber who shared his interest in ecology and general natural history. Tony had already known of centipede studies carried out some years before by two research students, H. Roberts & S. Vaitilingham, at Southampton from his time as an undergraduate there – but, as he admits, his notes from that time were not helpful and unfortunately neither of the two studies were formally published although John Lewis made reference to them in his book (Lewis, 1981). With shared interests in soil animals, Des concentrated on millipedes starting with a short note in *Entomologists' Monthly Magazine* on the presence of *Entothalassinum italicum* (*Stosatea italica*) in Surrey (Kime, 1967) and his work on these blossomed after he left RGS in 1974 to join the

European School in Brussels. He presented a paper on the distribution of millipedes in southern England at the Hamburg 3<sup>rd</sup> International Myriapod Congress of 1975 (Kime, 1978) and his subsequent work on diplopods, which included the three volumes of the European millipede atlas, has been immensely important (Kime & Enghoff, 2011; 2017; 2021).

F.A. Turk (1911-1996) and P. Langton were unable to attend the meeting in 1979 but sent their apologies. Dr Turk published several papers on myriapods including an account of those of Cornwall (Turk, 1944) and also worked with the Cave Research Group. He and his wife Stella were both active in Cornish natural history and in establishing biological recording in the county. One of his previously unsorted collections, from the Isles of Scilly, proved to contain a specimen collected by Stella in 1948 of an, at the time unidentified, small geophilomorph, which we now recognise as *Nothogeophilus turki* Lewis *et al.*, 1988. F.A.T., as he was often known, tended very much to stay in his home county and played no real role in the formation of BMG although I was made most welcome when I visited and he proved a most interesting person to talk to. Peter Langton, amongst other publications, reported on centipedes and millipedes in Buckingham Palace Garden (Langton, 2001) as well as other myriapod contributions.

## b) Progress

The 1970 meeting was marked by much useful discussion about myriapodological topics and field work carried out yielded, amongst other species, a centipede apparently new to Britain in several sites. Using a handwritten copy of the Brolemann (1930) key that someone had brought along, it was tentatively identified as *Chalandea pinguis* (*Eurygeophilus pinguis*) subsequently confirmed by Ted Eason. Later studies indicated that it was seemingly confined to the North Devon area (as well as the Alps, Pyrenees and Picos d'Europa) although it has now also been found in West Cornwall. There was agreement to the



formation of a group and of having further meetings, and after some discussion as to what the group should be called, the British Myriapod Group was formally established.

Colin Fairhurst described the discussions he had been having with the British Isopod Study Group (BISG) from 1969 on for the use of a common recording system (card based at that time) which, unlike most other biological recording schemes then current, not only recorded location, date, grid reference, collector, determiner, etc. but attempted to capture habitat information in a systematised way making additional use of the capacity of the IBM 80-column punch cards then used for computer input. There was agreement for using separate cards with common location and habitat data collection for both millipedes and centipedes (as well as woodlice). The design of the record card was such as to match the use of the IBM cards and it was agreed that Colin Fairhurst (millipedes) and Tony Barber (centipedes) should be the organisers and would work in co-operation with the Biological Records Centre (BRC) (then at Monks Wood).

This system was, in due course, agreed with BRC on the basis that it was a logical extension to the 10km square system, was experimental and did not imply that they would be prepared to support habitat studies on other groups. It was also subject to approval of the habitat classification system by the soil zoology section at Merlewood Research Station. Cards and instructions were issued in due course with a design that allowed a number of species in a particular situation to be record on a single card. The habitats and sub-categories were chosen with the three groups specifically in mind and with the hope that the lists would encourage collectors to look at more than the most obvious habitats and microsites. Recorders were encouraged “to fill in what they could”, but the forms were perhaps a little daunting, certainly at first.

A report on the recording scheme was given at the Manchester Congress by Barber & Fairhurst (1974) and subsequently by Fairhurst *et al.* (1978) and Fairhurst & Armitage (1966) with some discussion of it by Barber (2005). Atlases incorporating aspects of the habitat information were, in due course, published for woodlice (Harding & Sutton, 1985), centipedes (Barber & Keay, 1988; Barber, 2022) and millipedes (Lee, 2006).

In 1971 a second BMG meeting took place at Kington near the Welsh border with a total of thirteen members present and collections made in the counties of both Hereford and Radnor. A 1972 field meeting, as such, was not planned as the Second International Myriapod Congress was to take place in Manchester that year.

### **Symphyla & Pauropoda**

In addition to centipedes and millipedes, R.S. Bagnall had also looked at both Pauropoda and Symphyla (and other groups) and had included them in a number of reports. A key to British Symphyla was published by C.A. Edwards (Edwards, 1959) but despite efforts by the late Steve Hopkin to kickstart studies on this group (see Hopkin & Roberts, 1988) studies and publications about them remain limited. As far as Pauropoda are concerned, there has also been limited work in Britain, but there now seems some more interest currently. The late Ulf Scheller of Sweden had expertise in both groups, especially the pauropods, and contributed to studies of British species including describing a new one, *Trachypauropus britannicus* found by Gordon Blower. Much of our current understanding of these animals in Britain derives from Ulf's work (see Scheller, 1990; Barber, *et al.*, 1992). A similar problem seems to exist elsewhere in Europe for both of these myriapod classes.

### **International Congresses**

In April 1968 the First International Congress of Myriapodology had taken place in Paris (Demange, 1970). Papers presented included contributions from J.G. Blower, E.H. Eason, C.P. Fairhurst and J.G.E. Lewis. The meeting also saw the setting up of the Centre International de Myriapodologie (C.I.M.,

International Society for Myriapodology) under whose auspices subsequent international congresses continue to take place.

The second Congress took place as planned at Manchester in April 1972, organised by Gordon Blower assisted by Charles Brookes. Rev. Canon S.G. Brade-Birks attended as president and his address was on “Retrospect and Prospect in Myriapodology” (Brade-Birks, 1974). As well as the British participants, members from all over the world were welcomed.

The subsequent *Zoological Society Symposium Myriapoda* (Blower, 1974) contains lists of participants as well as the papers presented. For some of us this was, maybe, the first time we presented work at such a meeting, indeed maybe the first time we attended such a meeting, and were inspired to further myriapod studies. The congress also saw the first, and for a number of years, the only, volume of *The Bulletin of the British Myriapod Group* (Blower, 1972b).

### The British Myriapod Group “Quiet Years”

The years that followed were quiet in the sense that there were no formal meetings or publications of the British Myriapod Group. However, work on the recording schemes progressed and new contacts and new recorders were added to the list and various members attended international congresses in Hamburg (Germany), Gargano (Italy) and Radford (Virginia, USA).

Two of the recorders who joined us during these years were D.T. (Doug) Richardson and A.N. (Andy) Keay. Doug, an enthusiastic (and outspoken) Yorkshireman with a flair for organisation, was active in the Yorkshire Naturalists’ Union in organising recording of non-insect arthropod groups. Also known as “Compo”, after a character in a television series of the time, Doug took over the organisation of the millipede recording scheme from Colin and was also the first editor of the BMG Newsletter (1983). He was involved, with Paul Harding, in producing the first (preliminary) millipede atlas (British Myriapod



**Andy Keay, Roger Key & Paul Lee. BMG Langford (Mendips) meeting, 1987.** [Photo Helen Read]

Group, 1988) and also introduced Paul Lee to the group at the meeting in 1987. The latter went on to become, in due course both millipede recorder, author of the millipede atlas (Lee, 2006) and chair of BMIG for a number of years.

Andy Keay took a particular interest in centipedes, initially on the Isle of Wight where he found both *Lithobius pilicornis* and *Henia vesuviana* to be widespread. He also collected *Nothogeophilus turkii* on the Island as well as the millipede *Trachysphaera lobata* and was co-author of the *Provisional Atlas of the Centipedes of the British Isles* (Barber & Keay, 1988) for which he played a major part in organising data.

### Revival

By a coincidence, a biologist at Plymouth Polytechnic (now University), R.H. (Ron) Daniel, had been away working on an MSc at Manchester and had been with Gordon Blower. A slightly larger than life Cornishman who had experienced early contact with Frank & Stella Turk, he arrived in Tony’s then “office” in the Polytechnic to announce that he had “met a friend of yours”, Gordon Blower. We talked myriapods on a number of occasions both face to face and on the telephone – made a little more difficult by Ron’s deafness – and jointly published a short note in the *Entomologist’s Monthly Magazine* on *Chaetechelyne* (*Henia*) *vesuviana* and *Leptoilulus kervillei* (Barber & Daniel, 1973). In due course, Ron

began to talk about organising a BMG meeting in Plymouth. He negotiated with the polytechnic authorities to arrange accommodation, etc., and, working with Peter Smithers in identifying potential field-work sites, organised the 1982 BMG Plymouth meeting. Amongst those attending was another of Gordon's students with an interest in millipedes, H.J. (Helen) Read who was to become a key person in the activities and continuity of BMG and later BMIG both as Honorary Secretary and a *Bulletin* editor. She was also co-author with S.P. (Steve) Hopkin of *Biology of Millipedes* (Hopkin & Read, 1992).



**Some participants at the BMG Easter 1982 Plymouth meeting**

Left to right: Tony Barber, Ron Daniel, Pete Smithers, Doug Richardson, Helen Read, Des Kime and Kathleen Kime [Photo thought to be by Gordon Blower]

Steve Hopkin (1956-2006) first appeared in BMG notes when he contributed a note on being bitten by a geophilomorph centipede in the second *BMG Newsletter* (Hopkin, 1983). He was present, as were Helen and others, at the 6<sup>th</sup> International Congress in Amsterdam in 1984 where both read papers. Steve had worked on heavy metal tolerance in woodlice, etc. and went on to become a lecturer in zoology at Reading University. He had a wide range of interests and, as well as attending both British and International myriapod meetings, was co-author of *Biology of Millipedes* (above), author of the



**Steve Hopkin & Wolfgang Dohle with ice-creams, Vittoria Veneto Congress, 1987**

[Photo Helen Read]

author of the AIDGAP woodlouse key (Hopkin, 1991), of *Ecophysiology of Metals in Terrestrial Invertebrates* (Hopkin, 1989) and, for some years, organiser of the woodlouse recording scheme. He became interested in a wide range of soil fauna and was also author of the posthumously published AIDGAP key to Collembola (Hopkin, 2007) as well as numerous other publications. He was organiser of the BMG/BISG meeting at Bangor in 1985 and went on to make many contributions to myriapod & isopod studies and elected chair of BMIG just prior to his untimely death in a road accident. This was a very sad loss of this unassuming, bright and likeable biologist both to myriapod and isopod studies and, almost certainly, to natural history in Cornwall, to where he had relocated just prior to his death.

In 1983 another BMG meeting took place at St. Marks College Lancaster at a date when British Isopod Study Group members were also able to be present. From that year onwards, joint BMG/BISG meetings took place and the collaboration and exchange of ideas and identification skills was immensely productive. Not surprisingly, the two groups finally amalgamated, with a formal constitution and election of officers to form BMIG in 2000 at the meeting at Audley End, Essex.



**Dick Jones & Steve Gregory. Collecting trip to Hungary, 1994.** [Photo Helen Read]

The 1984 meeting was at Brancaster on the Norfolk coast, organised by A.G. (Tony) Irwin and R.E. (Dick) Jones and remembered by some who were there as one of the coldest spots BMG/BISG had ever met at. Dick, as well as being associated with the discovery and description of the centipedes *Arenophilus peregrinus* and *Nothogehilus turkii* also worked on Australasian *Tuoba* (a worldwide, largely maritime geophilomorph genus) and was at various times editor of the BMG Newsletter and co-ordinator of the Millipede Recording Scheme. His garden and its environs are still notable as the only known British site for the millipede *Unciger foetidus*.

A glance through the pages of the Newsletter and Bulletins on the BMIG website will show the names of many others who have contributed to the organisation in various ways. These include Keith Alexander (National Trust ecologist, subsequently independent), Eric Philp (Kent), Glyn & Dawn Collis (Bute), Charles Rawcliffe (a retired exciseman from Edinburgh), Gordon Corbet (ex-Natural History Museum, London & Fife), David Bilton (now at Plymouth), Noel Jackson (Co. Durham, remembered for his songs in the bar at the Mendip meeting), Ian Morgan, David Boyce, Adrian Fowles, Greg Jones and others from Wales. And not forgetting Adrian Rundle, a sharp-eyed chemist from Kew, who was well known for being able to collect interesting millipedes from the most unlikely places such as the dust and litter at the edge of a street.

One consequence of the collaboration & eventual amalgamation of BISG and BMG was a letter that the present author received in 1990, “Having tried with some success with Isopods, I thought I would attempt centipedes as well”. It was from S.J. (Steve) Gregory who went on to make contributions to our knowledge of woodlice, centipedes and millipedes (and also terrestrial amphipods), to discover a millipede new to Science in 1992 (*Anthogona britannica*), to take over the woodlouse recording scheme and produce *Woodlice and Waterlice (Isopoda: Oniscidea & Asellota) in Britain and Ireland* (Gregory, 2009) and in 2023 relinquish the woodlouse recording scheme to take on that for centipedes. At a similar time to that when Steve started to look at centipedes, J.P. (Paul) Richards, known for his most useful little book *Centipedes millipedes and woodlice of the Sheffield Area* (Richards, 1995), a subsequent CD and for his photography, became an active member of the group and continues to be so.

Paul Harding, (Head of BRC, 1982-2003), originally a “woodlouse man” though also credited with a number of myriapod records, offered much support and encouragement to BMG and to myriapod studies in Britain and Ireland over the years and continues to do so in his present role as treasurer of BMIG. The two myriapod recording schemes, like the woodlouse one, have always run in association with BRC and been supported by it. BRC, had, itself, been established following the success of the BSBI vascular plant recording and atlas (Perring & Walters, 1962). It has been a pioneer of what is now termed “citizen science”, working in “synergistic partnership” with recording schemes (see: Pocock *et al.*, 2015; Roy *et al.*, 2015). Of course, we would like to think of BMIG as more than just running recording schemes. We should also note support received over the years from colleagues in The Nature

Conservancy Council/English Nature/Natural England and their parallel Welsh and Scottish organisations. Roger Key, invertebrate specialist at English Nature, was very supportive and helped secure some funding for projects on rarer species such as *Trachysphaera lobata* and *Nothogeophilus turki*. Roger attended several meetings as did John Bratton and Ian Morgan.

### **The *Bulletin* reappears**

Whilst the BMG Newsletters and the annual joint BMG/BISG meetings kept members in touch, it was felt by some that a revival of the *Bulletin* would provide a focus for news, reports of meetings, updates on new species recorded and myriapod studies in general in Britain and Ireland. Preliminary work on a second volume was begun by Gordon and Colin but a bookseller's catalogue a few years later, offering a copy of Volume 1, was able to describe it as the "only one published". However, with Gordon's name as editor on a simple white cover, a relatively thin Volume 2 did appear in January 1985 (Blower, 1985b). It included articles by Paul Harding, Gordon Blower, Andy Keay, Des Kime, Colin Fairhurst and Tony Barber with humorous contributions such as "*Pollution Rhymes*" and *Anamorphosis of a Diplopod* from Wolfgang Dohle of Berlin. Sadly, it also contained three obituaries, Rev. Brade-Birks, Charlie Brookes and Sidnie Manton.

Volume 3 appeared the following year bearing both a drawing of the recently-discovered *Trachysphaera lobata*, and an ISSN number (Barber & Blower, 1986). Production in these early days usually involved typing up by friends, pasting in drawings, duplication by a local printer and binding by hand. Copies were then made available at annual meetings or sent out by mail to contacts in Britain, to copyright libraries and contacts elsewhere in Europe. One impact of this was the variety of styles of these various issues as we tried to keep costs down - at one stage, a grant/loan from BISG helped to keep us going.

### **Recording in Ireland**

Although there were quite a number of published accounts of Irish myriapods in the late nineteenth and early twentieth centuries, recording virtually ceased after the First World War right through to the 1960s and 1970s (Barber, 2022). There were records being contributed in the 1970s by Declan Doogue and Carmel Mothersill and others (including Don Cotton, Lesley Gibson, Des Higgins) along with several visitors from Britain. In 1978 Carmel published a progress report on recording harvestmen, pseudoscorpions and centipedes (Mothersill, 1978).

The present author collated published and other records including data from the National Museum of Ireland (thanks to Jim O'Connor) and published an account of Irish centipedes (Barber, 1984). However, he was only able to report about a hundred records made in the previous ten years. The provisional centipede atlas (Barber & Keay, 1988) had only 631 plottable Irish records. Doogue *et al.* in due course (1993) published a review of Irish millipedes. By the end of the twentieth century, sterling work by Roy Anderson, Martin Cawley and others had massively increased the number. Martin published a review of Irish centipedes (with distribution maps) in a decade later (Cawley, 2010).

### **The BMG Ethos**

BMG (and BMG/BISG) meetings and their organisation in the early years were relatively informal. At one stage, so as to be able to have a BMG bank account, officers, including a named Treasurer, had to be elected/appointed from those present at an annual meeting. What was very much a feature of the gatherings was the mixture of participants, academics and amateurs, experienced and beginners from all sorts of background and they were marked by openness in the sharing of knowledge, ideas and experience both in the field and over a glass or two in the evenings. I am sure this must have been due very much to the influence of Gordon Blower. In some meetings visitors from elsewhere in Europe or beyond were welcomed as well and the existence of C.I.M. also provided a valuable basis for international contacts and literature and to prompt us to see the British myriapod fauna in a wider context.



**Later Years: BMIG Committee at Cambridgeshire in 2009**

**Left to Right:** Glyn Collis, Peter Nicholson, Paul Harding, Helen Read, Steve Gregory, Eric Philp, Paul Richards, Jo Smith, Tony Barber, Paul Lee

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Special thanks are due to Helen Read and Paul Harding for their comments, information and refreshments to my memory and to both and to Steve Gregory for research into available photographs. Also, of course, to the Biological Records Centre and all those many people who have contributed to our knowledge of British and Irish myriapods and to the work of BMG and BMIG.

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## **‘For more years than he may care to remember’ – Tony Barber and centipede recording**

Since 1970 Tony Barber has been at the centre of recording of centipedes in Britain and Ireland. This was formalised that year when the British Myriapod Survey (BMS) was launched. The BMS was part of the British Myriapod Group (BMG) whose activities began in the same year resulting from a highly successful gathering of British myriapodologists in North Devon. A couple of years later two national recording schemes (for Centipedes and for Millipedes) were launched by BMG in association with the Biological Records Centre, together with a similar national scheme for woodlice and waterlice organised by the British Isopoda Study Group (BISG). After many years of collaboration BMG and BISG merged in 2000 to form the British Myriapod and Isopod Group (BMIG) under Tony’s chairmanship. See Tony’s account ‘*Early years of the British Myriapod Group*’ earlier in this volume of the *Bulletin* (36: pages 59-71).

Although employed teaching full-time in tertiary education throughout the next 4 decades, and with family and local political commitments, Tony has been the go-to person regarding the occurrence of centipedes in Britain and Ireland. The amount of identifications that he has undertaken in over 50 years, usually for less skilled contributors to the scheme, must be incalculable. Although a summary of the data collected to date was published as a *Provisional Atlas* in 1988 (Barber & Keay, 1988) much of Tony’s communication with recorders was at a personal level, originally by letter and eventually via email. He has been regular and active contributor to relevant BMG and BMIG publications and a co-editor of the BMG/BMIG Bulletin since the former was revived in 1985.

In 2008 the Field Studies Council (FSC) published Tony’s entirely new *Key to the identification of British centipedes* (Barber 2008) in its AIDGAP series. A year later FSC published his *Centipedes* volume (Barber 2009) in the Linnean Society Synopses series. These two publications renewed and refreshed the available literature to help identify British and Irish centipedes. As Tony made clear, with typical modesty, both publications drew on Eason’s *Centipedes of the British Isles*, published in 1964, in particular for illustrative material. These publications must be part of a thinly disguised master plan – to leave a new generation (or two) of myriapodologists with a complete guide to British and Irish centipedes. Tony’s long anticipated *Atlas of the centipedes in Britain and Ireland* (which is reviewed in this volume of the *Bulletin*, page 106) may be the culmination of his master plan! In his retirement from full-time teaching, these progressive steps characterise Tony’s quiet determination.

Paul T. Harding

# First Data On Centipedes (Myriapoda: Chilopoda) From The Cíes Islands (North-West Spain)

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## Abstract

Preliminary data on the centipede fauna detected in a short-term survey on 8th August 2023 on Monteagudo Island are provided. *Geophilus easoni* Arthur, Foddai, Kettle, Lewis, Luczynski & Minelli, 2001 and *Lithobius borealis* Meinert, 1868 are first reported in a Spanish archipelago. *Pachymerium ferrugineum* (C.L. Koch, 1835) and *Lithobius borealis* Meinert, 1868 are first recorded in Galicia and Pontevedra. Centipede species potentially occurring in the Cíes Islands are commented on.

**Key words:** Coastal environments, Galicia, *Geophilus easoni*, *Lithobius borealis*, *Lithobius pilicornis pilicornis*, mixed forests, Monteagudo Island, *Pachymerium ferrugineum*, Pontevedra.

## Introduction

Studies on centipedes from insular areas of Spain have mostly been carried out in the Balearic (Koch, 1882; Serra, 1983; Sammler *et al.*, 2006; Vadell, 2007a, 2007b; Vadell & Pons, 2008, 2009, 2010; Vadell & Martínez, 2011; Cabanillas & García-Febrero, 2020; Cabanillas & Robla, 2022) and the Canary Islands (Latzel, 1895; Brölemann, 1900; Serra, 1984; Eason, 1985; Zapparoli, 1990; Eason & Enghoff, 1992; Akkari & Ganske, 2018). Nevertheless, the centipede fauna of small islands that lie just off-shore of the Iberian Peninsula have been poorly researched, with only a couple of known records from the island of Terreros (Almería, south-eastern Iberian Peninsula) (Gómez de Dios *et al.*, 2022).

The Cíes Islands are located in the mouth of the Vigo estuary (Pontevedra, Galicia), in the north-west of the Iberian Peninsula. They are composed of three granite islands (Illa de Monteagudo, Illa do Faro and Illa de San Martiño) and small granite islets. The most representative environments in the Cíes Islands are cliffs, sand and pebble beaches, saline lagoons, dune systems and mixed forests of pine and eucalyptus. The climate of the archipelago has been defined by some authors as “sub-humid Mediterranean with an Atlantic tendency” due to dry and warm summers and rainy and mild winters (mean annual temperature is between 13-15°C and mean annual precipitation is around 1000 millimetres). More information about the natural environment, history and cultural heritage of the National Park of the Atlantic Islands of Galicia can be consulted in Organismo Autónomo de Parques Naturales (2014).

Studies on terrestrial arthropods from the Cíes Islands are scarce and only a few works on heteropteran, orthopteroid and coleopteran insects are available (Novoa *et al.*, 1999; Novoa & Baselga, 2000; Vázquez *et al.*, 2003). Aiming to keep on expanding knowledge on the arthropods of this archipelago, preliminary data on the centipede fauna from the Cíes Islands are provided.

## Material & methods

**Methodology.** Centipedes were searched for beneath rocks, logs and under bark of rotten wood on Monteagudo Island (Fig. 1) during a non-systematic and short-term survey on 8<sup>th</sup> August 2023.

Literature on the morphology and identification of centipedes was consulted in determining the identity of specimens (Serra, 1980; Arthur *et al.*, 2001; Gregory & Barber, 2010; Bonato *et al.*, 2014; Iorio & Voigtländer, 2019). Taxonomical criteria of Bonato *et al.* (2016) were followed for Geophilidae and Ganske *et al.* (2020) for Lithobiidae. *Habitus in vivo* of specimens was photographed *in situ* with a Panasonic Lumix DMC-FZ300 camera equipped with a Raynox DCR-250 macro lens and edited with Adobe Photoshop 2022 and PhotoScape. Coordinates are expressed in the Universal Transverse Mercator system.



**Figure 1: Sampling localities on Monteagudo Island.** A) Praia da Cantareira. B) Ecotone on Praia da Cantareira. C) Praia de Rodas. D) Mixed forest of pine and eucalyptus.

## Results and discussion

### Class Chilopoda

### Order Geophilomorpha

### Family Geophilidae

#### *Geophilus easoni* Arthur, Foddai, Kettle, Lewis, Luczynski & Minelli, 2001

**Material examined:** Illas Cíes - Illa de Monteagudo, Praia da Cantareira: 1 juvenile with 53 leg pairs (Fig. 2A), under bark of a pine log in the boundaries of a mixed forest of cluster pine (*Pinus pinaster* Ait.) and blue gum (*Eucalyptus globulus* Labill.) (29T 508175 4675048) and 1 ♀ with 53 leg pairs (Fig.

2B), 08/08/2023, under a rock in the ecotone between the terrestrial and the coastal area of a pebble beach (29T 508168 4676076).

*Geophilus easoni* (Fig. 2A-B) was first reported in Spain from coastal grasslands, moorlands and woodlands in Pontevedra and Ourense (northwestern Iberian Peninsula) (Gregory & Lewis, 2015). Later, the species was found in eucalyptus plantations in Asturias (northern Iberian Peninsula) (Cabanillas, 2019). New data from the Cíes Islands provide the first record from an insular territory of Spain and the third report for the country. Specimens fitted the description given by Gregory & Lewis (2015) for the Galician individuals (*i.e.*, stout and bluntly rounded teeth on the labral mid-piece and number of leg pairs), except the minimum number of coxal pores (6 on each coxa), as previously observed in British populations (Arthur *et al.*, 2001).

***Pachymerium ferrugineum* (C.L. Koch, 1835)**

**Material examined:** Illas Cíes - Illa de Monteagudo, Praia de Rodas: 1 juvenile with 53 leg pairs, 08/08/2023, under a rock at the end of a sand beach (29T 508071 4674835).

*Pachymerium ferrugineum* is widespread in the Iberian Peninsula in both coastal and inland habitats (Cabanillas & Robla, 2022). Also known from the Spanish archipelagos of the Balearic and the Canary Islands (Latzel, 1895; Brölemann, 1900; Cabanillas & Robla, 2022). The record from the Cíes Islands made it possible to first report the species in Galicia and Pontevedra. Although a juvenile, the specimen could be attributed to the coastal form due to body colour, number of leg pairs and its presence in a hypersaline environment.



**Figure 2: Habitus in vivo of some centipedes from the Monteagudo Island.**

- A) Juvenile *Geophilus easoni*. B) Female *Geophilus easoni*. C) Male *Lithobius borealis*.  
D) Female *Lithobius pilicornis pilicornis*.

## Order Lithobiomorpha

### Family Lithobiidae

#### *Lithobius borealis* Meinert, 1868

**Material examined:** Illas Cíes - Illa de Monteagudo: 1♂/1♀, 08/08/2023, under a rock in a mixed forest of cluster pine (*Pinus pinaster* Ait.) and blue gum (*Eucalyptus globulus* Labill.) (29T 508142 4675808).

*Lithobius borealis* (Fig. 2C) is a common species in pine forests, oak groves, eucalyptus plantations, meadows, moorlands and mountainous environments of the northern Iberian Peninsula (Serra, 1980; Salinas, 1990; Iorio & Voigtländer, 2019; Cabanillas, 2019). The new findings provided the first record in Galicia and Pontevedra and made it possible to first report the species in a Spanish archipelago. Specimens fitted the description given by Serra (1980) for Iberian specimens.

#### *Lithobius pilicornis pilicornis* Newport, 1844

**Material examined:** Illas Cíes - Illa de Monteagudo: 1♂/1♀, 08/08/2023, under a rock in a mixed forest of cluster pine (*Pinus pinaster* Ait.) and blue gum (*Eucalyptus globulus* Labill.) (29T 508142 4675808).

*Lithobius pilicornis pilicornis* (Fig. 2D) is considered one of the most common centipedes in the northern Iberian Peninsula, with many records in pine forests, riverbank woodlands, eucalyptus plantations, meadows, moorlands, mountainous environments and caves (Demange, 1959; Serra, 1980; Salinas, 1990; Iorio & Voigtländer, 2019; Cabanillas, 2019). Previously recorded in Galicia by Iorio & Voigtländer (2019) in the provinces of Pontevedra and Ourense. Also known from the Spanish archipelago of the Canary Islands (Akkari & Ganske, 2018). Specimens fitted previous descriptions given by Serra (1980, 1981) for Iberian specimens.

## Centipede community of the Cíes Islands

Preliminary results were too limited to accurately represent the composition of the centipede fauna of the Cíes Islands, as only a single short-term survey was conducted during the driest season. Nevertheless, exploring the habitat diversity of the Cíes Islands made it possible to surmise which centipede species could be living in this archipelago. Since the four centipede species found on Monteagudo Island are particularly frequent in the northern Iberian Peninsula (Serra, 1980; Salinas, 1990; Gregory & Lewis, 2015; Iorio & Voigtländer, 2019; Cabanillas, 2019; Cabanillas & Robla, 2022), it is reasonable to believe that a significant portion of the centipede species inhabiting the Atlantic and Cantabric regions may also dwell in the Cíes Islands. For instance, mixed forests of pine and eucalyptus are most likely inhabited by the silvicolous species *Lithobius variegatus* Leach, 1814, *Lithobius validus* Meinert, 1872, *Lithobius derouetae* Demange, 1958, *Lithobius crassipesoides* Voigtländer, Iorio, Decker, Spelda, 2017, *Strigamia crassipes* (C.L. Koch, 1835) species complex, *Geophilus truncorum* Bergsøe & Meinert, 1866 or *Stigmatogaster souletina* (Brölemann, 1907). Other common species in the northern Iberian Peninsula, such as *Cryptops (Cryptops) hortensis* (Donovan, 1810), *Cryptops (Cryptops) anomalans* Newport, 1844 or *Scutigera coleoptrata* (Linnaeus, 1758), are also expected to be present in the Cíes Islands. Additionally, Gregory & Lewis (2015) documented the presence of *Arenophilus peregrinus* Jones, 1989 in a neighbouring location in the north-western Iberian Peninsula and suggested a widespread Atlantic distribution for the species. Although the distribution of *A. peregrinus* in the Iberian Peninsula needs further investigation, the possibility exists that the species is also present in the Cíes Islands. Other habitats, such as cliffs, rocky beaches, saline lagoons and other coastal environments could provide suitable habitats for the settlement of the halobiont centipedes *Hydroschendyla submarina* (Grube, 1872), *Strigamia maritima* (Leach, 1817) or *Schendyla peyerimhoffi* Brölemann & Ribaut, 1911, amongst others. In light of the aforementioned considerations, further studies should be oriented to fully characterise the centipede community of the Cíes Islands.

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## Report on the BMIG field meeting in Preston Montford in 2022

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### Introduction and background

The 2022 BMIG field meeting, held from 21<sup>st</sup> to 24<sup>th</sup> April, was based at the Field Studies Council (FSC) Preston Montford centre in Shropshire. The field centre has extensive grounds including sheep grazed and rough grassland, ponds and mature broadleaved woodland on the bank of the River Severn (the Severn Montford SSSI). Shropshire has a varied geology, with outcrops of limestone, sandstone, shale and igneous rocks, with many potential sites including meadows, heath, wetlands and woodland.

BMIG had previously visited Shropshire in 2007, which was then based in Ludlow further south near the Herefordshire and Worcester borders. Shropshire was targeted due to the lack of recording of BMIG species, which was highlighted by Lee (2010) in his summary of the historical recording of millipedes in Shropshire (VC40). Up to 2001 there were about 100 millipede records comprising 20 species, with a few additional species records added from FSC Preston Montford by Paul Lee during identification courses undertaken prior to the 2007 meeting. The number of records is likely to have been similarly depauperate for centipedes and woodlice, thus highlighting the need for this field meeting.

The 2007 meeting proved successful with about 40 sites visited within 15 hectads (10km squares), significantly improving our knowledge of the Shropshire fauna. A summary of centipedes, millipedes and woodlice observations are reported by Barber (2008), Lee (2010) and Gregory (2010) respectively. In total 19 species of centipede were recorded, including *Schendyla dentata* and *Henia brevis* (the latter new to Shropshire). Of the 21 species of millipede species recorded five were new to Shropshire: *Brachychaeteuma melanops*, *Cylindroiulus parisiorum*, and perhaps more surprisingly the widespread *Melogona scutellaris*, *Archiboreoiulus pallidus* and *Polydesmus coriaceus*. The 16 species of woodlouse included *Trichoniscoides sarsi* seg. at Ludlow Castle (at the time only known from Kent, Suffolk and Leicestershire in Britain) and *Armadillidium pictum* at Downton Gorge NNR. Centipede, millipede and woodlouse records have continued to be made during identification courses held at FSC Preston Montford, and as recently as February 2022 female specimens of *Chordeuma* species (which will be new to Shropshire) were collected from the Severn Montford SSSI (in the grounds of FSC Preston Montford) (SJG pers. obsv.). It is hoped to find males to confirm the species.

### Methods and Sites

A list of sites with permission to survey and collect specimens was provided to all participants who were free to undertake field work whenever and wherever they chose to record. A few sites that were surveyed in 2007 were re-visited in 2022, for example along Wenlock Edge. The only 'organised' site visit was a brief evening excursion to the 'brick wall' in the grounds of FSC Preston Montford to demonstrate how to undertake a torch light survey with the objective (in this case) of finding the woodlouse *Porcellio spinicornis* (Fig. 2).

The week before the field meeting Gary Farmer of Vale Landscape Heritage Trust had emailed images to the author of a fast running dark reddish/purple trichoniscid woodlouse with the eye comprising a single ommatidium that he had found beside the River Avon in Worcestershire (Farmer, 2022). It seemed to be *Hyloniscus riaprius*, a species not recorded in Britain, so a site visit was hastily arranged.

In total 29 sites falling within 12 hectads were visited and are listed in Table 1.

**Table 1: List of sites visited.**

Records were submitted by: Kieran Anderson (KA), Kevin Clements (KC), Gary Farmer (GF); Neil Fletcher (NF), Steve Gregory (SG), Thomas Hughes (TH), Warren Maguire (WM), Dawid Martyniuk (DM), Annie Northfield (AN), Helen Read (HR), Duncan Sivell (DS) & Derek Whiteley (DW)

Site code	Locality	Grid ref.	VC	Date	Records submitted by:
1	Boring Mill Pond	SJ6604	40	21/04/2022	DW
2	Ercall Wood and quarry The Ercall	SJ6409	40	21/04/2022 22/04/2022	DW DM
3a	Lincoln Hill Wood	SJ6603	40	21/04/2022	DW
3b	Lincoln Hill Quarry	SJ6704		22/04/2022	HR
4	Smalley Hill SWT reserve Smalley Hill, New Works	SJ6608	40	21/04/2022 22/04/2022	DW HR
5a	FSC Preston Montford, torch survey	SJ4314	40	22/04/2022	SG
5b	FSC Preston Montford, grounds			23/04/2022	KC, SG, DM, DW
5c	FSC P.M. Severn Montford SSSI			23/04/2022	SG
6	Haines Meadows, Wick	SO9647	37	22/04/2022	GF, SG, TH, WM, AN
7	Tiddesley Wood NR	SO9245	37	22/04/2022	SG, TH, WM, AN
8	Ironbridge Gorge car park	SJ6603	40	22/04/2022	HR
9	The Wrekin, Shropshire	SJ6409	40	22/04/2022	NF
10	Dale Road, Coalbrookdale	SJ6604	40	22/04/2022	KA
11	Dolgoch Quarry SWT, Shropshire	SJ2724	40	23/04/2022	NF, DM
12	Harton Hollow	SO4787	40	23/04/2022	DS
13	Much Wenlock, Quarry near	SO6199	40	23/04/2022	SG
14a	Wenlock Edge near Presthope Manure heap	SO5897	40	23/04/2022	SG, TH, WM, AN
14b	Sparsely vegetated quarry	SO5797			
14c	Secondary woodland in quarry	SO5796			
15	Rea Brook Valley, Shrewsbury	SJ5012	40	23/04/2022	HR
16	Shrewsbury Abbey grounds	SJ4912	40	23/04/2022	HR
17a	Uffington, Old Canal	SJ5214	40	23/04/2022	HR
17b	Uffington canal	SJ5313		24/04/2022	DW
18	Uffington Church	SJ5213	40	23/04/2022	HR
19	Uffington Mill	SJ5213	40	23/04/2022	HR
20	Sweeny Fen	SJ2725	40	23/04/2022	DM
21a	Attingham Park	SJ5510	40	22/04/2022	DM
21b		SJ5409		24/04/2022	DW
22	Doctor's Field, Shrewsbury	SJ4813	40	22/04/2022	KC
23	Beck's Field, Shrewsbury	SJ4812	40	22/04/2022	KC
24	Copthorne Park, Shrewsbury	SJ4712	40	22/04/2022	KC
25	Mousecroft Pool, Shrewsbury	SJ4710	40	22/04/2022	KC
26	Carding Mill Valley, Long Mynd	SO4494	40	22/04/2022	KC
27	Rectory Wood, Long Mynd	SO4493	40	22/04/2022	KC
28	Townbrook Valley, Long Mynd	SO4493	40	22/04/2022	KC
29a	Earl's Hill Nature Reserve	Woodland SJ4005	40	23/04/2022	KC
29b		Grassland SJ4105			

## Species recorded

During the field meeting 61 species of BMIG taxa were recorded: 14 species of centipede (Table 2), 23 of millipede (Table 3), 17 of woodlice (Table 4), and also six species of pauropod and a symphylan (Table 5). The two most prolific sites are both large sites that not only support a wide array of contrasting habitats but were also visited by a large number of participants. The grounds at FSC Preston Montford (where we were based!) turned up 37 species (12 of centipede, 14 millipede, 9 woodlice and 2 pauropods) and a disused limestone quarry on Wenlock Edge near Presthope turned up 31 species (5 centipede, 15 millipede and 11 woodlice).

The pygmy woodlouse *Hyloniscus riparius* (C. Koch) is confirmed new to the UK (at a site where it was first found the week before). One species, the millipede *Choneiulus palmatus*, is listed in the Natural England species status review (Lee, 2015) as being Nationally Scarce. These species are discussed in more detail below.

## Centipedes

Fourteen species of centipede were recorded from 30 sites (Table 2). The most frequently recorded species were *Lithobius forficatus* (17 sites), *Lithobius variegatus* (14 sites; reflecting the relatively western location which this species favours) and *Haplophilus subterraneus* (12 sites). Other centipedes recorded were found at nine sites or less.

Of the six species of *Geophilus* the common *G. flavus* and *G. truncorum* were both recorded from four sites and the more local *G. electricus* from two. A specimen of *Geophilus carpophagus s.str.* was observed at night climbing up a brick wall during the night-time torch survey undertaken in the grounds of FSC Preston Montford to look for the woodlouse *Porcellio spinicornis*. The closely related, but ground dwelling, *Geophilus easoni* was recorded from three woodland and/or moorland sites. The only species of *Cryptops* recorded was *C. hortensis* which was found at nine sites in a wide variety of habitats, including a garden, a river-side meadow, disused quarries and ancient woodland. All five species of *Lithobius* recorded are common species and were found from between six to seventeen sites, with the exception of *L. crassipes* which was found in just one site, an ancient woodland.

Additional species recorded during the 2007 BMIG field meeting (Barber, 2008) include the elusive synanthropes *Schendyla dentata* and *Henia brevis* and the primarily rural 'woodland' species *Strigamia acuminata*, *S. crassipes* and *Lithobius macilentus*.

## Millipedes

A total of 23 species of millipede were recorded from 33 sites during the field meeting (Table 3). Perhaps unexpectedly, the most frequently recorded millipede was *Polydesmus coriaceus* from 22 sites, closely followed by the ubiquitous millipedes *Cylindroiulus punctatus* (18 sites) and *Tachypodoiulus niger* (17 sites).

The abundance of *Polydesmus coriaceus* relative to the 'ubiquitous' *P. angustus* (which was recorded from just 12 sites) perhaps reflects the calcareous geology of the majority of sites surveyed. Certainly, in lime-rich Oxfordshire, albeit further south, *P. coriaceus* is by far the most abundant species and *P. angustus* is mainly restricted to the few parts of the county with more acidic soils (Gregory, 1996). Two additional congeners, *P. denticulatus* and *P. inconstans*, were both found at single sites; a deciduous woodland and a riverside meadow respectively. The 'little white jobs' *Macrosterodesmus palicola* (1 site, with 3 sub-sites) and *Ophiodesmus albonanus* (2 sites) also favour calcareous soils and both were recorded from disused limestone quarries on Wenlock Edge (the latter also in the grounds of FSC Preston Montford). *Brachydesmus superus* (6 sites) was mainly recorded in disused quarries and woodland.

**Table 2: Centipedes recorded during the Preston Montford 2022 field meeting. X = species recorded from site.**\**Geophilus impressus* - formerly known as *G. insculptus* and more recently *G. alpinus*.

Site code:	1	2	3a	3b	4	5a	5b	5c	6	7	9	11	13	14a	14b	14c	15
Hectad:	SJ60	SJ60	SJ60		SJ60	SJ41			SO94	SO94	SJ60	SJ22	SO69	SO59			SJ51
<i>Haplophilus subterraneus</i>			X				X					X			X	X	
<i>Schendyla nemorensis</i>							X										
<i>Geophilus carpophagus s.str.</i>						X											
<i>Geophilus easoni</i>								X									
<i>Geophilus impressus*</i>												X					
<i>Geophilus electricus</i>			X				X										
<i>Geophilus flavus</i>							X		X								
<i>Geophilus truncorum</i>		X			X			X		X							
<i>Cryptops hortensis</i>							X	X	X	X							X
<i>Lithobius crassipes</i>										X							
<i>Lithobius forficatus</i>	X	X	X		X		X	X		X		X	X	X	X	X	
<i>Lithobius melanops</i>						X			X				X		X	X	
<i>Lithobius microps</i>			X				X					X	X		X		
<i>Lithobius variegatus</i>		X	X	X	X		X	X		X	X			X			
Total 14 species / No. per site:	1	3	5	1	3	2	8	5	3	5	1	4	3	2	4	3	1

**Table 2: Centipedes recorded (continued)**

<b>Site code:</b>	<b>16</b>	<b>17a</b>	<b>18</b>	<b>20</b>	<b>21a</b>	<b>21b</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	<b>27</b>	<b>28</b>	<b>29a</b>	<b>29b</b>	<b>Total records</b>
Hectad:	SJ41	SJ51	SJ51	SJ22	SJ51	SJ40	SJ41	SJ41	SJ41	SJ41	SO49	SO49	SJ40		
<i>Haplophilus subterraneus</i>	X	X	X	X				X	X				X		<b>12</b>
<i>Schendyla nemorensis</i>		X													<b>2</b>
<i>Geophilus carpophagus s.str.</i>															<b>1</b>
<i>Geophilus easoni</i>											X	X			<b>3</b>
<i>Geophilus impressus*</i>															<b>1</b>
<i>Geophilus electricus</i>															<b>2</b>
<i>Geophilus flavus</i>									X	X					<b>4</b>
<i>Geophilus truncorum</i>															<b>4</b>
<i>Cryptops hortensis</i>				X	X		X		X						<b>9</b>
<i>Lithobius crassipes</i>															<b>1</b>
<i>Lithobius forficatus</i>					X			X	X	X				X	<b>17</b>
<i>Lithobius melanops</i>							X								<b>6</b>
<i>Lithobius microps</i>				X	X	X							X		<b>9</b>
<i>Lithobius variegatus</i>				X	X	X				X	X		X		<b>14</b>
Total 14 species / No. per site:	1	2	1	3	4	2	2	2	4	3	2	1	3	1	

**Table 3: Millipedes recorded during the Preston Montford 2022 field meeting. X = species recorded from site.**XR = *Cylindroiulus* sp. bearing thalli of the ectoparasitic fungus *Rickia laboulbenioides*. NS = Nationally Scarce

Site code:	2	3a	3b	4	5a	5b	5c	6	7	8	9	11	13	14a	14b	14c	15
	SJ60	SJ60		SJ60	SJ41			SO94	SO94	SJ60	SJ60	SJ22	SO69	SO59			SJ51
<i>Glomeris marginata</i>	X	X	X				X		X			X	X		X	X	
<i>Brachydesmus superus</i>		X	X				X					X				X	
<i>Macrosternodesmus palicola</i>														X	X	X	
<i>Ophiodesmus albonanus</i>						X							X				
<i>Polydesmus angustus</i>	X	X				X	X					X				X	X
<i>Polydesmus coriaceus</i>	X	X	X	X			X	X		X		X	X		X	X	X
<i>Polydesmus denticulatus</i>		X															
<i>Polydesmus inconstans</i>								X									
<i>Melagona</i> sp.												X					
<i>Nanogona polydesmoides</i>						X							X	X			
<i>Blaniulus guttulatus</i>						X						X			X		
<i>Boreoiulus tenuis</i>																X	
<i>Choneiulus palmatus</i> NS																	
<i>Proteroiulus fuscus</i>	X			X		X	X	X								X	
<i>Brachyiulus pusillus</i>								X				X					
<i>Cylindroiulus britannicus</i>	X		X			X		X				X					XR
<i>Cylindroiulus caeruleocinctus</i>						X							X		X		
<i>Cylindroiulus punctatus</i>	X	X	X			X	X	X	X			X				X	
<i>Julus scandinavicus</i>		X					X					X					
<i>Ophiulus pilosus</i>	X		X					X								X	
<i>Ommatoiulus sabulosus</i>												X					
<i>Tachypodoiulus niger</i>	X		X		X		X		X		X	X	X	X	X	X	
<i>Nemasoma varicorne</i>							X					X					
Total 23 species / No. per site:	8	7	7	2	1	8	9	7	3	1	1	13	6	3	6	11	2

**Table 3: Millipedes recorded (continued)**

Site code:	16	17a	17b	18	19	20	21a	21b	22	23	24	25	26	27	28	29a	Total records
Hectad:	SJ41	SJ51		SJ51	SJ51	SJ22	SJ51	SJ40	SJ41	SJ41	SJ41	SJ41	SO49	SO49	SO49	SJ40	
<i>Glomeris marginata</i>							X									X	11
<i>Brachydesmus superus</i>						X											6
<i>Macrosterodesmus palicola</i>																	3
<i>Ophiodesmus albonanus</i>																	2
<i>Polydesmus angustus</i>		X			X					X	X		X				12
<i>Polydesmus coriaceus</i>		X	X		X	X	X	X	X	X	X	X					22
<i>Polydesmus denticulatus</i>																	1
<i>Polydesmus inconstans</i>																	1
<i>Melagona sp.</i>																	1
<i>Nanogona polydesmoides</i>																	3
<i>Blaniulus guttulatus</i>		X					X									X	6
<i>Boreoiulus tenuis</i>																	1
<i>Choneiulus palmatus N.Sc.</i>	X																1
<i>Proteroiulus fuscus</i>				X				X			X			X		X	11
<i>Brachyiulus pusillus</i>						X											3
<i>Cylindroiulus britannicus</i>		X			X	X	X		X		X		X				13
<i>Cylindroiulus caeruleocinctus</i>									X	X							5
<i>Cylindroiulus punctatus</i>			X		X	X	X			X	X	X	X		X		18
<i>Julus scandinavicus</i>											X	X					5
<i>Ophiulus pilosus</i>		X		X	X												7
<i>Ommatoiulus sabulosus</i>										X			X			X	4
<i>Tachypodoiulus niger</i>							X			X	X	X	X	X			17
<i>Nemasoma varicorne</i>																	2
Total 23 species / No. per site:	1	5	2	2	5	5	6	2	3	6	7	4	5	2	1	4	

The pill millipede *Glomeris marginata* was widely found at eleven sites, including disused quarries, secondary woodland and ancient woodland. Very few chordeumatidan millipedes were found. The most widely recorded was *Nanogona polydesmoides* (3 sites) and a single female *Melagona sp. (gallica / voigtii)* was found at Dolgoch Quarry. Female specimens of *Chordeuma proximum/sylvestre* had previously been recorded from the riverside woodland in the grounds of FSC Preston Monford (Severn Montford SSSI), but despite a targeted survey by the author, additional specimens were not found.

The only Nationally Scarce species recorded was the blaniulid *Choneiulus palmatus* which was found by Helen Read at Shrewsbury Abbey grounds. Interestingly the most frequently noted blaniulid was the typically subcortical *Proteroiulus fuscus* with 11 sites, whereas the ‘ubiquitous’ soil dwelling *Blaniulus guttulatus* was recorded from just six (with *Boreoiulus tenuis* also found at one of those sites). Perhaps this reflects a bias to looking under loose bark on trees and dead wood (2 sites were also noted for the subcortical *Nemasoma varicorne* too), rather than beneath partly buried stones and logs. After the ubiquitous *Cylindroiulus punctatus* and *Tachypodoiulus niger*, the next most widely recorded julid was *Cylindroiulus britannicus* (13 sites). A male specimen of *Cylindroiulus britannicus* collected from a wooded quarry on Wenlock Edge was found to be infected with the host specific ectoparasitic fungus *Rickia laboulbenioides* De Kesel. *Brachyiulus pusillus* was found at three contrasting sites: a riverside meadow, woodland in a disused quarry and on farmland.

## Woodlice

In terms of woodlice the meeting proved very successful with a total of 17 species recorded from 31 sites (Table 4). As to be expected the four most frequently recorded species were *Porcellio scaber* (from 27 sites), *Oniscus asellus* (21 sites), *Trichoniscus pusillus agg.* (18 sites) and *Philoscia ‘muscorum’ (s.str or s.lat.)* (16 sites).

The woodlouse highlight of the field meeting is undoubtedly confirmation of the discovery of the trichoniscid woodlouse *Hyloniscus riparius* (C. Koch) new to the UK from Haines Meadows in the Vale of Evesham, Worcestershire. In liaison with Gary Farmer of Vale Landscape Heritage Trust, the site was visited by Steve Gregory, Warren Maguire, Thomas Hughes and Annie Northfield (Fig. 1A; 1B). Several male specimens were collected which proved to be *H. riparius* (Gregory & Farmer, 2023). Numerous specimens of *Trachelipus rathkii* were also seen at this site and recently this species has been found at several other nearby sites along the Worcestershire Avon (Farmer, 2021), a species previously known downstream from the river Severn. Both species are often found together in flood plain habitats across Europe so they may share the same source of colonisation in Worcestershire. However, given the relatively isolated inland location and the close proximity of numerous ‘market garden’ glasshouses then it is quite likely that *H. riparius* (and possibly also *Trachelipus rathkii*) is an unintentional introduction to the Vale of Evesham.

A visit to the nearby Tiddesley Wood, an ancient deciduous woodland, also proved very productive with several specimens of the elusive trichoniscid, *Trichoniscoides albidus*, found beneath dead wood partly buried in wet soil near a ditch (Fig. 1C). A number of other interesting (non-BMIG) species were also encountered at this site. An additional four species of trichoniscid woodlice were also found over the course of the field meeting: *Haplophthalmus danicus* (5 sites), *Androniscus dentiger* (4 sites), *Trichoniscus provisorius* and *Trichoniscus pygmaeus* (both 3 sites).

With the exception of one site all *Philoscia* specimens were attributed by recorders to *P. muscorum*. Confirmed *Philoscia muscorum s.str.* were collected from 11 sites, including FSC Preston Montford and two disused quarries along Wenlock Edge. Other records for *Philoscia ‘muscorum’* are probably this species, but it is not apparent if all recorders had checked specimens for the presence of the scarce *P. affinis*, which was found by Duncan Sivell in woodland on Wenlock Edge. Although just three female specimens were collected (i.e. no males for confirmation), the head and body pigment patterns (and



habitat) are typical of this species. This is the first record of this species for Shropshire, but it has been recently recorded from the adjacent county of Worcestershire (Wyre Forest; Farmer, 2019) and also in Derbyshire (Paul Richards and Derek Whiteley; verified records on iRecord) and Nottinghamshire (including Sherwood Forest; Pendleton & Pendleton, 2023).

The paucity of *Armadillidium vulgare* sightings (just 6 sites) is surprising, but this species does become increasingly scarce at inland sites away from south-east England. A thriving population of *A. nasatum* (and *A. vulgare*) was discovered in an old limestone quarry on Wenlock Edge (where the species was previously recorded during BMIG's 2007 field meeting). Specimens were readily found under stones scattered among sparsely vegetated ground on the quarry floor. Nearby specimens of *Porcellio spinicornis* were also encountered among rubble at the base of a rock face. The night-time torch survey



**Figure 1:** A) Searching (successfully) among flood debris on Haines Meadows for *Hyloniscus riparius* and *Trachelipus rathkii* (from left to right; Warren Maguire, Annie Northfield, Gary Farmer and Thomas Hughes). B) *Hyloniscus riparius* female at Haines Meadows. C) *Trichoniscoides albidus* from Tiddesley Wood. Image A) by Steve Gregory, images B) & C) by Warren Maguire

**Table 4: Woodlice and waterlice recorded during the Preston Montford 2022 field meeting. X = species recorded from site.**

Except *Philoscia muscorum* records: SS = sensu stricto; SL = sensu lato. National status: NTB = New to Britain.

Site code:	1	2	3a	4	5a	5b	5c	6	7	10	11	12	13	14a	14b	14c	15
Hectad:	SJ60	SJ60	SJ60	SJ60	SJ41			SO94	SO94	SJ60	SJ22	SO48	SO69	SO59			SJ51
<i>Asellus aquaticus</i>						X											
<i>Androniscus dentiger</i>			X											X	X		
<i>Haplophthalmus danicus</i>	X		X			X	X		X								
<i>Hyloniscus riparius</i> NTB								X									
<i>Trichoniscoides albidus</i>									X								
<i>Trichoniscus provisorius</i>						X							X		X		
<i>Trichoniscus pusillus</i> agg.						X	X	X	X				X	X	X	X	X
<i>Trichoniscus pygmaeus</i>						X							X			X	
<i>Platyarthrus hoffmannseggii</i>								X		X	X		X		X		
<i>Oniscus asellus</i>		X	X		X	X	X	X	X				X	X	X	X	X
<i>Philoscia affinis</i>												X					
<i>Philoscia muscorum</i>	SS	SS		SS		SS	SS	SS	SS				SS		SS		
<i>Porcellio scaber</i>	X	X	X	X	X	X	X	X	X				X	X	X	X	X
<i>Porcellio spinicornis</i>					X										X		
<i>Trachelipus rathkii</i>								X									
<i>Armadillidium nasatum</i>															X		
<i>Armadillidium vulgare</i>	X								X				X	X	X		X
Total 17 species / No. per site:	4	3	4	2	3	8	5	7	7	1	1	1	8	5	10	4	4

**Table 4: Woodlice and waterlice recorded (continued)**

Site code:	16	17a	17b	19	21b	22	23	24	25	26	27	28	29a	29b	Total records
Hectad:	SJ41	SJ51		SJ51	SJ40	SJ41	SJ41	SJ41	SJ41	SO49	SO49	SO49	SJ40		
<i>Asellus aquaticus</i>															<b>1</b>
<i>Androniscus dentiger</i>								X							<b>4</b>
<i>Haplophthalmus danicus</i>															<b>5</b>
<i>Hyloniscus riparius NTB</i>															<b>1</b>
<i>Trichoniscoides albidus</i>															<b>1</b>
<i>Trichoniscus provisorius</i>															<b>3</b>
<i>Trichoniscus pusillus agg.</i>	X	X		X		X	X	X	X			X	X		<b>18</b>
<i>Trichoniscus pygmaeus</i>															<b>3</b>
<i>Platyarthrus hoffmannseggii</i>														X	<b>6</b>
<i>Oniscus asellus</i>		X	X	X		X	X	X	X		X		X		<b>21</b>
<i>Philoscia affinis</i>															<b>1</b>
<i>Philoscia muscorum</i>	SS				SS	SL	SL	SL		SL	SL				<b>16</b>
<i>Porcellio scaber</i>	X	X	X	X	X	X	X	X	X	X	X	X	X		<b>27</b>
<i>Porcellio spinicornis</i>															<b>2</b>
<i>Trachelipus rathkii</i>															<b>1</b>
<i>Armadillidium nasatum</i>															<b>1</b>
<i>Armadillidium vulgare</i>															<b>6</b>
Total 17 species / No. per site:	3	3	2	3	2	4	4	5	3	2	3	2	3	1	

in the grounds of FSC Preston Montford to look *P. spinicornis* proved successful with many specimens seen by the participants (Fig. 2). The ant woodlouse *Platyarthrus hoffmannseggii* was found at six sites, including a river side meadow and several disused quarries.

Of the known UK species that were not recorded during the field meeting perhaps the most obvious omissions are *Haplophthalmus mengii* *Armadillidium depressum* which were both recorded during BMIG's 2007 field meeting (Gregory, 2010).



**Figure 2: A) Night time torch survey of ‘the old brick wall’ at FSC Preston Montford. B) The primary target species; the woodlouse *Porcellio spinicornis*. Images by Stephanie Skipp.**

## **Paupods**

An unprecedented six species of Pauropoda collected from six sites were found during the field meeting (Table 5), which is possibly more than previously recorded in Shropshire! With one exception, these were all found by Dawid Martyniuk who specialises in finding these tiny and elusive species (see Dawid's report in the BMIG Newsletter (Martyniuk, 2022a)). One message coming from the field meeting is that pauropods can be relatively common if searched for in appropriate places and if one is actually able to see them! Most species are barely 1-2 mm in body length. Specimens were identified using Ulf Scheller's key in 'Mangfotingar' (2005), the most detailed and comprehensive key to European Pauropods to date; the distinction between *Allopaupopus broelemanni* (Hansen) and *Allopaupopus vulgaris* (Hansen) would have been very difficult without descriptions and diagrams of both species' trichobothria (which are present in Ulf Scheller's key).

*Allopaupopus (Decapaupopus) gracilis* (Hansen) (Fig. 3A) proved to be most frequent pauropod, being recorded from four sites. This is the most widespread species in the UK (Scheller, 1990) and is found in a wide range of habitats, from mixed woodland to agricultural land where it occurs in damp soil, within rotting deciduous wood or under loose bark. The most prolific site was Dolgoch Quarry with four species recorded. A colony of *Allopaupopus (Decapaupopus) vulgaris* (Hansen) was found under flat limestone rocks buried shallowly in the soil at the base of the limestone quarry face. Among these was a single individual of *Allopaupopus (Decapaupopus) helveticus* (Hansen), a species previously only recorded once before in the UK in Somerset in 1954. In adjacent woodland *Stylopaupopus pedunculatus* (Lubbock), a relatively common species, was found under a log along with a few colonies of *A. gracilis*.

A colony of *Trachypaupopus britannicus* Scheller was found by Thomas Hughes in Tiddesley Wood. These were found on the underside of dead wood close to where the elusive woodlouse *Trichoniscoides*

*albidus* was also recorded. A few specimens were collected live and were photographed by Dawid (Fig. 3B). This is Britain's most distinctive species of pauropod and once found it is easily recognised in the field. That said, there are only about a dozen records currently known from Britain (records supported by images submitted to iRecord), which reflects both the tiny size and lack of active field recorders that look for these elusive species.



**Figure 3: Two species of pauropods collected during the 2022 field meeting. A) *Decapauropus gracilis* with its characteristic elongated body (leg. Dawid Martyniuk). B) *Trachypauropus britannicus*, a very distinctive pauropod (leg. Thomas Hughes). Images by Dawid Martyniuk.**

**Table 5: Pauropods and Symphylans recorded during the Preston Montford 2022 field meeting. X = species recorded from site.**

Site code:	2	5b	7	11	20	21a	Total records
Hectad:	SJ60	SJ41	SO94	SJ22	SJ22	SJ51	
<b>Pauropods</b>							
<i>Allopaupopus gracilis</i>	X	X		X		X	4
<i>Allopaupopus helveticus</i>				X			1
<i>Allopaupopus broelemanni</i>		X		X	X	X	4
<i>Allopaupopus vulgaris</i>				X			1
<i>Stylopaupopus pedunculatus</i>				X			1
<i>Trachypauropus britannicus</i>			X				1
Total 6 species / No. per site:	1	2	1	5	1	2	
<b>Symphylans</b>							
<i>Scutigereella</i> sp.				X		X	2
<i>Scutigereella cf palmonii</i>					X		1

### Symphylans

Dawid Martyniuk also recorded *Scutigereella* sp. from three sites. This genus comprises five known species in Britain and Ireland, which tend to be the larger and more obvious symphylans and therefore more readily found (Fig. 4). Unfortunately, the five species seem to only have slight variations in morphological characters, making them difficult to accurately identify, especially when considering the lack (or difficulty of access) of literature and keys to British Symphylan species. One individual from

Sweeney Fen was collected and identified as *Scutigereella palmonii* (Michelbacher) using the keys in Edwards (1959) and ‘Mangfotingar’ (Andersson *et al.*, 2005). However, the identification is not certain as the posterior half was missing, and there could be other species in the UK that it more closely resembles but are not included in these keys, which is not unlikely considering how rarely this taxon is studied.



**Figure 4: Symphylan (*Scutigereella* sp.) collected during the 2022 Shropshire field meeting.**  
Image by Dawid Martyniuk (2022b)

## Acknowledgements

BMIG thanks Keiron Brown (then FSC Biolinks Project Manager) for his invaluable help with facilitating the 2022 field meeting at FSC Peston Montford.

Kevin Clements undertook the organisation of the field meeting including obtaining permissions to survey and collect from numerous sites.

Gary Farmer, Vale Landscape Heritage Trust, allowed access to Haines Meadows and made recommendations of addition sites nearby to visit.

Tony Barber and Paul Lee provided valuable comments on the draft text.

Finally, a big thank you to all those participants that submitted their records from the field meeting, which are reported herein (they are listed in Table 1).

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## Obituaries

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### Richard Desmond Kime (1932-2023)

Richard Desmond Kime, fondly known as ‘Des’, died aged 91 at home in Nontron, France on 12<sup>th</sup> September 2023. He will be greatly missed and we send our condolences to Kathleen and their family.

Born and brought-up in Lincolnshire, his interest in natural history was fostered by his grandfather. He studied zoology at the University of Durham, where his postgraduate research on hole-nesting birds included work on fleas (Kime, 1962). With a postgraduate Diploma in Education, he went on to teach Biology, Botany and Zoology at the Royal Grammar School (RGS) in Guildford, eventually as Head of Biology. In 1964 Des was joined by a similarly qualified new teacher, Tony Barber.

A former pupil at RGS, Dr Jon Garvey, has summed-up Des Kime’s influences as a teacher. Having had to drop biology until the 6<sup>th</sup> form, Garvey felt that he started from scratch under Des Kime and Tony Barber in 1967. He commented that *Des was quietly spoken, and always calm and affable, whether he had us identifying invertebrates from the school grounds (including myriapods, of course), studying chicken embryology in that formalin and rabbit-scented lab, or explaining the mysteries of the Hardy-Weinberg equation. It’s hard to say just how he motivated us, as there was no exaggerated enthusiasm. I think it was his obvious mastery of the science, his openness to discussion, and his readiness to point us to relevant sources so we could educate ourselves. But motivate us he did.* After successful A level results, Des organised an excursion to the Three Pigeons in Guildford High Street with a few star pupils to celebrate with an (underage) beer: they had, to Des, now come of biological age.

Despite their teaching commitments at RGS, Des and Tony were developing their shared interest in soil fauna, which was greatly helped by the publication of Ted Eason’s *Centipedes of the British Isles* in 1964 and the availability of Gordon Blower’s *Millipedes* Synopsis published in 1958. Based in Surrey, with its varied geology and landscapes, they found themselves in a remarkably productive area for myriapods. This led to a division of labour in fieldwork and identification, with Tony covering the centipedes and Des the millipedes, with the intention of recording in grid squares rather than the then traditional vice-counties.

Between them Des and Tony built up contacts with a small group of people, mainly teachers and other academics, with an interest in myriapods. In April 1970, Des and Tony joined 10 other myriapodologists at a field meeting in North Devon, at which the British Myriapod Group was formed (Anon, 1972; Barber, 2024). As a consequence the British Myriapod Survey was launched in 1971 by Colin Fairhurst and Tony Barber. In 1974 Des was appointed to the European School in Brussels, which gave him the opportunity to widen his interests in the ecology and distribution of millipedes in continental Europe.

By 1972 the Centre International de Myriapodologie had been established in Paris, France and world congresses were being organised. The 4th International Congress of Myriapodology in 1978, at Gargano, Italy, endorsed a proposal by Colin Fairhurst to set up the European Myriapod Survey, modelled on the British Survey. Eventually the scheme was launched (Kime, 1985) with Des as the only contact point for the project. Although the Survey never had any form of official financial support, by 1985 Des had already started mapping the European distributions of millipedes on paper maps supplied by the European Invertebrate Survey (EIS) via the Biological Records Centre at Monks Wood.

Of course, this was at the dawn of computerised information technology in biogeography. On visits to Des and Kathleen’s home in Linkebeek, piles of “work in progress” maps in Des’ study at the top of the house provided endless interest. The amounts of information increased and tantalizing distributions were beginning to emerge. Although, interim maps for 50 species were published (Kime, 1990a), the



difficulties of getting the data from original hand-plotted maps into a form suitable for publication delayed the project, but allowed Des more time to collate records.

Des' work on millipedes was mainly confined to his spare time and school holidays. Nevertheless, he built up active links with museums and university departments, particularly in Belgium, France and Luxembourg. He conducted research in his own right, and also collaborated widely as his publications demonstrate, including original ecological work on millipedes in forests, grasslands and cave systems. With his natural gift for languages, Des had been in communication with almost every active myriapodologist in Europe. Following his retirement in 1993 and subsequently after going to live permanently in central France, these collaborations increased and extended. He also had been awarded an honorary research post at the Institut Royal des Sciences Naturelles de Belgique.



**Des Kime (far right) during BMIG's field excursion to Hungary in 1994**

Left to right: Helen Read, Dick Jones & Tony Barber. Photo by Elisabeth Hornung.

Des worked with Henrik Enghoff on the Fauna Europaea project to collate the European list of Diplopoda (Enghoff & Kime, 2004). This led to their further collaboration on the three volume Atlas of European millipedes (Kime & Enghoff, 2011, 2017, 2021). The Atlas is a magnificent tribute to all concerned, not least to the perseverance of Des Kime in collating records for more than 30 years (and to Kathleen for putting up with it!).

As a result of his work on mapping the distribution of European millipedes Des (and the Survey) soon became involved with the European Invertebrate Survey (EIS). Indeed it was one of the few projects endorsed by EIS that produced tangible results at a European scale. EIS had been set-up in 1969 to promote the mapping of species in Europe. It failed to secure central funding and underwent some changes in direction and later had active involvement with the Council of Europe regarding the Bern Convention (and through that with EU legislation). For several years Des had been Assistant Secretary of EIS, taking an active part in running the organisation and attending its international colloquia and conferences, and co-editing the proceedings of the 1993 Colloquium (Valovirta *et al.*, 1995). EIS eventually ceased to exist in the 2000s.



**Des cutting his 80<sup>th</sup> birthday cake at BMIG's 2012 field meeting at Wentworth Castle** [Photo Paul Richards]

Des had been a founder member of the British Myriapod Group in 1970 and was actively involved with its successor, BMIG, participating in the annual field meetings on several occasions. One such meeting was notable because Des chose to spend his 80<sup>th</sup> birthday at the BMIG Spring Meeting at Wentworth Castle near Barnsley – a true sign of his dedication to myriapodology! Fortunately, this was with the full agreement of his family and BMIG provided birthday cake (see photograph to left) and a (slightly faltering) round of “Happy Birthday”. Unfortunately the venue ran out of beer that evening!

Des was a committed “European” with a remarkable facility for, and interest in, languages. He travelled widely throughout the continent (and associated islands) from his home in Brussels and later, after he and Kathleen had retired, from their home in central France. Some travel was as family holidays but searching for myriapods must obviously have featured, as would his landscape painting. He was particularly interested in painting isolated hill-top villages with their colourful roofs. His extensive, but always lightly worn, knowledge of countries and their landscapes was often invaluable to those travelling with him. Local food was a life-long interest, and food would naturally be accompanied

with local wines and beers as appropriate, or even with carefully chosen bottled water if a thirst had to be quenched. Des had developed a natural eye for a good restaurant and anyone that accompanied him, almost anywhere in Europe, would be sure of finding somewhere worthwhile to enjoy local hospitality. There were occasional boundaries to Des’ gastronomic adventures – in Finland he declined bear steaks (probably on ethical grounds) opting instead for reindeer. Travelling with Des occasionally had its down side if sharing a room was the only option – he snored for Europe!

Paul Harding, Tony Barber & Helen Read

## Species named for their association with Des Kime

### *Origmatogona kimeorum* Mauriès 1990

Mauriès, J.-P. (1990). Révision des Origmatogonini. Taxons nouveaux de France et d'Espagne (Diplopoda, Craspedosomida, Chamaesomidae). *Bulletin de la Société d'histoire naturelle de Toulouse*, **126**: 47-60.

### *Hylebainosoma nontronensis* Mauriès & Kime, 1999

Found by Des near his home in Nontron in the Dordogne and now known as *Maurieseuma nontronense* (Mauriès & Kime, 1999).

Mauriès, J.-P. & Kime, R.D. (1999). Description, écologie et chorologie de trois espèces nouvelles de diplopodes (Myriapoda, Diplopoda) des zones périphériques du Massif central et du centre de la France. *Zoosystema*, **21**(2): 367-378.

***Ommatoiulus kimei* Akkari & Enghoff, 2012**

Akkari, N.; Enghoff, H. (2012). Review of the genus *Ommatoiulus* in Andalusia, Spain (Diplopoda: Julida) with description of ten new species and notes on a remarkable gonopod structure, the fovea. *Zootaxa*, **3538**: 1-53. Available online at <https://doi.org/10.11646/zootaxa.3538.1.1>

***Galicisoma desmondkimei* Mauriès, 2015**

Mauriès, J.-P. (2015). Taxa nouveaux de Diplopodes Craspedosomatides collectés dans le nord-ouest de la Péninsule ibérique par les missions britanniques de 1993 et 2004 (Diplopoda, Craspedosomatida). *Bulletin de la Société d'histoire naturelle de Toulouse*, **150** [2014]: 27-57.

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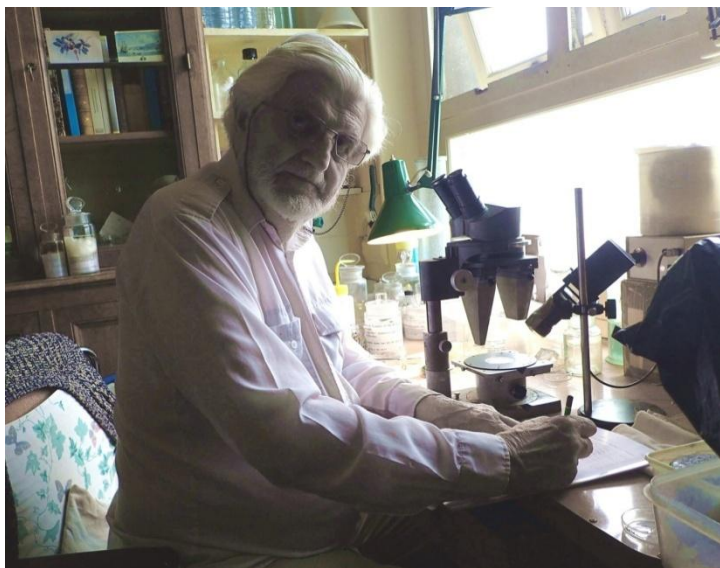
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## Jean-Paul Mauriès-Belou: Myriapodologist and Gentleman

**December 1st, 1934 - October 3rd, 2022**

Jean-Paul Mauriès, our highly estimated colleague, and more than a good friend, passed away in Guérande (Loire-Atlantique, France) on Monday 3 October 2022 at the age of 88. He died peacefully among his close relatives and family after a long and unfortunately painful illness and a long time far away from his beloved specimens, collections, researches and laboratory. His funeral was held in Paris (Funerarium of the Père-Lachaise Cemetery). He is survived by his two daughters, sons-in-law and grandchildren.



**Jean-Paul Mauriès in 2017: Paris, Muséum National d'Histoire Naturelle, laboratory Zoology-Arthropods.**

[Photo by Jean-Jacques Geoffroy]

Jean-Paul Mauriès-Belou was born in Albi (Tarn, France) 1st December 1934. He became a biology student at the Faculty of Sciences, University of Toulouse where he obtained his Licence 'és Sciences Naturelles' (SPCN, Geology, Zoology and Botany) in 1953-1956.

He did his military service from 1960 to 1962, partly in Algeria, and in the meantime became Assistant researcher at the CNRS from 1957 to 1966, a period during which he became more and more interested and involved in myriapod biology and systematics, notably in millipede taxonomy and distribution in the Pyrenean area.

In 1966, he moved to Paris and became Assistant-Researcher at the Laboratory Zoology-Arthropods, Muséum national

d'Histoire naturelle, directed by Prof. Max Vachon, then obtained the ranks of 'Maître-Assistant' 2nd class in 1974, 'Maître-Assistant' 1st class in 1979 and finally became 'Maître de Conférences Universitaire' in 1986 until his retirement at the MNHN.

He played a major role in myriapodology through his work on millipede systematics; he contributed to the original descriptions of many taxa (species, genera and families) and he rapidly became one of the main worldwide specialists of the order Chordeumatida. Beside his most exciting and passionate researches at the MNHN, he was during many years the very active curator of the collection "Myriapodes et Onychophores" of the Muséum in Paris, for which he permanently gave time for enrichment, managing and scientific updating, even after his retirement as an honorary researcher.

In 1968, he became, together with Prof. Jean-Marie Demange (Muséum, Paris) and Herr Prof.-Dr. Otto Kraus (Hamburg, Germany), and quickly joined by John Gordon Blower (Manchester, UK), a co-founder of the Centre International de Myriapodologie, the **CIM**, today CIM-International Society for Myriapodology, an amazing event for advances and relationships in Myriapodology. In collaboration with Monique Nguyen Duy-Jacquemin and Jean-Jacques Geoffroy, he contributed to the functioning of the permanent CIM-Secretariat, Bulletin of the CIM publishing and co-organisation of international congresses of myriapodology, held every three years. Jean-Paul attended many international congresses of myriapodology (ICM), he contributed to the organization of the 1st and 9th ICM in Paris and he was formally elected honorary member of the CIM society.

After J.-M. Demange's retirement, he contributed also to the annual course on venomous and poisonous

animals, given on millipedes and centipedes at the Muséum national d'Histoire naturelle. He published several papers on this subject in books dealing with venomous function.

As a specialist of myriapod biology and systematics, his work was mainly devoted to millipede taxonomy, in France and in several European countries or regions (Switzerland, Balkans, Iberian Peninsula, Corsica...) but also in many countries through the world: North Africa, Western Africa, Indo-Pacific, Caribbean, French Guiana, Brazil, Venezuela, China, South-East Asia, etc. Most of his publications are related to edaphic species in different habitats, many of them taxa strictly endemic and highly adapted to extreme environments in high mountains or in deep subterranean systems (MSS or deep caves). He contributed to subterranean biology via the publication of articles on troglobitic myriapods in encyclopaedic books: *Mémoires de Biospéologie*, *Encyclopaedia Biospeologica*, *Encyclopaedia of Cave and Karst Science*. These studies reveal the presence of species of an ancient lineage and paleobiogeographic interest; some of them deserving obviously protection and conservation measures. Most of the time, the rigorous descriptions of species created by Jean-Paul were wonderfully illustrated by his own handmade drawings, witness to his undeniable scientific drawing talent.

At the very end of his life, when illness had kept him away from his research and laboratory, the publication of very last studies in press and the expected discovery of species new for France helped to bring him some renewed joy and deep satisfaction for his job well done. A recent paper published by European colleagues recognizes the quality of his work by creating a new chordeumatidan genus that will honour him for ever: *Mauriéseuma* Antic & Spelda, 2022. Jean-Paul Mauriès leaves us as a legacy of an immense quantity of unpublished documents, such as impressive study files on diplopods of Cameroon, French Guiana and, above all, Chordeumatida, which will continue to be of immense use to researchers in the future.

His strong and friendly relationships with his native region of Toulouse remained intact and he published many major taxonomic papers in the journal *Bulletin de la Société d'Histoire Naturelle de Toulouse*. He was an active member of several other scientific societies in which he held some various responsibilities: Société de Biogéographie, Société Zoologique de France, Société Française de Systématique, Société Française d'Ecologie, Société Internationale de Biospéologie - International Society for Subterranean Biology. In addition, he was an elected member of the Board of Directors of the Muséum national d'Histoire naturelle and he was for a time the temporary head of the laboratory Zoology-Arthropods.

In a completely different context, our complicit friendship was fully expressed within the CNRS choir, of which he was for years a strong pillar of the bass section. He performed in several concerts in the role of an amateur but as a solid soloist with a warm and deep voice. In this regard, the walls of the laboratory, which have memories, still remember the echoes of his organ starting some traditional Occitan songs:

*Quand lo boièr ven de laurar*

*Quand lo boièr ven de laurar*

*Planta son aigulhada,*

*A, i, ò, ú,*

*Planta son aigulhada, A !*

We send our deepest sympathy to his two daughters Nathalie and Magali, their husbands and his grandchildren. Jean-Paul had survived his beloved wife Michèle by some years.

Today, millipedes are in mourning, they lost a good friend, as are we. This great loss will be felt very sadly by the members of the international community of Myriapodologists. He will be remembered by many as a very good friend and a gentleman.

Here's to you, dear friend Jean-Paul.

Jean-Jacques Geoffroy, Paris, October 2023

## Stephen Laurence Sutton (1938 – 2023)



Stephen Sutton has died after a short illness, aged 85, at his home in Kota Kinabalu, Sabah. BMIG offers its sincere condolences to his family in the UK and Sabah.

Stephen was crucially influential in the study of woodlice in Britain and Ireland from the 1960s to the 1980s. He set up the Isopod Survey Scheme (ISS) in 1968, from which the British Isopoda Study Group (BISG) evolved a year later. BISG merged with the British Myriapod Group in 2000 to form the British Myriapod and Isopod Group.

Stephen was born into an academic background at Oxford in 1938. His father, Leslie Ernest Sutton (1905-1992), was a Fellow of Magdalen College, Oxford, teaching Chemistry. His mother Catharine Virginia née Stock (1905-1962), married Leslie in 1932 at Oxford. Catherine was American and Stephen had spent most of the period of the Second World War with his mother and older sister, Virginia, with his mother's relatives in the USA. Stephen attributed his delight in travelling abroad to this childhood experience.

His early schooling was at the Dragon School, Oxford where a contemporary was the eminent dipterist Henry Disney. Stephen's education continued at Marlborough College and then, after two years National Service in the Royal Navy based at Portland, he went up to New College, Oxford to read Zoology. After a short period in industry, which Stephen admitted did not suit his temperament, he started a DPhil at the Bureau of Animal Populations, Oxford with Charles Elton and Kitty Southern. The original intention was to study *Ligidium hypnorum* in Wytham Woods, but Stephen claimed that he saw only one in three years, so he wisely moved to working on the population dynamics of *Philoscia muscorum* and *Trichoniscus pusillus*. This was the first such study on any species of woodlice in the UK.

Appointed as Lecturer in Zoology at the University of Leeds in 1966, Stephen established a small postgraduate research team. Over the next couple of decades those working on woodlice included R.C. Davis, George Fussey, Angela Grundy, Mark Hassall, Keith Sunderland and Rob Willows.

At this time he also renewed a long interest in Lepidoptera, particularly in Yorkshire, including running moth traps in his garden and paddock at Shadwell, near Leeds, and later on the edge of Burn Moor, near Settle. This eventually culminated in the Yorkshire Naturalists Union (YNU) publishing *Butterflies and Moths of Yorkshire* (Sutton & Beaumont, 1989). Stephen was pleased to serve as President of the YNU in 1990 and as a Vice-President for many years thereafter.

The Isopod Survey Scheme (ISS) had started as an initiative by Stephen and John Metcalfe, a friend who was an established teacher at Trinity and All Saints College in Horsforth (now Leeds Trinity University). I teamed up with them in 1969 after a get-together at Shadwell. The development of the recording scheme and BISG is described elsewhere (Harding, 2018).

In 1970 Stephen began writing an introduction to the biology of woodlice, with a particular emphasis on their suitability as organisms for teaching and for simple projects. David Burn, a former student at Leeds who had moved into scholastic publishing, commissioned the book, simply titled *Woodlice* (Sutton, 1972), in a short-lived series - *Invertebrate Types*. It was an opportunity for Stephen to compile a well-referenced 'all you need to know' about woodlice and included an off-printed key to species (Sutton,



Harding & Burn, 1972) with colour portraits of seven species by Hilary Burn. This Key was useful in promoting ISS to potential recorders.

Stephen soon became the go-to person for the media and publishers regarding woodlice and some other invertebrates – see for example Sutton (1980). This also included a sideline in contributing to radio programmes, mainly natural history panels and radio excursions. *The Humble Woodlouse* was broadcast by the BBC in 1973 in the “Living World” series and somewhat later he was involved with a sound recordist in a pioneering programme on the natural sounds of a tropical rainforest. Stephen and David Holdich (who, with Roger Lincoln, had set-up a short-lived scheme in BISG for the marine Isopods) were invited by the Zoological Society of London to organize a symposium on The Biology of Terrestrial Isopods in 1983. This was the first such international symposium and resulted in published proceedings (Sutton & Holdich, 1984) including 27 papers by over 40 authors, mainly on Structure and Physiology, and Population Biology and Behaviour. International symposia have continued to be hosted sporadically in several other countries; see for example Sutton & Harding (1989) and Harding *et al.* (1990).

The woodlouse scheme had been quite slow to grow and it was not until the early 1980s that Stephen and I agreed that we had probably taken this phase of BISG as far as he and I could go. Both of us were progressively moving away from work on Isopods – Stephen to tropical ecology and me to heading the Biological Records Centre. Eventually we found time to compile and edit *Woodlice in Britain and Ireland* (Harding & Sutton, 1985), including a few sessions together at his recently acquired farmhouse (Heigh Head) in Yorkshire, on the edge of Burn Moor, near Settle. The building itself was not in the best of condition, so Stephen was often having to fix aspects such as the roof, water supply, drainage and electricity ‘on the fly’ whilst I struggled to weave analyses of the habitat data into coherent text and also cope with our catering. Stephen always brought a slightly exotic tone to any encounter and these sessions at Heigh Head are now a delightful memory of hard work and companionship with plenty of laughs and a few long walks.

Stephen’s interest in the tropics was certainly fuelled by his involvement in the Zaire River Expedition in 1974/75 led by John Blashford-Snell. It was through this initial work and the contacts that ensued, that he became increasingly involved with Operation Drake and its successor Operation Raleigh. He became a leader for ecological research on these ambitious international projects and later was closely associated with the Royal Society as its scientific involvement in research in Borneo developed, particularly in the Danum Valley. Initially his work in the tropics was based from Leeds University where he still had a role teaching and with research students, but by the 1990s Stephen had moved almost permanently to Kota Kinabalu (KK) in Sabah. Here he extended his interests to books and publishing, establishing an on-line and physical bookshop, Borneo Books, with his partner Rosalind Tsang. The bookshop shared premises with Rosalind’s craft and gift shop in KK. Rosalind and Stephen married in 2006, later with a blessing at St Matthew’s church, Keasden, near Heigh Head. Stephen has described the life of Borneo Books between 1999 and its closure in 2014 (<https://stephensutton.info/>) in a typically self-deprecating and amusing style.

Even before he had settled in KK Stephen began a major project on the Pyraloid Moths of Borneo (see <https://stephensutton.info/>) leading to planned species guides (see Sutton *et al.* 2015, Whitaker *et al.* 2023). His contribution to the conservation and interpretation of the rainforests of Sabah is well recognised and in particular since 2019 with the Kinabalu Birdwing (*Troides andromache*) Conservation Project. The Sabah Minister for State Tourism, Culture and Environment, Datuk Christina Liew, congratulated Stephen and his team when she unveiled the Kinabalu Birdwing as the State Butterfly of Sabah in October 2023.

Stephen’s spontaneous enthusiasm and openness was a powerful stimulus to many that came in contact with him beyond a strictly academic context, myself included. Throughout his professional life he

nurtured the careers of many young biologists. Stephen's contribution to scientific research was typified by his enabling and co-ordination abilities to further the work of others rather than by data collection, analysis and publication of his own studies. His open, collaborative and highly social approach enabled many important research and conservation projects to be funded. Without the initial impetus provided by Stephen Sutton it is certain that knowledge of woodlice in Britain and Ireland would not have progressed as far as it has, and become a model for similar studies in other countries.

I am grateful to Terry Whitaker for helpful comments on a draft of this obituary and for additional references. Terry will be preparing obituaries covering other aspects of Stephen's life and research for publication elsewhere.

Paul T. Harding

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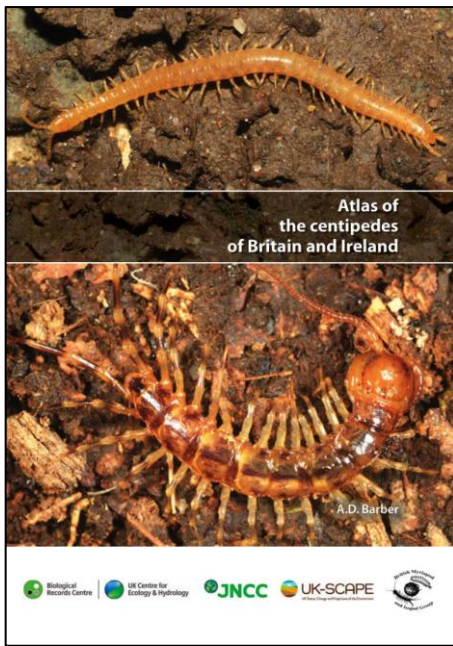
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## Book Reviews

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### Atlas of the Centipedes of Britain and Ireland



By A.D. Barber

December 2022, published by Field Studies Council.

ISBN: 9781906698812

Softback, 390 pp., 136 photos, 138 illustrations, 61 distribution maps and 94 tables; all in colour.

The atlas can be purchased directly from the Field Studies Council, <https://www.field-studies-council.org/shop/publications/centipedes-atlas/>, or via all good bookshops. Price c. £35.

In 1988 Tony Barber was joint author of the *Provisional atlas of the centipedes of the British Isles* (Barber & Keay, 1988), which mapped the then known distribution of 41 species and provided an analysis of the available habitat data collated through the recording scheme. Since that date (some thirty years ago!) considerable advances have been made in our knowledge and understanding of the distribution and habitat requirements of our

centipede fauna, including the discovery of several additional species. Thus, the publication of Tony's update, the *Atlas of the Centipedes of Britain and Ireland*, was eagerly anticipated.

The first section provides considerable information about how the recording scheme operated and what went before even BMG (British Myriapod Group) was formed, highlighting key researchers from the foundations laid by the likes of W.E. Leach in 1814 to Ted Eason's work in the 20<sup>th</sup> Century. The bulk of the book comprises detailed species accounts, based on over 53,000 records, for all 55 species now known from Britain, Ireland, Isle of Man and Channel Islands. It includes introduced 'indoor' species currently only known from within heated glasshouse such as those found at botanic gardens. The final section includes an appendix comprising a series of 32 tables summarising the data from records of all species.

Maps 1 and 2 summarise the number of species recorded from each hectad (10km square) and per vice county, respectively. The hectad map highlights areas where recording has been patchy (notably much of Scotland and Ireland) and, interestingly, key areas where recorders have been particularly active (e.g. Oxfordshire and Derbyshire). The highest species diversity lies in southern coastal counties (with 30 or more species per vice-county) with a gradual decline further north (18 species or less in Scotland). Species distribution maps are plotted at 10km square resolution and differentiated into four date classes: pre 1930; 1930-1959; 1960-1989 (these years encompassing the publication of identification keys to British and Irish species, setting up of BMG and the Centipede Recording Scheme and culminating in the publication of the 1988 *Provisional Atlas*); and 1990 to 2018 (which conveniently fits into my personal recording era). Where appropriate records have been differentiated between indoor (inside buildings, glasshouse, etc) and outdoor occurrences. However, the *Centipede Atlas* is much more than just 'dots on maps'. There is a detailed account for each species, including identification hints, notes on its occurrence in Britain and Ireland and colour photographs for most species. For all species with more than 30 records (the majority) there is a detailed analysis (presented as tables) of the associated data, including regional distribution, principle habitat preferences, ecotone, phenology, altitude data, collecting method, etc.

The most commonly recorded species is the large, conspicuous and ubiquitous *Lithobius forficatus* with over 10,000 records from more than 2,200 hectads. For many species clear distribution patterns emerge from the data, which, typically, were only hinted at in the *Provisional Atlas*. Perhaps the most striking example is that of *Lithobius variegatus*, a large and conspicuous centipede that is readily identifiable in the field. There are about 7,800 records for this ‘common’ centipede, but its distribution shows a distinct east/west divide, being strikingly absent from much of eastern England (except Kent!) and in Scotland it is pretty much restricted to western areas. Several species that are widespread across Britain are shown to be rare or absent in Ireland, notably *Lithobius calcaratus*. Species such as *Geophilus osquidatum* exhibit a typical south-western ‘Atlantic’ distribution, whereas others, such as *Lithobius muticus*, show a predominantly south-eastern ‘Continental’ distribution. Several species, such as *Geophilus seurati*, are restricted to coastal habitats. In the case of *Lithobius lapidicola* there is a stark contrast between a wide scattering of coastal sites in the south and east and widely scattered inland sites from inside heated glasshouses. And then there’s the ‘hard core’ northern contingency: *Geophilus proximum*, a widespread Scandinavian centipede that is only known from Unst, in the far north of Shetland. In a few cases it is apparent that the plotted species distributions reflect recorder activity! For example, the discrete blocks of records in Oxfordshire for the notoriously elusive *Schendyla dentata* and *Henia brevis* simply reflect targeted surveys undertaken there in the 1990s.

There are also a number of disjunct European wide distributions highlighted. For example *Stigmatogaster souletina* is known from the Falmouth area of Cornwall and the Pyrenees, while *Lithobius lucifugus* is known from a few widely scattered sites in Scotland, but otherwise predominantly a montane species of central Europe. It is quite likely that both species are chance introductions in Britain.

The comprehensive text and up-to-date maps of *Atlas of the Centipedes of Britain and Ireland* highlights the progress that has been achieved in the 30 years since the *Provisional Atlas* and provide a valuable resource of habitat data stretching back over 50 years. Although the maps will gradually become out-of-date as a result of continued recording, the text will certainly remain a primary go-to source of information about British and Irish centipedes for many decades to come.

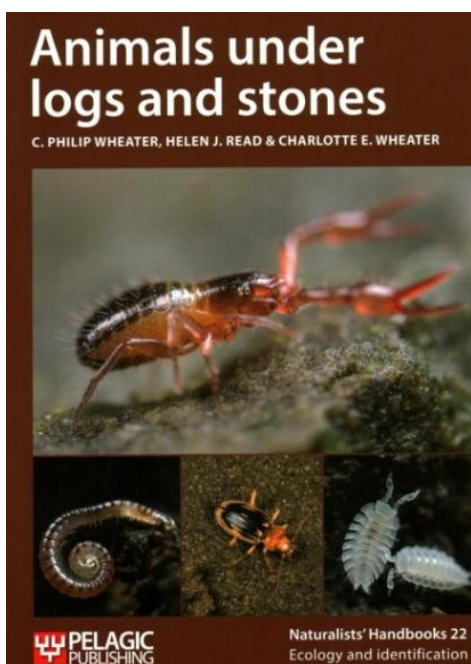
If you do not have a copy of the *Centipede Atlas* I thoroughly recommend acquiring one.

Steve Gregory

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## Animals Under Logs and Stones



Second Edition, 2023

C. Philip Wheeler, Helen J. Read & Charlotte E. Wheeler

Naturalists' Handbooks 22, Pelagic Publishing, London. £30

ISBN 9781-1-78427-417-7 Pbk.

9781-1-78427-418-4 ePub

9781-1-78427-419-1 PDF

Accounts and identification guides for specific groups of animals found in Britain such as birds, snails, insects in general, butterflies, beetles, etc, have been available to naturalists for many years, including for older generations, Warne's *Wayside and Woodland* series, some of the *Observers Books* and the various *Collins Field Guides*. In more recent years the Field Studies Council has produced its AIDGAP keys whilst the various Linnean Society *Synopses* and the Royal Entomological Society keys to various insect groups provide a more complete,

although necessarily more technical, series of volumes covering many individual groups.

As far as popular guides to animals of particular communities/ecosystems are concerned there have been a number of books dealing with either the sea shore (e.g. Barrett & Yonge, 1958 and others) or freshwater (e.g. Needham & Needham, 1962; Clegg, 1968; Fitter & Manuel 1986). For terrestrial ecosystems (including soil and litter) the availability of such publications has been more limited, reflecting the diversity and numbers of groups and species and the relative complexity of their interactions. However, both before and subsequent to the *Soil Zoology* of Kevan (1955) there have been many studies and publications at a technical level. In terms of more "popular" publications, however, there has been a relatively limited number that deal with the diversity of animals in soil and litter. In 1961, John Cloudsley-Thompson and John Sankey, published their *Land Invertebrates* which dealt with a range of invertebrate groups with notes on some species but specifically excluding insects – perhaps one of the first books for general naturalists that recognised that there were some interesting animals with more than six (or eight) legs.

It was in 1996, in their Naturalists' Handbooks series, Richmond Publications released *Animals under Logs and Stones* (Wheater & Read, 1996), at 90 pages, a rather slimmer volume than this present, much expanded second edition with its 344. The new edition includes drawings by Charlotte Wheeler. Of the authors, Philip Wheeler is Professor Emeritus in Environmental & Geographical Sciences at Manchester Metropolitan University and Helen Read is an ecologist, working for the City of London Corporation as Conservation Officer at Burnham Beeches NNR and is also currently preparing a new Linnean Society Synopsis of British millipedes.

After an introductory chapter which includes a table of the taxonomic groups to order level (and their English names), there is a review of the environmental conditions in which the animals are living under logs and stones; microclimate, substrate, decay and decomposition, refuges and ecosystem services. There are references to such topics as the changes during decomposition of logs, species-area curves and equilibrium numbers.

This is followed by an extensive review of the biology of the cryptozoa, both invertebrate and vertebrate and the various animal groups represented in it preceded by sections on activity patterns, life-cycles and food & feeding, biology of the invertebrate cryptozoa.

A large part of the volume (pages 96-264) is about identification and following an introduction on techniques (including those for live animals) and diagrammatic and dichotomous keys to the major invertebrate groups. There are sections on flatworms, earthworms, slugs, snails, mites, harvestmen, spiders, woodlice, millipedes, centipedes, hexapoda, springtails, earwigs, cockroaches, crickets & allies, ants (workers), beetles, ground beetles, rove beetles, insect larvae, amphibians, reptiles and mammals. Each section contains a key to members of the relevant group with drawings of characteristic features. The remainder of the book has a section on studying animals under logs and stones including suggestions for possible projects, a list of useful addresses and links and references. As well as drawings, it also contains a large number of useful photographs.

Any book on animal identification is, of necessity, likely to be a compromise between accuracy and reliability compared with both ease of use, and comprehensiveness. Writing any account which does not aim to include all the known (British) species must necessarily involve decisions on which ones to leave out and the user always takes the risk that the animal being looked at might be one of these “missing” ones – it might even be one not previously recorded here. What this book should certainly allow is that both amateur and professional naturalists together with students in both schools and university will be able to “have a go” at identifying to some level, the animals that they come across in cryptozoic habitats (bearing in mind this caveat) and will hopefully be able to move into more detailed and comprehensive keys to each individual group as available and appropriate should they so wish. References are included in the introductions to the keys for each group.

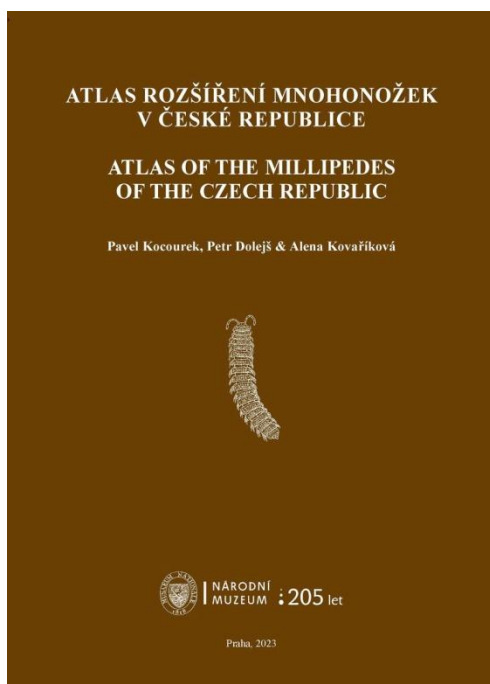
A book for individual naturalists, for biology labs in schools and universities and for local natural history groups. A search on-line will give a variety of possible prices. £30 was that charged by a local private bookshop who ordered a copy for us.

A. D. Barber

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## Atlas of the millipedes of the Czech Republic



By Pavel Kocourek, Petr Dolejš & Alena Kovaříková (In Czech)

Published by Národní Museum, Praha 2023

Although this paperback is in Czech it has an English summary and the titles and headers in the initial figures and tables are in English as well as Czech. The introductory section consists of a species list (81 species in total), information about the methods and people who have contributed to the atlas as well as some overview maps. Building on knowledge prior to 2017, extensive fieldwork between 2018 and 2022 has resulted in very few 10km grid squares with no records of millipedes, representing geographical coverage of more than 80% of the country. During this fieldwork four new species to the country were also found. A map showing the number of species recorded from each square highlights areas good for millipedes with a number having between 21 and 44 species found. A table summarises the ecological characteristics of each species

according to an ecological classification with 19 species are considered to be eurytopic and just five synanthropic. The table also lists the number of grid squares each species has been found in. From this it can be seen that *Julus scandinavius*, *Unciger foetidus* and *Polydesmus complanatus* are the most widespread species being found in more than 300 of the 677 squares in the Czech Republic. The next most widespread (found in more than 200 squares) being *Glomeris hexasticha*, *Megaphyllum projectum* and *Polydesmus denticulatus*. The fauna therefore has clear similarities with that of Britain, but includes some more continental elements.

The bulk of the book consists of maps for each species (presented alphabetically) with a line drawing, a short amount of text and a list of the map squares in which it has been found. From the maps clear distribution patterns can be identified. *Brachyiulus pusillus* seems to be confined to a small area in the south west (along with several other species) whereas *Brachychaeteuma bradae* has only been found in 12 squares but these are widely scattered across the whole country. *Polyzonium germanicum* in contrast has a northern and eastern distribution. An area in the western central part of the country seems to be particularly rich for millipedes, which may reflect higher intensity of collecting since this is around Prague. My understanding would have been enhanced by some information about the geography of the Czech Republic which may be given in the introductory text. However, as the maps are so visual and there are sufficient species in common with Britain that it is interesting browsing through them. The book contributes to our understanding and knowledge of British species, as well as introducing some more continental/eastern species which may be encountered during travels in continental Europe.

The book can be obtained from:

<https://www.nm.cz/e-shop/atlas-rozsireni-mnohonozek-v-ceske-republice-atlas-of-the-millipedes-of-the-czech-republic>

Helen Read