

Report on the BMIG field meeting in Newton Stewart in 2019

Steve J. Gregory¹, Paul Lee², A. D. Barber³ & Warren Maguire⁴

¹ Brook Cottage, Uffington, Oxfordshire SN7 7RE, UK.

Email: stevejgregory@btopenworld.com

² 1 Holly Cottages, Church Road, Tattingstone, Ipswich, Suffolk IP9 2LZ, UK.

Email: arachne2222@aol.com

³ 7, Greenfield Drive, Ivybridge, Devon PL21 0UG, UK.

Email: abarber159@btinternet.com

⁴ Email: W.Maguire@ed.ac.uk

Introduction and background

The 2019 BMIG field weekend, held from 25th to 27th April, was based at The Bruce Hotel, Newton Stewart in Dumfries and Galloway, south west Scotland.

The Solway coast of Dumfries and Galloway has proved an interesting area for species recording with a relict fauna possibly originating from a period of climatic optimum persisting in localised ‘sun-trap’ sites (Crowson, 1967). Supporting this view Harding (1975) highlights the occurrence of *Armadillidium pulchellum* (Zencker) at five sites. This includes the discovery of this species at Castlehill Point (NX8552) in 1962, the first ever record of an *Armadillidium* species in Scotland and a species previously only known from northern England (Westmorland, VC69 and Berwick, VC81). Harding (1975) also reports the discovery of *Armadillidium album* Dollfus at Torrs Warren (Luce Sands) (NX1152) in 1974, the most northerly known site in Europe (previously only known as far north as Cumberland, VC70).

BMIG (then two distinct entities; BMG and BISG) had previously visited Dumfries and Galloway (based at Dalry) back in 1997 and a summary of woodlice and millipede observations are reported by Gregory (1997) and Lee (1999) respectively. This field meeting visited sites mainly to the east of Newton Stewart. The woodlouse highlights were *Trichoniscoides saeroeensis* Lohmander, *Cylisticus convexus* (De Geer) and three sites for *Armadillidium pulchellum* from its (then) most northerly known locations in the UK (Harding & Sutton, 1985), all coastal sites. Of the millipedes there was *Cylindroiulus londinensis* (Leach) at Logan Gardens and *Thalassiosobates littoralis* (Silvestri) was found in large numbers at Mullock Bay (part of the Kirkcudbright MOD Training Area). There is no account of the centipedes recorded.

Subsequently, BMIG has held additional field meetings in south west Scotland. In 2006 BMIG visited Ayrshire, with the highlight being the discovery of *Chordeuma sylvestre* C.L.Koch at Culzean Country Park, the first record in Scotland and only the third site in the UK (Collis, 2007). A field meeting based near Oban in 2007 produced sites for the centipedes *Geophilus seurati* Brolemann (then known as *G. gracilis*) on the coast and the rare *Lithobius lucifugus* L.Koch. Millipedes included several northern sites for *Chordeuma proximum* Ribaut and more sites for *Thalassiosobates littoralis* and *Leptoiulus belgicus* Latzel (Collis, 2008; Barber, 2008; Barber & Gregory, 2008). Then in 2010 surveys in the Kintyre area revealed another site for *Lithobius lucifugus* in a coastal Kirkyard, another site for *Chordeuma sylvestre* at Brodick Castle on Arran and several additional sites for *Leptoiulus belgicus* (Barber, 2011; Gregory, 2016).

It was hoped in 2019 to find some species not recorded in 1997, but which were recorded during the later Ayrshire, Oban and Kintyre meetings, such as the millipedes *Chordeuma proximum* and *Leptoiulus belgicus* and the centipede *Geophilus seurati*.

In addition, the woodlouse *Philoscia affinis* Verhoeff was discovered in Britain in 2017 (Segers *et al.*, 2018) and examination of *Philoscia 'muscorum'* specimens collected from Oban during the 2007 field meeting were, over a decade later, found to be *P. affinis* (Gregory, 2018). This was a surprising 600 km further north than the previous records from south east England and therefore one of the aims of the field meeting was re-find this species in western Scotland and to determine if the Oban record was an outlier or if the species was more widespread and had been previously overlooked as *P. muscorum* (Scopoli)

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. Two organised site visits were arranged in advance. The first was to MOD land at Mullock Bay where *Armadillidium pulchellum* and *Thalassiosobates littoralis* had been previously recorded at their northernmost locations in the UK (Gregory, 1997; Lee, 1999). The second was to Cally Gardens at Gatehouse-of-Fleet (Callygardens.co.uk), a site not previously visited by BMIG.

Forty sites were visited during the course of the field meeting, 26 in Wigtownshire (VC74) and 14 in Kirkcudbrightshire (VC73). These were mostly a mixture of coastal sites and ornamental gardens, but a few woodlands and other habitats were also visited. Coastal sites visited included: St Ninian's Cave (site 10) with an extensive pebble beach and coastal slope; Ringdoo Point, near Stranraer (site 14) with coastal grassland and a sandy beach known to support *Armadillidium album* (Harding, 1975); and Mullock Bay (site 21) with an extensive shingle beach known to support the millipede *Thalassiosobates littoralis* (Lee, 1999) and the centipede *Geophilus seurati*. Ornamental gardens visited included: Dunskey Estate, near Portpatrick (site 6) with a walled garden and 19th century glasshouses; Logan Botanic Garden, Port Logan (site 8) with exotic plant collections, a walled garden and glasshouses; and Cally Gardens, Gatehouse-of-Fleet (site 15) with an 18th century walled garden with an ancient vinery. Woodland sites included The Forest, Hazelbank (site 12) and Kirroughtree Forest (site 30).

A summary of the sites visited and the sub-locations within these sites is shown in Table 1.

Table 1: List of sites visited.

Recorders: KA - Keith Alexander, WA - Wallace Arthur, TB - Tony Barber; SG - Steve Gregory, PH - Paul Harding, PL - Paul Lee, WM - Warren Maguire, HR - Helen Read, CU - Calum Urquhart, DW - Derek Whiteley

Site code	Location	Grid Ref.	VC	Date	Recorders
1	Carsluith shore	NX4854	73	24/iv/2019	DW
2	Kirkcowan, by A75, copse	NX3362	74	26/iv/2019	WA, TB
3	Craignarget	NX2551	74	26/iv/2019 28/iv/2019	SG, WM DW
4	Cumloden Deer Parks	NX4168	73	26/iv/2019	KA
5	Minnigaff Churchyard	NX4166	73	26/iv/2019	KA
6	Dunskey Gardens	NX0056	74	26/iv/2019	PL, HR, DW
7	Isle of Whithorn, St.Ninian's Chapel	NX4736	74	26/iv/2019	WA, TB
8	Logan Gardens	NX0942	74	26/iv/2019	WA, TB, PL, HR, DW
9	Port William	NX3344	74	26/iv/2019	WA, TB
10a	Port Castle Bay, St.Ninian's Cave	NX4235	74	26/iv/2019	WA, TB, PH

10b	Physgill Glen, St.Ninian's Cave	NX4336		27/iv/2019	KA
11	Monreith	NX3639	74	26/iv/2019	WA, TB
12	The Forest, Hazelbank	NX4448	74	26/iv/2019	WA, TB
13	Port Patrick	NW9953	74	26/iv/2019	PL, DW
14	Ringdoo Point, Luce Sands	NX1755	74	26/iv/2019	SG, WM, CU
15	Cally Gardens, Gatehouse-of-Fleet	NX6054 NX6055	73	27/iv/2019	WA, TB, SG, PL, WM, HR, CU, DW
16	Fleet Forest (by Cally)	NX6055	73	27/iv/2019	WA, TB
17	Cairnmore NNR (Visitor Centre)	NX5563	73	27/iv/2019	WA, TB
18	Fore Moor Moorland	NX5261	73	27/iv/2019	WA, TB
19	Dhooon Bay (picnic site)	NX6540	73	27/iv/2019	WA, TB
20	Galloway House Gardens	NX4744	74	27/iv/2019	KA
21	Mullock Bay MOD	NX7043	73	27/iv/2019	SG, PL, WM, HR, CU, DW
22	Mutehill shore	NX6848	73	27/iv/2019	HR, DW
23	Gatehouse Station, Old Railway Line	NX5462	73	27/iv/2019	WA, TB
24	Ravenshall Wood, beach	NX5252	73	27/iv/2019	SG, WM
25	Rocks of Garheugh	NX2650	74	27/iv/2019 28/iv/2019	KA DW
26	Newton Stewart	NX4165	74	28/iv/2019	WA, TB
27	Cairnbowie	NW9969	74	28/iv/2019	DW
28	Clachan Hill	NX0270	74	28/iv/2019	DW
29	Corsewall Point	NW9872	74	28/iv/2019	DW
30	Kirroughtree Forest	NX4564	73	28/iv/2019	SG
31	Creetown	NX4658	73	28/iv/2019	WM
32	Mull of Galloway, McTaggart's Rock	NX1530	74	28/iv/2019	KA
33	Planting End	NX1258	74	28/iv/2019	DW
34	Stair Haven	NX2053	74	28/iv/2019	DW
35	Stranraer beach	NX0961	74	28/iv/2019	DW
36	Wig Bay	NX0365	74	28/iv/2019	DW
37	Wigtown picnic site	NX4355	74	28/iv/2019	DW
38	Craigoch Park Moor	NX0053	74	29/iv/2019	KA
39	Dunskey Glen	NW9955	74	29/iv/2019	KA
40	Port Mora, Portpatrick to Black Head	NW9955	74	29/iv/2019	KA
41	Black Loch, Gargre Moor	NX2765	74	28/iv/2019	HR
42	Carstramom Wood	NX5960	73	27/iv/2019	DW

Species recorded

During the field meeting 57 BMIG species were recorded, including 14 species of centipede (Table 2), 23 of millipede (Table 3), 16 of woodlice and four of intertidal isopods (Table 4).

The organised group visits, with many enthusiastic participants, to Cally Gardens (site 15) (see Fig. 1), Logan Gardens (site 8) and Mullock Bay (site 21) proved to be the most prolific sites with 25 BMIG species (4 centipedes, 14 millipedes and 7 woodlice), 21 BMIG species (6 centipedes, 13 millipedes and 2 woodlice) and 19 BMIG species (4 centipedes, 7 millipedes and 8 woodlice) recorded, respectively. However, a group of just three recorders collected 19 BMIG species (4 centipedes, 12 millipedes and 3 woodlice) from Dunskey Gardens (site 6).

Seven of the species recorded during the weekend are listed in the Natural England species status review (Lee, 2015) as being Nationally Scarce (*Geophilus seurati*, *Allajulus nitidus*, *Choneiulus palmatus*, *Cylindroiulus londinensis* and *Armadillidium album*) or Nationally Rare (*Lithobius lapidicola* and *Thalassiosobates littoralis*). No Red List species were found, but one centipede, *Lithobius lapidicola*, is considered Near Threatened.



Figure 1: BMIG members at Cally Gardens, Gatehouse-of Fleet.

Left to right – Callum Urquart, Warren Maguire, Paul Harding, Helen Read, Paul Lee, Keith Lugg, Steve Gregory and Derek Whiteley.

Centipedes

Not unexpectedly in a more northerly part of Britain, the number of species of centipede recorded, 14 species from 21 sites (Table 2), is not as great as it might be, for instance, in Southern England. Nevertheless, it includes a fair proportion of our common species, including two halophiles. What we do not see are either of the two terrestrial *Strigamia* species, both of which seem to be confined to more southern areas, although there are a few old records of *S. crassipes* from Southern Scotland. Neither do we note either of our *Henia* species, of which the most northerly British record is an indoor one of *H. vesuviana* from North Lancashire (it has been recorded slightly further north in Ireland). Somewhat surprisingly, *Geophilus flavus*, which might be expected, knowing its recorded distribution (up to Wester Ross) is not included in the present list nor is *G. easoni* (recorded as far north as Orkney).

Of species recorded, *Stigmatogaster subterranea*, which has been found north to Orkney, tends to be synanthropic in more northern locations, *Geophilus truncorum* is very much an urban “avoider”,

whereas the similar sized *Schendyla nemorensis* occurs in both rural and urban sites; both of these small geophilomorphs are known as far north as Shetland. *Geophilus impressus* is a widespread species in both Britain and Ireland, again as far north as the Northern Isles. The seashore species *Strigamia maritima* occurs all around the British and Irish coasts from Jersey to Unst (Shetland) and is often, but not always, very abundant whilst *Geophilus seurati* has been less often recorded but has been found on the Argyll coast.

Two *Cryptops* species are known from Scotland, *C. hortensis* and *C. parisi* both tend to be more or less synanthropic away from Southern Britain / Ireland with records as far north as Sutherland (*C. hortensis*) and Aberdeen (*C. parisi*).

Of the two larger *Lithobius* species, *L. forficatus* is more or less ubiquitous and blank spaces on its distribution map are, maybe, as likely to be due to lack of recording effort in the area concerned as much as lack of suitable habitats. On the other hand, for Scotland, *L. variegatus* has been recorded largely, but not exclusively, in the more Atlantic counties so its presence in the present area is not unexpected.

Lithobius borealis and *L. crassipes* are both medium sized, rural “urban avoiders” but the relationship between the two species, which seem to occupy a somewhat similar niche in Britain, is not clear. There seems to be something of a westerly trend in *L. borealis* but with scattered records also across both Eastern Scotland and Eastern England. *L. crassipes*, on the other hand, does, from its distribution map, seem to have a distinct eastern preference but with records across many areas of England and Wales. It is, apparently, apart from a few isolated records, absent or rare in much of SW England and Southern Ireland.

Lithobius melanops is widely scattered across Britain and Ireland and many of its records are synanthropic ones from gardens and similar locations (and inside buildings). *Lithobius microps*, a relatively small animal, is more of a southern species, but again, often synanthropic. These two species, along with *L. forficatus*, are likely to be the lithobiids found in parks and gardens.

There are other species of *Lithobius* that might have been found: e.g. *L. calcaratus* (relatively uncommon apparently in much of Scotland) and *L. macilentus* (scattered records across much of Britain including Southern and Eastern Scotland). *Lamyctes emarginatus*, which is known from all parts of Britain, is markedly seasonal with a one-year life-cycle and records from February to May are rare.

The small and not very distinctive *Lithobius lapidicola* has been recorded in two contrastingly different types of site. First recorded from a greenhouse in the Royal Botanic Garden in Edinburgh and subsequently in other, similar sites, it was also found on the coast of East Kent and elsewhere on the eastern coast. Specimens from RBG Edinburgh and from Sandwich Bay were both identified as this species by the late E.H.Eason. Its status as Nationally Rare and Near Threatened, would perhaps seem more relevant to its “outdoor” occurrence in semi-natural habitats, but there is no way to differentiate from its occurrence in synanthropic habitats, such as Logan Gardens (site 8), where the species is most likely an accidental introduction.

Note on Nomenclature:

- *Geophilus impressus* has been recorded in the past under both the names *Geophilus alpinus* and *Geophilus insculptus*.
- *Geophilus seurati* has been recorded in Britain in the past as *Geophilus fucorum seurati* and possibly *Geophilus algarum*. The *algarum/fucorum/fucorum seurati* species seem to need further study: see the comments on this in the recent centipede atlas (Barber, 2022).
- *Lithobius borealis* had been recorded in the past as *Lithobius lapidicola* (e.g. Eason, 1964) but this is not the same species as *Lithobius lapidicola* Meinert, 1872 of the present account (see: Barber, 2022).

Table 2: Centipedes recorded during the Newton Stewart 2019 field meeting. X = species recorded from site.

National status: NR = Nationally Rare, NS = Nationally Scarce, NT = Near Threatened.

**Geophilus impressus* - formerly known as *G. insculptus* and more recently *G. alpinus*.

Site number:	3	6	7	8	9	10	11	12	15	16	18	19	20	21	22	23	26	29	30	33	41	No. sites
<i>Haplophilus subterraneus</i>		X		X	X		X		X		X	X					X					8
<i>Schendyla nemorensis</i>	X												X									2
<i>Strigamia maritima</i>	X				X								X									3
* <i>Geophilus impressus</i>		X		X				X								X					X	5
<i>Geophilus serauti</i> (NS)													X	X								2
<i>Geophilus truncorum</i>								X		X						X						3
<i>Cryptops hortensis</i>		X	X						X	X												4
<i>Lithobius borealis</i>				X																		1
<i>Lithobius crassipes</i>														X							X	2
<i>Lithobius forficatus</i>				X		X			X							X	X		X			6
<i>Lithobius lapidicola</i> (NR & NT)				X																		1
<i>Lithobius melanops</i>		X							X													2
<i>Lithobius microps</i>																		X				1
<i>Lithobius variegatus</i>				X		X							X							X		4
Total 14 species / No. per site:	2	4	1	6	2	2	1	2	4	2	1	1	1	4	1	3	2	1	1	1	2	

Millipedes

23 species of millipede were recorded from 33 sites (Table 3). The two most frequently recorded were *Tachypodoiulus niger* (from 19 sites) and *Cylindroiulus punctatus* (from 16 sites).

The sites with the highest species richness counts were all cultivated habitats, either botanical gardens or plant nurseries. These three sites Dunskey Gardens (12 species), Logan Gardens (13 species), and Cally Gardens (14 species, including some striking ‘pink’ *Tachypodoiulus niger*: Fig. 2) were the most interesting from a conservation viewpoint also. All three of the Nationally Scarce millipedes seen during the weekend were found in one or more of these gardens.

The rarest millipede collected was the shoreline inhabitant *Thalassiosobates littoralis*. Not surprisingly, this Nationally Rare species did not occur in any of the gardens but only on the MOD land at Mullock Bay where the shingle beach is a known site for the millipede.

The large black Julid *Cylindroiulus londinensis* was surprisingly widespread in the area for a Nationally Scarce species. In England the related *C. caeruleocinctus* is a common garden species away from the south-west, but it was only found at a single site, Logan Gardens, during the meeting. However, the much scarcer *C. londinensis* occurred in all three of the gardens visited as well as four other sites.

The two other Nationally Scarce species were restricted to single locations. Logan Gardens supported *Allajulus nitidus*, and Cally Gardens was home to *Choneiulus palmatus* amongst huge numbers of *Proteroiulus fuscus* in the decaying timbers forming the edges of raised beds. Both these millipedes tend to be synanthropic species in Scotland, at the northern limits of their ranges.

Cylindroiulus millipedes recorded at two sites by Steve Gregory were found to be infected with the host specific ectoparasitic fungus *Rickia laboulbenioides* De Kesel. The first on *C. britannicus* inside the vinery (a glasshouse) at Cally Gardens and the second on *C. punctatus* in dead wood at Kirroughtree Forest. In light of this discovery, voucher specimens of *C. britannicus* collected from Auchalton Meadows (NS335036, VC75, 08.iv.2006, Gregory, S. leg./det.) during the BMIG meeting in Ayrshire in 2006 were examined and also found to bear thalli of *R. laboulbenioides*. At the time (2019) these were the three most northerly sites for this fungus in the UK (which has subsequently been found from Arran and near Edinburgh (Gregory, 2021)).

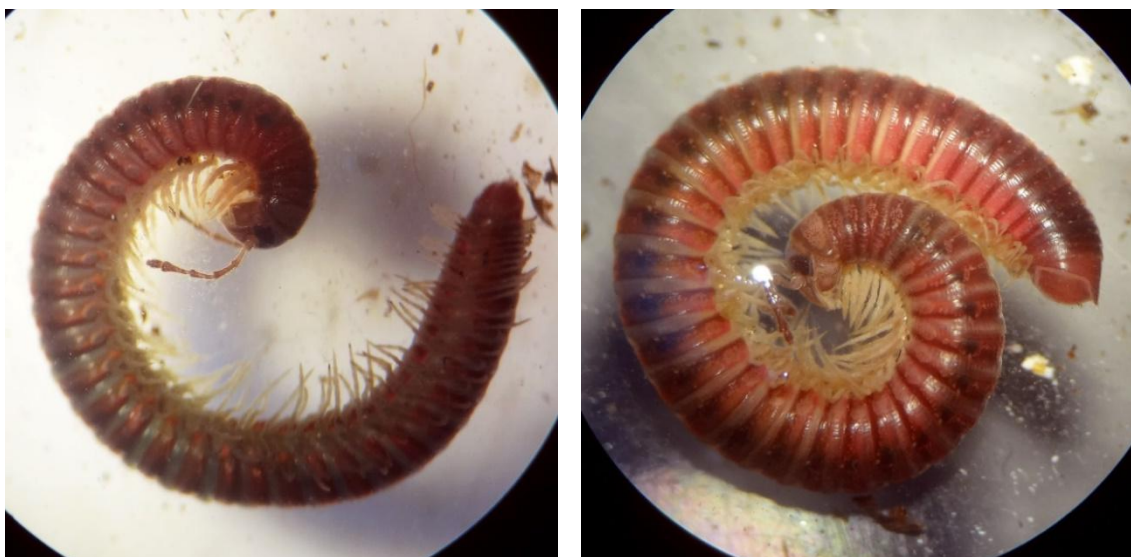


Figure 2: ‘Pink’ *Tachypodoiulus niger* from Cally Gardens; left male, right female.

Images by Steve Gregory

Table 3: Millipedes recorded during the Newton Stewart 2019 field meeting. X = species recorded from site.National status: NR = Nationally Rare, NS = Nationally Scarce. XR = *Cylindroiulus* sp. bearing thalli of the ectoparasitic fungus *Rickia laboulbenioides*.

Site number:	1	2	3	4	6	7	8	10	11	12	13	14	15	16	17	19	20
<i>Glomeris marginata</i>		X								X			X				
<i>Nanogona polydesmoides</i>													X				
<i>Melogona gallica</i>					X					X			X				
<i>Archiboreoiulus pallidus</i>					X												
<i>Blaniulus guttulatus</i>	X				X								X				
<i>Choneiulus palmatus</i> (NS)													X				
<i>Proteroiulus fuscus</i>		X			X		X	X		X	X		X				
<i>Thalassisobates littoralis</i> (NR)																	
<i>Allajulus nitidus</i> (NS)							X										
<i>Brachyiulus pusillus</i>																	
<i>Cylindroiulus britannicus</i>					X		X						XR				
<i>Cylindroiulus caeruleocinctus</i>							X										
<i>Cylindroiulus latestriatus</i>		X	X			X		X	X		X	X					
<i>Cylindroiulus londinensis</i> (NS)		X			X		X	X					X	X			
<i>Cylindroiulus punctatus</i>	X	X		X	X		X	X		X	X	X	X				X
<i>Ommatoiulus sabulosus</i>					X		X	X				X	X				
<i>Ophiulus pilosus</i>		X			X		X			X			X	X	X	X	
<i>Tachypodoiulus niger</i>	X	X			X		X	X		X		X	X	X		X	
<i>Brachydesmus superus</i>					X		X										
<i>Polydesmus angustus</i>		X			X		X						X				
<i>Polydesmus coriaceus</i>										X							
<i>Macrosternodesmus palicola</i>							X										
<i>Ophiodesmus albonanus</i>							X						X				
Total 23 species / No. per site:	3	8	1	1	12	1	13	6	1	7	3	4	14	3	1	2	1

Table 3: Millipedes recorded (continued)

Site number:	21	23	24	25	28	29	30	32	35	36	37	38	39	40	41	42	No. sites
<i>Glomeris marginata</i>	X			X										X		X	6
<i>Nanogona polydesmoides</i>																	1
<i>Melogona gallica</i>																	3
<i>Archiboreoiulus pallidus</i>																	1
<i>Blaniulus guttulatus</i>																	3
<i>Choneiulus palmatus</i> (NS)																	1
<i>Proteroiulus fuscus</i>		X			X					X			X				11
<i>Thalassisobates littoralis</i> (NR)	X																1
<i>Allajulus nitidus</i> (NS)																	1
<i>Brachyiulus pusillus</i>	X																1
<i>Cylindroiulus britannicus</i>																X	4
<i>Cylindroiulus caeruleocinctus</i>																	1
<i>Cylindroiulus latestriatus</i>	X		X	X				X						X			12
<i>Cylindroiulus londinensis</i> (NS)			X														7
<i>Cylindroiulus punctatus</i>	X				X		XR						X			X	16
<i>Ommatoiulus sabulosus</i>									X	X		X					8
<i>Ophiulus pilosus</i>																X	9
<i>Tachypodoiulus niger</i>	X		X			X				X	X		X	X	X	X	19
<i>Brachydesmus superus</i>																X	3
<i>Polydesmus angustus</i>	X		X				X						X				8
<i>Polydesmus coriaceus</i>																	1
<i>Macrosternodesmus palicola</i>																	1
<i>Ophiodesmus albonanus</i>																	2
Total 23 species / No. per site:	7	1	4	2	2	1	2	1	1	3	1	1	4	3	1	6	

Woodlice

16 species of woodlouse were recorded from 36 sites (Table 4). Of the undisputed terrestrial woodlice (see paragraph below) by far the two most frequently recorded were *Porcellio scaber* (from 32 sites) and *Oniscus asellus* (24 sites), with *Trichoniscus pusillus* agg. (nine sites) next.

Ligia oceanica was recorded from six sites. However, according a ‘genetic’ analysis undertaken by Dimitriou *et al.* (2019), this species is more closely related to marine isopods of suborders Valvifera and Sphaeromatidea than to suborder Oniscidea (the true ‘woodlice’). They examined (for the first time in Oniscidea) the evolutionary highly conserved nuclear protein-coding genes for Sodium-potassium pump (NAK) and Phosphoenolpyruvate Carboxykinase (PEPCK) (in addition to the traditionally used 18 s and 28 s ribosomal RNA genes). The implication for our UK fauna is that *Ligia oceanica*, our familiar Sea Slater, should no longer be considered a terrestrial ‘woodlouse’, but a marine intertidal isopod.

Overall the coastal sites proved the most interesting (see also **Intertidal Isopods** below). *Trichoniscoides saeroeensis* was recorded from three sites. Good numbers of *Armadillidium album* were recorded from Ringdoo Point, Luce Sands (site 14) (Fig. 3A). This species was first recorded there in 1974 (Harding, 1975), at its only known Scottish site (Gregory, 2009). Similarly, large numbers of *Armadillidium pulchellum* were seen at Mullock Bay (site 21) (Fig. 3B), where the species was also recorded during the in 1997 field meeting. *Cylisticus convexus* was also recorded from the coast at Craignarget (site 3) and also in unusually large numbers at Cally Gardens (site 15) (Fig. 3C).



Figure 3: Terrestrial Woodlice recorded during the BMIG 2019 field meeting.

A) *Armadillidium album* from upper drift line at Ringdoo Point; B) *Armadillidium pulchellum* from coastal grassland at Mullock Bay; C) Group of *Cylisticus convexus* at Cally Gardens; D) *Philoscia affinis* male from coastal grassland at Ringdoo Point. Images © Warren Maguire.

Perhaps the greatest surprise was that both Ringdoo Point and Mullock Bay also supported an abundance of *Philoscia affinis* (Fig. 3D), a species first reported from Britain from south east England in 2017 (Segers *et al.*, 2018). In total *P. affinis* was found at five rural localities in both coastal habitats and inland woodland, whereas the only confirmed record for *P. muscorum* (i.e. male specimen examined) was from Cally Gardens (site 15), very much a synanthropic site. Unidentified *Philoscia* specimens were also observed at three additional coastal sites, but unfortunately were not collected for examination to enable species determination. Subsequently, *P. affinis* has been recorded further north from the islands of Lismore and Raasay, with possible females from Arran and Skye (Gregory, 2020).

These observations of *P. affinis* are important because during BMIG's previous field meetings in western Scotland (which predate the discovery of this species in Britain), *P. muscorum* had been widely recorded from Kirkcudbrightshire, Ayrshire, Argyllshire and Kintyre (Gregory, 1997; Collis, 2007; Collis, 2008; Gregory, 2016). One of these records (collected from Oban in 2007) has subsequently been shown by examination of voucher material to be *P. affinis*. Unfortunately, no additional voucher material of *Philoscia* collected during these meetings is available to check species identification. Thus, it seems quite probable that some (possibly many) populations of *P. muscorum* reported from western Scotland (and that are mapped as that species in Gregory (2009)) will be found to include, or to be entirely composed of, *P. affinis*.

Of the known UK species that were not recorded during the field meeting perhaps the most obvious omissions are *Haplophthalmus danicus*, which is known from scattered sites in southern Scotland, and *Platyarthrus hoffmannseggii*, which is known from the Solway Coast (Gregory, 2009). It is also surprising that no species of Waterlouse (Asellidae) were recorded, but these freshwater species do tend to be relatively under-recorded by active BMIG members compared to the terrestrial woodlice.

Intertidal Isopods

While intertidal isopods were not a specific focus of this field meeting, several sites were quickly checked, producing four species (Table 4), in addition to the 'honorary woodlouse' *Ligia oceanica* (which was found at six locations).

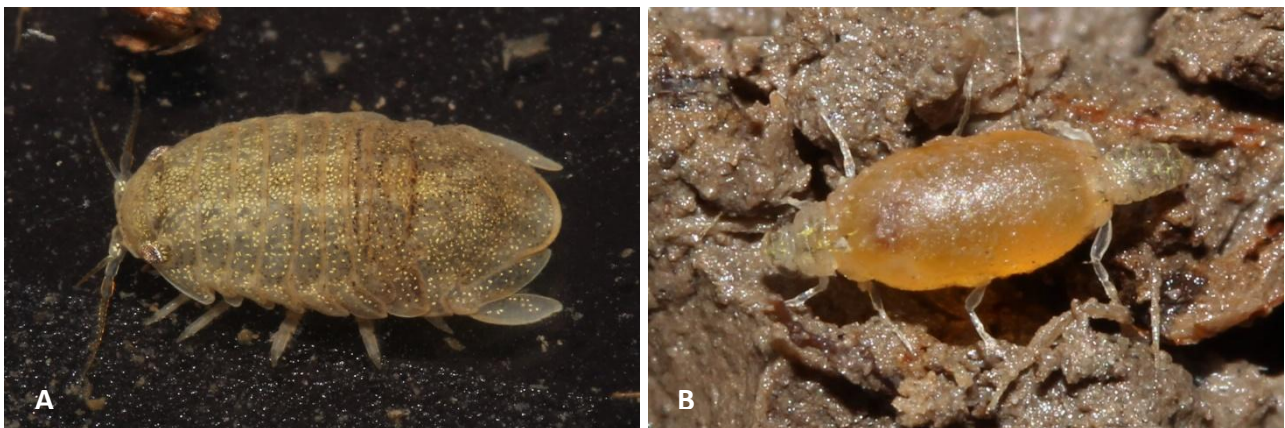


Figure 4: Intertidal Isopods recorded at Creetown during the BMIG 2019 field meeting.

A) *Lekanephaera rugicauda* in upper saltmarsh pool; B) *Paragnathia formica* sub-adult female from a mud bank at the edge of saltmarsh. Images © Warren Maguire.

Table 4: Woodlice and intertidal isopods recorded during the Newton Stewart 2019 field meeting. X = species recorded from site.

National status: NS = Nationally Scarce.

Site number:	1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21
Woodlice																			
<i>Ligia oceanica</i>	X	X										X					X		X
<i>Androniscus dentiger</i>														X					
<i>Haplophthalmus mengii s.lat.</i>														X					
<i>Trichoniscoides saeroeensis</i>		X																	X
<i>Trichoniscus pusillus agg.</i>	X	X											X	X				X	X
<i>Trichoniscus pusillus s.str.</i>														X					X
<i>Trichoniscus pygmaeus</i>																			X
<i>Oniscus asellus</i>		X	X		X	X	X		X	X	X		X	X	X	X	X	X	X
<i>Philoscia affinis</i>													X						X
<i>Philoscia muscorum</i>														X					
* <i>Philoscia sp.</i>	X																		
<i>Porcellio scaber</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
<i>Porcellio spinicornis</i>					X														
<i>Cylisticus convexus</i>		X												X					
<i>Armadillidium album</i> (NS)													X						
<i>Armadillidium pulchellum</i>																			X
<i>Armadillidium vulgare</i>																			
Total 16 species / No. per site:	4	6	2	1	3	2	2	1	2	2	2	2	5	7	2	1	3	3	8
Intertidal isopods																			
<i>Jaera (Jaera) albifrons</i>		X																	
<i>Jaera (Jaera) nordmanni</i>																			
<i>Lekanesphaera rugicauda</i>													X						
<i>Paragnathia formica</i>																			
Total 4 species / No. per site:	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	

Table 4: Woodlice and intertidal isopods recorded (continued)

Site number:	22	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	40	41	No. sites
Woodlice																			
<i>Ligia oceanica</i>		X																	6
<i>Androniscus dentiger</i>																			1
<i>Haplophthalmus mengii s.lat.</i>																			1
<i>Trichoniscoides saeroeensis</i>			X																3
<i>Trichoniscus pusillus agg.</i>		X						X						X					9
<i>Trichoniscus pusillus s.str.</i>																			2
<i>Trichoniscus pygmaeus</i>																			1
<i>Oniscus asellus</i>		X	X	X	X		X	X			X			X			X		24
<i>Philoscia affinis</i>		X						X								X		X	6
<i>Philoscia muscorum</i>																			1
* <i>Philoscia sp.</i>													X	X					3
<i>Porcellio scaber</i>	X	X	X	X	X	X	X	X		X		X	X	X	X	X			32
<i>Porcellio spinicornis</i>																			1
<i>Cylisticus convexus</i>																			2
<i>Armadillidium album</i> (NS)																			1
<i>Armadillidium pulchellum</i>																			1
<i>Armadillidium vulgare</i>			X																1
Total 16 woodlice/No. per site:	1	5	4	2	2	1	2	4	-	1	1	1	2	4	1	2	1	1	
Intertidal Isopods																			
<i>Jaera (Jaera) albifrons</i>																			1
<i>Jaera (Jaera) nordmanni</i>		X																	1
<i>Lekanesphaera rugicauda</i>									X										2
<i>Paragnathia formica</i>									X										1
Total 4 species / No. per site:		1							2										

The very common *Jaera albifrons* (s.s.) was at Site 3 (Craignargert), under rocks around mid-tide. Despite its ubiquity, there was only one previous record of the species from SW Scotland in the National Biodiversity Network Trust (NBN) online atlas and database (<https://nbnatlas.org/>). Another *Jaera* species, the somewhat more distinctive *J. nordmanni*, was found in typical habitat (under stones in a stream meeting the shore) at Site 24 (Ravenshall Wood, beach). There were no previous records of this fairly common species on NBN in SW Scotland.

The common, ball-rolling *Lekanesphaera rugicauda* was found in its typical saltmarsh habitat at two locations, 14 (Ringdoo Point, under driftwood) and 31 (Creetown, in upper saltmarsh pools) (Fig. 4A). At this latter location, two bulbous sub-adult female *Paragnathia formica* (Fig. 4B) were also found in a mud bank at the edge of the saltmarsh, though no other individuals of the species could be found (including adult males which, unlike adult females, are present all year round) despite a good search of suitable habitat. There were no previous records of this poorly recorded but distinctive species in Scotland on NBN.

Acknowledgements

Paul Harding undertook the organisation of the field meeting, including arranging accommodation and obtaining permissions to survey and collect from sites, using site information kindly supplied by Peter Norman, Peter Garson, Bob Merritt and Craig Macadam.

Jonathan Warren, Scottish Natural Heritage, gave permission to collect specimens from SSSIs. Permission to visit various non-public sites was given by Kevin Hughes (Cally Gardens), Alastair Orr Ewing (Dunskey Estate), Richard Baines (Logan Botanic Garden) and Scott McLean (Range Officer, Kirkcudbright MOD Training Area). We thank all.

References

- Barber, A.D. (2022) *Atlas of the Centipedes of Britain and Ireland*. Telford, FSC Publications.
- Barber, A.D. (2008) Report on the autumn meeting in the Oban area, 2007: Chilopoda. *Bulletin of the British Myriapod & Isopod Group* **23**: 45-46.
- Barber, A.D. (2011) Report of the BMIG field meeting at Claonaig, Kintyre, September 2010: Centipedes. *Bulletin of the British Myriapod & Isopod Group* **25**: 66-68.
- Barber, A.D. & Gregory, S.J. (2008) Report on the autumn meeting in the Oban area, 2007: Diplopoda. *Bulletin of the British Myriapod & Isopod Group* **23**: 47-49.
- Collis G.M (2008) Report on the autumn meeting in the Oban area, 2007: Isopoda. *Bulletin of the British Myriapod & Isopod Group* **23**: 43-44
- Collis G.M (2007) Report on the 2006 BMIG meeting in Ayrshire. *Bulletin of the British Myriapod & Isopod Group* **22**: 32-35.
- .Crowson, R.A. (1967) Refuges for warmth-loving species along the Scottish south coast. *Entomologist's Monthly Magazine* **102**: 245-246.
- Dimitriou, A.C., Taiti, S. & Sfenthourakis, S. (2019) Genetic evidence against monophyly of oniscidea implies a need to revise scenarios for the origin of terrestrial isopods. *Scientific Reports* **9**: 18508. doi.org/10.1038/s41598-019-55071-4
- Eason, E.H. (1964) *Centipedes of the British Isles*. London, Warne.
- Gregory, S.J. (1997) BISG/BMG Field Meeting in Kirkcudbrightshire. *British Isopod Study Group Newsletter No. 40*: 1-2 (unpublished).
- Gregory, S. (2009) *Woodlice and Waterlice (Isopoda: Oniscidea & Asellota) in Britain and Ireland*. Shrewsbury: FSC Publications.

- Gregory, S.J. (2016) Report of BMIG field meeting at Claonaig, Kintyre, autumn 2010: woodlice and millipedes, including additional Scottish records of *Chordeuma sylvestre* C.L.Koch and *Leptoiulus belgicus* (Latzel). *Bulletin of the British Myriapod & Isopod Group* **29**: 50-58.
- Gregory, S. (2018) Additional UK records of *Philoscia affinis*. *British Myriapod & Isopod Group Newsletter* **36**: 3 (unpublished)
- Gregory, S.J. (2020) Further observations of *Philoscia affinis* Verhoeff, 1908 (Isopoda, Oniscidea, Philosciidae) in Britain and Ireland: Distribution, Habitat and Identification. *Bulletin of the British Myriapod & Isopod Group* **32**: 2-14.
- Gregory, S.J. (2021) Preliminary observations of the ectoparasitic fungus *Rickia laboulbenioides* De Kesel (Laboulbeniales) in Britain. *Bulletin of the British Myriapod & Isopod Group* **33**: 35-45.
- Harding, P. T. (1975) *Armadillidium* in South-west Scotland. *Glasgow Naturalist* **19**: 175-177.
- Harding, P.T. & Sutton, S.L. (1985). *Woodlice in Britain and Ireland: distribution and habitat*. Huntingdon, Institute of Terrestrial Ecology.
- Lee, P. (1999) Millipede records from Galloway. *British Myriapod Group Newsletter* **31**: 2 (unpublished).
- Lee, P. (2015) *A review of the millipedes (Diplopoda), centipedes (Chilopoda) and woodlice (Isopoda) of Great Britain*. Natural England Commissioned Report NECR186. Species Status **23**. Natural England.
- Segers, S, Boeraeve, P, & De Smedt, P. (2018) *Philoscia affinis* Verhoeff, 1908 new to the UK (Isopoda: Philosciidae). *Bulletin of the British Myriapod & Isopod Group* **30**: 21-25.