

Review paper

Changes in the millipede fauna of the British Isles between 1958 and 2025

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Accepted: 6 March 2026 / Published online: 20 September 2026

Citation: Read H. 2026. Changes in the millipede fauna of the British Isles between 1958 and 2025. In: Antić D, Makarov S, guest editors. Myriapoda in a Fractured World. Proceedings of the 20th International Congress of Myriapodology (Srebrno Jezero, Serbia). Biologia Serbica. 48(1):48-51. <https://doi.org/10.5281/zenodo.20772073>

Summary. The number of millipede species found from the British Isles can be tracked through key publications in 1958, 1985, 2006 and 2025 and has increased from 43 to 84. The number of orders of millipede has also increased from five to eight, and now includes representatives from the largely tropical orders Spirobolida and Siphonophorida. There has been an increase in species found from heated glasshouses, some of which are now breeding successfully outside. The British fauna includes a large proportion of species from the Iberian Peninsula and Italy, especially in the orders Chordeumatida and Julida. This may be due to historical links between these areas, including the transportation of goods for industrial processes.

Key words: colonisation, distribution, glasshouse, Iberian Peninsula, Wales.

INTRODUCTION

The British Isles consists of two larger islands, Great Britain and Ireland together with a number of smaller islands, including the Channel Islands, the Isle of Man and the Isles of Scilly. They are situated off the north-west coast of Europe with France the nearest part of mainland Europe. Great Britain became separated from the rest of Europe approximately 12,000 years ago (Davies et al. 2004); the island of Ireland had previously become separated. Some species probably survived the glacial periods of the Quaternary in refugia, but as the climate slowly warmed following the last of these, other fauna and flora colonised from the south (Godwin 1975). However, once the British Isles had become separated from the rest of Europe, this hindered the natural spread of many species. As a result, the British fauna,

including that of the millipedes, is more depauperate than might be expected for the latitude and the number of millipede species found in Great Britain is lower than in the neighbouring region of France; that of Ireland is even more limited.

Millipedes have been relatively well studied in Britain and Ireland over a long period of time. Leach (1790–1836) described several common species (Barber and Read 2023), Pocock (1863–1947), who was employed at the Natural History Museum in London (Barber, 2025), published a list of 16 species in 1893 (Pocock 1893) and Bagnall (1889–1962), Hilda K. Brade-Birks (1890–1982) and S. Graham Brade-Birks (1887–1982) added several more species (Barber and Mann 2004; Proudlove 2011) bringing the list to 39 by 1922 (Harding in Lee 2006). The first modern identification guide to the millipedes of Britain was written by J. Gordon Blower (1923–2001) and was published in 1958 as part of the series

'Synopsis of the British fauna' (Blower 1958). This included keys to species, detailed descriptions and numerous illustrations. The Synopsis was updated in 1985 (Blower 1985) and a further revision and update is due to be published in 2026 (Read and Lee in press). The activities of Blower, a lecturer at the University of Manchester, stimulated several generations of students and together with the establishment of the Millipede Recording Scheme, by Colin Fairhurst in 1970, this galvanised the study of millipedes in Britain. This included ecological and taxonomic studies but also encouraged numerous people to start looking for and recording millipedes across the country. The formation of the British Myriapod Group in 1970, later to become the British Myriapod and Isopod Group (BMIG) in 2000, gave additional impetus to the recording. In 2006 an atlas of distribution maps for the millipede species known from Britain was published (Lee 2006). Due to the collection of ecological data along with the species records, the atlas also included information about the preferred habitats of each species.

CHANGES IN THE NUMBER OF SPECIES OVER TIME

Harding (in Lee 2006) charts the rise in species of millipede in Britain and Ireland between 1814 and 1958. The four publications, Blower (1958), Blower (1985), Lee (2006) and Read and Lee (in press) provide information about the fauna as known at these points during a time when active biological recording of the group has been promoted. The number of species listed in each publication has increased over time (Table 1). These figures include species only found in heated glasshouses, most of which appear to be successfully reproducing there. However, they do not include those that have clearly been imported in cultivated house plants, but have not established self-sustaining populations, (such as *Chorodrodesmus cf. riparius*), and those intercepted by the Government Agency (FERA) that carries out inspections of goods imported into the United Kingdom. Note that there was one additional species included in the 1958 and 1985 lists, *Eumastigonodesmus boncii* (Brölemann, 1908), which has been omitted from these totals, and has probably never occurred in Britain.

The increase in species may be explained partly by increasing collector effort over time with some 47,000 records

Table 1. Numbers of millipede species listed in definitive publications over the last 70 years.

Date	Number of species	Publication
1958	43	Blower (1958)
1985	52	Blower (1985)
2006	62	Lee (2006)
2025	84	Read and Lee (in press)

contributing to the 2006 Atlas. Increased awareness of less well-known invertebrate groups, along with the availability of good identification keys and workshops, has enabled invertebrate ecologists specialising in species groups such as beetles and ants to collect and identify millipedes. A further reason for the increase is the introduction and transportation of species by humans [for example *Oxidus gracilis* (C.L. Koch 1847)], and others may have colonised by more natural routes. In addition, species new to science have been described from the country. These include *Siphonethus dudleycookeorum* Moritz, Gregory & Wesener, 2022 which seems highly likely to have a New Zealand origin and *Anthogona britannica* Gregory, Jones & Mauriès, 1993 which has yet to be found outside Britain. Some larger glasshouses have been targeted for survey by BMIG members, including the Eden Project in Cornwall, and this has boosted the number of species in Britain that originated from tropical climates, some of which, such as *Poratia digitata* (Porat, 1889) have well established and thriving breeding populations. Thus, the overall number of these species has doubled since 1958 (Figure 1) and several are now found regularly away from heated buildings, although in synanthropic situations.

Figure 2 illustrates the number of known British species in each order over time. The number of orders has increased from five in 1958 to eight in 2025. The finding of two members of the order Spirobolida and, most surprisingly a Siphonophorida, has widened the list of orders to include some not expected outside warmer regions. The number of species in the three most speciose orders, Polydesmida, Chordeumatida and especially Julida have all increased.

Amongst the Polydesmida, new species to the British fauna have included outdoor species, such as *Polydesmus asthenestatus* Pocock, 1894 but there has been a big increase

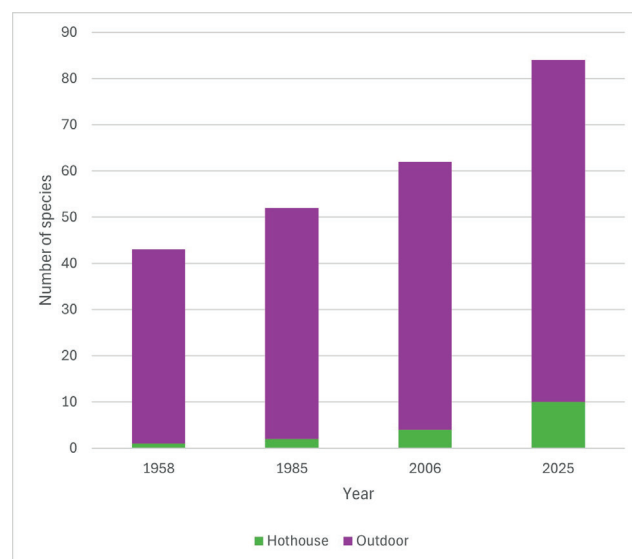


Fig. 1. The change in numbers of hothouse species over time.

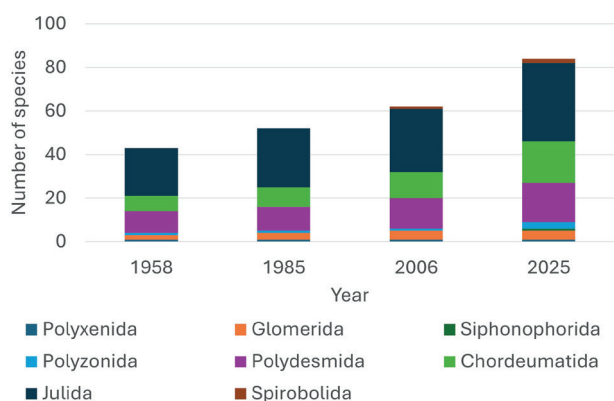


Fig. 2. The numbers of species in each millipede order.

in the number of hothouse species (Figure 3), including *Cylindrodesmus hirsutus* Pocock, 1889 and *Eutrichodesmus communicans* Golovatch, Geoffroy, Mauriès & VandenSpiegel, 2009 which appear very similar and occur in mixed populations.

In the order Julida, the number of species in the families Blaniulidae and Nemasomatidae have remained constant, thus the additional species have all been in the family Julidae (Table 2). Several new species are from the genus *Cylindroiulus* Verhoeff, 1894, including *Cylindroiulus salicivorus* Verhoeff, 1907 *Cylindroiulus dahli* Demange, 1970 and *Cylindroiulus sagittarius* (Brölemann, 1897).

Although there have been long standing discussions about what 'native' might mean regarding species of millipede in Britain, distributions and comments from Kime and Enghoff (2017) have been used as guidance. When

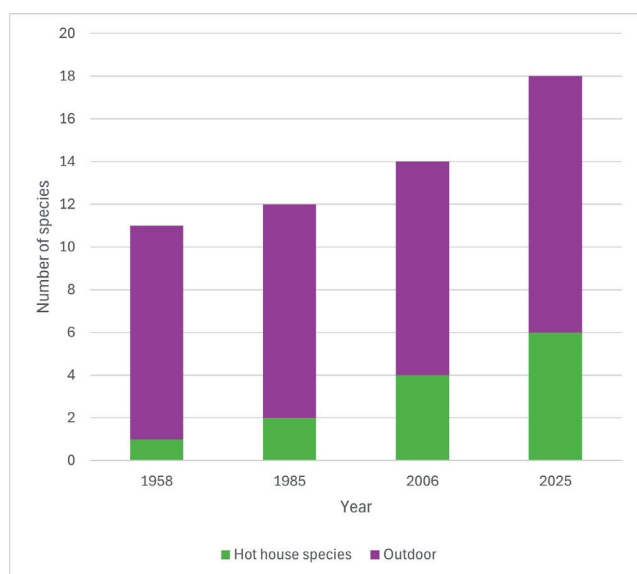


Fig. 3. The change in numbers of hothouse species in the order Polydesmida over time.

examining the presumed origin of species of Julidae, a remarkable number appear to be from Italy or Iberia (Table 3), including *Cylindroiulus pyrenaicus* (Brölemann, 1897), *Cylindroiulus appenninorum* (Brölemann, 1897) and *Haplopodoiulus spathifer* (Brölemann, 1897).

A similar picture can be seen for the order Chordeumatida (Table 4) for which Kime and Enghoff (2021) was used for guidance. Species from Iberia include *Turdulisoma turdulorum* Mauriès, 1964, *Turdulisoma helenreadae* Mauriès, 2015 and *Cranogona dalensi* Mauriès, 1965, while *Mauriéseuma nontronense* Mauriès & Kime, 1999 was described from south-west France.

A remarkable number of species from Iberia (i.e. Spain, Portugal and including the south of France) have been discovered in south Wales, thanks largely to work carried out by Christian Owen. These are six species of Chordeumatida: *Ceratosphys amoena* Ribaut, 1920, *Cranogona dalensi*, *Mauriéseuma nontronense*, *Turdulisoma helenreadae*, *Turdulisoma turdulorum*, *Psichrosoma* sp. and the three species of Julidae: *Cylindroiulus pyrenaicus*, *Cylindroiulus sagittarius*, *Ommatoiulus moreleti* (Lucas, 1860). The latter species has also been found in Northern Ireland and Cheshire England. Other Iberian species found in Britain include *Cylindroiulus dahli* from Scotland and *Haplopodoiulus spathifer*, first recorded from Kew Botanic Gardens but now quite widespread.

South Wales has an industrial past associated with coal mining and steel production. Ships imported goods, including vast quantities of iron ore and other industrial raw materials to south Wales (Gregory et al. 2018) much of which came from northern Spain. In addition, several hundred workers, and their families, were brought from northern

Table 2. Changes in the number of British millipede species in the order Julida over the last 70 years.

	1958	1985	2006	2026
Blaniulidae	6	6	6	6
Julidae	14	19	21	28
Nemasomatidae	2	2	2	2
TOTAL	22	27	29	36

Table 3. Presumed origin of British species in the family Julidae. *Figures in brackets are species for which it is less possible to be certain about their origin. Examples include the very widespread *Cylindroiulus truncorum* (Silvestri, 1896) and more restricted *Cylindroiulus vulnerarius* (Berlese, 1888) both here considered to be possibly 'native'.

Presumed origin	Number of species*
'Native'	12 (5)
Iberia	5
Italy	3
Continental Europe (i.e. The Netherlands, Germany, France etc. but not Italy or Iberia)	2 (1)

Table 4. Presumed origin of British species in the order Chordeumatida. *Figures in brackets are species for which it is less possible to be certain about their origin. These include *Melagona gallica* (Latzel, 1884) and *Brachychaetema melanops* H.K. Brade-Birks and S.G. Brade-Birks, 1918 both here considered to be possible ‘natives’.

Origin	Number of species*
‘Native’	5 (3)
Iberia/Southern France	6
Italy	1
‘Continental Europe (i.e. northern France, Germany)’	2 (2)

Spain to south Wales to work in the mines and industries soon after 1873 (Owen and Gregory 2021). Potentially millipedes may have been transported with the materials, the miners or their equipment. Most of the species with an Iberian origin are today found in areas that have had an industrial past, including coal spoil heaps. Interestingly, *Cylindroiulus dahli* is known only from one site in Scotland and this also has historical links to transportation of industrial goods, although there is no known link with Spain.

DISCUSSION

Even the fauna of island nations is not static and, in the face of climate change and the movement of humans and their goods, will continue to change. Historical events may have enabled millipedes to colonise new areas when soil and minerals were transported between countries as part of industrial processes. More recent colonisations have perhaps occurred more frequently through the movement of plants into domestic, formal and botanic gardens, including into heated glasshouses. While some species have been unable to spread out from the heated indoor environments, others have already spread into associated gardens and even into the wider countryside. Even as the Synopsis (Read and Lee in press) was in preparation, two further species of millipede have been found in Britain, an unknown species of Blaniulidae from a coal mine in south Wales and *Glomeris intermedia* Latzel, 1884 from the island of Jersey. It seems highly likely that the species list will continue to grow.

ACKNOWLEDGEMENTS

I am grateful to Dragan Antić for the opportunity to deliver a presentation on this topic at the 20th International

Congress of Myriapodology in Serbia, July 2025. Many thanks to Paul Lee, Steve Gregory, Tony Barber and all the members of the British Myriapod and Isopod Group for contributing to discussions and especially to all those people who have found millipedes and contributed records to the Millipede Recording Scheme. I would particularly like to thank the following for help with identification and accessing specimens: Mike Davidson, Henrik Enghoff, Leif Moritz, Christian Owen, Jörg Spelda, Ruttapon Srisonchai and Thomas Wesener. Thanks also to C. Philip Wheeler for suggesting the topic and Paul Lee, Paul Harding, Steve Gregory, Zoltán Korsós, Dragan Antić and one other referee for helpful comments on the text.

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