# Seven arboreal barkflies newly-recognized in Ireland and records of other species from six historic demesnes across Northern Ireland (Insecta: Psocoptera)

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*Seven species of Psocoptera (*Atlantopsocus adustus*,* Elipsocus moebiusi*,* Epicaecilius pilipennis*,* Peripsocus milleri*,* Philotarsus parviceps*,* Pseudopsocus rostocki *and* Trichadenotecnum sexpunctatum*) are added to the Irish list and records are provided of 26 further species from six historic demesnes across Northern Ireland.*

**Keywords:** arboreal, historic demesnes, Psocoptera

## Introduction

Smithers *et al*. (1999) provide a modern review of the Irish list of Psocoptera (booklice, barklice or barkflies, psocids) and include their known county distribution. While they comment that Psocoptera are a much-neglected group of insects in Ireland, this situation is nowhere near as bad as in Britain where a modern Checklist has only recently been published (New 2005 – albeit confusingly including exclusive Irish species) and where no county distributions currently exist. In reality, Ireland has had a remarkable history of documentation of its Psocoptera, with many species appreciated here long before they were noticed in Britain (Smithers 1978, Smithers and O'Connor 1991). It was therefore very surprising to find seven additional species during the course of a single project surveying the fauna of veteran trees in six historic demesnes across Northern Ireland. This brings the Irish list to 53 species, an increase of over 15 per cent.

Interest in the free-living Psocoptera is currently being stimulated through the launch of a Barkfly Recording Scheme led by Bob Saville of the Lothian Wildlife Information Centre in Scotland (www.brc.ac.uk/schemes/barkfly/homepage.htm). Distribution maps covering Britain and Northern Ireland are already available on this site. The invention of a new common name for these insects – barkflies – has been adopted as a means of making them more accessible and respectable – stimulating interest using 'psocids' or 'barklice' was thought to be self-defeating. The free-living Psocoptera are predominantly to be found on trees and shrubs – on the bark surfaces of trunks and boughs, where they feed on encrusting and largely epiphytic micro-organisms such as algae, lichen and fungi, and also feed on micro-flora on leaf surfaces – they are mostly part of the epiphytic invertebrate assemblage. A few species occur in other situations, on unshaded field layer plants such as reeds and grasses, amongst leaf litter, and on rock-encrusting saxicolous lichens, etc.

## Methods

During 2006, one of us (KNAA) was contracted by the Environment & Heritage Service (DoENI) to carry out a scoping study on the wood pasture and parkland habitat in Northern Ireland. Although this had been identified as a priority habitat under the UK Biodiversity

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Table 1. Barkflies recorded from six historic demesnes in Northern Ireland during 2006, indicating months of detection (5 refers to May, 6 to June, etc).

| Family and Species | Barons | Caledon | Coole | Drenagh | Glenarm | Ward |
|---|---|---|---|---|---|---|
| **Lepidopsocidae** | | | | | | |
| *Pteroxanium kelloggi* (Ribaga) | 9 | 8,9,10 | 8,9 | 8,9 | 8,9,10 | 8,9 |
| **Trogidae** | | | | | | |
| *Cerobasis guestfalica* (Kolbe) | | | | 9 | | |
| **Caeciliusidae** | | | | | | |
| *Caecilius fuscopterus* (Latreille) | | | 9 | | | |
| *Valenzuela flavidus* (Stephens) | 6,8,9 | 8,9 | 6-9 | 6 | 6,8 | 9 |
| *Epicaecilius pilipennis* (Lienhard) | | | 9 | 8 | | |
| *Enderleinella obsoleta* (Stephens) | | | 7 | | | |
| **Stenopsocidae** | | | | | | |
| *Graphopsocus cruciatus* (L.) | 6 | 8 | 6,7,8 | 6,9 | 6,7 | |
| *Stenopsocus immaculatus* (Stephens) | | 7 | 9 | | 9 | |
| **Lachesillidae** | | | | | | |
| *Lachesilla pedicularia* (L.) | 8,9 | | 9 | 8,9 | 7,8 | 7,8 |
| **Ectopsocidae** | | | | | | |
| *Ectopsocus axillaris* (Smithers) | 6-9 | 5-9 | 5-9 | 8,9 | 7 | 8 |
| *E. briggsi* McLachlan | 5,8,9 | 5,8,9 | 5-9 | 8,9 | 8 | 5 |
| *E. petersi* Smithers | 5,8,9 | 6,7,9 | 6-9 | 6 | 6,8,9 | |
| **Peripsocidae** | | | | | | |
| *Peripsocus alboguttatus* (Dalman) | | | 7 | | | |
| *P. milleri* (Tillyard) | | 8 | | | 9 | |
| *P. phaeopterus* (Stephens) | | | | | | 8 |
| *P. subfasciatus* (Rambur) | 7 | | | | 7,9 | |
| **Trichopsocidae** | | | | | | |
| *Trichopsocus clarus* (Banks) | | | | | | 7 |
| **Philotarsidae** | | | | | | |
| *Philotarsus parviceps* Roesler | 7,8 | 7-9 | 8,9 | 8 | 8,9 | 8,9 |
| **Elipsocidae** | | | | | | |
| *Elipsocus abdominalis* Reuter | | 7 | | | 7 | |
| *E. hyalinus* (Stephens) | 5,6,7 | 6,7 | 5-8 | | 5,6,8 | 5,7,8 |
| *E.moebiusi* Tetens | | | 6 | 6 | 6 | |
| *E. pumilis* (Hagen) | | 7,8 | | 6 | 6 | 7 |
| *Pseudopsocus rostocki* Kolbe | | | 9 | | | |
| *Reuterella helvimacula* (Enderlein) | 8,9 | | 7 | | 8 | 9 |
| **Mesopsocidae** | | | | | | |
| *Mesopsocus unipunctatus* (Mueller) | 6 | 6,7 | 6 | 6 | 6 | |
| **Psocidae** | | | | | | |
| *Amphigerontia bifasciata* (Latreille) | 7 | | | | | |
| *Psococerastis gibbosa* (Sulzer) | | 7,8 | 7 | | 8 | 7 |
| *Metylophorus nebulosus* (Stephens) | 7,8 | 7 | | | 7,8 | 8 |
| *Atlantopsocus adustus* (Hagen) | | 6 | 6,9 | | 8 | 8 |
| *Loensia fasciata* (Fab.) | | | | 5 | 6 | |
| *L. variegata* (Latreille) | 8 | 7 | 7 | 8 | 8,9 | 8 |
| *Trichadenotecnum majus* (Kolbe) | | 8 | 9 | 8 | | |
| *T. sexpunctatum* (L.) | 8 | 7,8 | | 9 | | 9 |
| **Total Psocoptera 33** | **16** | **19** | **22** | **17** | **23** | **16** |

Action Plan (BAP), little knowledge was available locally. Six historic demesnes were selected for detailed investigation across the six counties. A full day was spent exploring each demesne in March and then again monthly between May and October. Epiphytes had been identified as one of the subjects for the scoping study and so barkflies were included in the field survey work. The identification work was carried out largely by KNAA, but specimens which proved difficult to identify and examples of all seven new species were passed to RES for his opinion. A few were also passed to the European authority, Charles Lienhard, for his views.

The six sites selected for survey (and the abbreviated names used in Table 1) were as follows:

Barons – Baronscourt Park, Co. Tyrone (H3682);
Caledon – Caledon Park, Co. Tyrone (H7543);
Coole – Castle Coole Park, Co. Fermanagh (H2643);
Drenagh – Drenagh Estate, Co. Londonderry (C6923);
Glenarm – Great Deer Park, Glenarm, Co. Antrim (D3015);
Ward – Castle Ward Park, Co. Down (J5749).

## Results

The full species list arising from the surveys is presented in Table 1 and comprises 33 species, *i.e.* 65 per cent of the revised total Irish list.

The seven additions to the Irish list are detailed below in alphabetical order. Two – *Epicaecilius pilipennis* and *Peripsocus milleri* – are clearly recent establishments in Ireland but the other five may well be genuinely overlooked native species.

*Atlantopsocus adustus* is the main surprise of the 2006 surveys as this species has only previously been reported from Madeira and the Canary Isles (Lienhard 1998). The specimens were originally assumed to be *A. personatus* (Hagen) as this has been widely reported across southern Ireland (Smithers *et al*. 1999). However, RES noticed that all specimens found keyed out to *A. adustus* using the keys in Lienhard (1998) and that the illustration of the subgenital plates of *A. personatus* provided in New (2005) actually relates to those of *A. adustus* as shown in Lienhard (1998). It is therefore quite feasible that the so-called Irish *A. personatus* are a result of misidentification – voucher material needs to be checked to clarify the Irish status of *A. personatus*. *Atlantopsocus adustus* was found on dead aerial branches on open-grown trees in four of the demesnes: Caledon, on Ash (*Fraxinus excelsior*), 16 June; Castle Coole, oak (*Quercus* sp.) and Birch (*Betula* sp.), 17 June and oak, 14 September; Glenarm, oak, 19 August; Castle Ward, Ash, 20 August.

*Elipsocus moebiusi* is something of a mystery as it has almost certainly been long overlooked in Britain – and possibly Ireland too. Males of this species had been thought to belong to *E. hyalinus* but that species is now known to be parthenogenetic in Britain. Lienhard (1985) first sorted this out, and *E. moebiusi* is now known from widely scattered areas of northern and western Britain (Saville *et al*. 2005). The discovery of a new species in three well separated demesnes does suggest the species will be found to be more widespread in Ireland. It was widely found at Drenagh: one swept beneath an Ash tree in the old avenue, one knocked from a flowering elder (*Sambucus* sp.) bush, and another knocked from a fallen oak branch, all 14 June. It was also found at Glenarm, 13 June and Castle Coole, 17 June. The restricted dates may suggest a limited adult stage.

*Epicaecilius pilipennis* was described originally from Madeira and had been regarded as a Madeiran endemic (Lienhard 1998). It was first found in Britain on tree trunks in Scotland (Saville 1999) and has been steadily turning up throughout the island. It is now thought to be widespread there. One was found on trunk bark of an oak at Drenagh, 18 August, while another was knocked from Ivy (*Hedera helix*) on an oak at Castle Coole, 14 September.

*Peripsocus milleri* was described from New Zealand. Although first found in Britain in ships' holds in Liverpool in 1953, possibly of African origin (Broadhead and Datta 1960), it only began to turn up in the countryside from the mid-1990s (Saville *et al*. 2007), and it now appears to be widespread there. Examples were knocked from aerial dead branches on open-grown oaks in Caledon Park, 16 August and in Glenarm, 16 September.

*Philotarus parviceps*. Charles Lienhard has drawn attention to the fact that all European specimens of *Philotarsus* had been allocated to *P. picicornis* (F.) before *P. parviceps* was recognized as a species in its own right in 1954, and this continued in Britain until Saville (2001) drew

attention to the fact that *P. parviceps* was actually the commoner of the two in the Lothians. All Irish records for *P. picicornis* therefore need re-examination of voucher material. All *Philotarsus* found during the 2006 surveys have proved to be *P. parviceps* and the species was common at all six sites. Lienhard (1998) indicates that *P. picicornis* is often the predominant species on conifers and *P. parviceps* on broad-leaved trees, so the 2006 findings are not surprising as few conifers were sampled. It is feasible therefore that *P. picicornis* does occur in Ireland but this requires confirmation.

*Pseudopsocus rostocki* is another enigma as it is primarily known in Britain from the far south-east of England and is therefore a real surprise in Northern Ireland. Both of the most recent and detailed records come from ancient wood pasture sites (Saville *et al*. 2005). Castle Coole demesne does include areas of ancient wood pasture as well as more formal parkland. One was knocked from an aerial dead branch on an open-grown oak tree, 14 September.

*Trichadenotecnum sexpunctatum* is the largest and most distinctive of the additions and therefore the most surprisingly overlooked species – it was found at three well-separated demesnes. It is a widespread species in the Palaearctic region (New 2005) and is almost certainly native in Ireland. It was first found at Caledon, 26 July and 16 August, then at Baronscourt 15 August, Drenagh 15 September, and Castle Ward 17 September. It was mostly knocked from aerial dead branches on open-grown oak trees.

Six other species found during the 2006 study have few previous Irish records and may be genuinely rare: *Pteroxanium kelloggi*, *Peripsocus alboguttatus*, *Reuterella helvimacula*, *Loensia fasciata*, *L. variegata* and *Trichadenotecnum majus*.

Fahy (1970) regarded *Pteroxanium kelloggi* as having a southern distribution in Ireland as it had only been found at a number of sites in Co. Cork and was also thought to have a south-western distribution in Britain at the time. However, Smithers *et al*. (1999) later added records from Cos. Clare, Donegal and Mayo. Its abundance on aerial dead branches at all six demesnes in September is quite remarkable. New (2005) says that it is found predominantly in leaf litter and more rarely on dead material on trees. It is possible that the relatively humid climate of Ireland makes an aerial existence more favourable, in contrast to drier climates. Its reputation as a rarity in Ireland may reflect a failure to survey old open-grown trees in historic demesnes.

*Peripsocus alboguttatus* has only previously been found in Ireland in Co. Cork (Smithers *et al*. 1999). Fahy (1970) found a single female on Beech at Fota Island in 1966. Its discovery in Castle Coole Park, Co. Fermanagh – knocked from an aerial dead bough on an open-grown oak, 27 July 2006 – might therefore seem surprising. However, its British distribution is not particularly southern, despite what New (2005) says. It is a very distinctive species and may be a genuine rare native in Ireland.

*Reuterella helvimacula* has only previously been found in the Killarney area (Smithers *et al*. 1999), but was found in four of the six demesnes, suggesting that old open-grown trees in ancient wood pastures and historic parklands may be the key Irish habitat. The Killarney record is of a single female found on an oak in 1967 (Fahy 1970). It is found throughout Europe (New 2005) and there has been no suggestion that it may be an introduction. Examples were knocked from aerial dead branches on open-grown oaks at Castle Coole, 27 July, Baronscourt, 15 August and 12 September, Glenarm, 19 August, and Castle Ward, 17 September.

The other three species are amongst the largest and most distinctive of the Irish barkflies and the rarity of previous records may again suggest that historic demesnes hold the key habitat in Ireland for them. *Loensia fasciata* and *Trichadenotecnum majus* have only previously been found in single localities in Co. Wexford during a 1910 survey (Fahy 1970), but were each found in three out of the six study sites and five between them. *L. variegata* is more widely known with records from Cos. Dublin, Kerry and Wicklow, but was found in all six demesnes. *L. fasciata* was first spotted at rest on the well-lit trunk of an open-grown Beech at Drenagh, 19 May, and was knocked from aerial dead branches on an open-grown oak at Glenarm, 13 June. *Trichadenotecnum majus* was also found on aerial dead branches of open-grown oaks at Caledon 16 August, Drenagh, 18 August, and Castle Coole, 14 September.

Site species-richness declines from Glenarm (22), Castle Coole (19), Caledon (18), Baronscourt and Castle Ward (16), to Drenagh (14). This is more or less the same sequence as for saproxylic (wood-decay) invertebrates found during the same project (to be reported else-

where). The Great Deer Park of Glenarm has very extensive high quality wood pasture habitat, Castle Coole has patches of high quality habitat within a larger matrix, while Caledon, Baronscourt and Castle Ward are more conventional historic parklands in layout and content, and Drenagh is an 18th century estate.

Large open-grown broad-leaved trees are probably the most productive habitat for finding barkflies in Britain and Ireland, and so it is no surprise that long-established parklands on the old demesne estates have proved rich hunting grounds for these insects. The discovery of the rare *Pseudopsocus rostocki* is the most significant find as an association with ancient wood pasture sites has been suggested in south-east England. The species-richness of barkflies and the species content would appear to be an important means of assessing site quality for the ancient wood pasture habitat in Ireland.

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