

NEGLECTED INSECTS IN BEDFORDSHIRE

Beds Natural History Society Conference

PSOCOPTERA – BARKFLIES

by Alan R. Outen & Ian K. Dawson



PSOCOPTERA

Barkflies and Booklice (also sometimes referred to as Psocids)

Small insects (1.5 – 7mm) with a domed postclypeus (the area at the front of the head between antennae and mouth); long filiform antennae; simple wing venation with two ‘triangular’ cells at tip of forewing; tendency to run rather than fly.

Winged barkflies usually hold their wings tent-wise over their abdomens like miniature lacewings. These species can be confused with Psyllids but can be distinguished by gently touching them – psyllids jump away, barkflies don’t.



Stenopsocus immaculatus – a common species in Beds. Note the strongly domed postclypeus and long filiform antennae

Barkflies - Variations on a theme

Some species don't have full-sized (macropterous) wings but have them much reduced (brachypterous) or absent (apterous). They can be confused with springtails (which however will jump away when touched).



Cerobasis guestfalica has been recorded from several Beds sites



Embidopsocus enderleini
An uncommon species not (yet) found in Beds

Available Resources

- Excellent British Barkflies website which via the gallery has been brilliant in facilitating identification of this group making them accessible to all.
- 2005 RES Handbook is also very good.
- Keith Alexander who runs the National Recording Scheme is very helpful.



Graphopsocus cruciatus –
a common and distinctive
Bedfordshire species

National Barkfly Recording Scheme



Barkflies

The order Psocoptera is one of the least recorded insect groups. This lack of recording is not because the species are rarely encountered – on the contrary; almost every tree in Britain is likely to be home to some of these creatures and psocids are far more abundant than some insect orders (e.g. lacewings).

One hundred species have been recorded in Britain which, compared to other insect groups, is not a dauntingly large number to learn to identify. There are two distinct groups: species that occur outdoors (the [barkflies](#)) and those that are only recorded indoors (the booklice). The [barkfly recording scheme](#) is only concerned with the former group of which currently 68 species have been recorded in Britain and Ireland.

A potential deterrent for studying a group is the lack of good identification literature. The [Royal Entomological Society handbook covering Psocoptera](#) has recently been revised (2005) and now includes keys for every species (bar two).

The lack of recording ensures that even casual recorders of the group have a good chance of making significant finds. Wherever you live you are likely to turn up species previously unrecorded in the area and may even find species new to Britain. Over the last ten years seven new species have been found and there is every chance that further species are waiting to be discovered.

This website was written and edited by Bob Saville. [Keith Alexander](#) has now taken over as recording scheme coordinator and welcomes your correspondence regarding barkflies (keith.alexander@waitrose.com).

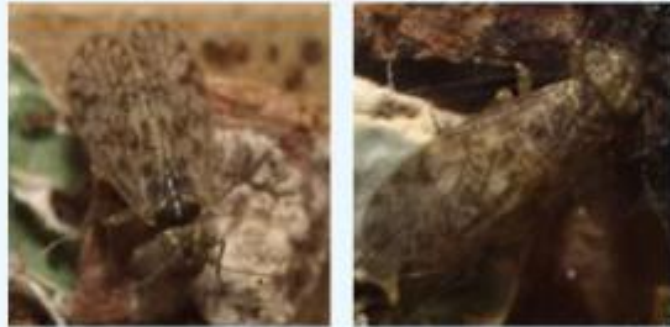
News

- [Psocus bipunctatus](#) is one of the British Isles' least recorded barkflies with only a single record from Kent appearing on the NBN Gateway. Thanks to Ingrid Altmann, we have added some excellent photos of the species to the website after she found it in her garden in Germany. (September 2013)
- Summer 2012, with its excess of rain, has had a dramatic impact on barkfly abundance. All around the country barkflies have been difficult to find. This was particularly evident during the annual summer field meeting of the Dipterists Forum in late July, when a group of entomologists sampling insects for a whole week only managed to detect six species. Only [Valenzuela burmeisteri](#) could be found in any abundance, typically amongst the foliage of evergreen trees and shrubs, especially juniper. [Graphopsocus cruciatus](#) was the most widespread species found, albeit as singletons; the other species detected were [Mesopsocus unipunctatus](#), [Stenopsocus immaculatus](#), [Elipsocus hyalinus](#) and [Loensia fasciata](#). (Summer 2012)
- **The Barkflies & Booklice (Psocoptera) of Cornwall & The Isles of Scilly** is now available as a [printed document](#) or [download](#) (pdf). It contains all of the known records from the county organized by 10km square and has a brief assessment of the known habitat associations and local status. It is illustrated with a few tetrad distribution maps and some of Joe Botting's images of selected species. (July 2011)

Barkfly Gallery (Outdoor Psocoptera)

[Photographers...](#)

Aaroniella badonneli



Amphigerontia bifasciata



Trichopsocus clarus



Trichopsocus dalii



Valenzuela atricornis





Psocids Psocoptera

(Booklice and barklice)

T.R. New

THE 2005 RES
handbook is also
excellent with keys
that are much easier
to follow than many
mycological ones !

.....

21. Pterostigma absent (Fig. 35)
 **Psoquillidae** (p. 66)
- Pterostigma present 22
22. Areola postica (AP) free (major fore wing markings a series of discrete submarginal spots in radial and media cells; fore wing veins and margin strongly setose) (Fig. 36)
 **Philotarsidae** (p. 115)
- Areola postica joined to M (major fore wing markings in form of transverse dark bands; fore wing veins very sparsely setose) (Fig. 37)
 **Elipsocidae** (*Propsocus*) (p. 108)
23. Fore wing with areola postica absent (Fig. 38)
 24
- Fore wing with areola postica (AP) present (Fig. 39) 25
24. Tarsal claws with a subapical tooth; pulvillus narrow (Fig. 40) **Peripsocidae** (p. 101)



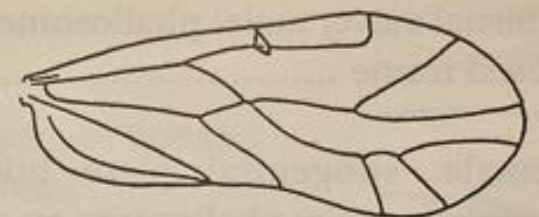
35



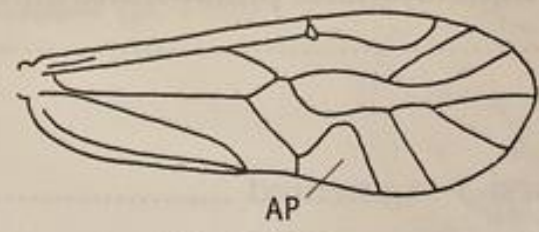
36



37



38



39



40

A Stereo zoom binocular microscope is very useful though not essential



.....It is remarkable what can be achieved with the aid of digital photography !!

Stenopsocus immaculatus



PSOCOPTERA – BARKFLIES

98 British spp in total of which 69 live outdoors, the rest are synanthropic. Of the 69 outdoor spp 31 have so far recorded from Beds i.e. 45% (with one synanthropic species)

This is in just 4 years with most of the records from just two people. There are though still some that could be expected to turn up!

cf. ODONATA – DRAGONFLIES AND DAMSELFLIES

57 British species

(includes 12 which are vagrants or extinct)

24 are recorded for Beds i.e. 42%

With virtually continuous recording since the 1940s and c 70 contributors of records annually in recent years.

In addition few people can miss noticing dragons and damsels whilst many here have perhaps never even seen a barkfly! Thus, despite this, it is perhaps not unreasonable to conclude that in some respects Barkflies are no longer a neglected group in the County!

National Barkfly (Outdoor Psocoptera) Recording Scheme

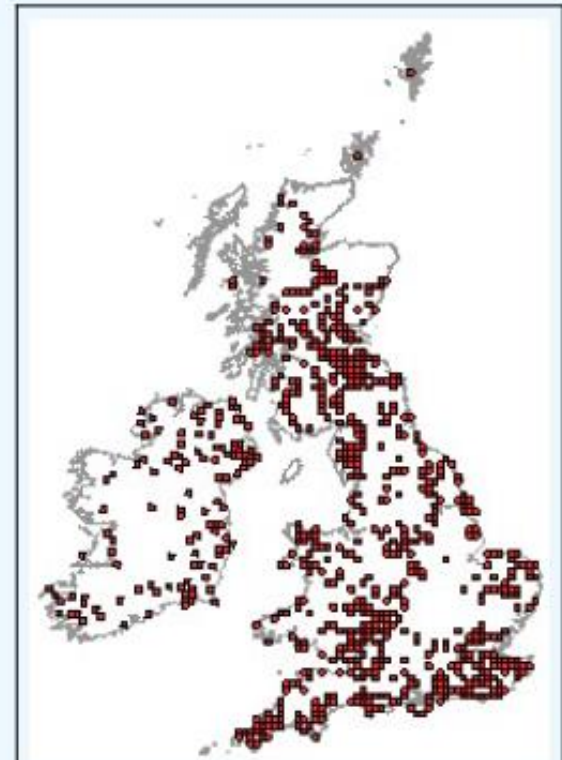
The Psocoptera (outdoor species)/barkflies recording scheme was started in 2006 with the primary aim of building up as full a picture as possible of the distribution of the species in Britain and Ireland. Knowledge of distribution is necessary to determine their national and local statuses and, in particular, whether any are under sufficient threat to require conservation action.

Another aim of the scheme is to discover more about the life histories of the species especially focussing on variations in different parts of Britain (e.g. it has been found that some species are single-brooded in northern Britain, double-brooded in the south).

The records are sent to the [Biological Record Centre](#) (BRC) for storage and transfer to the [National Biodiversity Network \(NBN\) Gateway](#) which makes the data accessible anywhere in the world.

Records should consist of as much detail as possible and ideally should include: species, date, recorder, location, grid reference, abundance, sex/stage, sampling details (e.g. beaten from elder bush) and any other comments.

If you wish to contribute records to the scheme please [contact Keith Alexander](#).



Current distribution of Psocoptera records from the NBN Gateway. (April 2009)

What can you contribute to Barkfly recording?

Keith Alexander says we are doing well! Few active recorders in SE. He would expect another 7 or 8 spp. as possible for Beds i.e. taking us to c 40 spp. He has 45 spp for Cornwall and Isles of Scilly.

In fact, as indicated, almost all of our 270+ Beds records (and all 31 NCRs) have come from just Ian Dawson and me with just six other people contributing 9 records between them!

Earlier this year Ian Dawson wrote in an e-mail to me "I owe you a debt of thanks for first stimulating my interest in this fascinating group."

When you start looking they prove to be remarkably common and identification is mostly not that difficult.

Sandy Lodge has 17 recorded spp. I have 8 species recorded for our garden.

For those involved in Pan-species listing this group should undoubtedly provide a good source of additional species for your life lists!

Why not give them a try? See what you can find in your own garden or in the wider countryside.

SOME TECHNIQUES FOR FINDING BARKFLIES

Searching.....

Sieving
(Kerry
Robinson
image)



Beating (Gwen Hitchcock image)



BNHS Invertebrate Group meeting 12/7/2012 Studham Common (East) TL028157

Sweeping (John Pitts image)



Bark Brushing (John O'Sullivan image)

Common Bedfordshire Barkflies



Ectopsocus petersi – very common

Ectopsocus briggsi
- Clifton Bury
Not quite so common



Other frequently encountered species include



Graphopsocus cruciatus - Shefford



Loensia variegata - Clifton



Loensia fasciata – Flitwick Moor

More species seen fairly often in Bedfordshire



Mesopsocus immunis – Flitwick Moor
the female (left)
is wingless



Elipsocus hyalinus - Studham



Metylophorus nebulosus - Clifton



Two species of
Stenopsocus are not
uncommon.....

Stenopsocus immaculatus–
(image Duck End NR)

Stenopsocus stigmaticus –
(image Studham Common)





....and two *Valenzuela* spp are also frequently found

Valenzuela flavidus – is the commoner of the two (image Shefford)

Valenzuela burmeisteri is less common (image Clifton)



Some less common Bedfordshire species



Trichadenotecnum sexpunctatum is an uncommon species in the UK. This specimen, the only Beds record, was found at Dropshort Marsh.



Psococerastis gibbosa is also uncommon in the UK. It is the largest UK species (up to 7mm). This specimen was from our Clifton garden in 2014 and was the first adult for the County.
(image ARO, det Ian Dawson)

Some examples of
Apterous types
recorded from Beds



Mesopsocus immunis female
(Ian Dawson image)



Cerobasis guestfalica

Some less common
brachypterous and
apterous species recorded
from Beds



Epicaecilius pilipennis was found at Duck End NR by Ian Dawson



Bertkauia lucifuga
was found at Maulden Woods
(Ian Dawson image)



Kolbia quisquiliarum
is a scarce UK species first
found in Beds by Ian Dawson at
Flitwick Moor in 2012 and then
this year at Wrest Park
(Ian Dawson images)



Liposcelis bostrychophila

The single synanthropic species
so far recorded in Bedfordshire
It is most often found in stored
flour (as were both Beds records)

Right: Linslade, Rory Morrisey image



Lower two images, Clifton, ARO images



Some synanthropic species to look out for as not yet recorded in Beds

(internet images)

All of these are less than 2mm!



Lepinotus patruelis (above) can be a pest of grain in the milling and brewing industries

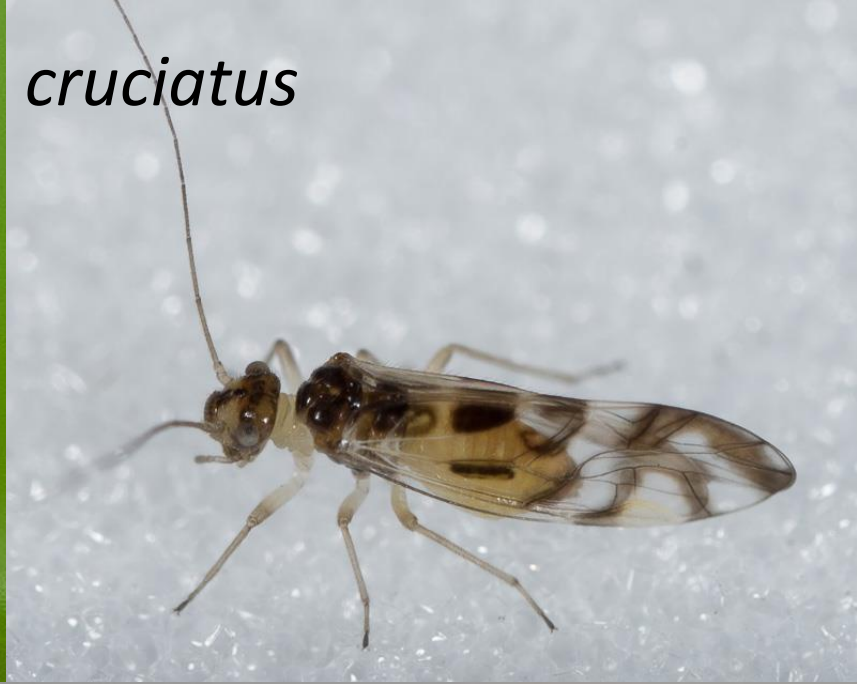


Lepinotus reticulatus (above) - said to be a common domestic species, feeding on debris of all kinds, will destroy insect collections!



Dorypteryx domestica (right) has rudimentary wings but can jump several inches!

Graphopsocus cruciatus



Liposcelis sp.



Barkflies in Bedfordshire

In a recent issue of *Muntjac* (Spring 2011, number 158) I wrote an article entitled "Neglected Insects in Bedfordshire". My intention was that this would be the start of a series of articles in an attempt to try and stimulate further interest and recording of some of these Insect groups. In addition to giving regular updates on the progress in the recording of these I hope to provide further information about the various groups on which I am focusing.

For this article I have selected the Barkflies and Booklice that together comprise the Insect Order Psocoptera, a group that many will probably not have encountered though they are actually rather common. Nonetheless with just under 90 species of this order known in Britain only a handful have so far been recorded for Bedfordshire.

The name barkfly was only coined in 2003 by Keith Alexander as an alternative to the previously used vernacular name of barklice. As the term "lice" has such a bad press he felt a more attractive name might promote greater interest in these delightful little insects. Barkflies live outdoors whereas Booklice occur indoors, including as pests of stored food products though they are harmless to humans.

Barkflies are relatively small insects (1.5 – 7mm) that usually hold their wings in a tent-wise fashion over their abdomens rather like miniature lacewings. Some species do not have full-sized (macropterous) wings but have ones that are much reduced (brachypterous) or absent (apterous).

Useful features in recognising barkflies are the domed postclypeus (the area at the front of the head between the antennae and mouth), long filiform antennae, the simple wing venation with two 'triangular' cells at the tip of the forewing, and a pronounced tendency to run rather than fly away. They can be confused with jumping plant lice (psyllids) but these have very different wing venation and tend to jump if gently touched whereas barkflies will only rarely do so and might at best manage a feeble hop.

Barkflies can be found on a wide range of broad-leaved and coniferous tree species with the greatest diversity of species likely on Oak, Beech, Yew, Pine, Elder and Hawthorn. Ash, Sycamore and Lime usually have a low diversity of species. Mature trees in old parkland can be particularly productive.

Two useful techniques for collecting barkflies are:

1. Beating tree branches with a stick and catching the falling insects onto a beating tray, a net or an upturned umbrella).
2. Sampling of tree trunks using a large soft brush (e.g. wallpaper paste brush) and brushing down the trunk catching any specimens in a beating tray or net.

The foliage of trees represents a distinctly different niche to the bark and in particular the trunks. As a result, beating tree branches will often result in a different range of species to that obtained by sampling tree trunks. However not all barkflies are associated with



Graphopsocus cruciatus



Ectopsocus petersii



Valenzuela flavidus



New County Records



Peripsocus phaeopterus above
Elipsocus moebiusi below
Chicksands Wood, July 2013



Enderleinella obsoleta
The Lodge, Sandy, June 2014





More variety

Caecilius fuscopterus Totternhoe Knolls
new to Beds, September 2014



left *Psococerastis gibbosa* final instar nymphs

right *Philotarsus parviceps*

The Lodge, Sandy





NATIONALNYCKELN
TILL SVERIGES FLORA OCH FAUNA



Stövsländor

Psocoptera

Denna volym omfattar samtliga nordiska arter

Key to Nordic families within Psocomorpha
– macropterous individuals

In the suborder Psocomorpha the wing length varies both between and within individual species. Four different wing morphs occur: macropterous, brachypterous, micropterous or apterous. In macropterous specimens the forewings extends beyond the abdominal apex when in resting position. In the key below, such specimens can be identified to family. For all families comprising more than one Nordic species there is a separate key for identification (mainly of macropterous specimens) to species. In brachypterous specimens the wings are more or less strongly reduced, not extending beyond the abdominal apex. Not only the length, but also the shape and venation of the forewing may deviate from that of macropterous specimens. The key below may also be used for the identification of brachypterous specimens, provided that the forewing is only moderately modified (both pterostigma and areola postica must be visible). Micropterous and apterous specimens cannot be identified by using this key. A key to brachypterous, micropterous and apterous individuals is found on p. 81. All characters apply only to adults.



- 1. Tarsi 2-segmented. Tarsal claws with or without subapical tooth..... 2
- Tarsi 3-segmented. Tarsal claws with subapical tooth..... 11
- 2. Areola postica absent 3
- Areola postica present 4
- 3. Forewing veins glabrous. Forewing darker, with or without spots. Hindwing with veins Rs and M fused for a length. Claws with subapical tooth *Peripsocidae* p. 118
6 Nordic species
- Forewing veins sparsely setose (at least vein An setose). Forewing paler or hyaline, with or without marginal dark spots. Hindwing with veins Rs and M connected by a crossvein. Claws without subapical tooth..... *Ectopsocidae* p. 113
3 Nordic species

- 4. Areola postica joined to vein M for a length. Forewing veins glabrous. Claws with subapical tooth..... *Psocidae* p. 154
18 Nordic species
- Areola postica not joined to vein M (sometimes connected by a crossvein). Forewing veins glabrous or setose. Claws with or without subapical tooth..... 5
- 5. Areola postica connected to vein M by a crossvein. Pterostigma and vein Rs connected by a crossvein. Claws without subapical tooth..... *Stenopsocidae* p. 100
4 Nordic species
- Areola postica and pterostigma not joined to vein M. Claws with or without subapical tooth..... 6
- 6. Forewing veins glabrous. Claws with subapical tooth..... *Lachesillidae* p. 109
3 Nordic species
- Forewing veins setose. Claws with or without subapical tooth..... 7
- 7. Labrum with 2 oblique, longitudinal, sclerotised bands (visible through the cuticula). Forewing veins Rs and M connected by a crossvein. Males rare, females apterous..... *Epipsocidae* p. 85
Bertkauia lucifuga
- Labrum without sclerotised bands. Forewing vein Rs usually joined to vein M for a length (in 1 species sometimes by a crossvein)..... 8
- 8. Posterior margin of hindwing glabrous. Claws with subapical tooth..... part of *Elipsocidae* p. 133
Reuterella helvimacula
- Posterior margin of hindwing setose. Claws without subapical tooth..... 9

Recent arrivals in Britain (and Beds)...



above *Ectopsocus axillaris*



below *Epicaecilius pilipennis*



...and another one: first UK record in Devon 2003
first for Beds, Sandy Smith NR 2013



Trichopsocus brincki

Cryptic species: *Ectopsocus petersi*
separated from *E. briggsi* in 1978



E. briggsi above

E. petersi below and right



Sexual dimorphism: females above, males below



Kolbia quisquiliarum



Metylophorus nebulosus



Litter specialists



Kolbia quisquiliarum male



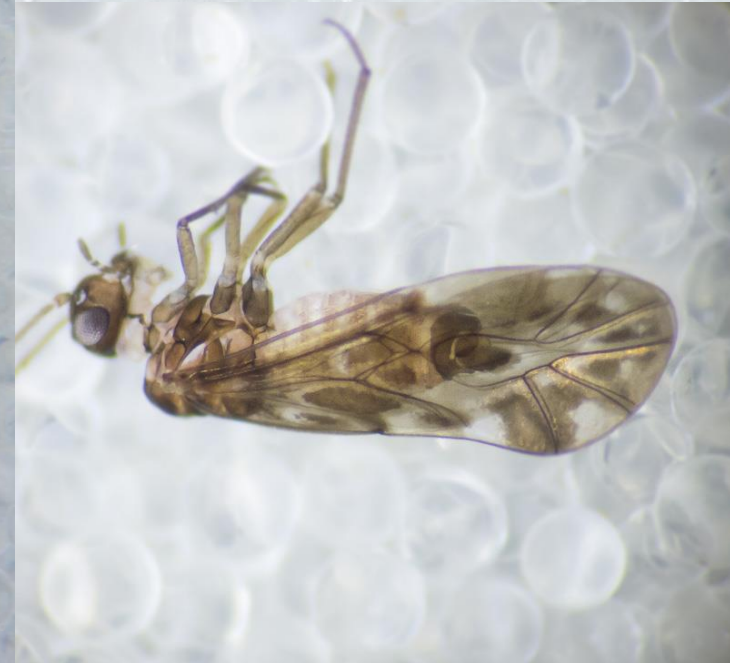
Bertkauia lucifuga



Low vegetation species

Valenzuela atricornis new to Beds
Wrest Park, Sept 2014

Peripsocus alboguttatus new to Beds
The Lodge, Sandy, Sept 2012 (below right)



THE END

THANK YOU



Peter is
next!