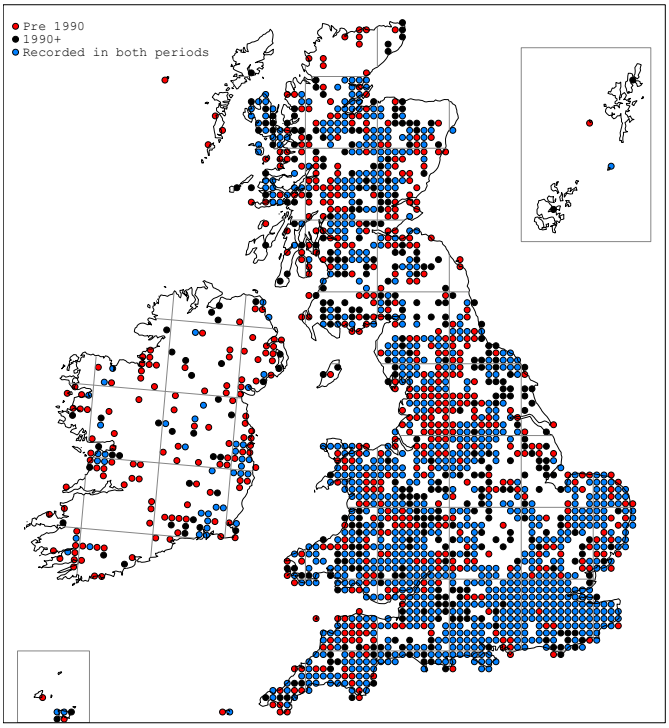
Fungus Gnats Recording Scheme

Newsletter 6 Spring 2013

Mapping fungus gnats

Since the report in Newsletter 4 (Spring 2010 Bulletin) further data, including the results of fieldwork in 2009 to 2011, have been added to the recording scheme database by Val Burton of BRC. A review of the conservation status of all species has also been undertaken as part of a Review of Diptera statuses according to the latest IUCN criteria, organised by Buglife on behalf of Natural England. This review determines trends by comparing numbers of hectads recorded for each species up to 1989 with those from 1990 to 2011. Bjorn Beckmann and Stephanie Rorke of BRC have kindly prepared updated maps to distinguish hectads in these date categories, with a third category for those with records from both periods. The map below shows these categories for all records in the database.



This shows pre 1990 records in red, 1990 to 2011 in black and those hectads with records from both periods in blue. This contrasts with the previous maps that showed hectads with records only before 1980 in blue, and combined those with only later records, or with records from both periods, in red.

The total number of hectads with fungus gnat records has increased from 1862 in 2009 to 1902. Some of the increase has resulted from recording in south-west Wales, Galloway and the Scottish borders. There are still significant gaps in the latter area, the east Midlands and the far north of Scotland, reflecting the distribution both of woodland and of recorder effort. There is also an obvious gap in the south around Taunton and Yeovil, and in Sussex around Horsham and Worthing, as well as surprisingly TQ51 near Eastbourne.

BRC have also provided updated figures on the number of species known per hectad, from which it has been possible to compile the following list of best recorded hectads in descending order, with the number of species recorded to end of 2011 indicated and the principal localities involved stated. This includes the expected areas with ancient or extensive woodland, but also a number of less expected areas that have proved to be rich in species due to local recorder effort.

1 SU98 (**272**) Burnham Beeches, Buckinghamshire.
2 SU20 (**246**) and **12 SU30** (**207**) The New Forest, Hampshire. These and adjoining hectads including parts of the Forest have a combined total of **281** species.
3 TQ53 (**234**) Crowborough, Sussex and Tunbridge Wells, Kent. These are mainly historic records by F.J.H. Jenkinson and C.G. Nurse respectively.
4 NJ02 (**232**) part of the Spey Valley, Scotland, including Nethy Bridge and Grantown-on-Spey.
5 SU97 (**226**) Windsor Forest, Berkshire.
6 NH80 (**223**) part of the Spey Valley, Scotland, including Feshiebridge. Kinrara and Loch an Eilein.
7 SO77 (**222**) Wyre Forest, Worcestershire.
8 SU49 (**221**) Cothill and other nearby fen areas, Oxfordshire.
9 SU26 (**216**) Savernake Forest, Wiltshire.
10 NJ05 (**209**) part of the Findhorn Valley, Scotland including historic records by F.J.H. Jenkinson at Logie.
11 TL87 (**208**) King's Forest, Suffolk.
12 SU30 (see under 2 above).
13 TQ49 (**206**) Epping Forest, Essex.
14 (**jointly**) **TL99** (**205**) Wayland Wood and Thompson Common, Norfolk.

14 (**jointly**) (**205**) **SE20** woods west of Barnsley, including Nabs Wood and Cawthorne, and **SK29** Wortley Top Forge. Records for the two latter hectads, both South Yorkshire, result mainly from recording in recent years by John Coldwell.
17 (**jointly**) **NH91** (**201**) part of the Spey Valley, Scotland, including Loch Garten and Rothiemurchus.
17 (**jointly**) **SN62** (**201**) Dinefwr Deer Park, Carmarthenshire.
19 SP74 (**197**) Buckingham Thick Copse, Northamptonshire, entirely Malaise trap records by Tony Warne.
20 NN55 (**194**) and **25 NN65** (**178**) woods south of Loch Rannoch, Perthshire. These two hectads have a combined total of **234** species.
21 SU78 (**191**) Warburg Reserve, Bix Bottom, Oxfordshire and other nearby woodlands.
22 TL66 (**185**) Chippenham Fen, Cambridgeshire.
23 SO34 (**182**) Moccas Park, Herefordshire.
24 SO30 (**179**) Llanover Park, Monmouthshire.
25 (**jointly**) **NH81** (**178**) part of the Spey Valley, Scotland, including Aviemore and Craigellachie NNR.
25 (**jointly**) **NN65** (see under 20 above).
27 TQ08 (**176**) Ruislip Woods, Middlesex.
28 NH69 (**173**) Migdale Wood, Sutherland.
29 SP50 (**172**) Oxford, including Milham Ford School, Sydling's Copse, etc.
30 NH94 (**168**) part of the Findhorn Valley, Scotland including Dulsie Bridge and Randolph's Leap.

The top three hectads in Ireland are T19 (135 species, Glendalough, Co. Wicklow), V98 (115 species, Killarney, Co. Kerry) and T29 (93 species, Devil's Glen, Co. Wicklow).

Recording in 2012

Records for 2012 have yet to be processed by BRC, or fully identified. Ivan Perry added 42 species to his previous records for the Warburg Reserve, thus reaching a personal total of 204 species for the site and a site total of 212, so SU78 has risen to the top 10 of the above hectads. Interesting records from this site, which is mainly dry woodland on chalk, included *Rymosia affinis*, *R. fosteri*, *Trichonta bicolor* and *Greenomyia mongolica*. Ivan also found *R. affinis* at this site in 2011, the first record from mainland Britain since 1980, while *R. fosteri* has otherwise been recorded from wetland sites.

Greenomyia mongolica is evidently now well established in southern England. It was also newly recorded in Kent, by Laurence Clemons, at two sites: Hurst Wood (TQ934483), near Charing Heath, a male swept in a Scots pine *Pinus sylvestris* plantation on 25 May; Riverside Country Park (TQ807684), Gillingham, male and female swept from ivy *Hedera helix* on 29 October.

Keith Alexander had good results in recording fungus gnats with flight interception traps at several sites. One sample taken in the period 13/8-16/10, from an ancient parkland oak at Hardwick Hall, Derbyshire produced 62 species of fungus gnat, including *Phronia forcipula* as well as *Exechiopsis davatchii* mentioned below. A surprising find, in a sample taken in the period 30/8-25/9, from an oak at Cleghorn Glen, Lanarkshire was *Mycetophila eppingensis*, only found previously in southern England.

Rob Wolton continued to obtain good catches from the Malaise trap recording Diptera from the hedge on his Devon farm, Locks Park Farm. The total species recorded in 2011-2012 is 139, a remarkable number for such a location. These included 11 with conservation status, among them some already known from the south-west such as *Neoplatyura biumbrata* and *Mycetophila strigatoides*, while others were new records for this region, e.g. *Allodia angulata* and *A. neglecta*.

The summer field meeting based at the Lagganlia Centre, near Feshiebridge, was successful in recording 163 species of which 15 had conservation status. The Centre is in hectad NH80, which thus received a boost to its already high position in the above list. *Dynatosoma cochleare*, found at three sites in NH80 during the week, was previously known from Loch an Eilein in this hectad. A *Phronia* species, found at Beananach Wood (NH875213) on 26 July, is new to Britain, but has yet to be identified. Otherwise the most significant finds were *Urytalpa macrocera*, one male on the wooded shore of Loch Insh near Kincraig (NH8305), also on 26 July and *Phronia persimilis*, one male in a birchwood at Dundreggan (NH3214) on 23 July. That visit to Dundreggan was described in the Autumn Bulletin (pp 16-17 and cover photo) and the projected follow-up took place on 14-17 September and is discussed below.

Gnat recording at Dundreggan

Dundreggan is a 4000 hectare estate in Glen Moriston, west of Loch Ness. It has been owned since 2008 by the Trees for Life charity, whose purpose is to restore the Caledonian pine forest. Much of the estate comprises open moorland, where dwarf birch *Betula nana* and juniper are also present locally. The estate also includes several areas of birchwood and a variety of other trees including pine, aspen, oak and willow.

Fungus gnat recording began with a visit in September 2011 by Duncan Sivell, who collected 4 species and suggested that a survey for this group might produce interesting results. I was then requested to visit for that purpose by Alan Watson Featherstone, founder and Executive Director of Trees for Life, and I took the opportunity provided by the field meeting at Lagganlia to make a preliminary visit in July.

A Diptera survey had been done by Graham Rotheray on visits in 2008-2010, but few Lower Diptera (Nematocera) and no fungus gnats were recorded. Staff of the World Museum, Liverpool had also carried out Malaise trapping at several locations from 2010 to 2012, principally to record sawflies. Trapping sites included birchwood, dwarf birch areas, willow carr and a new plantation of aspen and other trees.

The visit in July produced only 17 species of fungus gnats after a very wet start to the day; these included *Mycetophila abbreviata*, a local species confined in Britain to the Scottish Highlands as well as the fourth British record of *Phronia persimilis*, mentioned above. The habitat evidently had potential and in September 96 species were recorded, giving an overall total of 103. Of these 9 were of conservation status and one, *Mycomya disa* discussed below, was new to Britain.

More recently it has been possible to examine fungus gnats kindly sorted by Tony Hunter from the Liverpool Museum Malaise trap catches. These included samples from six sites over the period of three years. Altogether 109 species were identified, of which only 44 were in common with my catches, bringing the total for the estate to 168 species. This difference can be explained by the collecting techniques, different habitats sampled

and the presence of autumn flying species in September, while the Malaise traps were mostly operated only till August. These results suggest that a substantially larger total fauna for the estate can be expected.

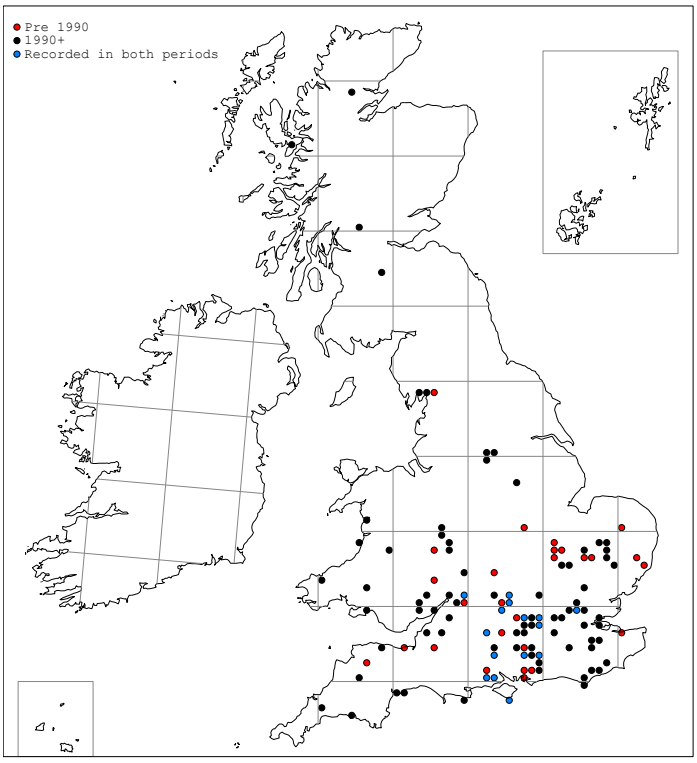
The Malaise catches remarkably included two more species new to Britain, discussed below, and 15 other species with conservation status, of which 3 were also among the 9 species with such status caught on the September visit. Significant records included a male of *Palaeodocosia alpicola* in the 21/7-25/8/2011 sample from the aspen plantation area (NH33806 14357). The only reliable previous British record is a male from Holker Moss, Lancashire, caught by F.W. Edwards on 12-13 July 1923. Most surprising was a female orange-bodied *Dynatosoma*; the only British species with this coloration is *D. thoracicum*, which occurs in old forests in the south of England, but other similar species only distinguishable by male genitalia occur in Scandinavia.

The hectad involved (NH31) had only 39 species previously recorded, 34 of them by me from part of Inchnacardoch Forest (NH390107) adjoining Loch Ness, near Fort Augustus, on 21 July 1997 and 5 by Ted Pelham-Clinton from an unspecified site in Glen Moriston on 23 September 1962. These add 11 to the Dundreggan total, bringing the hectad total to 179

Keroplatus testaceus Dalman, 1818 – no longer Nationally Scarce

This large conspicuous species has evidently spread widely and increased its range over recent decades, possibly because of greater availability of dead wood bearing its fungal hosts. Adults are quite mobile but it is still rare to observe them other than singly. Although its occurrence in more than 100 hectads already then seemed certain, Falk & Chandler (2005) retained Nationally Scarce status because of the vulnerability of its larval habitat.

Keroplatus testaceus



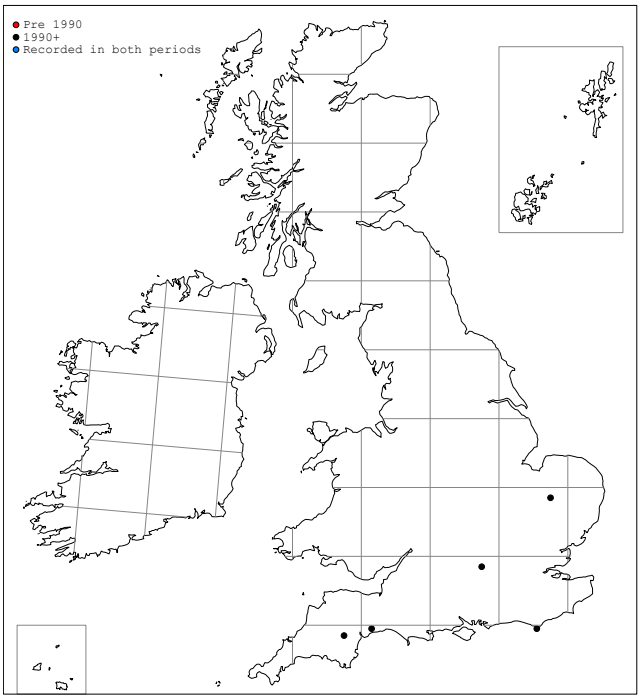
Since 2005 this species has continued to be recorded from further areas, filling gaps in its distribution in England and it has now been recorded from 133 hectads, of which 100 are post 1990, including all Welsh and Scottish records. The map above shows 121 (92 post 1990) of these. It has been reported elsewhere that Alan Stubbs found it in a wood by Menai Bridge on Anglesey on 8 October 2012, extending its distribution to North Wales. It is concluded that Nationally Scarce status can no longer be justified for a species that is actively spreading to new areas.

Mycetophila sublunata Zaitzev, 1998

This species was first recorded as British from two sites in Devon in the autumn 2011 newsletter. Three further records came to notice in that year. It was found on the autumn field meeting, on 13 October 2011, among other interesting records in a small wood at Birling Gap, on the Sussex coast near Beachy Head. Then I was surprised to find that Ivan Perry had also discovered it at two sites during 2011, at Brandon Country Park in Suffolk on 18 April and at the Warburg Reserve, Bix Bottom, Oxfordshire on 1 October. Thus Ivan was the first to find the species in Britain.

The scatter of sites involved is shown in the map below. If this is a recent arrival in this country it had already become widespread before detection. However, no specimens of this species have so far turned up from 2012 catches, so it will be interesting to see whether it continues to be recorded in subsequent years.

Mycetophila sublunata



Grzegorzekia species – the new gnat from Bushy Park

(see Newsletter 5, Autumn 2011 and photos in header above)

Nine further visits to Bushy Park were made in 2012, but only one female of the genus *Grzegorzekia* was found, and this was inseparable in the structure of its ovipositor from females

attributed to *G. collaris*. Fungus gnats were generally in lower numbers than in 2011, despite the wetter conditions, and it was concluded that the drought that affected the Park for much of 2011 had resulted in this reduction in gnat populations.

More species new to Britain

Discovery of species new to the British Isles continues unabated. Some recent additions, like *Mycetophila sublunata* discussed above, might be new arrivals in this country. That certainly seems to be the case with *Greenomyia mongolica*, a conspicuous species that should not have gone unnoticed if it had been here much earlier, and *Mycetophila sigmoides* which has been found widely in the past decade and develops in a fungus, *Daedaleopsis confragosa*, that is not much favoured by other insects. Both of those were discussed in more detail in Newsletter 4 (Spring 2010 Bulletin)

With other less obvious species that have only been found in Britain on one or a few occasions it is harder to be sure about this. One such is *Exechiopsis davatchii*, which was recorded on a single male found at Brandon Country Park, Suffolk by Ivan Perry on 21 October 2010 (Chandler & Perry 2011). In 2011 Ivan found it at the Warburg Reserve, Bix Bottom, Oxfordshire on 15 May. Both are sites to which he has given considerable attention in recent years. Then in 2012 Keith Alexander obtained single males in catches from flight interception traps at two sites, Briddlesford Copses in the Isle of Wight (at a creek-side oak in the period 21/6-23/8) and Hardwick Hall, Derbyshire (at an ancient parkland oak in the period 13/8-16/10). Thus again an already wide distribution is established for a rarely recorded species with unknown biology.

Another addition to the British list was obtained by Ivan at the Warburg Reserve in 2011. This was *Zygomyia matilei*, which was previously recorded from the Channel Islands, one of five fungus gnat species known from Jersey but not hitherto from mainland Britain. Also in 2011 Judy Webb found a *Brevicornu* species new to Britain.

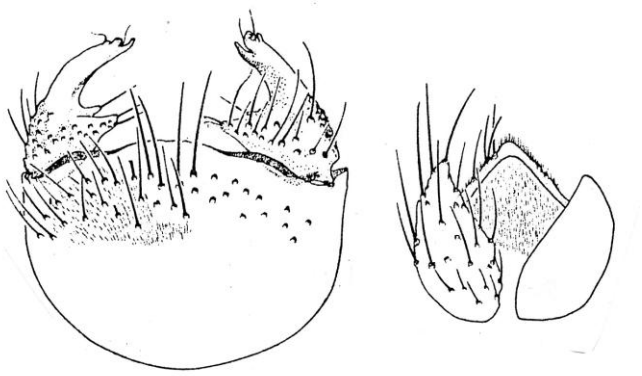
Three additions in 2012 have been from the Dundreggan Estate (see above), although two of these were collected in 2010 and 2011 in Malaise traps operated by the Liverpool Museum. These three species, all recorded on single males, have a boreal and alpine distribution in Europe, so are more likely to be overlooked natives than are some of the above mentioned species that have turned up sporadically in the south of England.

These five species new to Britain are discussed below, with details of their distinguishing characters.

Zygomyia matilei Caspers, 1980

This is a small black species, with unmarked wings that is distinguished from the allied species *Z. valida* and *Z. valeriae* by lacking the medial excavation of the gonocoxites.

Ivan Perry found it at the Warburg Reserve, Bix Bottom, Oxfordshire, on 27 October 2011. The Channel Islands record has not previously been published. Tony Warne found it in Jersey at the Waterworks Valley, St Lawrence, on 8 October 1994. It was described from Germany and has since been recorded from Austria, the Czech Republic and Switzerland.



Male genitalia of *Zygomyia matilei*, ventral view (left) and cerci (from Caspers 1980)

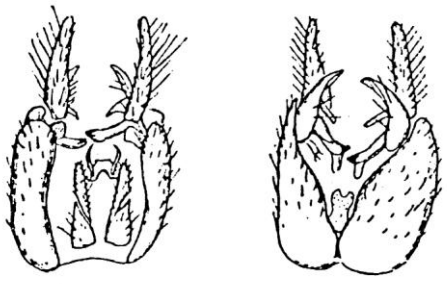
Brevicornu **sp.** (= *B. arcticum* sensu Zaitzev 1988)

On 8 December 2011 a male *Brevicornu* was found by Judy Webb at New Marston Meadows SSSI, Oxfordshire, flying over a cap of the field blewit fungus *Lepista saeva*. This belongs to the species figured by Zaitzev (1988) as *B. arcticum* (Lundström, 1913). It is a different species from that recorded from Ireland under that name. The latter is considered to be the true *B. arcticum* of Lundström, so Judy's find is presently nameless.

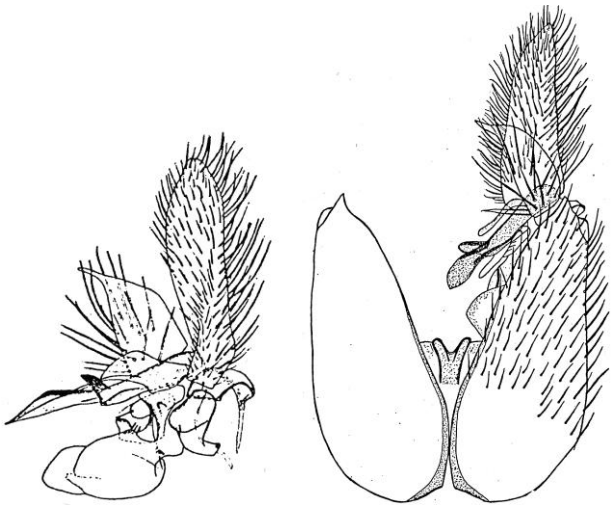
Zaitzev (1988) figured a western Nearctic (USA, Washington State) specimen, but I had previously seen 6 males collected by Gerhard Bächli at two sites in Switzerland. It has also been recognised from mountains in Norway by Jostein Kjærandsen, who also has other species of this genus awaiting description. Judy had hoped to further investigate the Oxfordshire site, a floodplain meadow of the River Cherwell, in November 2012 but this was precluded due to extensive flooding of the site.

Lundström (1913) described *B. arcticum* from the Kanin Peninsula in Northern Siberia, providing the figures shown below. A male from Powerscourt Deer Park, Co. Wicklow, found on 10 July 1971, figured by Chandler (1977). remains the only record from the British Isles. This is also the species recorded as *B. arcticum* from northern Sweden by Kjærandsen *et al*. (2007) (Jostein Kjærandsen *pers. comm*.).

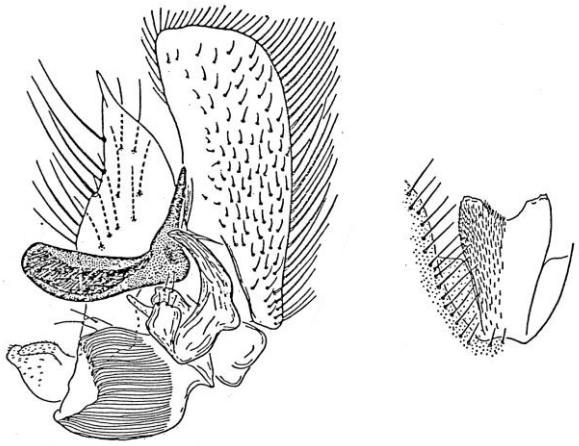
The form of the internal process of the gonostylus strikingly differs in the Oxfordshire specimen, which agrees with the figures of Zaitzev (1988) and photographs of a Norwegian male, kindly supplied by Jostein Kjærandsen, also shown below.



Male genitalia of *Brevicornu arcticum*, dorsal (left) and ventral (right) view (from Lundström 1913)



Male genitalia of *Brevicornu arcticum*, internal view of gonostylus (left) and ventral view (from Chandler 1977)

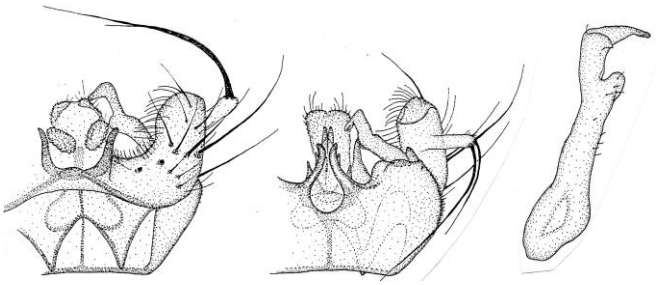


Male genitalia of *B. arcticum* sensu Zaitzev, internal view of gonostylus (left) and ventral gonocoxal appendage (right) (from Zaitzev 1988)

Male genitalia of a Norwegian specimen of *Brevicornu* sp. near *arcticum* (photographs by Jostein Kjærandsen)

Mycomya disa Väisänen, 1984

This belongs to the *M. tenuis* group, which includes several species in the Holarctic Region, six of them occurring in Europe, but only *M. tenuis* itself in this group has been recorded previously from Britain. Most of these species, including *M. disa*, have a boreal distribution. The group is characterised by a medially emarginate tergite 9, with on each side an appendage bearing a pair of long bristles. The form of the submedial tergal and sternal appendages distinguishes *M. disa* from *M. tenuis* and other species. Like *M. tenuis* it is a mainly brownish yellow species with more or less fused brown thoracic stripes, the thorax darker in the specimen examined than in most examples of *M. tenuis*, which was found elsewhere on the Dundreggan Estate.

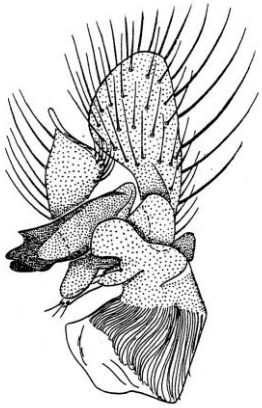


Male genitalia of *Mycomya disa*, dorsal (left) and ventral views, and gonostylus (from Väisänen 1984)

This was described from boreal forests and fells in Finland; it is known mainly from Scandinavia (Norway, Sweden, Estonia) and there are also records from Germany and Bulgaria. One male was found in the isolated birchwood on the north slope of Binnilidh Mhor (NH3316) on the Dundreggan Estate on 15 September 2012.

Brevicornu parafennicum Zaitzev in Zaitzev & Polevoi 1995

This is a difficult genus with numerous species distinguished by small differences in the structure of the male genitalia. This species is closest to *B. fennicum*, itself a rare species with a few Scottish records. The specimen has the thorax yellow laterally with fused brown stripes dorsally, and the abdomen brown with the sides of tergites 1-4 yellow, this coloration extended dorsally onto the hind margins of tergites 2-4.

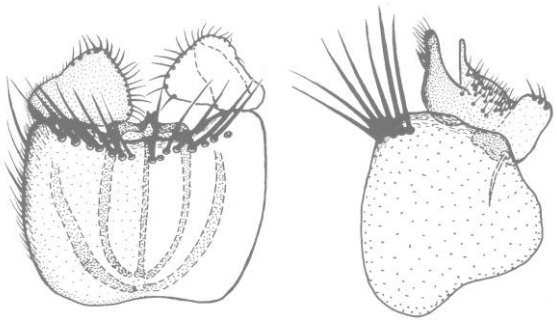


Male genitalia of *Brevicornu parafennicum*, internal view of gonostylus (from Zaitzev & Polevoi 1995)

This is a boreal species, described from northern Russia (Karelia) and since recorded only from Finland and Sweden. One male was found in a Malaise trap sample from the period 21/7-25/8/2011 in a new plantation area (NH33806 14357) on the banks of the river Moriston. The trap was set in rough pasture, planted with saplings of aspen, birch, rowan and wild roses in 2009/10, within a deer exclusion fence. It bordered sheep-grazed meadows, a clear-felled area of dead and moribund pines with some mature pines and larches still standing, and herb-rich riverbanks.

Sceptonia longisetosa Ševčík, 2004

This was among other new species of this genus described by Jan Ševčík, distinguished from the other small black species of this genus by details of the male genitalia. This species is closest to *S. concolor* in the form of the gonostylus, but is easily recognised by the fringe of long bristles near the apical margin of the gonocoxites.



Male genitalia of *Sceptonia longisetosa*, ventral view (left) and lateral view (from Ševčík 2004)

One male was found in a Malaise trap sample from the period 10/5-7/7/2010, taken by the Allt Ruadh (Red Burn) on the Dundreggan Estate. The trap (situated at NH31288 15295) was set in the stream valley, inside a steep-sided gorge amongst alder, birch and pine, with an understorey of *Vaccinium* and low herbs.

This species was described from the Czech Republic from 3 specimens collected in 1999, at peat bogs in the Šumava Mountains of Bohemia. It has since been recorded from Sweden and Finland.

Acknowledgements

I am especially grateful to Bjorn Beckmann and Stephanie Rorke of BRC for their considerable help in processing data, preparing updated maps, and for providing the latest figures on number of species known per hectad and the number of hectads known for each species before 1990 and from 1990 to 2011.

I also thank all those who have provided records and specimens for examination, and in particular Keith Alexander, Laurence Clemons, Ivan Perry, Alan Stubbs, Tony Warne, Judy Webb and Rob Wolton for the opportunity to include their records here. Jostein Kjærandsen kindly provided information on several *Brevicornu* species.

I am grateful to Tony Hunter, Guy Knight and Richard Underwood of the World Museum, Liverpool for providing the Malaise trap catches from Dundreggan for study, and to Duncan Sivell for bringing this interesting area to my attention. I am indebted to Alan Watson Featherstone, Director of Trees for Life, for the assistance and hospitality shown to me during my visits to Dundreggan.

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Peter Chandler