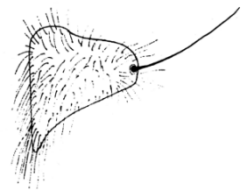
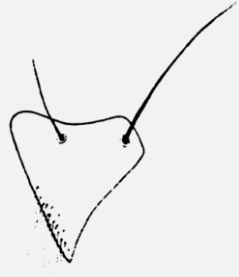
Key to genera and species of Scathophagidae

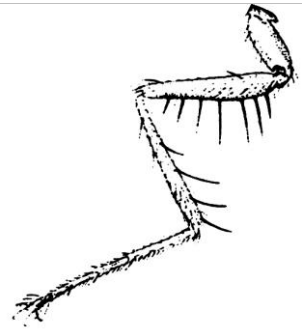
1.	One sternopleural bristle (usually none in *Ernoneura*). (Take care over *Delina nigrita*. This is a small, mainly shinning black species with a yellow face, which has two sternopleural bristles, but the front one is fine and pale and easily overlooked)	2.
–	Two or three sternopleural bristles	**22.**

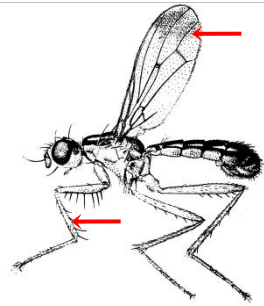
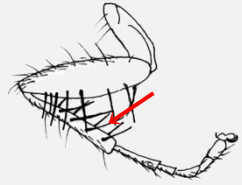


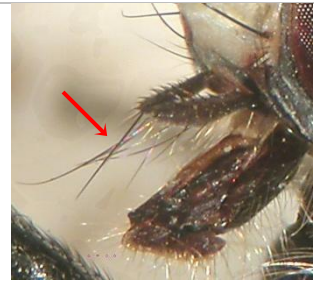
Sternopleuron of *Scathophaga stercoraria*

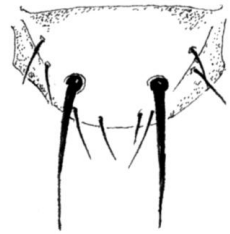
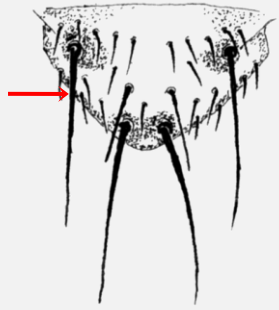


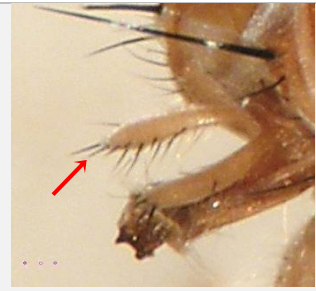
Sternopleuron of *Chaetosa punctipes*

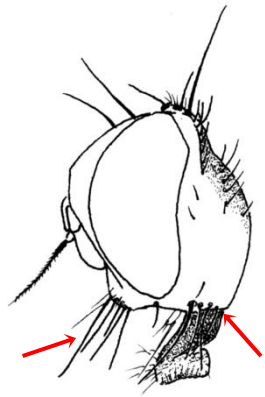
2.	Front femora with two rows of stout, erect, black ventral spines at least some of which of which are as long as the femora is thick. Tibia with at least one such row of spines. This gives the front legs a mantis-like appearance.	3.	 Front leg of *Norellia spinipes*
–	No such spines present, although there may be isolated, long bristles	4.	

3.	Front tibia with a single row of ventral spines which are mainly short - only the outer three longer than the femora is thick. Wings with markings (that are often rather faint): cross-veins clouded and with more or less distinct dark spots at the apex of R_{4+5} and M_{1+2}. Often small extra veinlets within the darkened patches. Only 2 pairs of strong dorsocentral bristles. 	***Norellia spinipes***	 *Norellia spinipes* ♂
–	Front tibia with two rows of spines (anterior- and posterior-ventral). Wings unmarked. More than 2 strong pairs of dorsocentral bristles. 	**Genus *Norellisoma***	 Front leg of *Norellisoma spinimanum*

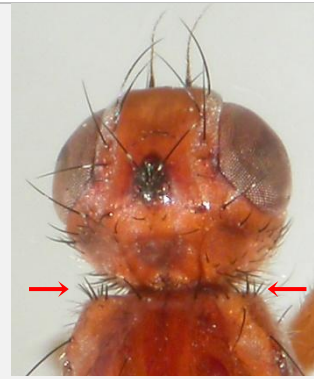
4.	Black species with strong leg bristles. Thorax, abdomen and at least the femora are black, although the tibia and tarsi may be orange/yellow. Palps with a long apical bristle clearly longer than any surrounding bristles.		Genus Cordilura	 *Palps of Cordilura ciliata*
–	Flies with the legs and at least parts of the sides of the thorax and abdomen with a grey, brownish or yellow ground colour. Palps may or may not have a long apical bristle.		5.	

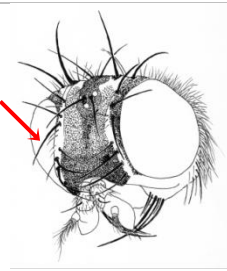
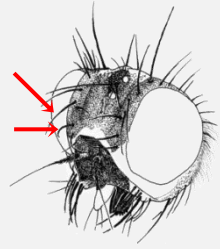
5.	One pair of strong scutellar bristles placed near the apical margin the scutellum.	**6.**  Scutellum of *Megaphthalma pallida*
–	In addition to the apical-marginal pair of scutellar bristles, there is at least one more pair placed near the base, and often on the disk of the scutellum.	**9.**  Scutellum of *Scathophaga litorea*

6.	Palps with a long apical bristle clearly longer than any surrounding bristles. Arista may or may not be long haired.	**7.**	
–	Bristles on the palps all of similar length. Arista long haired. A pale yellowish, medium-sized fly with conspicuous, black bristles.	***Megaphthalma pallida***	

7.	Entirely pale yellow species (abdomen sometimes darkened, or reddish, after death) with a cluster of strong vibrissae directed forward and downward and another cluster of 3-4 strong bristles below the eye on the posterior part of the jowls.	***Leptopa filiformis***	
–	Abdomen and thoracic dorsum usually black (sometimes more extensively pale in *Cordilura albipes*). Vibrissae normal. No such bristles on the jowls.	**8.**	

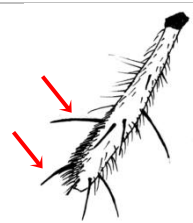
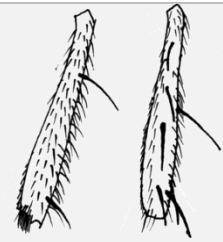
8.	Arista long haired. Two humeral bristles.	**Cordilura (Cordilurina) albipes**	
–	Arista short haired or virtually bare. One or no humeral bristles.	**Genus *Parallelomma***	

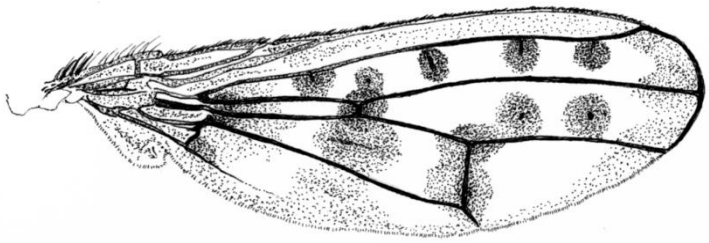
9.	Vein R_1 bare above at end. Humeri without a fringe of bristles in front	**10.**	
–	R_1 with a few small bristles on upper side towards end. Front margin of humeri with a fringe of short bristles	**Gimnomera tarsea**	

10.	Front bristle only of the three upper frontal bristles turned forward, the other two turned outwards or backwards, or all three turned outwards Note that *Scathophaga* & *Conisternum* belong here but occasional specimens have the middle frontal bristle turned forward and so go the wrong way. They usually run to *Trichopalpus*.	**11.**	 Head of *Ceratinostoma ostiorum*
–	The front-most two of the three upper frontal bristles pointing forwards, or (*Hydromyza*) all three very short and pointing forwards	**13.**	 Head of *Trichopalpus fraternus*

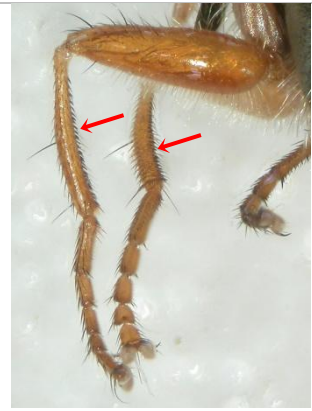
11.	Front tibia with normal, rather long fine hairs beneath, but without minute black spines. Two supra-alar bristles	**12.**
–	Front tibia with a double row of very small, close-set, black spines beneath and a short, stout, erect ventral spine at the tip. Only one supra-alar bristle	**Genus *Acanthocnema***

Front leg of *Acanthocnema nigrimana*

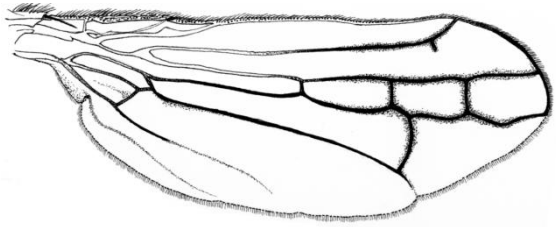
12.	Front tibia with a distinct anterior-ventral spinose bristle before, and another at tip. A large, dull-grey species found at the coast with a geniculate black proboscis and very long palps.	***Ceratinostoma ostiorum***	
–	Front tibia without anterior ventral spine before the tip and, usually, without one at the tip either	**Genera *Scathophaga* / *Conisternum***	 Front tibia of *Scathophaga litorea* (left) and *S. furcata* (right)

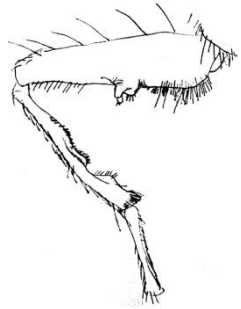
13.	Sternopleural bristle usually absent. Wings with numerous, round, brown spots. R_{2+3} with veinlets. Usually found at the margins of, or scatting over the surface of small lochs. 	***Ernoneura argus***	
–	Sternopleural bristle present. Wings without such markings.	14.	

14.	Ocellar bristles absent and orbitals very short. All bristles on body and legs also very short. Only one (prescutellar) pair of dorsocentral bristles.	***Hydromyza livens***	
–	Ocellar bristles present and orbitals normal.	**15.**	

15.	Front tibia with small, short, dark ventral spines mostly forming longitudinal rows (examine carefully with at least 30× magnification).	**16.**	 Front legs of *Microprosopa pallidicauda*
–	Front tibia without ventral rows of short black spines.	**21.**	

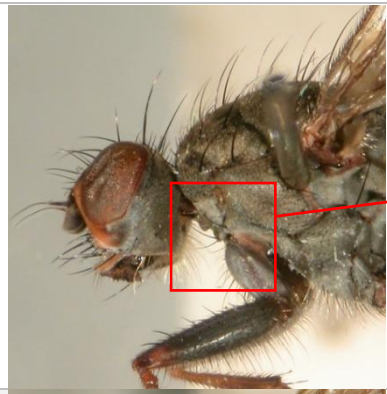
16.	Males	**17.**
–	Females	**19.**

17.	Abdomen with conspicuous tufts of pale yellow hairs on hypopygium and elsewhere on ventral surface. Wing venation remarkable with extra cells and veinlets. Front femora with a black, ventral projection and front tibia twisted, forming a bulge which fits against the projection on the femora. 	***Pogonota barbata***	
–	No such tufts of hair present.	**18.**	

18.	Front femur with a ventral projection which fits into a notch on the front tibia. Antennae partly, often mostly, pale.	***Cosmetopus dentimanus***	 Front leg of male (inside view)
–	Front femur and tibia simple. Antennae black.	***Microprosopa pallidicauda***	

19.	Third joint of antennae about twice as long as broad and tapering slightly in apical half. Palpi enlarged and lanceolate.		***Pogonota barbata***  Palp of female *Pogonota barbata*
–	Third antennal joint short, or if nearly twice as long as broad, then palps long and narrow.		**20.**

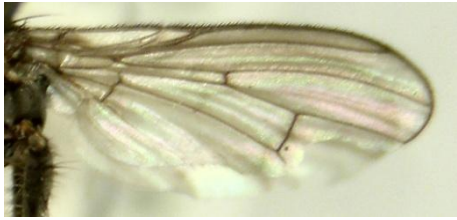
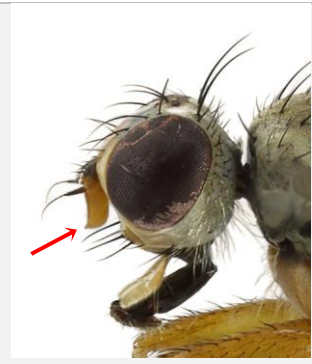
20.	Palpi spathulate and widest near the tip. Body elongate. Antennae partly, often mostly, pale.		***Cosmetopus dentimanus***	 Palp of female *Cosmetopus dentimanus*
–	Palpi lanceolate and widest about the middle. Antennae black.		***Microprosopa pallidicauda***	 Palp of female *Microprosopa pallidicauda*

21.	Propleural and stigmatical bristles distinct (above front coxa). A short, but distinct prealar bristle present.		***Trichopalpus fraternus***	 Propleural and stigmatical bristles
–	Propleural bristle not distinct, pale and hair like. Stigmatical and prealar bristles absent		***Spaziphora hydromyzina***	

22.	Two sternopleural bristles	**23.**
–	Three sternopleural bristles	**26.**

23.	One pair of strong scutellar bristles	**24.**
–	Two pairs of strong scutellar bristles	**25.**

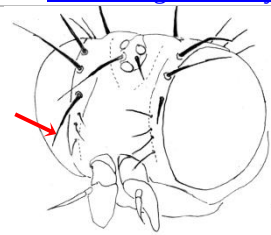
24.	Third antennal joint with a pointed upper corner	**Genus Nanna**; some females	
–	Third antennal joint blunt at apex. (A shining black species with yellow frons and face.)	***Delina nigrita***	

25.	Third antennal joint large and broad. Arista thickened and geniculate. The two sternopleural bristles are the hind ones. Wings somewhat darkened and brownish towards front margin. 	***Gonatherus planiceps***	
–	Third antennal joint normal, but with a pointed upper corner. The two sternopleural bristles are the front and upper-hind ones. Wings not darkened.	***Chaetosa punctipes***	

26.	Vein R_1 hairy above near tip. Front femora usually with a conspicuous black mark on posterior face.		***Cleigastra apicalis***	 Vein R_1
–	R_1 bare above.		Genus Nanna	

Genus Acanthocnema

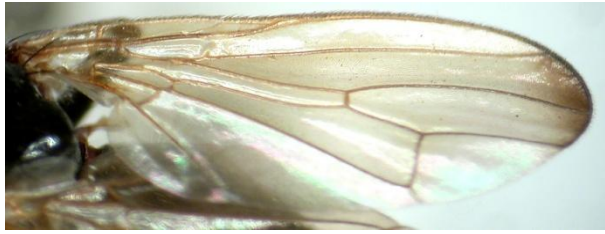
Return to generic key

1.	Front most upper frontal orbital bristle pointing forwards, the other two curve more or less outwards. Brownish species with a pale, yellowish frons, whitish face and legs which are darkened to a variable extent, but are yellowish in part. Wings may have a brownish tinge.	***Acanthocnema nigrimana***	
–	All three upper frontal orbitals long and curved outwards. An entirely dark grey species with dark coloured legs and greyish tinged, darkened wings.	***Acanthocnema (Clinoceroides) glaucescens***	

Genus Cordilura

Return to generic key

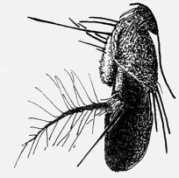
1. Arista nearly bare. Wings with more or less distinct and sharply defined apical darkening. Vein M_{1+2} sinuate (strongly so in *C. ustulata*). 2.



Wing of *Cordilura* (*Scoliaphleps*) *hyalinipennis*

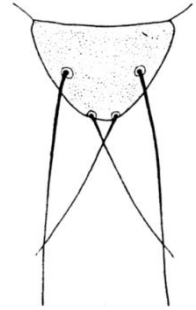
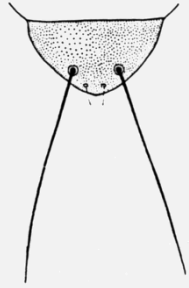
Antenna of *C. ustulata*

– Arista short to long plumose. Wings without markings, although sometimes with an overall yellowish tinge and *C. impudica* may have some diffuse darkening at the wing tip. 3.



Antenna of *C. ciliata*

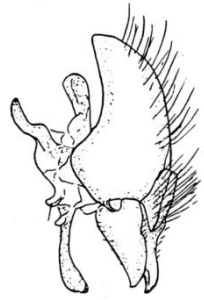
2.	Pteropleuron with a few fine, erect hairs. A smaller, narrower species with, at most, one setula above the apical portion of the vein R_1. (Check male genitalia)	***Cordilura (Scoliaphleps) hyalinipennis***
–	Pteropleuron bare. Slightly larger and more robust usually with several distinct setulae above the apical portion of the vein R_1. (Check male genitalia)	***Cordilura (Scoliaphleps) ustulata***

3.	Scutellum with four strong bristles.	**4.**  Scutellum of *C. pubera*
–	Scutellum with only two strong apical bristles.	**10.**  Scutellum of *C. impudica*

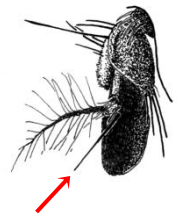
4.	Palps yellow. All tibia and tarsi yellow, or only hind tarsi somewhat brown. Femora dark except for extreme tips.	***Cordilura picticornis***	
–	Palps dark.	**5.**	

5.	At least front and middle tibia yellow.	**6.**
–	All tibia dark. Vein R_1 setulose above towards tip.	**9.**

6.	Tarsi not darkened beneath at base. Vein R_1 bare above or with only 1-2 fine setulae.	**7.**
–	Tarsi darkened beneath at base of at least the last four joints (careful examination necessary!). Vein R_1 with numerous fine setulae above towards tip.	**8.** 

7.	Male claspers large and triangular with a slightly hooked tip from some points of view. Third antennal joint with an up-curved, pointed tip. Vein R_1 bare above or with 1 or 2 small setulae on the top surface of the vein R_1.		***Cordilura pudica***	
–	Male claspers smaller and with a rounded tip. 1 or 2 small setulae on the top surface of the vein R_1 which are fine and inconspicuous in some specimens. Hind tibia obviously darkened in some specimens, but many have more or less completely yellow hind tibia like *pudica* (i.e. dark hind tibia are distinctive of *rufimana*, but their absence is not conclusive!).		***Cordilura rufimana***	

8.	Male paralobes broad, very deep, split and with a rectangular upper basal curve. Arista long haired. No distinct prescutellar dorsocentral bristle on thorax.		***Cordilura pubera***	
–	Male paralobes more ovate, with only a short cleft at the tip and with a rounded basal upper corner. Arista shorter haired. A distinct pair of prescutellar dorsocentrals present.		***Cordilura aemula***	

9.	Large species (8-9 mm), more shining and without acrostichals on the thorax. Third antennal joint with a long bristle on the outer side, below the base of the arista.	***Cordilura ciliata***	
–	Smaller (5 mm), somewhat dusted species with a few small acrostichals bristles and without a long bristle on the third antennal joint.	***Cordilura atrata***	

10.	Pleurae of thorax pale creamy yellow, typically contrasting with the shining black thoracic dorsum, but paler specimens are not uncommon. All coxae and legs also pale creamy yellow.	***Cordilura (Cordilurina) albipes***	
–	Thorax entirely dark. At least coxae and femora dark.	**11.**	

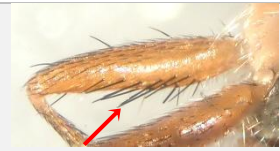
11.	Large species (8-9 mm) with yellow tibia.	***Cordilura impudica***
–	Smaller species (6 mm) with dark tibia.	***Cordilura picipes***

Genus Nanna

Return to generic key

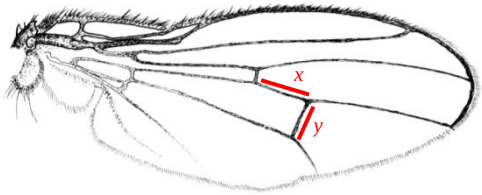
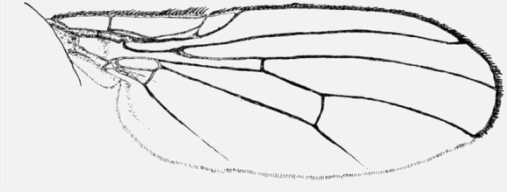
1.	Femora and tibia entirely yellow or, at most, only the front femora with a darkened streak above.	**2.**	 *Nanna multisetosa*
–	Femora extensively darkened - yellow at base and tip.	**4.**	 *Nanna fasciata*

2.	Anterior-ventral surface of front femora with only one long, strong, bristle. Dorsum of thorax partly shining: shining patches on mesopleuron, sternopleuron and pteropleuron. Abdominal tergites shining in dorsal view and, in side view, with shining bands at the apex of each tergite	***Nanna brevifrons***	
–	Anterior-ventral surface of front femora with many (7+) long black bristles.	**3.**	

3.	Anterior-ventral surface of front femora with 7-8 long, black bristles. Thorax, pleura and basal abdominal tergites all heavily grey dusted	***Nanna flavipes***	
–	Anterior-ventral surface of front femora with more than 10 long, black bristles.	**Nanna multisetosa**	

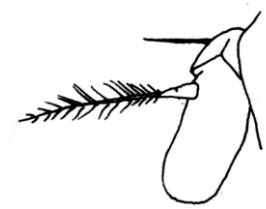
4.	Front femora without black anterior-ventral bristles	***Nanna inermis***	
–	Front femora with at least a few black anterior-ventral bristles and often with a large patch of them	**5.**	 *Nanna fasciata*

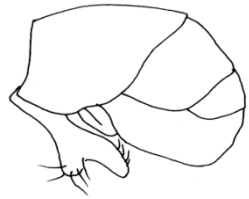
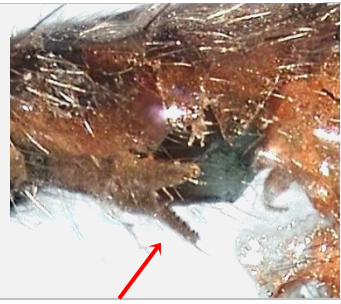
5.	Front femora with only a few (5-6) black anterior-ventral bristles, three of which are longer than the others	***Nanna armillata***
–	Front femora with a dense patch of black anterior-ventral bristles	**6.**

6.	Cross-veins closer together. The distance between them, measured along vein M_{1+2} (*x*), being about 1.3 - 1.4× the length of the outer cross-vein (*y*). Male front tibia without a posterior ventral placed near the posterior- and anterior dorsal (Caution: female does have such a bristle). Female posterior tibiae usually with an anterior ventral bristle. 	***Nanna tibiella***	 *male front leg*
–	Cross-veins further apart. The distance between them as measured above, about twice the length of the outer cross-vein. Front tibia with a posterior ventral bristle placed close to the posterior- and anterior dorsal. Female posterior tibiae usually without an anterior-ventral bristle. 	***Nanna fasciata***	 *male front leg*

Genus Norellisoma

Return to generic key

1.	Arista short plumose. Larger (7 mm) species. Lobes of 5th abdominal sternite of male are long, curved and flattened with tiny black spines along inner margin.	***Norellisoma spinimanum***	
–	Arista only pubescent. Smaller (4-5 mm) species.	**2.**	 *Norellisoma lituratum*

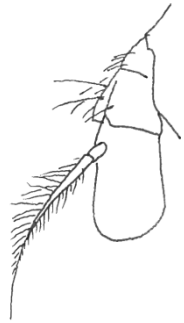
2.	Abdomen and thorax densely dusted dull grey except for the terminalia in both sexes, which are shining black. Each lobe of the male 5th sternite ends in a bluntly bilobed tip.		***Norellisoma opacum***	
–	Viewed from above and slightly behind and with the lighting from in front, the black ground colour shines through the thin dusting of the abdominal tergites and the sides of the thorax, contrasting with the more densely dusted centre line of the thorax. Terminalia in both sexes shining black. Each lobe of the male 5th sternite ends in a simple blunt point.		***Norellisoma lituratum***	

Genus Parallelomma

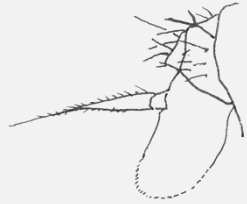
Return to generic key

1.	Third antennal segment dark. Apical bristle on the palps longer and stronger than the vibrissae and measuring 0.38 - 0.49 mm.	***Parallelomma paridis***	
–	Third antennal segment entirely clear yellow. Apical bristle on palps not as strong as the vibrissae and measuring 0.24 - 0.38 mm.	***Parallelomma vittatum***	

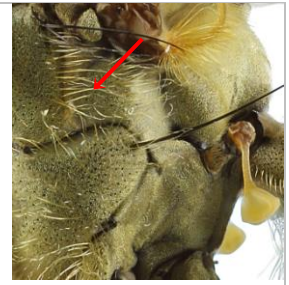
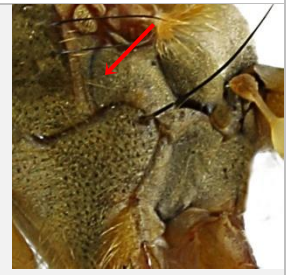
1.	Arista long haired.	**2.**
–	Arista bare or microscopically pubescent.	**7.**



Scathophaga stercoraria antenna



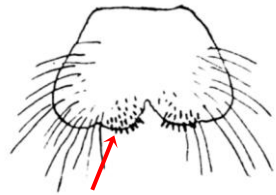
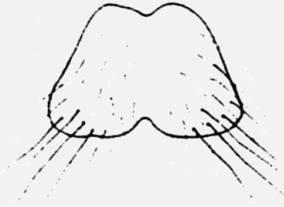
Scathophaga litorea antenna

2.	Pteropleuron hairy. Middle tibia with 2 strong posteroventral- and 3 strong anteroventral bristles. 3rd antennal joint dark brown to blackish (very variable in size and general appearance).	***Scathophaga stercoraria***	
–	Pteropleuron bare (Examine carefully: The mesopleuron and sternopleuron are hairy even when the pteropleuron is bare, so care is needed to be sure where the hairs arise). Middle tibia with no posteroventral- and only one anteroventral bristle.	**3.**	

3.	Veins R_{4+5} and M_{1+2} distinctly convergent towards the wing tip. The area beneath the base of the abdomen and above the hind coxae normally sclerotised. A large and distinctly orange-yellow species with long yellow legs and large, yellow tinged wings. Male claspers narrow and pale, darkening towards the tip, which is bifid. 	***Scathophaga scybalaria*** 	
–	Veins R_{4+5} and M_{1+2} parallel. The area beneath the base of the abdomen and above the hind coxae divided vertically by a membranous strip (considerable care is needed with this character - *S. lutaria* especially may have little evidence of this strip from some angles and has horizontal wrinkles running continuously across this whole area which give the appearance of one, solid continuous structure - in this case (and most other *Scathophaga spp.*) the male claspers are simple, stout, black and slightly hooked).	**4.**	

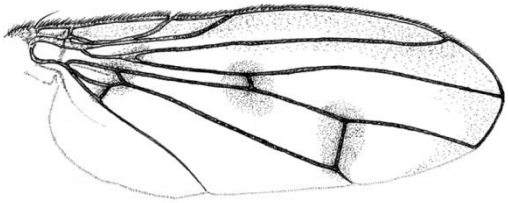
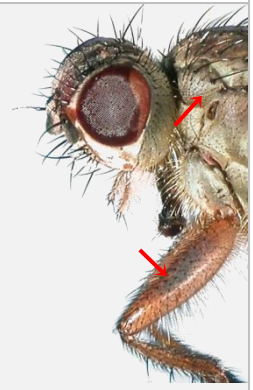
4.	Male hind femora without (BUT female with) anterodorsal bristles. Female 7th abdominal segment shining in contrast to the rest. Typically a smaller and rather pale coloured species.	 female abdomen of *S. suilla*	**5.**	 male hind leg of *S. suilla*
–	Hind femora of both sexes with distinct anterodorsal bristles towards tip (usually several, but sometimes only 1-2 near the end of the femur, especially in *S. lutaria*). Female 7th abdominal segment dusted like the others.	 female abdomen of *S. inquinata*	**6.**	 male hind leg of *S. inquinata*

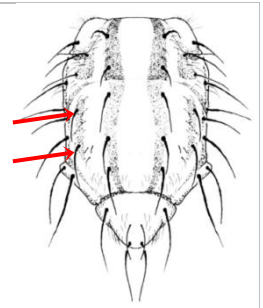
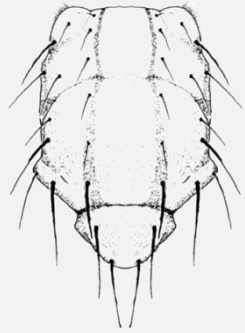
5.	Ground colour of the sides of the thorax and occiput uniform. At least front, and sometimes middle and even rear, femur with a strong black streak. Cross-veins only slightly infuscated, outer barely perceptibly so. 	***Scathophaga taeniopa***	
–	Sides of the thorax with a pale yellow area contrasting with the rest of the thorax including the humeri and extending on to the mesopleuron, sternopleuron. Often the lower part of occiput also pale. Femora plain yellow. Wings with cross-veins obviously infuscated. 	***Scathophaga suilla***	

6.	Male abdomen entirely yellow and yellow haired. 5th sternite with a patch of tiny black spines on hind margin, near median indentation. Females generally smaller and darker with dark humeri and scutellum and front femora immaculate.	***Scathophaga inquinata***	
–	Typically a large species with a dark streak on the front femora. Male abdomen with at least the hind margin of the first tergite darkened and with some dark hairs mixed with the yellow ones towards the tip of the abdomen. 5th sternite with fine hair only near the median indentation (care is needed here - often difficult to work out which sternite is which on dried specimens if the abdomen has shrivelled). Female larger and typically (but not invariably) with yellow humeri, a yellow scutellum and often with a dark streak on the front femora.		***Scathophaga lutaria***	

7.	Pteropleuron bare or (*C. obscura*) with 1-2 long pale hairs which are not very conspicuous. Acrostichals fine and few in number.	**8.**
–	Pteropleuron hairy. Acrostichals long, strong, numerous and bi- to multiserial with the rows close together.	**11.**

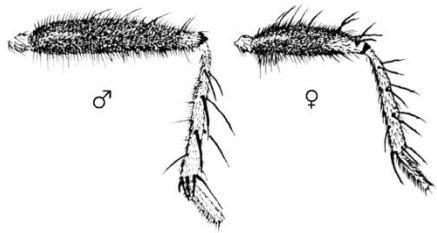
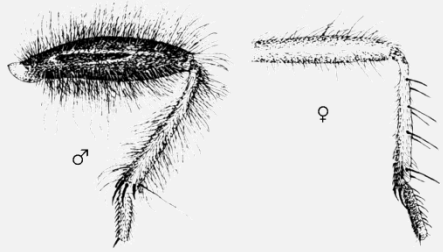
8.	Cross-veins conspicuously clouded.	**9.**
–	Cross-veins not clouded.	**10.**

9.	Humeri with the yellow ground colour showing through dusting at least below. Cross-veins heavily and broadly infuscated giving the wings a spotted appearance. 	***Scathophaga pictipennis*** 
–	Humeri same colour as rest of thorax. Cross-veins not very broadly infuscated although this is rather variable (the specimen illustrated has broader and darker infuscation than most). Typically a rather robust species with a dark streak on the front femora, but very variable in size and colouration. 	***Scathophaga furcata*** 

10.	Larger species with 2 distinct intra-alars.	***Conisternum decipiens***	
–	Smaller species with one, or no, intra-alars.	***Conisternum obscura***	

11.	Acrostichals hair-like, numerous and multiserial. Cross-veins clouded. Femora with dark base and yellow outer third sharply divided.	***Conisternum tinctinerve***
–	Acrostichals bristle-like and biserial. Cross-veins not clouded.	**12.**

Middle and hind legs

12.	Hind tibia with 3-4 pairs of long spinose bristles above and at least one such bristle anteroventrally. Other pubescence on the hind legs normal and not particularly long or conspicuous. Female with a distinct posterodorsal bristle near the tip of the hind femora. Acrostichals rows more or less equally far apart as they are from the dorsocentrals.		***Scathophaga litorea***	
–	Hind tibia of male with only 1-2 pairs of long fine bristles on apical half, otherwise covered in long outstanding hairs all over, even anteroventrally (BUT female hind tibia normal). Female without a distinct posterodorsal bristle near the tip of the hind femora. Acrostichals rows closer together than they are from the dorsocentrals.		***Scathophaga calida***	

SCATHOPHAGIDAE

A small family of Calyptrate flies with 55 species in 23 genera recorded from the British Isles. Smith (1989) reports 360 species in 66 genera worldwide, and I have been able to find reference to 407 described species (also in 66 genera) although synonymy makes it difficult to be certain of such figures. According to Vockeroth (1987) the family is almost entirely confined to the Holarctic, with only 5 species known from the southern hemisphere (two of these are *Scathophaga stercoraria* (recorded from Brazil and South Africa) and *S. furcata* (from South Africa) which have probably been accidentally introduced with imported livestock). He considers that it is the most northerly distributed of all fly families and, of the approximately 150 species recorded from Canada, 25 are restricted, or nearly restricted, to the arctic tundra and 34% also occur in the Palaearctic. The situation in Britain is not dissimilar with 21 of our species (39%) also occurring in the Nearctic and many species restricted to northern Britain, whilst few are confined to the south. The richest fauna in Britain is found in central Scotland.

The family are often known as "dung-flies", but this is not a particularly appropriate name because only a few species in the genus *Scathophaga* are actually dung breeders (about 5 or 6 of the British species are recorded from mammalian dung). This name probably derives from the "Common yellow dung-fly", which is often applied to *S. stercoraria* –one of the most abundant and ubiquitous flies in Britain (and many other parts of the northern hemisphere). It is an appropriate name for this species since the furry, yellow males are typically seen sitting on fresh cow pats or sheep droppings, but other members of the family are actually rather diverse in life style and larval habits include leaf miners, plant feeders and aquatic predators.

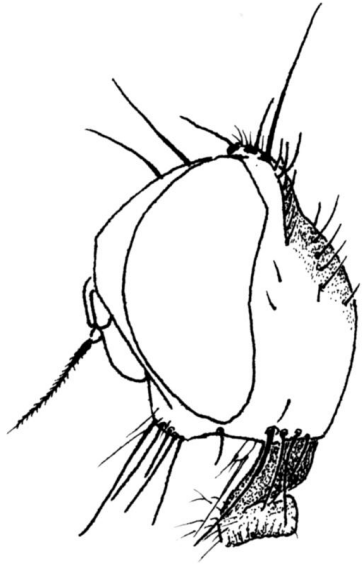
Scathophaga stercoraria on fresh cow dung.

Is it a Scathophagid?

It can be quite tricky to decide when you are dealing with a Scathophagid since, in most keys, this family drops out at the end of the key to Calyptrate families if it is not a Muscid, Fanniid or Anthomyiid. They tend to be distinguished by the lack of features that characterise these families, rather than by anything very definite that is unique to the Scathophagidae. In general appearance they can easily be confused with Anthomyiids and some species (e.g. *Leptopa*, *Delina*, *Gimnomera*) could be mistaken for an acalyptrate on first glance.

However, in all British species with the exception of, *Leptopa filiformis*, the back of the head is noticeably rounded with a patch of fine hair on the bottom part of the occiput, and this does give them quite a distinctive appearance.

Head of *Nanna tibiella* (male) showing typical rounded shape of the back of the head and fine hairs on the lower occiput.



Head of *Leptopa filiformis* – note the typical rounded shape, but lacks the patch of fine hairs. Never-the-less, this species is quite distinctive with kidney-shaped eyes and multiple vibrissae.

Colyer & Hammond (1968) describe the family thus:

> "Head more or less rounded in profile; at least four orbitals; ocellar triangle never pointed anteriorly; one or two large vibrissae, sometimes accompanied by smaller bristle posteriorly; proboscis in predatory species strong, labella armed with prostomal teeth for perforating the integument of prey; palpi well developed; arista pubescent or plumose; wings long, often tinged or clouded at cross-veins, in one case spotted with a dark band along the costal margin (*Ernoneura*); Veins 3 and 4 more or less divergent apically, or very slightly convergent (*e.g. Scathophaga scybalaria* L.); supplementary cross-veins between Veins 3 and 4 (*Pogonota*) or recurrent veinlets from Vein 2 (*Ernoneura*); 2nd basal and anal cells never sharply-pointed at lower, outer corner; Vein 6 may or may not reach margin; Vein 7 always in evidence, even if only as a fold; abdomen, often in profile appearing long and flattened, and with five or six visible segments; male genitalia very prominent."

Hackman (1956) gives the following characters to separate them from other Muscidoidea:

> "The eyes in the male are always widely separated and the frons never bears crossed bristles. Wing squama small, costa without spine-like bristles at the end of the sub-costa. Scutellum always bare on the under surface. ... Abdomen with more than 4 pregenital joints and without a dorsal pattern of spots or stripes."

Oosterbroek (2006) describes the characteristics of the family as follows:

Characters: Small to large (3-12 mm), usually slender flies. Colour ranging from a dull yellowish brown to lustrous black or yellow, in some species bicolourous. Body and legs often with many bristles, sometimes densely covered by fine hairs. Occiput usually with some to many pale, longhairs; arista bare to plumose; interfrontal bristles absent. Wing usually clear, sometimes distinctly marked or darkened at the tip or along the crossveins; anal vein long, usually reaching the wing margin. Meron without bristles along the hind margin, near the posterior spiracle.

Species accounts

Acanthocnema

The two species of this genus are readily distinguished from other members of the family by the presence of a short stout ventral apical spine on the front tibia (illustrated in Key to genera, couplet **11.**). They are slender, dark coloured species found near rapidly running water.

Acanthocnema nigrimana (Zetterstedt, 1846)

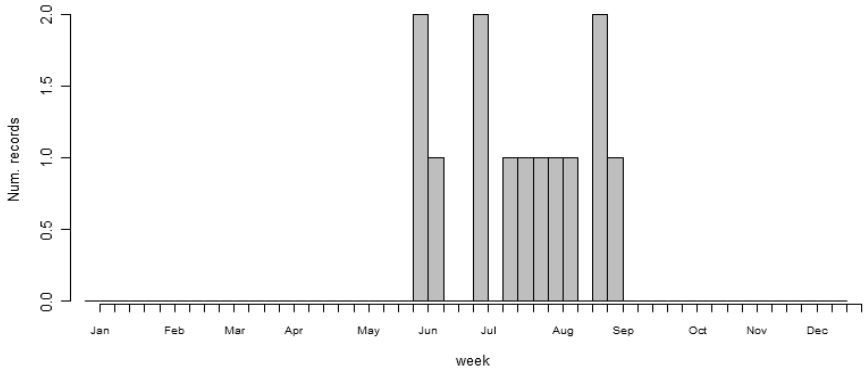
Return to key

A brownish fly with yellow legs and the front of the frons yellow. The third antennal joint is also yellow with a variable amount of darkening at the tip (darker in females according to Collin, 1958). Wing length: ♀ 4.6 - 4.6 - 4.7 mm (2).

This appears to be a scarce species of western Britain where it is found beside streams and rivers on vegetated shingle banks, usually in wooded valleys. Larvae unknown, but presumed to be similar in habits to *A. glaucescens*. Regarded as a rare species, but may be overlooked (see discussion under the next species). **RDB3** according to Falk (1991). It has been recorded from 16 hectads in total and from 4 since 1990. Distribution map.

World distribution: Palaearctic: Austria, Denmark, Germany, Hungary, Norway, Poland, Portugal, Sweden. **British distribution:** Recorded from Devon, Somerset, Yorks, Durham, Brecon, Caernarfon, Stirling, Inverness and the Isle of Lewis.

Acanthocnema nigrimana A: Antenna; B male 5th sternite; C male genitalia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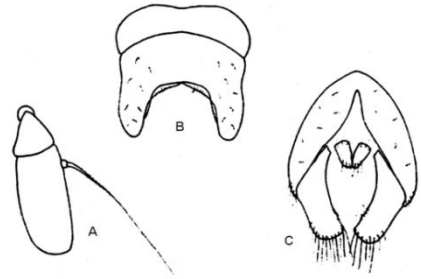
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Acanthocnema (*Clinoceroides*) *glaucescens* (Loew, 1864)

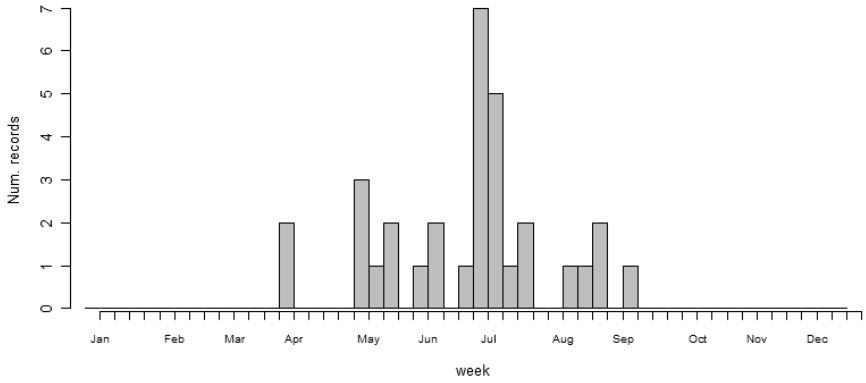
Return to key

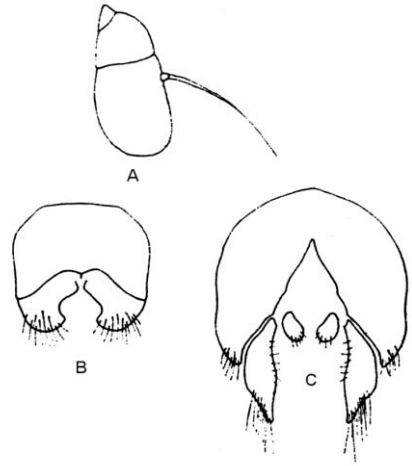
A slender, dark grey species with dark legs, a grey frons and darkened wings. The third antennal joint is entirely dark in both sexes. Wing length: ♂ 4.5 - 4.7 - 4.8 mm (3); ♀ 4.6 mm (1).

A species which can be swept from mossy boulders in shady streams, usually, but not exclusively, in woodland. It has been found in the splash zone of a small waterfall on open moorland at Moorhouse NNR. Most often recorded from western Britain where this habitat is most frequent, but Hinton (1981) found adults to be common in early spring in southern England. Hinton (1981) found larvae living in, and feeding on, the egg masses of caddis flies and some Nematocerous Diptera (e.g. Dixidae) and Nelson (1992) describes the larvae and pupae. He found about 30 larvae in caddis egg masses laid under a piece of wood trapped between two stones and two pupae in the algal film growing over the same stones. This has been considered to be a scarce species. However, experience during recent Dipterists summer field meetings suggest that it is widespread where suitable habitat occurs, but is unlikely to be encountered unless specifically searched for by sweeping over, boulders in streams and rivers. It is therefore usually overlooked. Adults from April to September, most frequent in Spring (Nelson, 1992). **Notable** according to Falk (1991). It has been recorded from 29 hectads in total and from 15 since 1990. Distribution map.

Acanthocnema glaucescens ♂, A: antenna; B: male 5th sternite; C: male genitalia.

World distribution: Palaearctic: European Alps, Austria, Czech Republic, Finland, France, Germany, Hungary, Norway, Poland, Slovakia, Sweden.





***Ceratinostoma ostiorum* (Haliday in Curtis, 1832)** Return to generic key

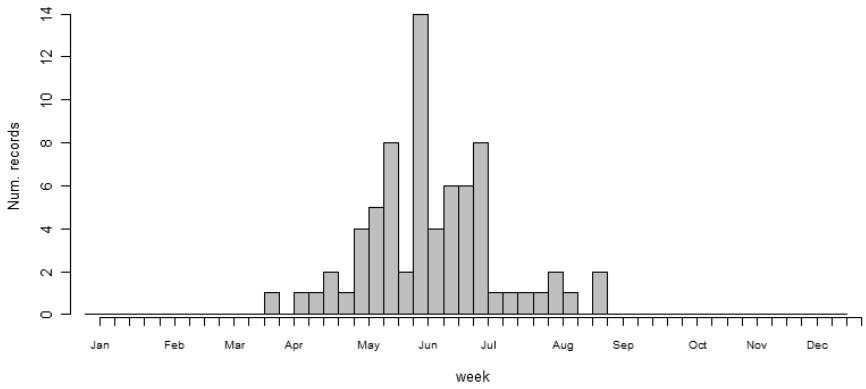
A large, robust, dark grey, sea coast species. The whole fly is covered in dense dark grey dusting, with some brown areas on top of the thorax. Frons also rather dark blackish-brown. Only on the rather stout proboscis does the black ground colour show. Palps yellow-brown, conspicuously long and armed with rather stout, short black bristles. Legs entirely grey dusted, but the undersides of the tarsi are covered in a thick felty layer of yellowish-brown hairs. Wing length: ♂ 4.5 - 6.7 - 7.8 mm (21); ♀ 5.2 - 6.5 - 6.9 mm (7).

Widespread around the British coast and Collin (1958) reports it from "Inverness and the Isle

of Arran down to the south coast of England". Irwin (1974) reports it from Northern Ireland (Strangford Loch). I have found it on rocky shores in Northumberland and on estuarine breakwaters in North Wales and Devon. In these types of location it can be extremely challenging to catch because it is very alert and difficult to approach closely and has a habit of flying very low and swiftly just above the water surface where you are more likely to get a wet net than a specimen! However, during the Dipterists Summer Field Meeting in 2006, it was swept in abundance from salt marsh in Pagham Harbour. According to Smith (1989) it breeds in thick, moist rotten seaweed on the sea shore. It has been recorded from 70 hectads in total and from 46 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, France, Germany, Iceland, Ireland, Lithuania, Netherlands, Norway, Poland; **Nearctic**: Canada, USA.

Ceratinostoma ostiorum ♂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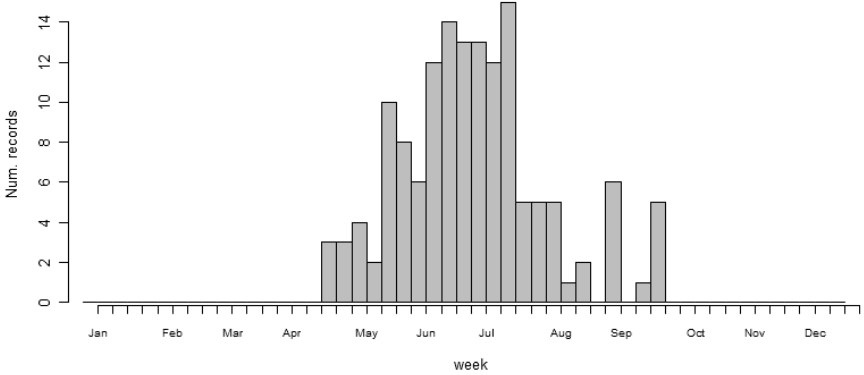
***Chaetosa punctipes* (Meigen, 1826)** Return to generic key

A small grey species with entirely pale legs, including the front coxae. The third antennal joint is noticeably pointed anteriorly at the tip. Wing length: ♂ 3.6 - 4.0 - 4.7 mm (15); ♀ 3.7 - 4.2 - 5.0 mm (16).

Widespread and common and usually found in long vegetation in wetland or damp grassland situations. It has been recorded from 78 hectads in total and from 47 since 1990. Distribution map. According to Collin (1958), the larvae live in various grass species, but he gives no details and I have been unable to locate any other reference to this (e.g. not mentioned by Smith, 1989). Uffen & Chandler (in Stubbs & Chandler, 1978) suggest that this supposed association may result from confusion with *Nanna* spp.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Romania, Slovakia, Sweden, Switzerland, Russia: eastern Palaearctic; **Nearctic**: Canada, USA.

Chaetosa punctipes A: Sternopleuron; B: male 5th sternite; C: Male genitalia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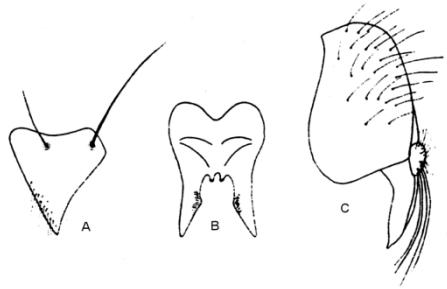
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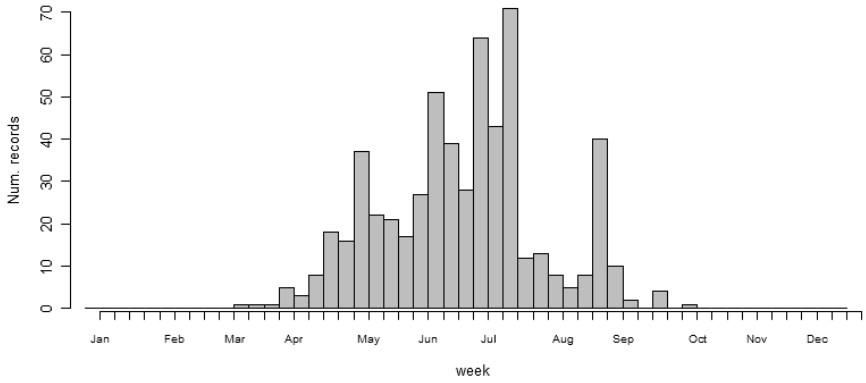
***Cleigastra apicalis* (Meigen, 1826)** Return to generic key

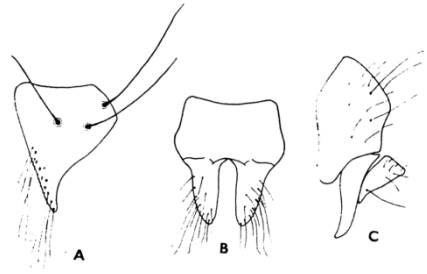
An easily recognised species usually with a distinctive black mark on the outer face of the fore femora and, on closer examination, a combination of three sternopleural bristles and setulae on the upper surface of vein R_1. Wing length: ♂ 4.0 - 5.2 - 6.1 mm (22); ♀ 4.5 - 5.4 - 6.3 mm (14).

A predatory fly which is locally abundant in reed beds, especially, but not exclusively, where *Phragmites* grows (I have found it in abundance in water traps placed in a *Typha* bed). The larvae have been found associated with *Lipara* galls and a puparium has been found in an empty gall. According to Smith (1989) (citing Groth, 1969) they are also claimed to be associated with the stem boring caterpillars of twin-spotted wainscot, *Archanara geminipuncta* and fen wainscot, *Arenostola phragmitidis*. It has been recorded from 196 hectads in total and from 145 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland, Russia: north European region.

Cleigastra apicalis A: Sternopleuron; B: male 5th sternite; C: male genitalia





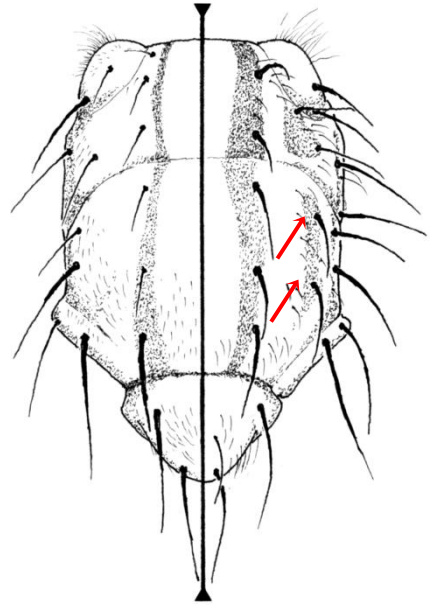
Conisternum Return to key

At various times these three species have been placed in *Scathophaga*, or separated in this genus (previously called *Coniosternum*). I found the separation of these two genera one of the most difficult and least satisfactory aspects of Collin's (1958) key and therefore found it a relief that they were placed in *Scathophaga* by Kloet & Hincks (1976). Chandler (1998) separates them again, but, for the purposes of constructing a workable key, I have left them in the key to *Scathophaga* and not attempted to find characters to separate the two genera. See key to *Scathophaga & Conisternum* species.

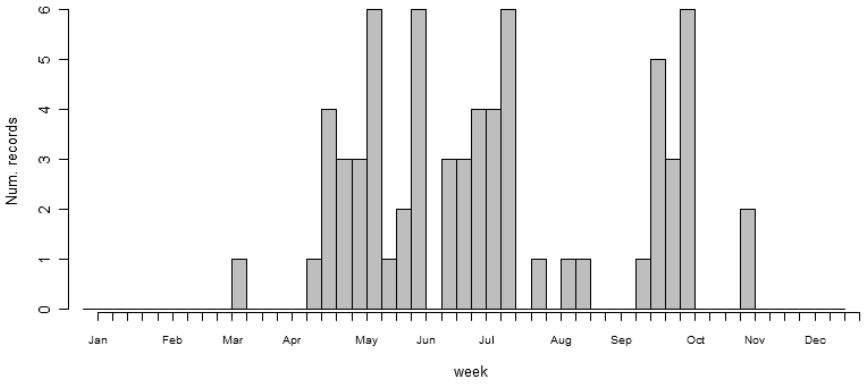
Jowls, occiput and orbits greyish and frons reddish yellow. Thorax grey with longitudinal brown stripes dorsally and with a brownish spot on the mesopleuron. Abdomen grey. Femora grey, tibia and tarsi reddish brown. Antennae small and black. Palps yellowish brown. Proboscis shining black. Wing length: ♂ 4.8 - 5.5 - 6.2 mm (6); ♀ 5.7 - 5.9 - 6.2 mm (4).

A scarce southern species. Habitat preferences unclear, but mostly recorded from damp places including coastal marsh, vegetation around ponds, long vegetation in fen (especially *Carex* beds) and carr woodland. Mostly recorded from southern England, although there are records from Yorks, Pembroke and Perth. Adults from March to November. **Notable** according to Falk (1991). It has been recorded from 64 hectads in total and from 33 since 1990. Distribution map.

World distribution: Palaearctic: Czechoslovakia, Denmark, France, Ireland, Netherlands; North Africa: Algeria; Russia: Karelia, Tajikistan; **Nearctic**: Canada.



Comparison of the thoracic dorsum of *Conisternum obscura* (left) and *C. decipiens* (right). Note the difference in the intra-alar bristles.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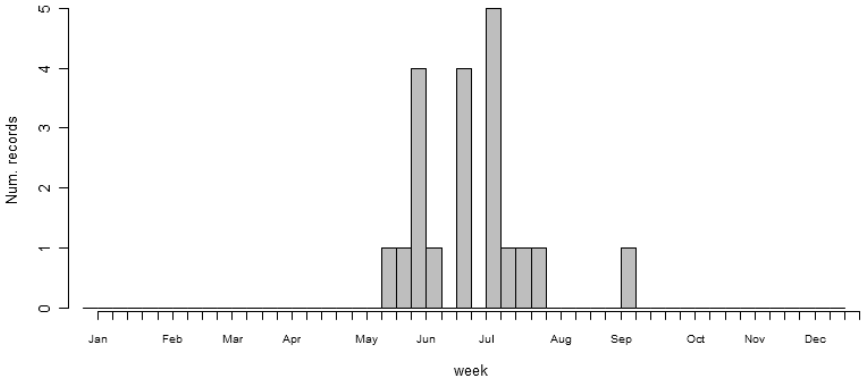
***Conisternum obscura* (Fallén, 1819)** Return to key

A small greyish species with a reddish frons and face. Legs reddish yellow. Halteres yellow. Wings clear with yellow veins. Palps rather long, somewhat flattened and yellow. Antennae with second segment pale, but otherwise dark. Wing length: ♂ 4.1 - 5.0 - 6.0 mm (6); ♀ 4.1 - 4.2 - 4.3 mm (5).

Berté & Wallace (1987) describe the biology of this species in Ireland. The larvae are aquatic and were found in the egg masses of Limnephilid caddis flies in stony streams and rivers. Larvae moved around within the jelly of the egg mass and fed on eggs they encountered by slashing through the chorion with their mouth hooks. Occasionally they protrude their prominent posterior spiracles through the surface of the jelly for a short time. Larvae left the egg mass to pupate and, in no case, were all the eggs in an egg mass consumed. Adults are usually swept from long vegetation beside such water bodies in June to August. This appears to be a scarce but widespread species in northern and western Britain. It has been recorded from 18 hectads in total and from 10 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: north European and Eastern Palaearctic; Asia: Mongolia.

Conisternum obscura: A: male 5th sternite; B: male genitalia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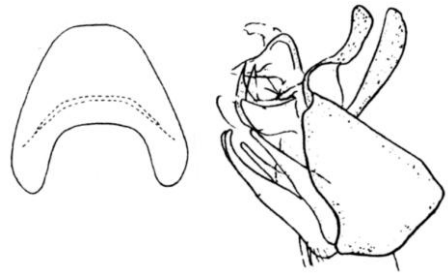


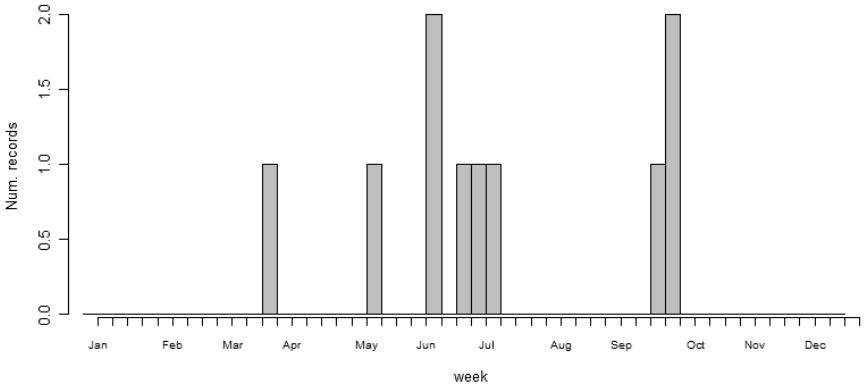
***Conisternum tinctinerve* (Becker, 1894)** Return to key

A rather dark species with strongly infuscated cross-veins. Thorax and abdomen dark. Frons and face reddish brown. Antennae dark, palps reddish. All femora dark, but with an orange outer third which is rather sharply divided. Middle and hind femora also narrowly orange at the base. Tibia and tarsi reddish brown. Halteres brown. Wing length: ♂ 5.3 - 5.5 - 5.7 mm (4).

Conisternum tinctinerve: A: male 5th sternite; B: male genitalia

Added to the British list by Nelson (1992) from a series of specimens taken on Beanrigg Moss, part of the Whitlaw Mosses NNR in Roxboroughshire, in 1971, 1980 and 1981, where it was swept from *Carex* dominated marsh and on another of the Whitlaw Mosses complex, Murder Moss, in 1980. In 1988, Falk found specimens in the Norfolk Broads in mixed, rich fen around small pools, and a number of specimens were taken (at several sites in the Broads) by the Dipterists summer field meeting in 1993. David Clements has also taken a single specimen in Gloucestershire and Ivan Perry recorded it from Wicken Fen in 1997. Adults seem to occur late in the year (August to October) and then again in the early spring (peak at Woodbastwick Fen in late March in 1991, but very scarce by summer). **RDB2** according to Falk (1991). It has been recorded from 6 hectads in total and from 3 since 1990. Distribution map.

World distribution: Palaearctic: Austria, Czech Republic, Finland, Lithuania, Poland, Sweden; Russia: northwest European region.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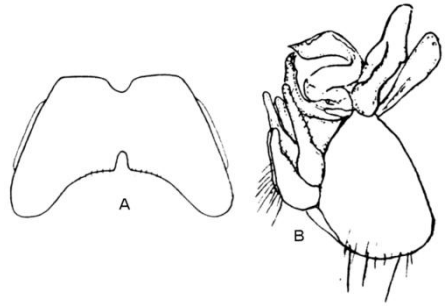
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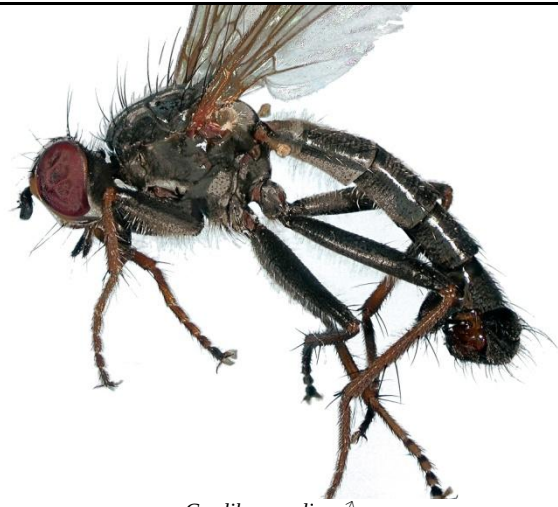
Cordilura (*Cordilurina*) *albipes* ♀



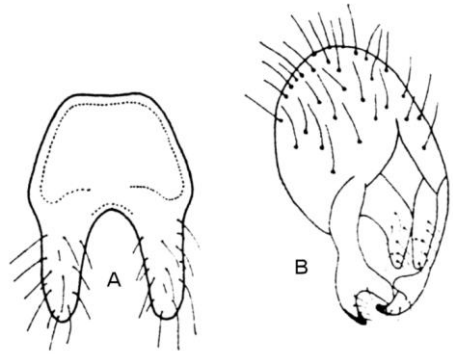
Cordilura pudica ♂

The immature stages of American *Cordilura* develop in the culms of *Carex*, *Scirpus* and *Juncus* as far as is known according to Wallace & Neff (1971) who only include one species which occurs in Britain (*C. pudica*) in their account of species from the eastern USA. They found that females prefer to oviposit on new, small tender shoots. Nelson (1998) reports finding larvae and pupae of *C. picticornis* in the stems of *Carex aquatilis* growing beside the River Spey. Otherwise, the larvae of British species are unknown although adults are generally found in situations that suggest similar larval habits. The male genitalia provide useful characters in confirming the identity of species and most British species are illustrated by Hackman (1956).

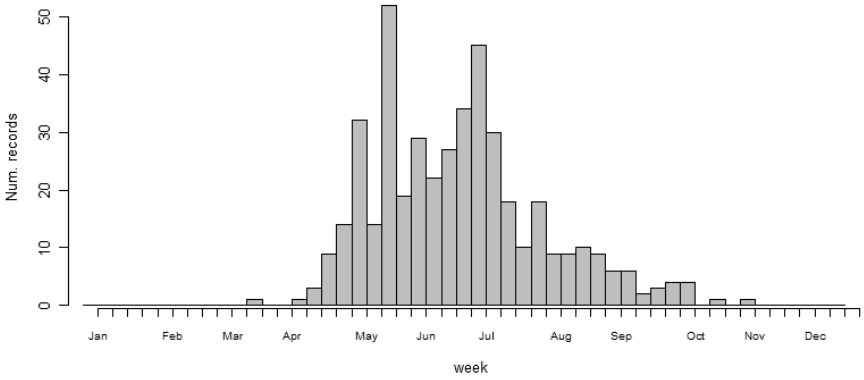
Quite a small and distinctive species which has the legs, sides of the thorax and abdomen a pale creamy yellow colour contrasting with the shining black thoracic dorsum, although paler specimens with little or no black markings occur. This does not look like other *Cordilura* species and is superficially more similar to a *Parallelomma* and has been classified in this genus in the past (e.g. Collin, 1958). Wing length: ♂ 3.6 - 4.3 - 4.9 mm (12); ♀ 4.0 - 4.7 - 5.3 mm (11).

Not uncommon in damp, shady places and Collin (1958) records it north to Loch Maree, and it has been found subsequently to the north coast of mainland Scotland. It can be swept from damp grassland in marshes and fens, from trees and bushes near water and sometimes in damp woodland. Speight (1983) states that it is most often encountered in poorly drained woods. Adults from May through the summer. It has been recorded from 257 hectads in total and from 196 since 1990. Distribution map.

World distribution: Palaearctic: Andorra, Belgium, Corsica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: northern and central European.



Cordilura albipes: A: male 5th sternite; B: male genitalia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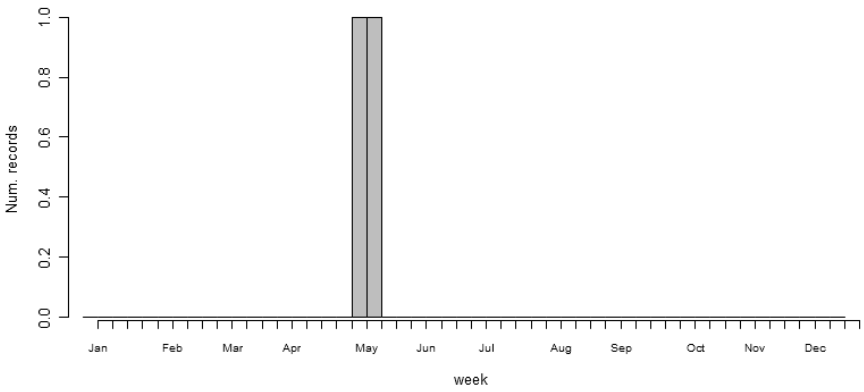
***Cordilura* (*Scoliaphleps*) *hyalinipennis* (Ringdahl, 1936)** Return to key

This species was discovered in Britain by J.M.Nelson on 15.v.1957 at Holkam Moss, Lancashire in *Carex* and *Juncus* dominated fen where he also found specimens on 23.v.1964 and 15.v.1965. These observations were published by Nelson (1965) under the name *C. (S.) ustulata*. Specimens were later examined by J.R.Vockeroth who identified them as *C. (S.) hyalinipennis* and true *C. (S.) ustulata* were subsequently found in the Scottish Borders (Nelson, 1992). These two species are readily separated from other *Cordilura* by their almost bare arista and well developed black marking at the wing tip, but are very closely related and, at various times in the past, have been considered as subspecies or synonyms. Nelson (1992), states that the two can be readily distinguished by their genitalia and by the hairs on the pteropleuron (bare in *C. ustulata* whilst *C. hyalinipennis* has a few, fine, erect, pale hairs - a character pointed out by Vockeroth). Wing length: ♀ 4.7 mm (1). **RDB1** according to Falk (1991). It has been recorded from 1 hectads in total and from 0 since 1990. Distribution map.

Nelson (1992) discusses the past confusion between these two species and concludes that true *C. hyalinipennis* has only been recorded elsewhere from Sweden.

World distribution: Palaearctic: Sweden.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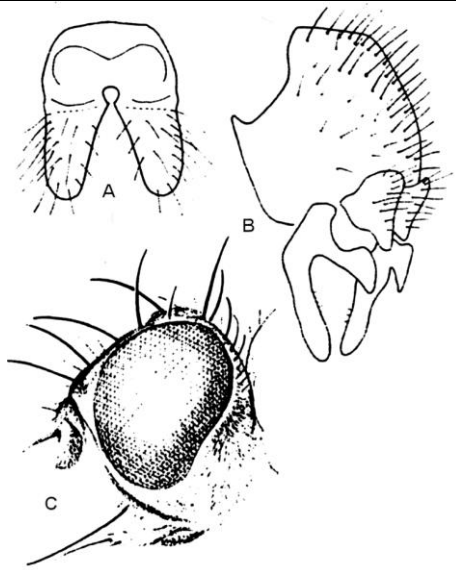
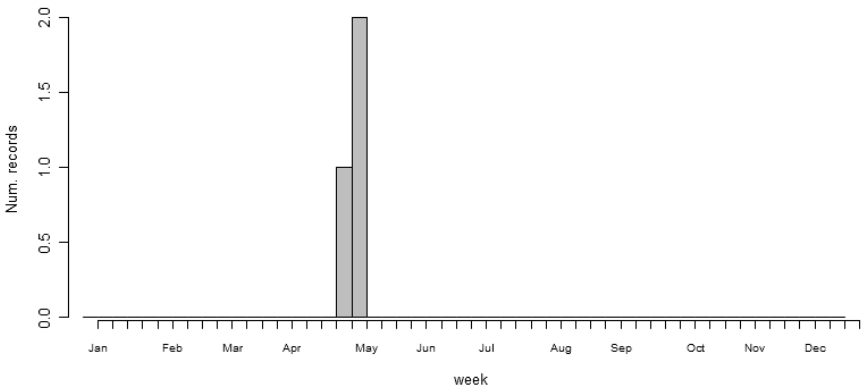
Discovered in May 1991 at Murder Moss, part of the Whitlaw Mosses NNR in Selkirkshire, by J.M.Nelson in *Carex* fen where a total of seven specimens were found on three visits between 8.v and 19.v (Nelson, 1992). Closely related to *C. (S.) hyalinipennis* and the differences are discussed under that species. Wing length: ♂ 5.6 mm (1); ♀ 5.6 mm (1). It has been recorded from 1 hectads in total and from 1 since 1990. Distribution map.

According to Nelson (1992) this is very much a northern species recorded in Europe most commonly from Finland and Lapland and, more widely, across northern Russia, Asia and Canada.

World distribution: Palaearctic: Belgium, Czech Republic, Estonia, Finland, Germany, Norway, Poland, Sweden; Russia: northern European and east Palaearctic; **Nearctic**: Canada, USA.



Cordilura ustulata: A: male 5th sternite; B: male genitalia; C: head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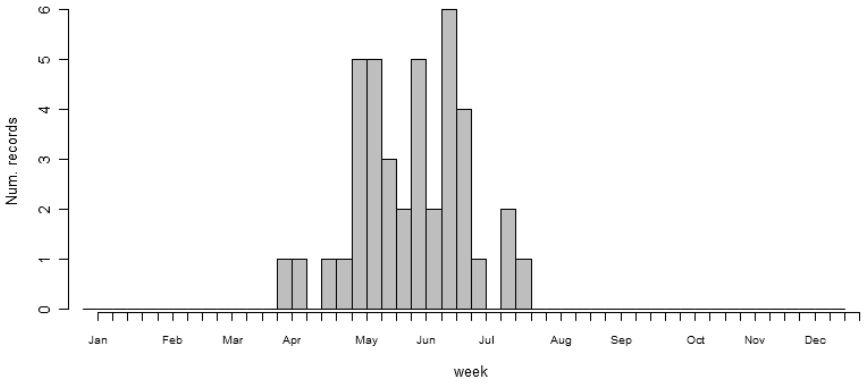
The most reliable way of distinguishing this large black species from the common *C. pubera* is by examination of the male genitalia using the features described by Collin (1958). The arista is rather less densely and shorter haired than *C. pubera* and there are 1-2 pairs of fine, but distinct, presutural acrostichals bristles whereas *C. pubera* usually has no presutural acrostichals bristles (although there is a specimen in the collection of the Natural History Museum with a single presutural acrostichals present). Wing length: ♂ 6.4 - 6.5 - 6.6 mm (2); ♀ 6.9 mm (1).

This is a fenland species which has mainly been recorded from East Anglia (Cambs, Norfolk, Suffolk), where it was first found by Collin in the 1950s. It can be reasonably numerous at localities in the Norfolk Broads and at pingo sites in North Norfolk. However an older specimen from Crymlyn Bog has been located in the collection of the Natural History Museum (collected Yerbury, June 1906). Several were found in Herefordshire during the Dipterists Spring Meeting in 2006, Roy Crossley found it at Askham Bog in 2012-13, Alan Stubbs has found it in western Scotland and Speight (1983) records it from two localities in Ireland. These records suggest that it is more widespread and could easily be overlooked because of its similarity to *C. pubera*. Adults are recorded in May and June. **RDB3** according to Falk (1991). It has been recorded from 20 hectads in total and from 12 since 1990. Distribution map.

World distribution: Palaearctic: Czech Republic, Denmark, Estonia, Germany, Ireland, Netherlands, Russia: central European regions.

Cordilura aemula male genital capsule

Cordilura aemula Male paralobes in profile (compare with *C. pubera)*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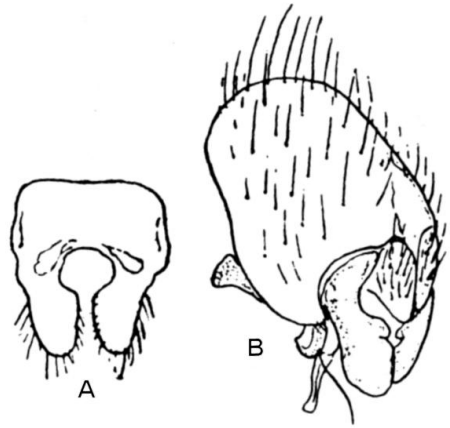
Cordilura atrata (Zetterstedt, 1846)

Return to key

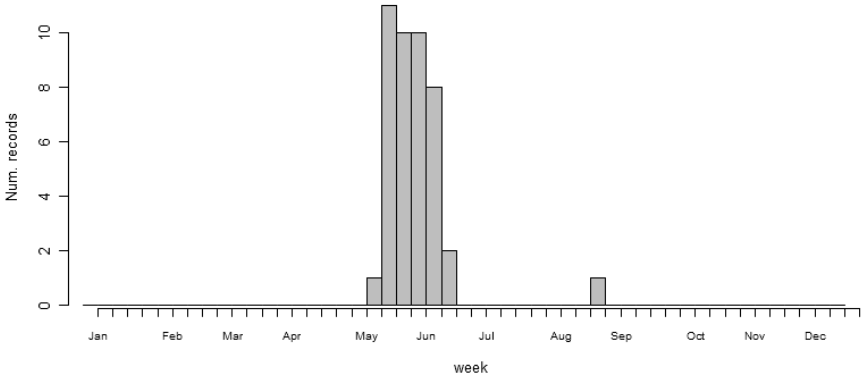
Quite a small black fly with completely black legs. Whole body thinly dusted with the black ground colour showing through especially on the top of the thorax and abdomen. Face and jowls more densely dusted. Front of the frons reddish. Palps black. Halteres yellow. Wing length: ♂ 3.8 - 4.2 - 4.6 mm (9); ♀ 3.9 - 4.5 - 4.8 mm (18).

A scarce species which appears to be mainly confined to the Central and Northern Highlands of Scotland (Inverness, Perth, Aberdeen, East Ross, Sutherland), but with a single English locality: Moorhouse NNR (number of records in 1960s). Locally abundant at some localities in Speyside and with numerous records in the Killin district, Perthshire in the 1930s. Adults are usually found in wetland situations such as fens, marshes and streamsides with records up to 910m. Most records are for June and July (but extremes 20.v - 3.ix). **Notable** according to Falk (1991). It has been recorded from 21 hectads in total and from 11 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Finland, France, Norway, Slovakia, Sweden; Russia: Karelia, north European, east Palaearctic; **Nearctic**: Canada, USA.



Cordilura atrata: A: male 5th sternite; B: male genitalia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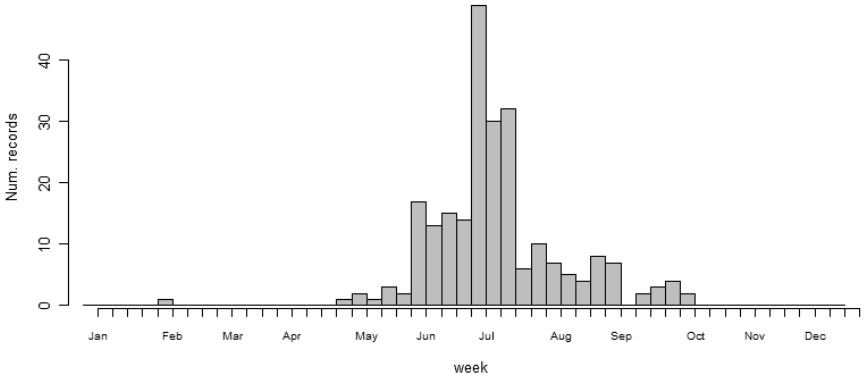
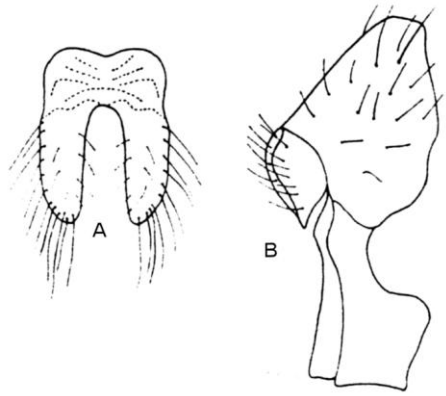
***Cordilura ciliata* (Meigen, 1826)** Return to key

This is a large black species with a conspicuous silvery areas of dusting on the face around the lower margin and hind corner of the eye, another over the front coxa and a third on the sternopleuron above the mid coxa. The rest of the pleura are more lightly grey dusted, but when viewed from in front with the light behind, the whole face and side of the thorax looks white, contrasting strongly with the top of the thorax and abdomen which are all shining black. The strong bristle on the outside of the third antennal segment below the insertion of the arista is a distinctive feature. All femora and tibia black. Wings often yellow tinged towards the front margin and apex. Wing length: ♂ 6.4 - 6.8 - 7.2 mm (7); ♀ 5.9 - 6.9 - 7.8 mm (5).

Not uncommon and usually found in fens and marshes where it can be swept from long vegetation, especially beds of Common reed, *Phragmites* and stands of *Carex*. It has been recorded from 136 hectads in total and from 91 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European regions.





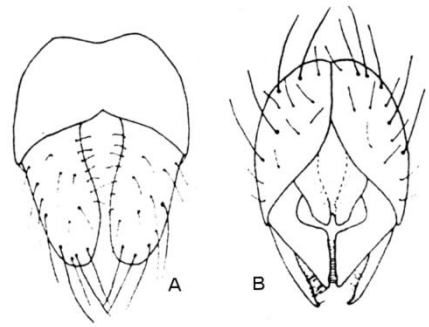
Cordilura ciliata: A: male 5th sternite; B: male genitalia

***Cordilura impudica* (Rondani, 1866)** Return to key

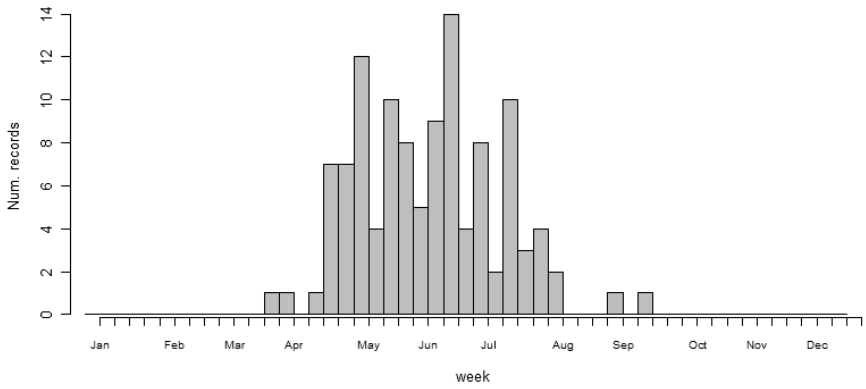
A large species. Palps yellow at the base. Body black with grey dusting, especially on the thoracic pleurae. The disk of the thorax and the abdomen are thinly dusted with the black ground colour shining through. Has only two scutellar bristles and the wings are often yellow tinged and distinctly darkened towards the apex. Femora black, tibia and tarsi yellow. Wing length: ♂ 5.3 - 6.1 - 6.5 mm (16); ♀ 6.1 - 6.8 - 7.6 mm (15).

Collin (1958) says it is not an uncommon species in the south and Stubbs & Chandler (1978) regard it as frequent in *Carex* beds along with *C. ciliata*. It has been recorded from 80 hectads in total and from 38 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, France, Germany, Hungary, Ireland, Italy, Netherlands, Poland, Slovakia, Russia: southern European regions, Kazakhstan.



Cordilura impudica: A: male 5th sternite; B: male genitalia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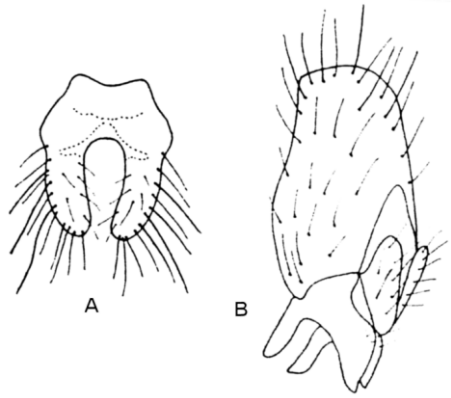
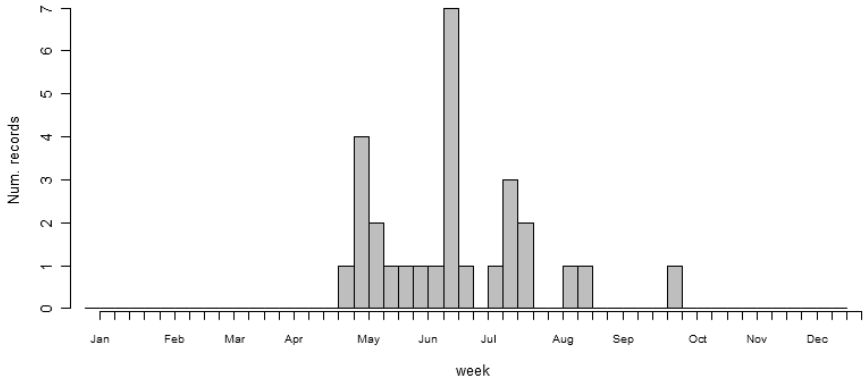
Shining black species with mostly black legs, only paler on the knees and tarsi. Wing length: ♂ 5.3 mm (1); ♀ 5.6 - 5.6 - 5.6 mm (2).

Rare on damp heathland and in marshes in southern England (Surrey, Middlesex, Suffolk, Cambs, Hereford), although there is are records from Cumbria, Yorks and Denbigh. It seems to have been reasonably frequent in Herefordshire in the past, but there are very few recent records, although a specimen was taken at Moccas Park during the Dipterists Spring Field Meeting in 2006. The few records with full dates seem to be either in May (13.v - 2.vi) or in the period from July to late August. **RDB3** according to Falk (1991). It has been recorded from 14 hectads in total and from 4 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia; Asia.



Cordilura picipes: A: male 5th sternite; B: male genitalia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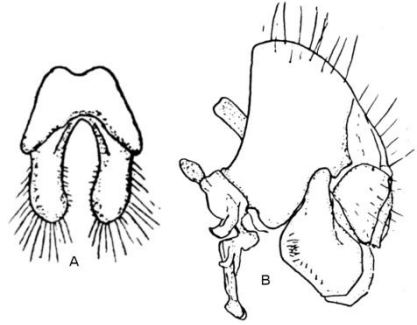
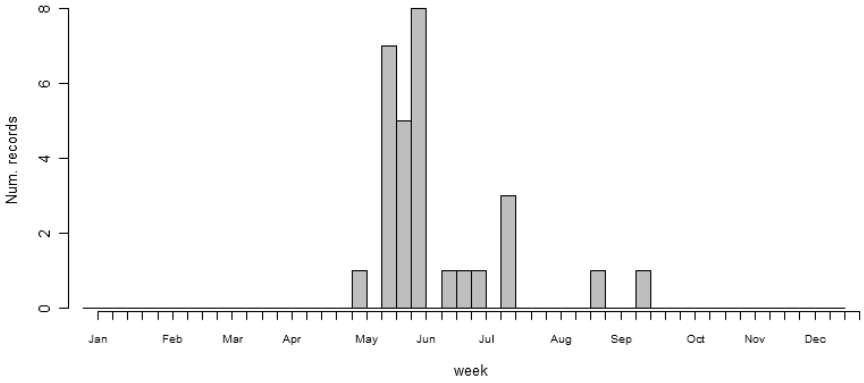
This is *C. similis* Siebke of Collin (1958). The palps are a pale creamy yellow and the frons, face and tip of the second antennal segment are also yellow. The thorax and abdomen are black and thinly dusted with the ground colour shining through. Two or more fine setulae are present on the upper side of the wing vein R_1. Wing length: ♂ 4.3 - 5.3 - 6.1 mm (29); ♀ 4.0 - 5.8 - 6.6 mm (12).

A rare northern species found in marshes and fens in upland areas. Mainly recorded from the Central Highlands of Scotland where it is locally abundant at a number of localities along the River Spey from Insh to Grantown. Nelson (1998) found larvae and pupae in the stems of *Carex aquatilis* growing beside the River Spey just upstream of Grantown-on-Spey. The mines extended for about 10cm above the water surface and were filled with brown frass. Pupae were found at the top of such workings. There are two records from northern England: Holker Moss, Lancashire (1969) (although this is probably J.M.Nelson's record. originally determined by him as this species, but which turned out to be *C.* (*S.*) *hyalipennis*) and Keld Head Spring, Yorks (1987). (There is also a very dubious record from Lyndhurst in the New Forest). Most records are for June, but extending to 23.vii. Nelson suggests that the species is univoltine, with eggs laid in July, hatching after about 7 days and pupating by mid-September. Adults then emerge about the following June. **RDB3** according to Falk (1991). It has been recorded from 10 hectads in total and from 4 since 1990. Distribution map.

World distribution: Palaearctic: Finland, Sweden, Russia: northern European regions; **Nearctic**: Canada, USA.



Cordilura picticornis: A: male 5th sternite; B: male genitalia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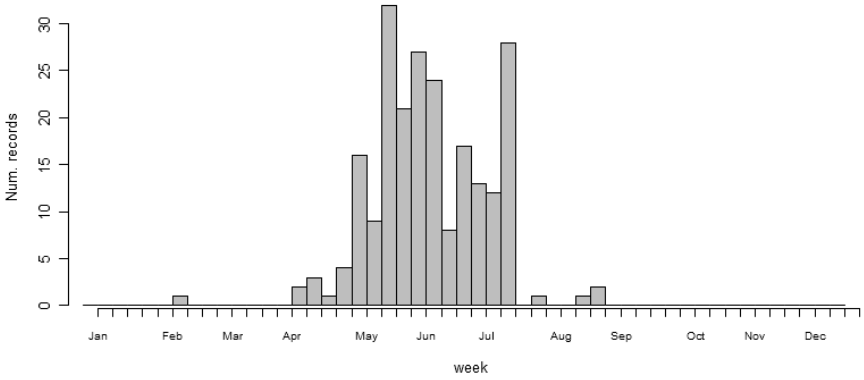
***Cordilura pubera* (Linnaeus, 1758)** Return to key

Readily distinguished by its 4 scutellar bristles and the black spot near the base of the underside of each tarsal segment (examine carefully from behind). Body black, heavily grey dusted with the black ground colour shining through only on the sides of the thoracic dorsum and towards the base of the abdominal tergites. Femora black. Tibia and tarsi yellow. Front of the frons, sides of the face and mouth margin yellow. Frons heavily whitish-grey dusted, contrasting with the black orbits. Palps black. Wing length: ♂ 5.6 - 6.1 - 6.6 mm (19); ♀ 5.5 - 6.2 - 6.7 mm (10).

Very similar to the rare *C. aemula* - see the discussion under that species. This is a large and common black species which can be found in damp places, usually being swept from long vegetation in marshy situations. It has been recorded from 125 hectads in total and from 94 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, Switzerland; Russia: northern European regions, East Palaearctic.

Cordilura pubera: A: male 5th sternite; B: male genitalia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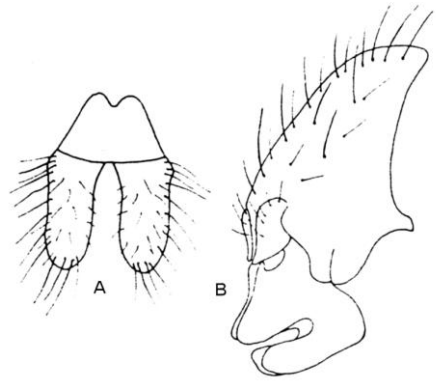
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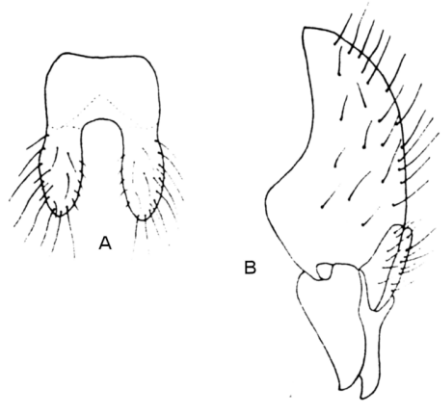
Cordilura pudica (Meigen, 1826)

Return to key

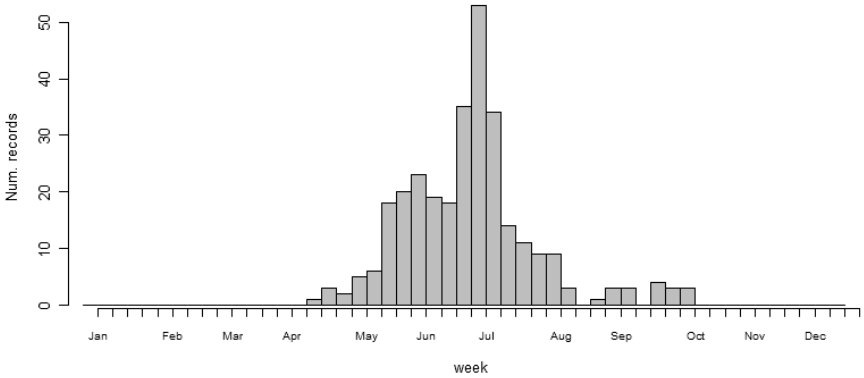
Most similar to the rarer *C. rufimana* and not easy to distinguish - the male genitalia should be checked. Wing length: ♂ 4.6 - 5.8 - 6.9 mm (45); ♀ 5.0 - 6.2 - 7.3 mm (31).

A common species in wetlands and probably the most frequently encountered member of the genus and often abundant, especially in beds of *Carex*. Speight (1983) states that it is the most widespread *Cordilura* in Ireland. Collin (1958) found in "not uncommon" in Scotland, but also in Suffolk and Warks. It has been recorded from 145 hectads in total and from 100 since 1990. Distribution map. Adults May to August, but most records in May and June.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Lithuania, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland, Russia: northern European regions; **Nearctic**: Canada, USA.



Cordilura pudica: A: male 5th sternite; B: male genitalia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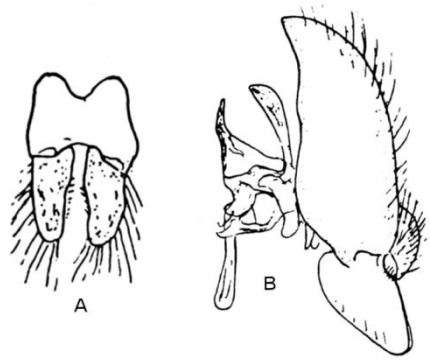
The fore- and mid- tibia are clear yellow, whilst the hind tibia is dark brownish with the base narrowly, and the apex more broadly yellow, although I have seen specimens with very dark hind tibia. The darker colouration is most noticeable on the dorsal surface and the colour difference, compared to the anterior four legs, is not all that striking in some specimens in the collection of the Natural History Museum. Hackman's key (1956) places this in the group of species with dark hind tibia, which leads me to think that this material perhaps needs re-examination! The setulae above vein R_1 are quite variable, being dark and readily visible in some specimens (although always fine) but pale and far from conspicuous in others whilst *C. pubera* not infrequently does have 1-2 distinct setulae on this vein. Consequently, extreme care is necessary in separating this species and the male genitalia should be examined. Wing length: ♂ 4.4 - 5.2 - 5.9 mm (41); ♀ 4.9 - 5.2 - 5.6 mm (20). **Notable** according to Falk (1991).

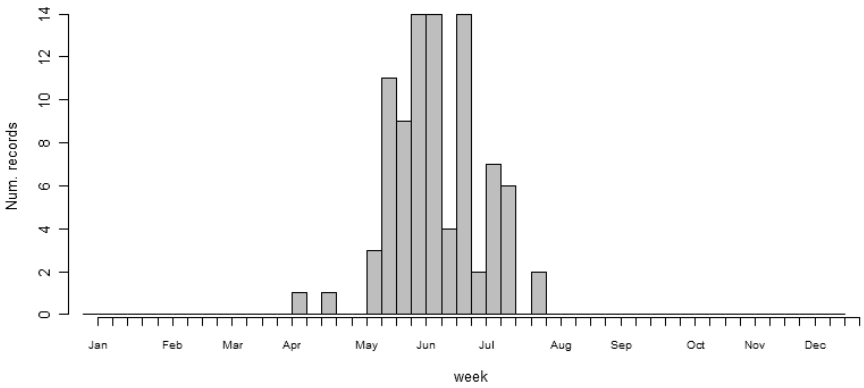


Cordilura rufimana: A: male 5th sternite; B: male genitalia

An uncommon northern species found in marshes and fens besides rivers and standing water in upland situations, but often abundant where it occurs. Hackman (1956) describes it as "Especially abundant on wet, treeless *Sphagnum* bogs". Mostly recorded from Scotland, especially from the Speyside area although extending northwards to Sutherland, but also from northern England (Yorkshire, Lancashire, Cheshire, Cumbria) and North Wales (Flint). Irwin (1974) records it from Londonderry, Ireland. There is also a dubious record from Oxfordshire. It has been recorded from 43 hectads in total and from 30 since 1990. Distribution map. Most records are for May and June (but extending to 19.vii).

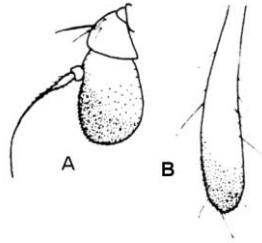
World distribution: Palaearctic: European Alps, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Netherlands, Norway, Poland, Slovakia, Sweden; Russia:

northern European regions, eastern Palaearctic; **Nearctic**: Canada, USA.



Cosmetopus dentimanus ♂

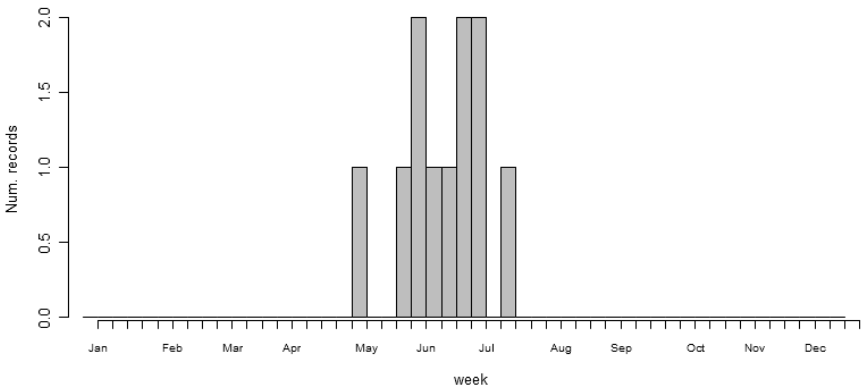
Adults resemble *Chaetosa punctipes* in being small, grey and pale legged, but the single sternopleural bristle, lack of pointed tip to the third antennal segment and presence of a bright orange frontal stripe should serve to distinguish it. The male front legs are distinctive with a swelling on the underside of the femora that fits into a series of depressions on the tibia. Anderson (1974) reviews the Northern European members of this genus which all have similar modifications to the front legs. Wing length: ♂ 4.7 - 5.3 - 5.8 mm (3); ♀ 4.4 - 4.6 - 5.0 mm (4).



Cosmetopus dentimanus: female
A: antennae; B: palp

This species was added to the British list by Chandler and Stubbs (1974, 1975) on the basis of a series of specimens taken on the banks of the River Test, Hampshire in 1970, 1971, 1974, 1975, 1986 and 1994 from late June to early July. The flies were swept from long vegetation and the foliage of riverside trees beside the small calcareous river running through fen and carr. In 1995 Martin Drake found a further specimen beside the River Itchen only a few kilometres away. This was swept from vegetation bordering ditches in an old water meadow (Drake & Ball, 1996). It was found on the River Monnow in south Wales during a Dipterists field meeting in 1997 and again, relatively nearby on the River Usk, in 2011. Although the larvae of this species are unknown, related species have free living, predatory, aquatic larvae. Anderson (1974) lists several records from Sweden and one from Norway and Gorodkov (?) gives its distribution as "north of Western Europe and Switzerland". **RDB1** according to Falk (1991). It has been recorded from 6 hectads in total and from 5 since 1990. Distribution map.

World distribution: Palaearctic: Czech Republic, Finland, Germany, Norway, Sweden, Switzerland; Russia: northern European regions.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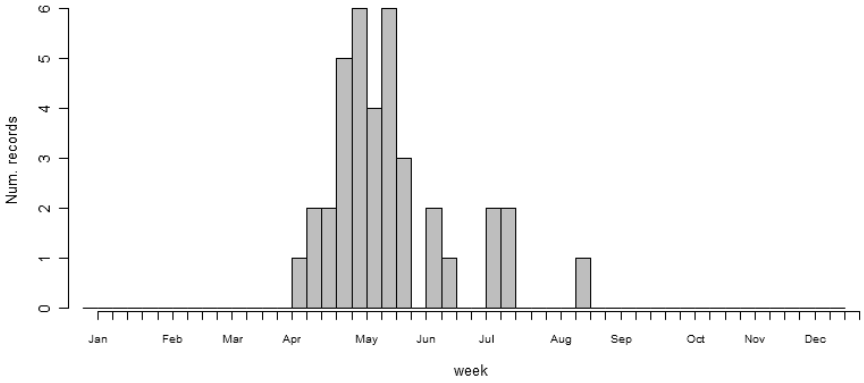
A smallish, elongate, shining black fly. Frons yellow, face and jowls white. Palpi dark. Propleuron and front coxa white dusted. Halteres yellow. Femora dark except very narrowly at the knees. Tibia yellow, tarsi brownish. Wings unmarked with yellowish brown veins. Wing length: ♂ 3.5 - 3.8 - 4.0 mm (6); ♀ 3.6 - 4.0 - 4.5 mm (12).

The larvae mine the leaves of orchids forming a linear mine which extends from the egg which is deposited on the upper surface of a leaf. Marsh orchids (*Dactylorhiza* spp.) are the most frequent host plant, but Hackman (1956) records it from *Plantanthera* and *Orchis*. I have found it in poor fen and moorland situations in Scotland, including at high altitude on Cairngorm (approx. 915m), where Heath spotted orchid (*Dactylorhiza maculata*) was abundant. Widespread but scarce in damp grasslands. Irwin (1975) records it from Ireland and notes a record of a marsh orchid in a Belfast garden infested with large numbers of larvae. It has been recorded from 36 hectads in total and from 25 since 1990. Distribution map. Adults fly in June and July.

World distribution: Palaearctic: Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Lithuania, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: European regions and eastern Palaearctic; Asia, Mongolia; **Nearctic**: Canada, USA (Alaska).

Delina nigrita: A: male 5th sternite; B: male genitalia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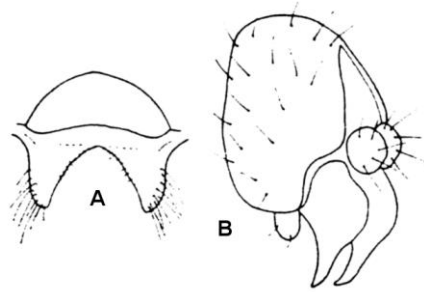
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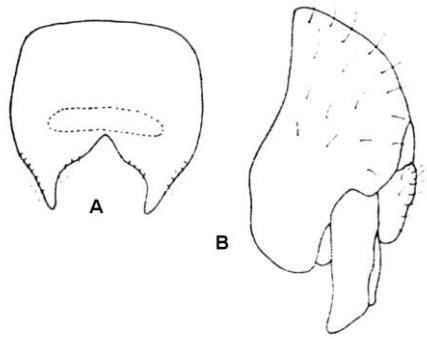
***Ernoneura argus* (Zetterstedt, 1838)** Return to generic key

A small, brown, bristly fly with wing markings that make it very distinctive. The fore margin is brownish and the wing membrane has numerous round brown spots placed adjacent to the main veins and mostly with a veinlet, or at least a trace of one at the centre. Occiput, thorax and abdomen brownish yellow. Frons and basal antennal joints red-brown. Face and jowls dusted pale grey. Palps yellowish and elongate. Proboscis shining black. Thoracic dorsum with shining black stripes. Wing length: ♂ 4.4 - 5.2 - 5.9 mm (2); ♀ 5.1 - 5.3 - 5.7 mm (4).

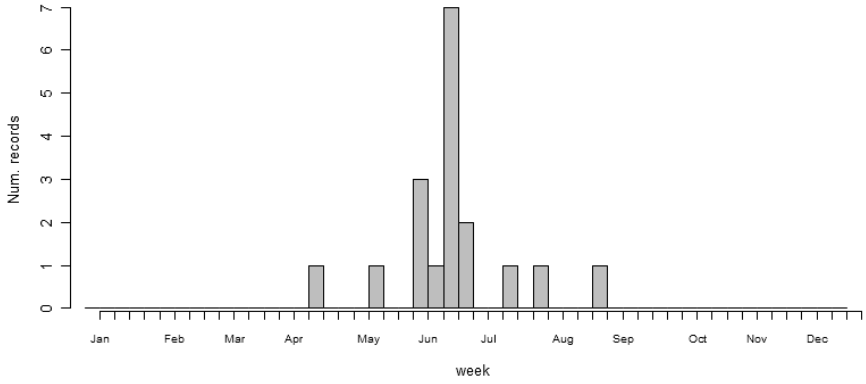
Found beside oligotrophic lochs with shingle or boggy edges. Adults 'skate' low over the water surface. This is a species of tundra lake shores and is recorded from very few localities in Britain. It was first discovered at Loch Garten (Sharp, 1910) and this remains its best known locality (including Loch Mallachie - on the same reserve) and one where it can be found in abundance (records from 1906, 1910, 1935, 1967, 1982, 1988, 1991, 2008). Sharp also reports that Yerbury had previously found it near Thurso and Collin (1958) adds Loch Einich, Speyside (Collin's specimen dated 1933). There are specimens in the collection of the Natural History Museum from Loch Etchachan, Aberdeenshire (taken by Coe in 1951) and a small lochan on Lewis (caught by Bloomfield & Vardy in 1962) and a published record from a lochan near Loch Ericht, Perthshire (Horsfield, 1989). A record from a small lough on Harbottle Moors, Northumberland in 1980 was submitted to the ISR by Ian Wallace (and the specimen seen by myself). Adults in May to August. This appears to be a widespread, but decidedly northern, Holarctic species which Vockeroth (1987) describes as "Arctic" in North America and Gorodkov (?) lists from Siberia, Taimyr and north of Western Europe. **RDB2** according to Falk (1991). It has been recorded from 15 hectads in total and from 11 since 1990. Distribution map.

The larvae is aquatic and its biology is described by Nelson (1989): Adults brought into captivity readily mated and females laid eggs when provided with moss containing caddis egg masses. Newly hatched larvae congregated on the egg masses where they appeared to feed on the surface of the jelly, rather than on the eggs themselves. Larvae were not successfully reared in captivity, but mature larvae were found in the field amongst water washed roots of a Scot's pine projecting into the edges of Loch Mallachie. This substrate supported little other life apart from tipulid larvae and oligochaete worms. Available adults records are all date from June and July.

World distribution: Palaearctic: Finland, Lithuania, Norway, Poland, Sweden; Russia: European regions and eastern Palaearctic; **Nearctic**: Canada, USA (Alaska).



Ernoneura argus: A: male 5th sternite; B: male genitalia



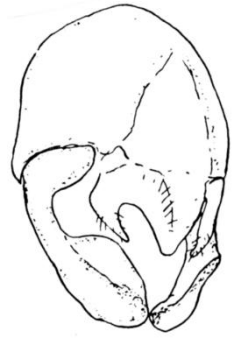
Gimnomera tarsea ♂

♀

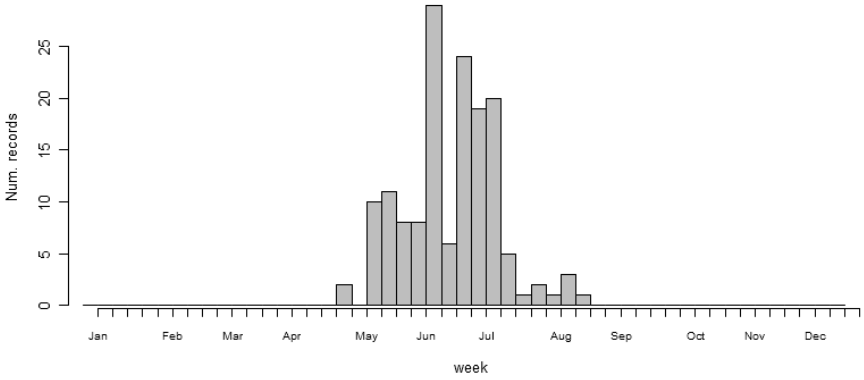
A shining brown species which could readily be mistaken for an acalyptrate belonging to a family like Psilidae. The whole body is shining brown with the third antennal segment, proboscis, tarsi and upper part of the occiput darkened. All tergites have a darkened hind marginal band. Palps rather long, very thin and cylindrical. Both the male genital capsule and the female ovipositor are large and conspicuous. Wing length: ♂ 3.3 - 3.9 - 4.4 mm (5); ♀ 3.6 - 4.3 - 4.7 mm (23).

Larvae live in the seed capsules of marsh lousewort (*Pedicularis palustris*) (Chandler, 1975) and adults can be found by sweeping the plant in June and July (latest 23.viii). The plant is most frequent in northern and western Britain, typically in moorland bogs, but also on fen peat in more lowland situations, and the fly follows this distribution with most records from Scotland, northern England, North Wales and the south west peninsular, but also in the fens of East Anglia. Chandler (1974) also reports old records from Ireland. **Notable** according to Falk (1991). It has been recorded from 84 hectads in total and from 47 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Denmark, Estonia, Finland, Germany, Ireland, Netherlands, Norway, Poland, Sweden; Russia: northern European regions.



Gimnomera tarsea: male genitalia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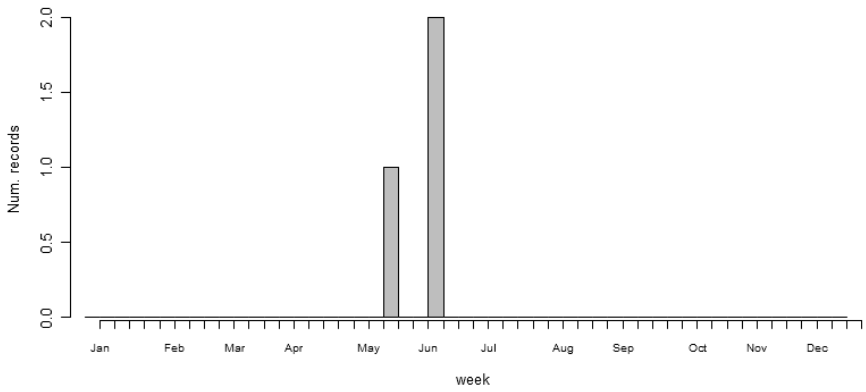
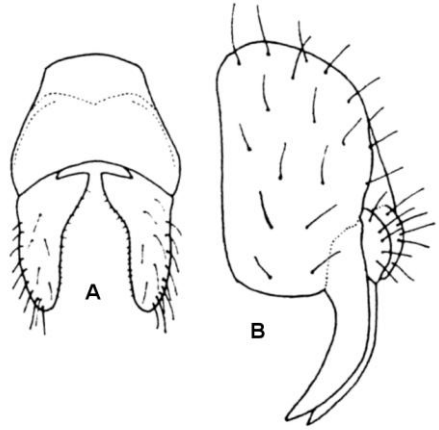
A small greyish species with a white dusted face and palps and a very distinctive head shape. The frons projects forward, the antennae are large and brown, and the arista is thickened and geniculate. The narrow reddish yellow mid-frontal stripe contrasts with the black orbits. The wings are inconspicuously marked being narrowly brownish along the costal margin and with the cross-veins somewhat clouded, especially in the male. The female has a well developed ovipositor similar in appearance to *Gimnomera*. Wing length: ♂ 4.5 mm (1); ♀ 4.4 mm (1).

Gonatherus planiceps: A: male 5th sternite; B: male genitalia

Found in boggy flushes and wet moorland at high altitudes (600 to 1000m) mainly in the Central and Northern Highlands of Scotland, but also from Moorhouse NNR in the Pennines. Larvae unknown. The female ovipositor suggests that it may be associated with a plant in some way. Adults fly early, with most records in May, extending into June (which probably means it is under-recorded, given the paucity of Dipterists at high altitude this early in the year!). Considered a rare boreo-alpine species in Northern Europe and also occurs in North America. **RDB3** according to Falk (1991). It has been recorded from 10 hectads in total and from 2 since 1990. Distribution map.





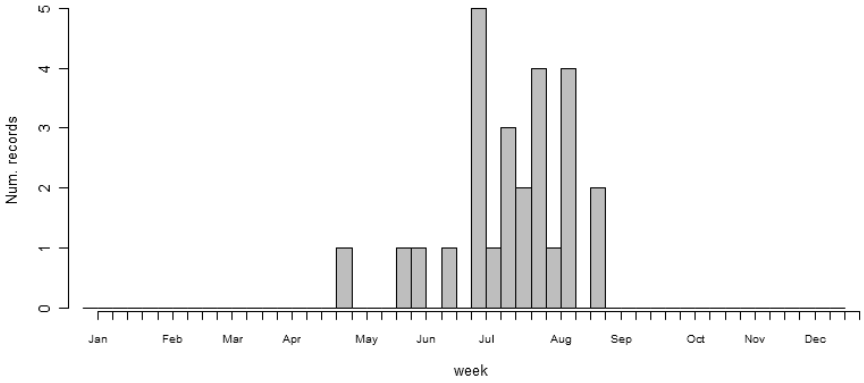
World distribution: Palaearctic: Czech Republic, Estonia, Finland, Germany, Hungary, Italy, Norway, Poland, Slovakia, Sweden; Russia: northern European regions, eastern Palaearctic, Kamchatka; **Nearctic**: USA (Alaska).

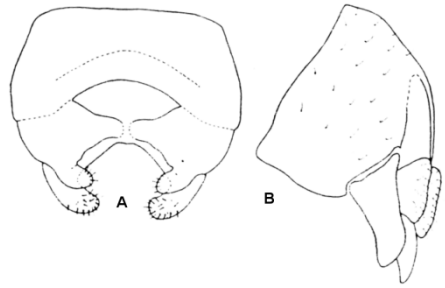
***Hydromyza livens* (Fabricius, 1794)** Return to generic key

An elongate, dark coloured fly with very reduced head and thoracic bristles. The ocellar bristles are absent and the frontal orbitals are very short. Frons reddish, face jowls and palps yellow. Thorax and abdomen dark grey. Thorax with two brownish stripes along the lines of the very short dorsocentrals. Femora dark, but with yellow tips and tibia also dark with yellow knees and apexes. Tarsi dark, halteres and wing veins all dark. Wing length: ♂ 6.5 - 6.7 - 6.8 mm (2); ♀ 6.7 mm (1).

The larvae mine the stems and leaves of water lilies (*Nuphar*, *Nymphaea*) and Smith (1989) illustrates the mines. Adults are generally found running about over the surface of lily pads. This habit makes them hard to approach. They are also quite alert and can be challenging to catch! These factors may account for the scarcity of records, although not hard to detect by searching for mines on the lily pads using binoculars. Recorded from southern and eastern Britain and can be quite abundant in slow moving rivers and larger ditches. They are certainly widespread and abundant on water courses through the East Anglian fens and also on some rivers in the New Forest. It has been recorded from 24 hectads in total and from 20 since 1990. Distribution map.

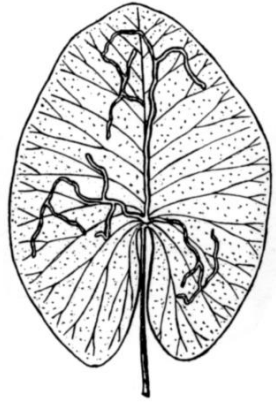
World distribution: Palaearctic: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Lithuania, Netherlands, Norway, Poland, Sweden, Switzerland; Russia: northern European regions.





Hydromyza livens: A: male 5th sternite; B: male genitalia

Mines of *Hydromyza livens* on a lily pad



Leptopa filiformis Zetterstedt, 1838

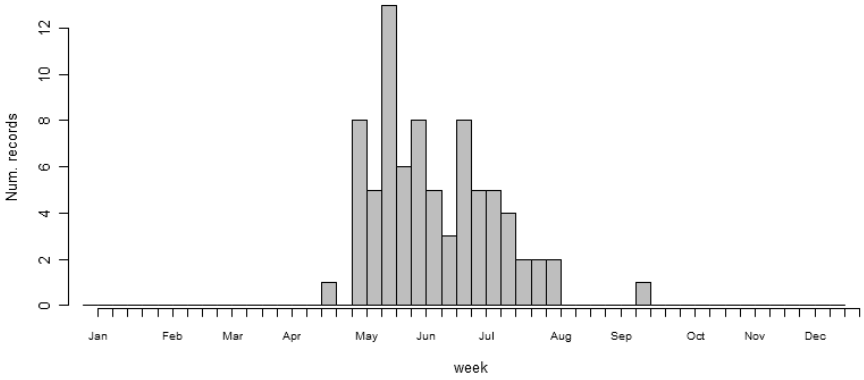
Return to generic key

A smallish pale yellow fly with a superficial resemblance to an acalyptrate, such as *Lyciella spp.*, sometimes with brownish patches but without dusting. Unlike all other British members of the family, it lacks long fine hairs on the ventral part of the occiput. Palps short and yellow with a long terminal bristle. Legs entirely pale yellow, tarsi somewhat brownish. Abdomen frequently darkened (after death?) in dry preserved specimens. All strong bristles black. Wing length: ♂ 3.5 - 4.0 - 4.4 mm (13); ♀ 4.0 - 4.8 - 5.3 mm (11).

The larvae are unknown, but it is assumed to be a leaf miner like other members of the subfamily Delininae. Adults are usually found in damp woodland and carr. For example, it was abundant in captures from Malaise traps paced in carr woodland in Oxfordshire Fens. Widespread, local, but probably overlooked, and most often found by Dipterists searching for crane-flies. It has been recorded from 60 hectads in total and from 38 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European regions.

Leptopa filiformis: A: male 5th sternite; B: male genitalia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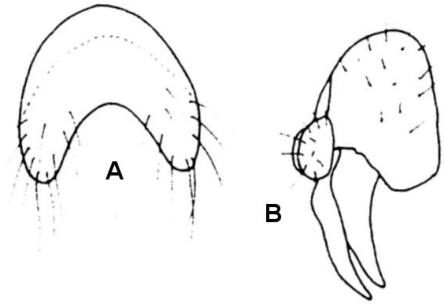
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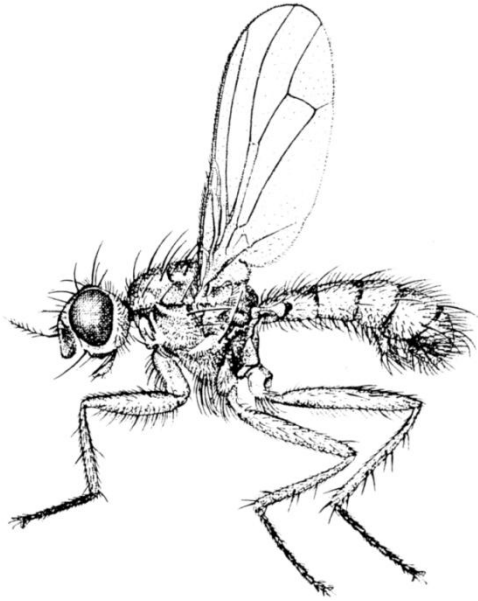
Megaphthalma pallida ♀

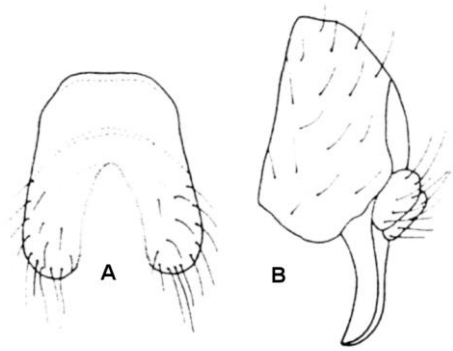


Megaphthalma pallida ♂

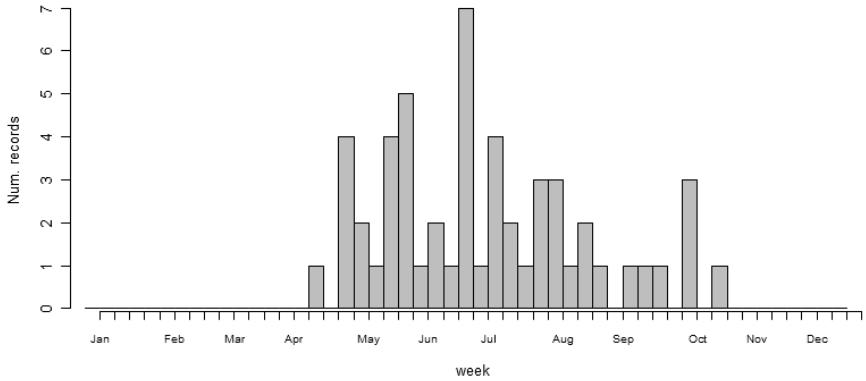
A reddish brown species with a somewhat greyish thorax with a pair of dark longitudinal dark stripes either side of the dorsocentrals rows. Abdomen pale with narrow, dark terminal bands on the tergites. Head pale except for the ocellar triangle. Antennae yellow with a long haired arista. Proboscis and palps both rather narrower than is usual in the family. Legs yellow. Wing length: ♂ 4.0 - 4.9 - 5.5 mm (15); ♀ 4.3 - 5.3 - 5.8 mm (13).

According to Collin (1958) it is widely distributed in wooded district, but recent experience suggests that it is rather infrequently encountered and usually in damp woodland. For example, it was caught in reasonable numbers by Malaise traps set in damp woodland on Oxfordshire Fens. The larva is unknown. It has been recorded from 54 hectads in total and from 34 since 1990. Distribution map.

World distribution: Palaearctic: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Netherlands, Norway, Poland, Romania, Slovakia, Sweden, Switzerland; Russia: European and eastern Palaearctic; **Nearctic**: USA.



Megaphthalma pallida: A: male 5th sternite; B: male genitalia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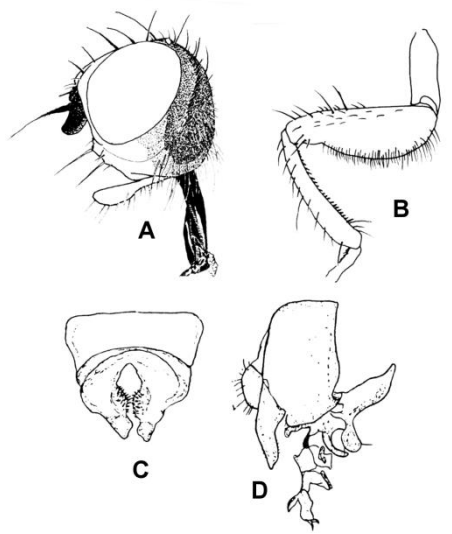
Microprosopa pallidicauda ♂

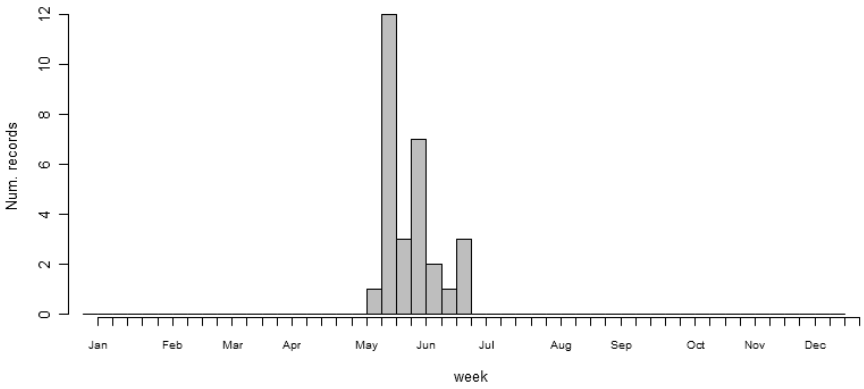
Face frons and jowls yellow and contrasting strongly with the dark grey dusted orbits. Occiput grey dusted. Proboscis shining black. Antennae small and dark. Palps strongly widened, globular and mainly yellow. Legs entirely yellow. Anterior wing veins yellow, darkening towards the apex and posterior margin. Wing length: ♂ 3.5 - 4.1 - 4.7 mm (52); ♀ 3.7 - 4.5 - 5.6 mm (19).

Found near water where it is associated with *Scirpus* and *Carex* species. British records appear to be confined to the Spey valley where it is locally abundant along the river from Insh to Grantown. Speight (1983) records it from Ireland. It is believed to belong to the group of species with predatory aquatic larvae. Adults fly in June and July. Hackman (1956) regards it as a high-boreal and boreo-alpine species. Also occurs in North America (Vockeroth, 1987). **RDB3** according to Falk (1991). The larva is unknown. It has been recorded from 6 hectads in total and from 4 since 1990. Distribution map.

World distribution: Palaearctic: Czech Republic, Finland, Ireland, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European and eastern Palaearctic; **Nearctic**: Canada, USA (Alaska).



Microprosopa pallidicauda: A: head; B: front leg; C: male 5th sternite; D: male genitalia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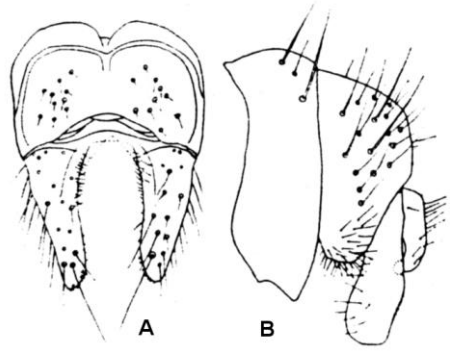
Nanna tibiella ♂

Sometimes known as 'Timothy flies', the larvae, where known, feed in the flower heads of grasses and some (*N. armillata* and *N. flavipes*) are regarded as pests of rye and Timothy grass, *Phleum pratense* (Smith, 1989). Adults usually fly early in the year.

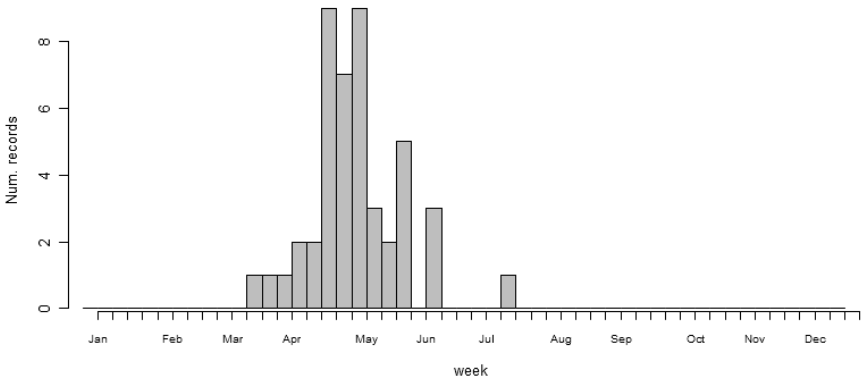
According to Collin (1958) the colour of the femora is variable, but the smaller number of black bristles beneath the front femora is distinctive. Wing length: ♂ 3.8 - 3.9 - 3.9 mm (2); ♀ 3.3 - 4.0 - 4.6 mm (3).

Widespread and common and sometimes reported as a pest of *Phleum* and rye grass meadows. It has been recorded from 38 hectads in total and from 28 since 1990. Distribution map.

World distribution: Palaearctic: Czech Republic, Denmark, Estonia, Finland, Germany, Lithuania, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European and eastern Palaearctic.



Nanna armillata: A: male 5th sternite; B: male genitalia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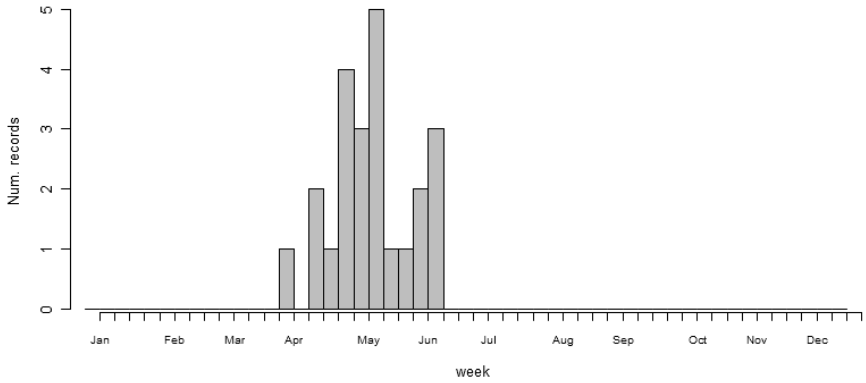
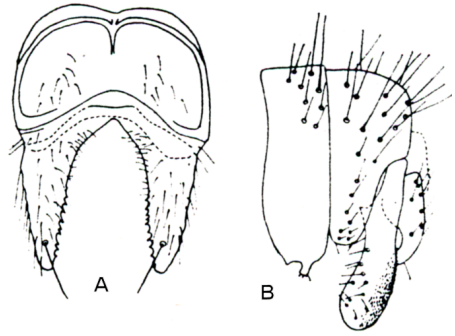
A scarce northern species found in damp grassland and unimproved meadows. Records are widely scattered in Scotland and it has also been found in Yorkshire, Warwickshire, Huntingdon, Surrey and Wiltshire. Adults April to June. Wing length: ♂ 3.5 mm (1); ♀ 3.6 - 3.9 - 4.1 mm (5). **Notable** according to Falk (1991). It has been recorded from 23 hectads in total and from 8 since 1990. Distribution map.

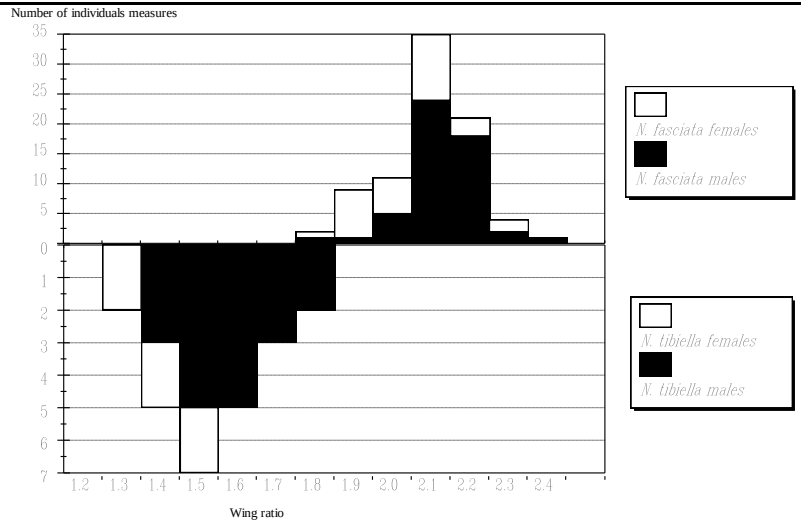
World distribution: Palaearctic: Czech Republic, Estonia, Finland, Germany, Norway, Poland, Slovakia, Sweden; Russia: European regions.



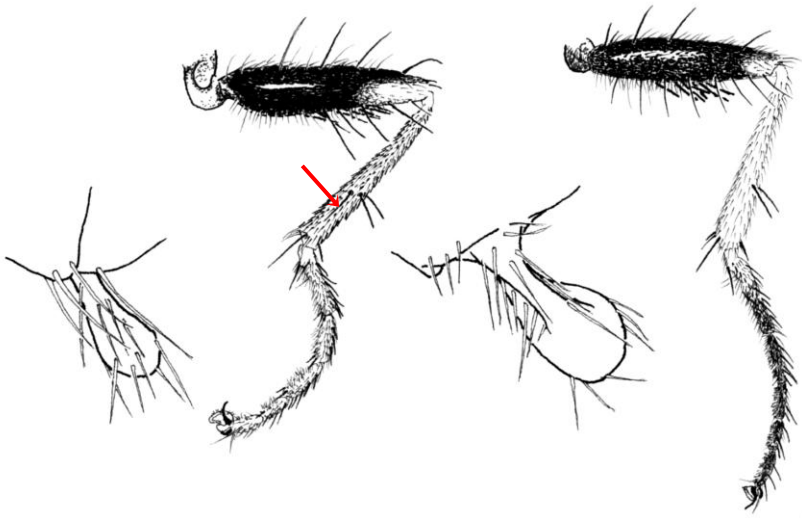


Nanna brevifrons: A: male 5th sternite; B: male genitalia

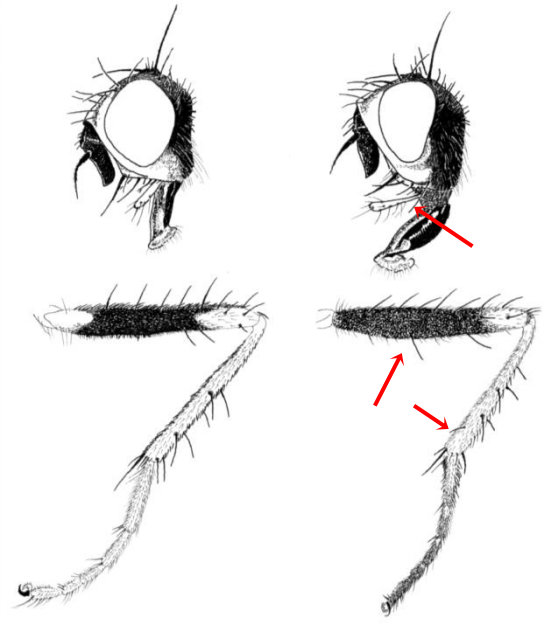
N. fasciata and *N. tibiella* are both common and are very similar. Collin (1958) points out that they were previously separated by the colour of the femora, with those of *N. fasciata* having a yellowish base and tip, whilst *N. tibiella* has entirely dark femora. He reports that this is not a reliable character (and I agree!). However, it is nevertheless useful to note that the legs of *N. fasciata* do generally appear lighter (and *N. tibiella* tends to have darker tarsi too), therefore it is a useful way of pre-sorting a mixed batch prior to detailed checking. Collin uses different characters for males and females, but a common character is the distance between the cross-veins. As the figures and histogram show, there is clearly a marked difference in the ratio between the distance between the cross-veins (*x*) and the length of the posterior cross-vein (*y*) (see annotations on the illustration of wing of *N. tibiella* in couplet 6 in the key to *Nanna*). This ratio is around 2 for *N. fasciata* and around 1.5 for *N. tibiella*.



Histogram comparing ratio of the distance between the cross-veins (*x*) to the length of the outer cross-vein (*y*) in each sex of *Nanna fasciata* and *N. tibiella*.



Front leg and appendage of 5th sternite of males *Nanna fasciata* (left) and *N. tibiella* (right)



Head and hind legs of *Nanna fasciata* (left) and *N. tibiella* (right)

Males: The difference between the chaetotaxy of the front tibia described by Collin (1958) is illustrated. This is quite an easy character, simply look for either 2 or 3 bristles in the middle of the shaft of the front tibia, and, even if the bristles have been lost, the scars stand out well against the yellow ground colour. However, a degree of care is needed, since 3 bristles are present in females of both species. The

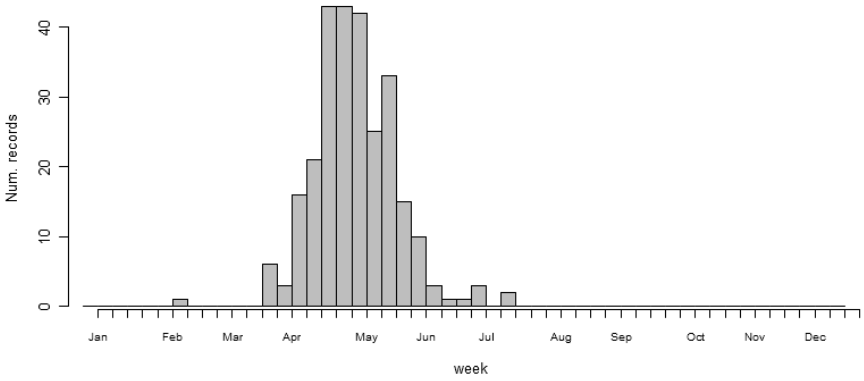
appendages to the 5th sternite are also quite noticeably different. In both species (and other members of the genus) these appendages are basically spoon-shaped and curve underneath the abdomen. In *N. fasciata* they are relatively narrow, whilst in *N. tibiella* they are much broader.

Females: Collin (1958) mentions the size of the antennae as a difference (smaller in *N. fasciata*), but this is rather difficult to assess, especially in dried specimens where the face tends to collapse inwards. He also mentions "a more or less strong black bristle on the posterior part of the jowls below the eye" in *N. tibiella* which is illustrated. Finally he notes differences in the chaetotaxy of the hind leg : "usually a posterior-ventral bristle to the hind femora at the middle, and an anterior-ventral bristle to the hind tibiae" in *N. tibiella* whilst in *N. fasciata*, there is no such bristle on the femora and the one on the tibia is "often absent". These bristles are quite difficult to spot, because the one on the tibia is not always clearly differentiated and, if the one on the tibia is lost, the scar is very difficult to see against the dark ground colour. In conclusion, the **presence** of the bristles on the jowl and hind femora is distinctive of *N. tibiella*, but their absence is not always conclusive.

It has been recorded from 152 hectads in total and from 114 since 1990. Distribution map.

Wing length: ♂ 3.5 - 3.9 - 4.0 mm (6); ♀ 3.8 - 4.3 - 5.7 mm (19).

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Spain, Sweden; Russia: northern European regions.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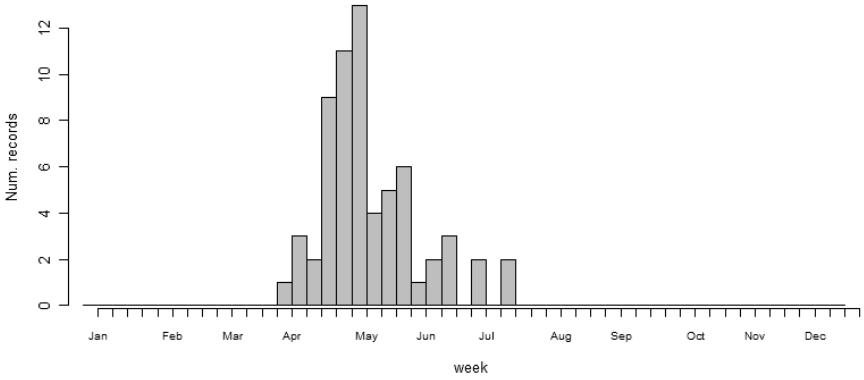
Collin (1958) regards this species as local and records it from southern England, but Chandler (quoted in Irwin, 1975) reports taking it frequently in south-eastern England. Irwin (1975) also records it from Ireland. Hackman (1956) regards it as a common species of *Phleum* meadows along with *N. armillata*. Wing length: ♂ 3.3 - 3.7 - 4.1 mm (14); ♀ 3.3 - 4.2 - 5.1 mm (26). It has been recorded from 42 hectads in total and from 27 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Lithuania, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: European and eastern Palaearctic, White Sea.

Nanna flavipes: female *Nanna flavipes*: A: male 5th sternite; B: male genitalia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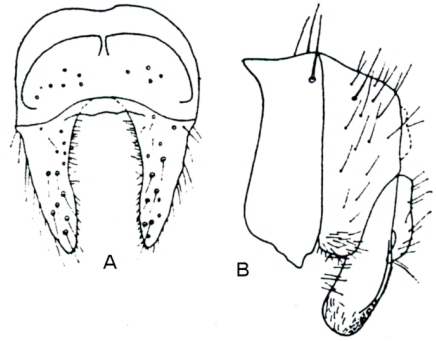
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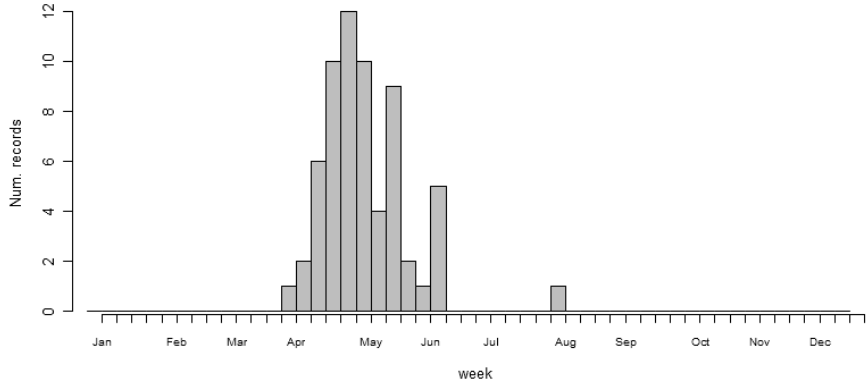
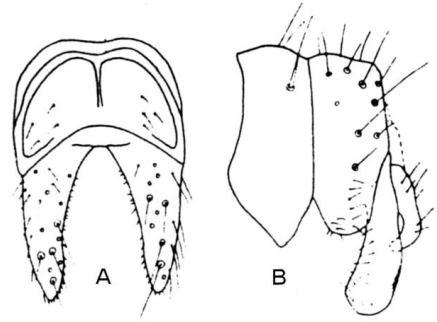
Collin (1958) reports that it is widely distributed and gives records from England, Scotland and Wales, especially on *Calamagrostis*. An early flying species with adults in April to May. Wing length: ♂ 2.8 - 3.2 - 3.5 mm (9); ♀ 2.8 - 3.4 - 3.7 mm (5). It has been recorded from 44 hectads in total and from 26 since 1990. Distribution map.

World distribution: Palaearctic: Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Russia, Slovakia, Sweden; Russia: European regions.





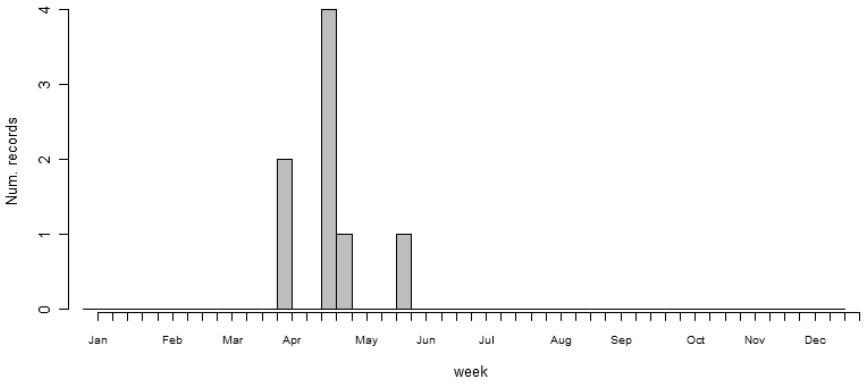
Nanna inermis: A: male 5th sternite; B: male genitalia

Originally described by Hackman (1956) (as *Amaurosoma multisetosum*) he describes it as similar in size and general appearance to *N. flavipes*. Frons not projecting, black except for a yellow front spot which tapers backwards and reaches the ocellar triangle. Antennae black, third joint broad and with a sharp angled upper corner. Arista as in *N. flavipes* thickened to about the middle of its length. Face yellowish, jowls yellow with whitish pollinosity. Palps yellow. Mesonotum, pleurae and scutellum grey and evenly dusted. Bristles of head and thorax black. Wings normal. Halteres pale. Legs yellow, only the second and third coxa darkened. The tarsi look dark because they are covered in dense dark dusting. Front femora with 10-14 black anterior-ventral spines (the main distinction from *N. flavipes* which has 7-8). Mid-femur with 8-10 ventral spines. Third femora with a less regular anterior-dorsal row of black spines. Abdomen dark grey with whitish dusting above. Male genitalia similar to *N. flavipes*. Wing length: ♀ 4.1 - 4.6 - 5.1 mm (2).

Nanna multisetosa: male surstyli

Recently discovered in Ireland by Speight (1995) from a Malaise trap operated in the Connemara National Park, Galway in 1994. Speight checked material from Surrey and found it to be true *N. flavipes*. However, following this publication, material from southern England which he had previously determined as *N. flavipes* was exhibited at Dipterists Day by Peter Chandler who, based on limited material, believed that these two species may be equally frequent. It has been recorded from 7 hectads in total and from 7 since 1990. Distribution map.

World distribution: Palaearctic: Ireland, Sweden.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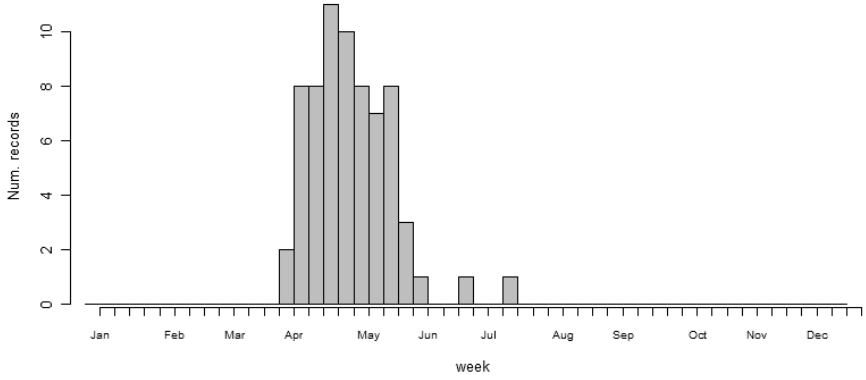
Collin (1958) describes this species as "common and widespread". It is very similar to *N. fasciata*, see the discussion under that species. Wing length: ♂ 3.5 - 3.7 - 3.9 mm (9); ♀ 3.3 - 3.8 - 4.2 mm (9). It has been recorded from 53 hectads in total and from 36 since 1990. Distribution map.

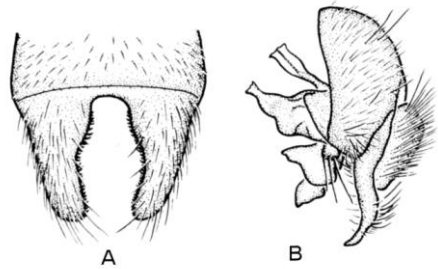
World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European regions.



Norellia spinipes ♂

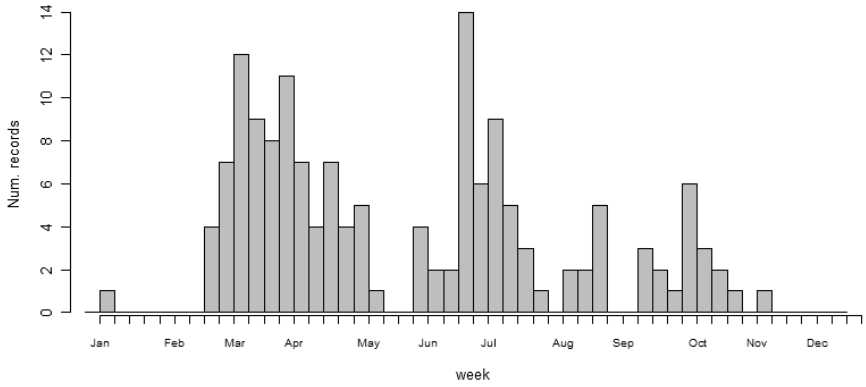
A pale coloured species with strongly spined front legs and marked wings (a dark cloud over both the anterior and posterior cross-veins and a dark spot near the apex of the wing). The thorax is mainly dull with four dark longitudinal stripes, but is narrowly shining along the dorsocentrals rows. Abdomen shining with a dark central stripe. Head mainly yellow, but with triangular black patches on the occiput either side of a broad, pale, central line. Ocellar

triangle dark. Antennae yellow. Legs entirely pale. Wing length: ♂ 5.4 - 6.1 - 6.7 mm (30); ♀ 5.9 - 6.4 - 7.4 mm (13).



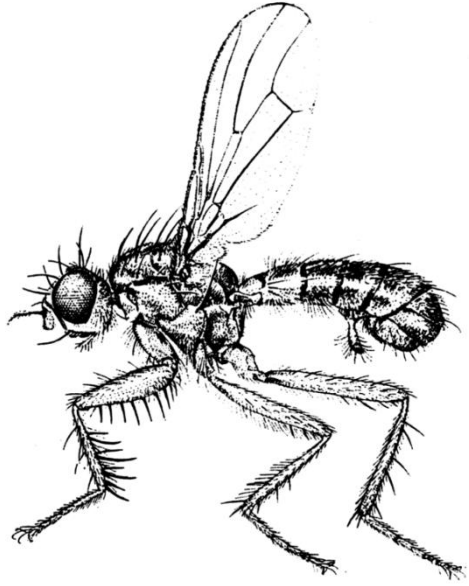
This rather distinctive species was first recorded in 1965 (Chandler and Stubbs, 1969; Chandler, 1970) and has been found mainly in deciduous woodland or in gardens in Surrey, Kent, Sussex, Bucks, Berks, Herts, Cambs., Hunts. and Middlesex (Allen, 1983; Godfrey, 1989; Smith, 1996; Smith & Vardy, 1988) where it is associated with daffodils (*Narcissus*). The larvae mine the leaves and pupate at the base of the plant and sometimes damage the bulbs (Smith, 1989). Most records are for the Spring (April to June) when adults are usually found on daffodil leaves, but there are also October records which seem to always relate to females. No specimens earlier than 1965 have come to light, although it is not uncommon at some localities within its limited range. This suggests it is a recent colonist and was probably introduced from the continent in imported bulbs. De Jong (1985) discusses the past confusion between this species and *N. tipularia* and concludes that *N. spinipes* has only been recorded with certainty from Britain, France and the Netherlands. **Notable** according to Falk (1991). It has been recorded from 80 hectads in total and from 70 since 1990. Distribution map.

World distribution: Palaearctic: Europe: Carpathian Mountains, Belgium, Czech Republic, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Slovakia, Spain, Sweden, Switzerland; North Africa: Algeria; Russia: Southern European regions.



Norellia spinipes: A: male 5th sternite; B: male genitalia; C larval mine in Daffodil leaf

Norellisoma spinimanum ♀

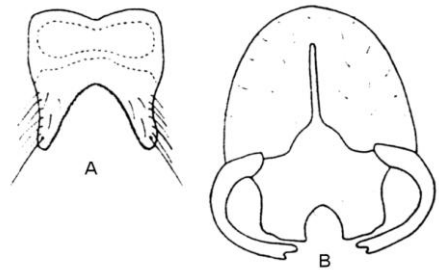


Norellisoma spinimanum ♂

Norellisoma lituratum **(Wiedemann in Meigen, 1826)** Return to key

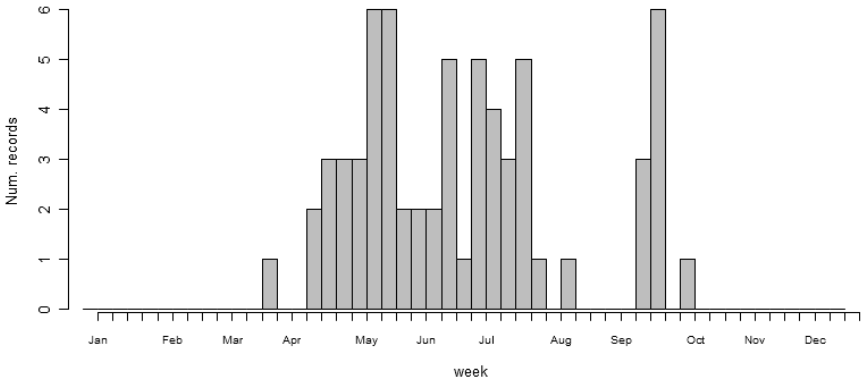
A small dark coloured species with yellow legs, the front pair with double rows of strong black spines below the femora and tibia. The dark ground colour of the thorax and abdomen shines through the thin dusting which is only dense and grey on a fairly broad central stripe on the thoracic dorsum. Terminalia of both sexes undusted and shining black. Wing length: ♂ 3.3 - 3.5 - 3.9 mm (4); ♀ 3.3 - 3.7 - 3.8 mm (3).

This is a wetland species which can be swept from sedges and grasses. Widespread. Irwin (1975) and Speight (1983) record it from Ireland. It has been recorded from 48 hectads in total and from 15 since 1990. Distribution map. According to Smith (1989) it is associated with meadowsweet (*Filipendula*) which, I think, stems from Yerbury (1900) who mentions sweeping it frequently from this plant in Herefordshire and speculates that the larvae feeds in the stalk. This is *N. flavicorne* of Collin, 1958, but there has been considerable confusion in the nomenclature between this species and the next.



Norellisoma lituratum: A: male 5th sternite; B: male genitalia

World distribution: Palaearctic: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Asia: Mongolia; Russia: European and eastern Palaearctic, White Sea.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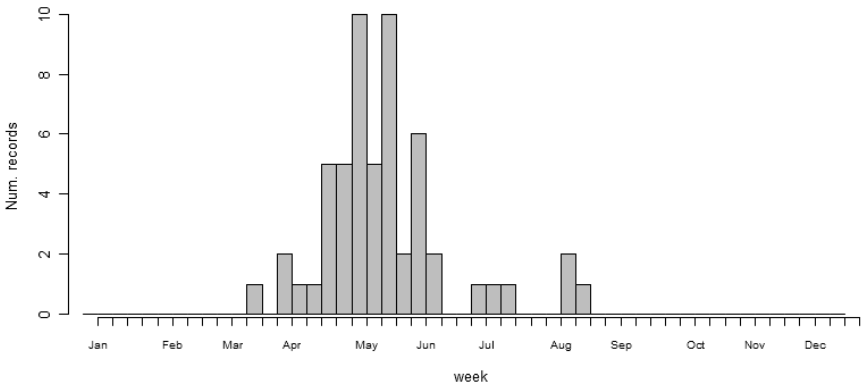
Similar in general appearance to *N. lituratum*, but the thorax and abdomen are densely grey dusted except for the shining black terminalia. Best distinguished by the male genitalia. Wing length: ♂ 3.6 - 4.1 - 4.6 mm (22); ♀ 3.8 - 4.2 - 4.6 mm (11).

This also seems to be a species found in long, damp grassland situations, but nothing is known of its larval stages. Collin (1958) states that it can be swept from *"Spiraea"* (note that this is an old name for meadow-sweet, but also the current name for an closely related introduced alien - I am not sure which Collin meant). It has been recorded from 37 hectads in total and from 25 since 1990. Distribution map.

World distribution: Palaearctic: Netherlands.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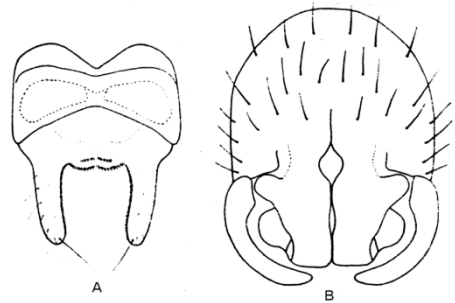
***Norellisoma spinimanum* (Fallén, 1819)** Return to key

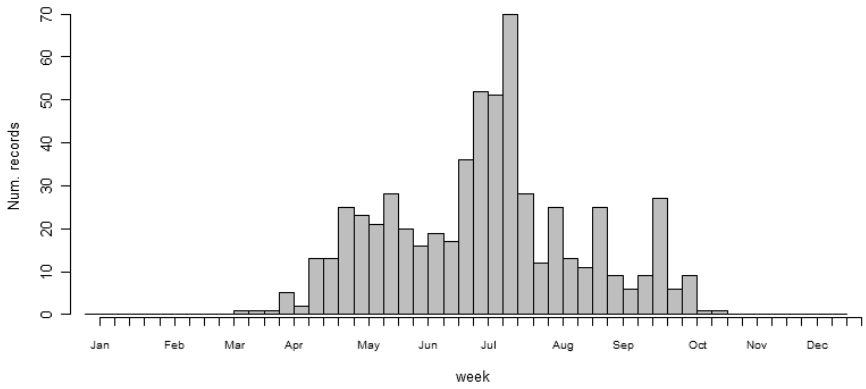
A medium sized, yellowish-brown species with conspicuously spined front legs which give it a raptorial, mantis-like appearance. Readily distinguished from the other two *Norellisoma* species by its larger size, generally paler appearance and plumose arista. Wing length: ♂ 5.8 - 6.3 - 6.7 mm (6); ♀ 5.4 - 5.9 - 6.3 mm (6).



Norellisoma spinimanum: A: male 5th sternite; B: male genitalia

Larvae mine the stems of docks (*Rumex*) where they are relatively easy to detect as the stem is typically swollen and reddish around the exit hole. Mines are usually on the main stem, but sometimes also in the leaf petioles (Disney, 1976). He reared the fly from mines in broad-leaved dock, *R. obtusifolius* and mentions literature records from *R. aquaticus* in France and the introduced *R. triangulivalvis* in Britain. This is a not uncommon species in rank grassland and waste places where the adults are predatory. Adults May to August. Irwin (1975) and Speight (1983) record it from Ireland. It has been recorded from 311 hectads in total and from 222 since 1990. Distribution map.

World distribution: Palaearctic: Europe: Carpathian Mountains, Andorra, Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland, Ukraine; Russia: European and eastern Palaearctic; **Nearctic**: Canada, USA.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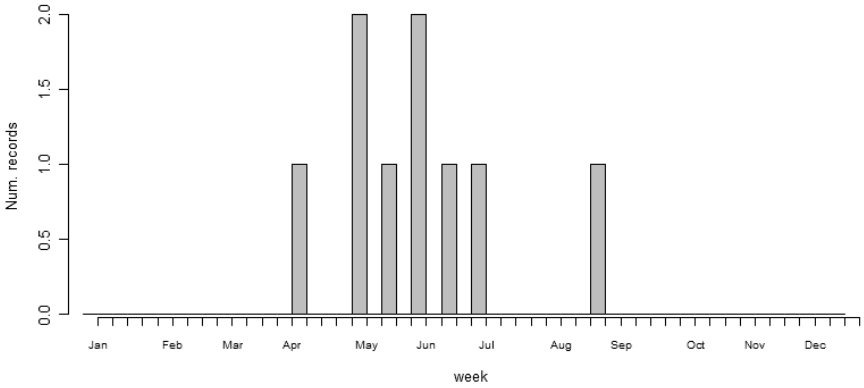
According to Collin (1958) the third antennal joint is darkened (clear yellow in *P. vittatum)* and the terminal bristle on the palps is stronger than the vibrissae (not as strong in *P. vittatum*). Hackman (1956) illustrates paler markings on the thoracic dorsum which Nelson (1990) confirms were present in his reared specimens, but cautions that teneral *P. vittatum* also showed similar markings. Nelson (1990) suggests that the most reliable way of distinguishing the two was to measure the terminal bristle on the palps which was 0.38-0.49 mm in *P. paridis* compared to 0.24-0.38 mm in *P. vittatum*. Wing length: ♀ 4.4 mm (1).

Larvae mine the leaves of herb Paris (*Paris quadrifolia*) and the mines are illustrated by Séguy & Pauchet (1929). Some continental literature also mentions Solomon's seal (*Polygonatum*) and other liliacous plants, but given the confusion over the nomenclature of this genus, it is not at clear that this refers to the same species. Nelson (1990) found the average number of eggs laid on a leaf was 4.9 and the larval development was rapid, taking only 13 days. The species appears to be univoltine and to spend most of its life as a pupa (average 348 days). Adults hatched in May which fits with previous field records of adults which range from late April to late May. Recorded from Berks, Cambs (Wooditton Wood - now coniferised and unlikely to be suitable), Yorks, Cumberland, Stirling, Perth and Forfar. Nelson doubts that this species is a scarce as previously thought and reports that he has found it wherever he has been shown the host plant (which is itself quite scarce). Localities with herb Paris should be checked for evidence of larval mines since the rather short flight period may makes adults difficult to detect. **RDB2** according to Falk (1991). It has been recorded from 11 hectads in total and from 7 since 1990. Distribution map.

Parallelomma paridis: larval mines on Herb Paris (*Paris quadrifolia*)

World distribution: Palaearctic: Denmark, Lithuania, Sweden; Russia: Karelia;

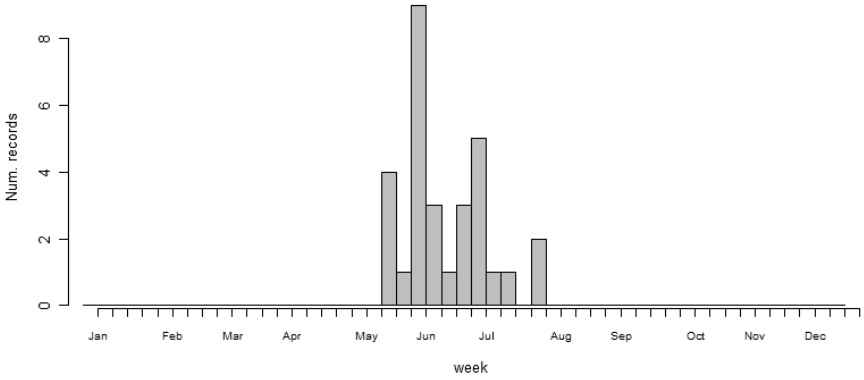
Indomalaysian: Nepal.



The separation from *P. paridis* is discussed under that species. Wing length: ♂ 3.5 - 4.0 - 4.4 mm (3); ♀ 3.9 - 4.2 - 4.7 mm (10).

Nelson (1990) reared this fly from larvae mines in the leaves of heath spotted orchid (*Dactylorchis maculatum* ssp. *ericatorum*). Bland (1975) reared specimens (det. V.R.Vockeroth) from mines in *Epipactis helleborine*, *Cephalanthra longifolia* and *C. rubra* collected in Spain and quotes a rearing record by Vockeroth also from *E. helleborine.* Some of the older literature mentions many other plants (including orchid genera *Ophyra*, *Listera* and *Orchis*, and also non-orchids such as *Paris* and *Polygonatum*), but given the confusion over nomenclature, these records need treating with care. Nelson (1990) reports the average number of eggs laid on a leaf was 2.1 and larval development was rapid taking only 9 days. Six pupae took most of the year to develop whilst five hatched in 26 days, giving rise to a second generation. This fits with field records of adults which extend from May until September and show that the species is at least partially bivoltine. Nelson reports that a male caught and fed on a psocid and both sexes fed from a squashed raspberry, but none lived longer than 10 days. The available records suggest that this is less scarce than *P. paridis* with widely scattered records, mostly from Scotland, but also England and Wales. **Notable** according to Falk (1991). It has been recorded from 29 hectads in total and from 10 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: northern European regions; **Nearctic**: Canada, USA.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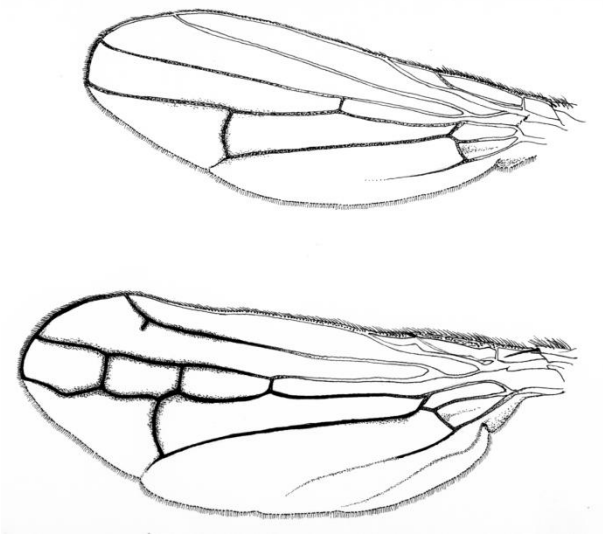
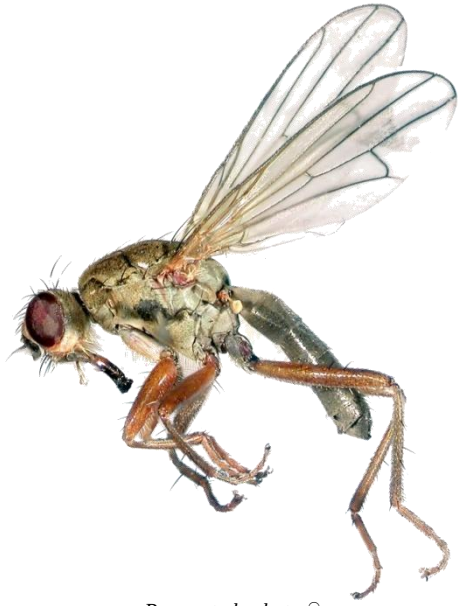


Pogonota barbata: Female wing (top), male wing (bottom).

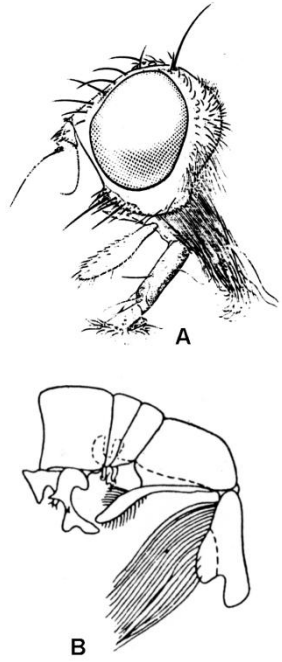


Pogonota barbata ♀

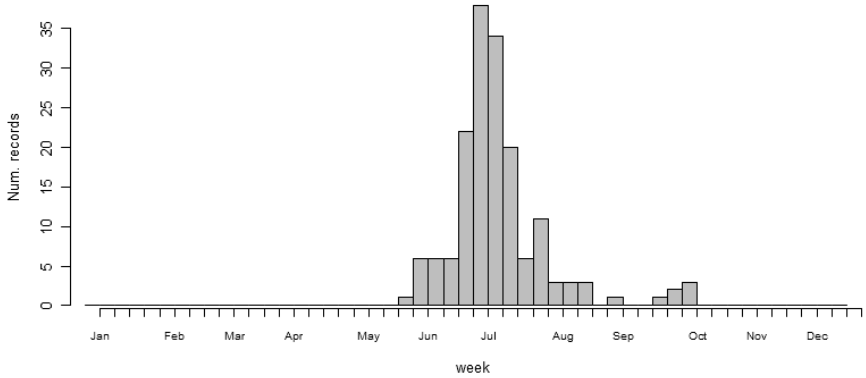
The male is unmistakable because of the conspicuous tufts of golden hair on the hypopygium and the underside of the head (illustrated in couplet 17 of the generic key) and because of its peculiar wing venation with a series of extra cells and veinlets between the radial and discal veins. Females have a rather elongate and narrow body shape with a brownish dusted head and thorax, dark grey abdomen, and long yellow legs. In both sexes the wing veins are yellowish towards the base and costal margin and noticeably darker towards the apex and posterior margin. This results in a rather characteristic, almost striped appearance in the field when the wings are folded. Wing length: ♂ 6.0 - 6.6 - 7.0 mm (30); ♀ 5.6 - 6.3 - 9.5 mm (43).

Adults are predatory and are found in peat bogs and around moorland pools, mainly in the north and west of Britain, but also in a few localities on wet heathland in southern England. Speight (1983) records it from Ireland. Tends to be very local, but abundant where it occurs. It has been recorded from 88 hectads in total and from 60 since 1990. Distribution map. Larval biology unknown, but assumed to belong to the group of species which have predatory aquatic larvae. Adult behaviour is described by Hackman (1956) who observed them capturing smaller flies by a quick pounce from a distance of 6-8 cm. He also observed mating and reports that copulation was not preceded by any sort of courtship display and lasted only 5-7 seconds. I have spent some time observing them in the field and agree that males do not seem to indulge in any form of display. Both sexes seem to be reluctant to fly and are more inclined to run with wings tightly folded. This is a widespread Holarctic species and the only member of the genus in Europe, but additional species occur in North America.

World distribution: Palaearctic: Czech Republic, Denmark, Estonia, Finland, Ireland, Lithuania, Norway, Poland, Sweden; Russia: European and eastern Palaearctic; **Nearctic**: Canada, USA (Alaska).



Pogonota barbata: A: male head; B: male genitalia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Scathophaga stercoraria: a large, orange male from western Scotland, a 'typical' male from southern England and a very small, female-like male.

Many species of *Scathophaga* vary greatly in size, and smaller individuals sometimes lack typical colouring and chaetotaxy. For example, small males may resemble females in general appearance and colouring. This appears to be related to their biology. The larval

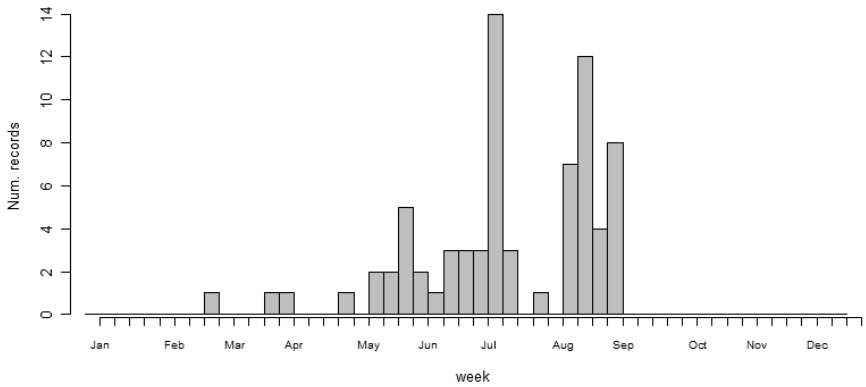
pabulorum is often in discrete patches (such as a cow-pat or a pile of rotting vegetable matter) in which potentially large numbers of larvae are confined, but which offers a finite amount of food. If more larvae are present than the food is sufficient to support, then intense competition occurs and they are forced to pupate prematurely. For example, Larsen (1943) found that even at four days old, *S. stercoraria* larvae could pupate, but most did not emerge successfully. Many such pupae fail to survive, but those that do hatch into small and atypical adults (at least in *Scathophaga stercoraria* where this phenomenon has been most studied) which are often sterile and have sometimes been referred to as a separate species, *S. merdaria* (F.), or as variety (Gibbons, 1980). The practical consequence is that it is not always possible to reliably determine isolated individuals. Adults are often encountered in considerable abundance in the field, so it is worth retaining a number of specimens covering the full range of size and general appearance. The features of the male genitalia that are readily visible externally do not seem to be all that useful in this genus. With the exception of *S. scybalaria*, most species have simple, stout, black, slightly hooked claspers.

***Scathophaga calida* (Haliday in Curtis, 1832)** Return to key

Very variable in size and general colouration. Large individuals tend to be more furry and darker coloured, being generally greenish brown with darker femora, whilst some smaller individuals have a yellowish-red abdomen contrasting with the grey-brown thorax. Frons normally reddish at least in front. Most similar to *S. litorea* but readily distinguished by the features mentioned in the key. A large male is quite unmistakable with its back tibia covered in long, fine outstanding hair. Wing length: ♂ 6.3 - 7.0 - 7.5 mm (8); ♀ 6.6 - 7.0 - 7.4 mm (4).

A rather restricted coastal species which Collin (1958) recorded from The Scilly Isles, Glamorgan and the north coast of Scotland. There are more recent records from Northern Ireland (Irwin, 1974), Rum (Whiteley, 1994) and Uist (Skidmore, 1994). Abundant around the coast of Lewis & Harris in 2006 where adults were mostly found by sweeping tall vegetation a little way inland, which presumably offers shelter in these rather exposed locations. Can be very abundant where it occurs. Larvae presumed to inhabit piles of wet, rotting seaweed like *S. litorea*. It has been recorded from 52 hectads in total and from 33 since 1990. Distribution map.

World distribution: Palaearctic: Faeroe Islands, Finland, Iceland, Ireland, Norway, Sweden; Russia: north European regions, Murmansk, Kola Peninsula, White Sea.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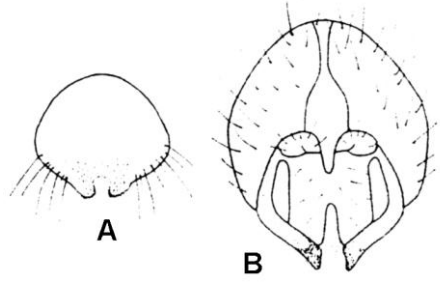
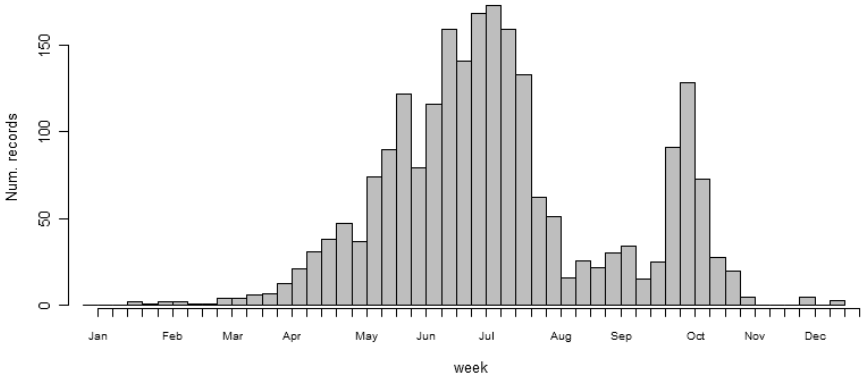
Tends to be a stout species with a dark marking on the outer side of the front femora (similar to *S. lutaria* which has a plumose arista). Legs entirely yellow, apart from the dark mark on the front femora. Wing length: ♂ 4.3 - 6.0 - 8.0 mm (71); ♀ 4.4 - 5.9 - 7.6 mm (57).

A very common dung breeding species often associated with sheep dung and tending to replace *S. stercoraria* in more upland localities, although the two frequently occur together. Recorded from dog, human and sheep dung and frequently from privies (Skidmore in Stubbs & Chandler, 1978). It has been recorded from 757 hectads in total and from 595 since 1990. Distribution map.

World distribution: Palaearctic: Andorra, Austria, Belgium, Czech Republic, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: European and eastern Palaearctic; **Nearctic**; Canada, Greenland, Mexico, USA.



Scathophaga furcata: A: male 5th sternite; B: male genitalia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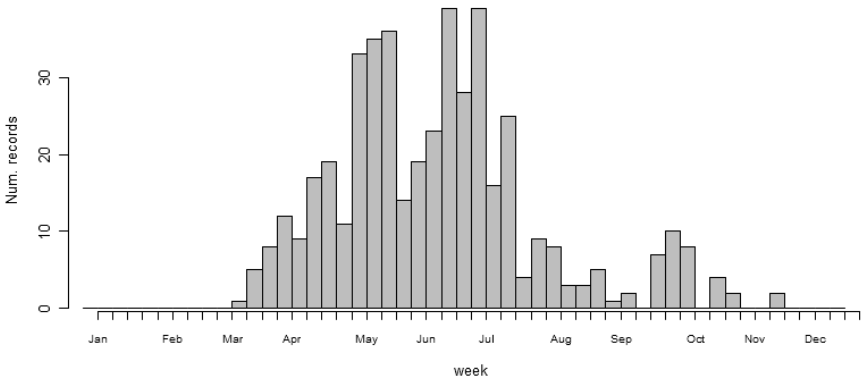
Male very yellow with golden pubescence and dusting and rather orange-yellow legs, often with the yellow abdomen contrasting with the browner thorax. Thorax and humeri unicolourous. Wings also yellow tinged, especially around the costa. Female darker with the thorax dark grey and abdomen yellow-grey, but darkened on the base and hind margins of the tergites. Male 5th sternite distinctive although care is needed because the abdomen often shrivels in dried specimens and it can be quite difficult to work out which bit to look at. Wing length: ♂ 5.3 - 6.5 - 8.7 mm (41); ♀ 5.7 - 7.1 - 9.3 mm (25).

Breeds in dung according to Skidmore in Stubbs & Chandler (1978). Hackman (1956) says it occurs especially on moors. It has been recorded from 248 hectads in total and from 210 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, Netherlands, Norway, Poland, Slovakia, Spain, Sweden; Russia: northern European regions, Karelia.

Scathophaga inquinata: A: male 5th sternite; B: male genitalia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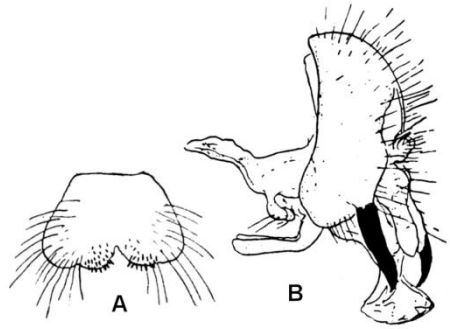
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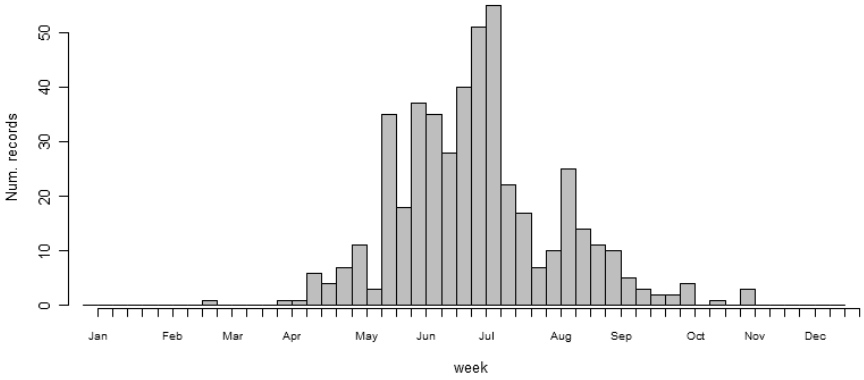
***Scathophaga litorea* (Fallén, 1819)** Return to key

A medium sized, dark grey species with brownish yellow tibia. The head, thorax and abdomen all have a dark ground colour with dense grey dusting apart from brownish stripes on the top of the thorax. Proboscis black. Palps yellow. Frons red. Face and jowls paler dusted. Femora dark, densely grey dusted. Tibia yellow, tarsi darker. Wing length: ♂ 4.1 - 5.3 - 6.9 mm (70); ♀ 4.3 - 5.4 - 6.5 mm (71).

A widespread and abundant coastal species which breeds in piles of wet, rotting seaweed. Adults can be abundant where such accumulations occur including sandy and rocky shores, salt marshes and coastal grazing levels and can be found visiting flowers some distance from breeding localities. They tend to shelter in the longer vegetation on upper salt marsh and around ditches in coastal grazing levels and it can be one of the most abundant flies in such situations. It has been recorded from 211 hectads in total and from 160 since 1990. Distribution map.

World distribution: Palaearctic: Azores, Belgium, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Iceland, Ireland, Madeira Islands, Netherlands, Norway, Poland, Spain, Sweden; Russia: northern European regions, Karelia, Novaya Zemlya; **Nearctic**: Greenland.

Scathophaga litorea: A: male 5th sternite; B: male genitalia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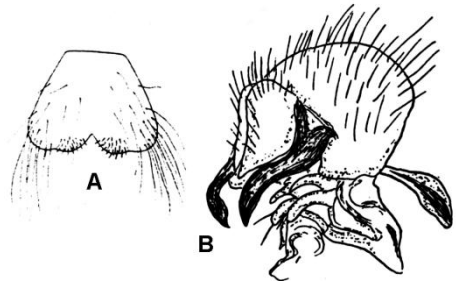
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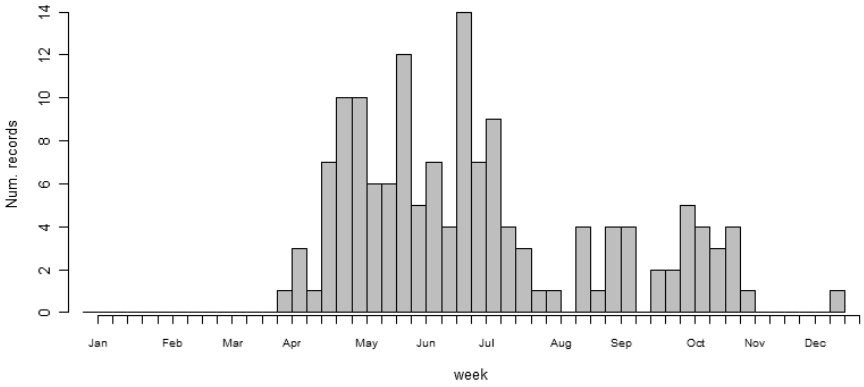
Typically a rather large species with a strong dark streak on the outer surface of the front femora (similar in this respect to *S. furcata* which has a bare arista), however, as with many *Scathophaga*, smaller specimens with colour characters poorly developed are not infrequent. In the male the greyish thoracic dorsum contrasts with the yellow humeri and scutellum. Abdomen yellow with hind margins of the tergites darkened. Most readily distinguished from *S. inquinata* by examination of the male 5th abdominal sternites although care is needed because the abdomen often shrivels in dried specimens and it can be quite difficult to work out which bit to look at. Wing length: ♂ 4.7 - 7.1 - 8.8 mm (20); ♀ 5.1 - 7.1 - 8.6 mm (12).

Breeds in dung and recorded from human faeces (Skidmore in Stubbs & Chandler, 1978). Chandler (in Stubbs & Chandler, 1978) suggests that this species replaces *S. stercoraria* in dung deposited in woodland. Irwin (1975) states that it is common in woodland in Northern Ireland. It has been recorded from 109 hectads in total and from 65 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland; Russia: northern European regions, Karelia, east Palaearctic; North Africa.

Scathophaga lutaria: A: male 5th sternite; B: male genitalia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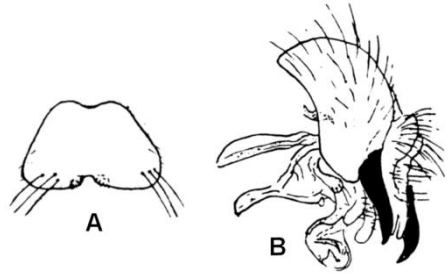
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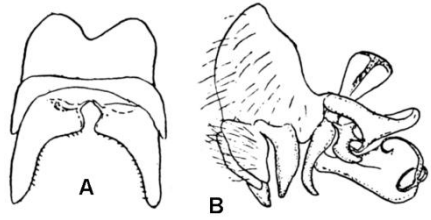
Scathophaga pictipennis (Oldenberg, 1923)

Return to key

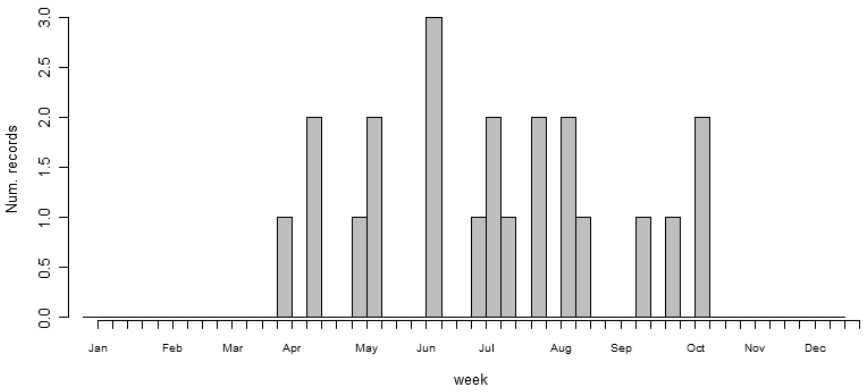
A greyish species with a reddish face and frons and yellow abdomen (often darkened basely). Occiput, orbits, proboscis and thoracic pleura all grey. Thoracic dorsum and scutellum dark brown. Legs yellow, front femora darkened basely. Palpi yellow and flattened so that they are broader than they are thick. Both cross-veins strongly and broadly darkened and with a less intense cloud at the tip of vein R_{4+5} giving the wings a spotted appearance. Wing length: ♂ 6.3 mm (1); ♀ 5.3 - 6.1 - 6.5 mm (4).

This is a scarce species which appears to be confined to the Central Highlands of Scotland where it was regarded as locally frequent along the Rivers Spey and Dee although with a wide scatter of records in Inverness, Perth and Grampian. But there do not appear to be any recent records and, in a number of visits to the Speyside area over the last decade, I have not been able to find it. (There is a single recent record on the NBN from northern England. I know of no other records outside Scotland, so I think this needs checking!) It is thought to belong to the dung breeding group of *Scathophaga* species, but is not recorded from cow dung. Deer dung is a possibility that deserves investigation. Although it appears to have a long flight season, specimens do seem to have been taken more frequently late in the year with a number dated from as late as October. **RDB3** according to Falk (1991). It has been recorded from 13 hectads in total and from 4 since 1990. Distribution map.



Scathophaga picticornis: A: male 5th sternite; B: male genitalia

World distribution: Palaearctic: Austria, Czech Republic, Estonia, Finland, Germany, Norway, Slovakia, Sweden; Russia: northern European regions; **Nearctic**: Canada.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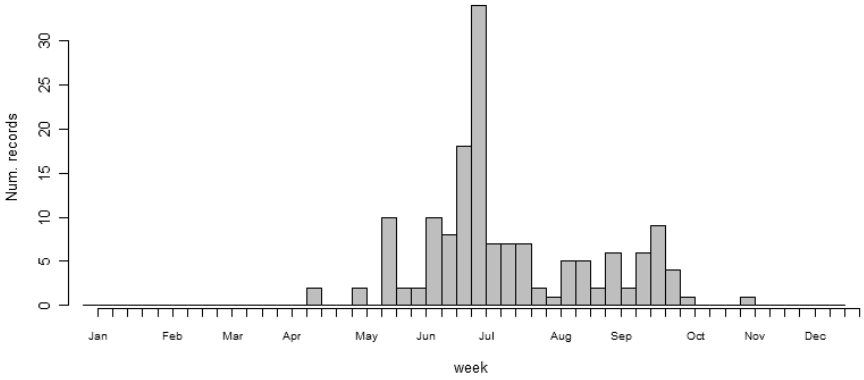
A very large, orange-yellow, furry species ('teddy-bear fly') in which the attractive males are covered in long golden fur, have a strong yellowish tinge to the wings and long yellow legs. However, smaller duller individuals also occur which are less readily distinguished from *S. stercoraria*. Large specimens of *S. lutaria* seem particularly liable to be mistaken for this species, probably because the membranous strip above the hind coxae is darkened and not at all obvious in some cases. The male claspers are distinctive being rather pale and narrow, darkening towards the tip which is bifid whereas most other *Scathophaga* have simple, stout, black claspers. Wing length: ♂ 7.4 - 10.9 - 12.3 mm (24); ♀ 9.1 - 10.0 - 10.8 mm (16).

This is a dung breeder (Skidmore in Stubbs & Chandler, 1978). and males are frequently found at or near cow pats, although there seems to be a preference for damp places such as fens and damp meadows. A local species of the north and west which is often abundant where it occurs. It is particularly frequent in the New Forest and parts of Wales. **Notable** according to Falk (1991). It has been recorded from 77 hectads in total and from 42 since 1990. Distribution map.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Spain, Sweden, Switzerland; Russia: European and eastern Palaearctic.

Scathophaga scybalaria: A: male 5th sternite; B: male genitalia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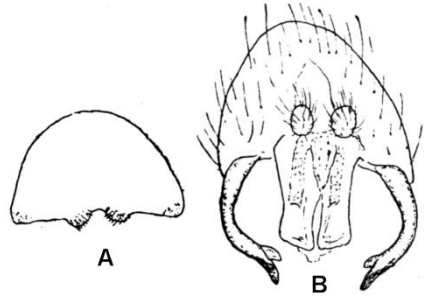
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The 'common yellow dung fly'. One of the most abundant and ubiquitous of British flies. 'Typical' males are yellow and furry, whilst females are greenish and bristly. However, smaller males frequently lack the yellow furry appearance and are more like a female in general appearance. These were sometimes given specific status (*S. merdaria*) in the past, although most recent works refer to these (if at all) as no more than a colour form. Small individuals may be sterile (Gibbons, 1980). Large and rather more orange coloured males seem to occur in northern Scotland which could easily be mistaken for *S. scybalaria*. Wing length: ♂ 4.9 - 7.4 - 9.6 mm (57); ♀ 4.1 - 6.2 - 8.0 mm (63).

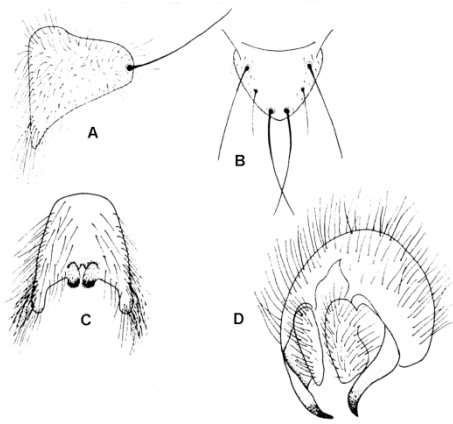
Larvae develop most frequently in cow dung, although they have been bred from the dung of a wide variety of other species including dog, human, sheep and horse according to Skidmore in Stubbs & Chandler (1978). Eggs are typically laid in fresh cow dung and the larvae are predatory on other insect larvae within the dung. Adult males are usually seen on or near fresh cow pats where they wait for females to arrive and attempt to intercept them to mate. There is intense competition between males and fights are frequent and it is not unusual to see a female at the centre of a struggling ball composed of a number of males. Both the adult mating strategies and larval competition within the cow pat are frequent subjects for study and there is a huge literature on this species.

It has a very long season and adults can be found at any time of year including mid-Winter (Blackith & Blackith, 1990). Although it is most abundant in farmland were cattle are to be found, specimens can be found in any habitat from city centres (where it can breed in dog dung - Disney, 1973) to the tops of mountains (I have found specimens, with *S. furcata*, on reindeer dung near the top of Cairngorm). Females particularly disperse from breeding areas

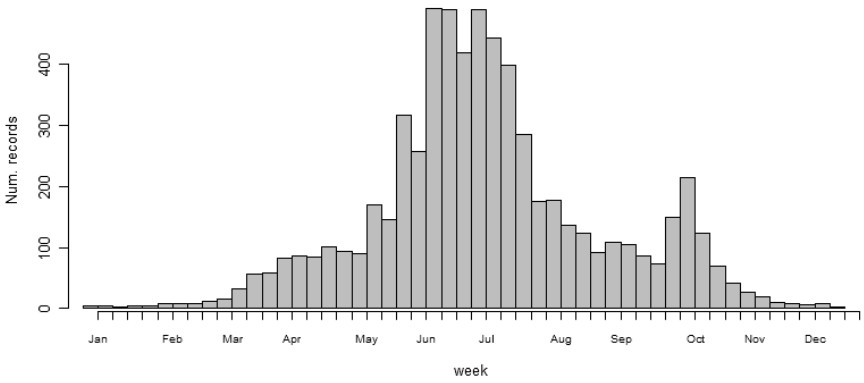
into hedgerows and woods where they are voracious predators on other flies and there is quite extensive literature on their prey selection. Both sexes are often found visiting flowers, such as umbels of hogweed (*Heracleum sphondili*) where they both feed from the flower and hunt other insects which the flower attracts.

It has been recorded from 1,428 hectads in total and from 1,288 since 1990. Distribution map.

World distribution: Palaearctic: Andorra, Austria, Azores, Balearic Islands, Belgium, Bulgaria, Canary Islands, Czech Republic, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Madeira Islands, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, Yugoslavia; Russia: European and eastern Palaearctic; North Africa; Asia: Kashmir; **Nearctic**: Canada, USA; **Neotropical**: Brazil; **Afrotropical**: South Africa.



Scathophaga stercoraria: A: sternopleuron; B: scutellum; C: male 5th sternite; D: male genitalia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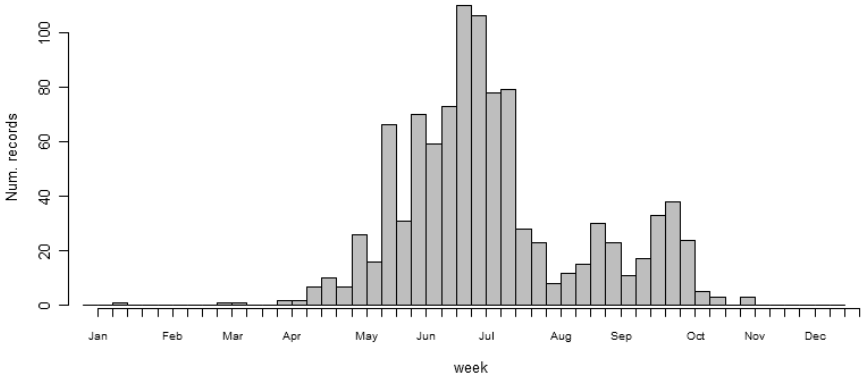
Chandler's (1998) checklist accepted the view of Šifner (1995) that *S. taeniopa* was a synonym of this species whilst previous British keys and checklists have regarded them as separate species. The status of *S. taeniopa* was restored by Bernasconi *et al*. (2001). This nomenclatural confusion complicates matters and makes much of the recent literature hard to interpret.

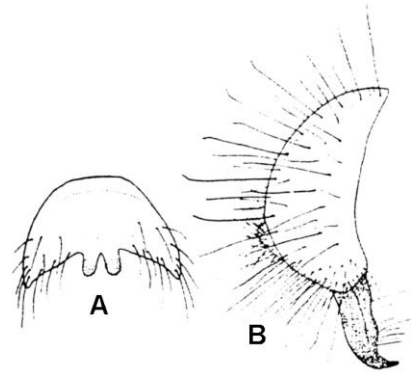
Scathophaga suilla: A: male 5th sternite; B: male genitalia

This is generally a small species and the ground colour of the lower front part of the thorax (humeri to front coxae extending on to the mesopleuron and sternopleuron) and the lower part of the occiput tend to be pale yellow. The antennae, palps and proboscis all have a pale ground colour and the abdomen (which usually has a darker ground colour) has thick bands of yellow-brown dusting. These factors, together with the entirely yellow legs, all give an overall pale impression. The wing has both cross-veins infuscated. Wing length: ♂ 5.2 - 6.0 - 7.5 mm (19); ♀ 5.6 - 6.2 - 7.3 mm (21).

Widespread and common. The larvae is unknown. It has been recorded from 437 hectads in total and from 328 since 1990. Distribution map.

World distribution: Palaearctic: Austria, Belgium, Corsica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: European and eastern Palaearctic; **Nearctic**: Canada, USA; **Afrotropical**: South Africa.





***Scathophaga taeniopa* Rondani, 1866** Return to key

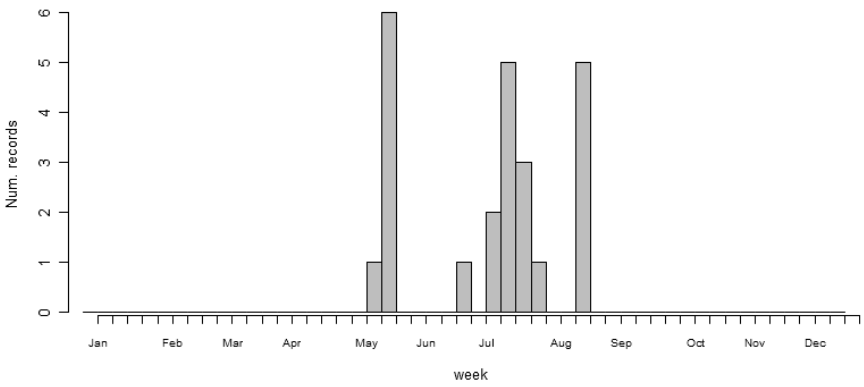
Although this species was included in Collin's (1958) key, Chandler (1998) followed Šifner (1995) in synonymising this species with *S. suilla*. Subsequently Bernasconi *et al.* (2001) confirmed its status as a good species.

In the field, this is quite a large and stout, rather yellow species with almost clear wings with only a hint of infuscation about the cross-veins. The femora usually have strong black streaks on the outer surface on at least the front legs and sometimes the middle and event the hind pair as well. The sides of the thorax lack the pale, yellowish patch of *S. suilla* and the humeri have the same colouring and dusting as the rest of the thorax. Wing length: ♂ 5.7 - 7.5 - 8.6

mm (24); ♀ 6.7 - 7.5 - 9.3 mm (16).

I have found this to be a reasonably frequent species in Speyside and more northerly areas of Scotland, especially in grassy places along the bottoms of glens at mid-altitudes. Collin (1958) reported that it was "not uncommon in Scotland" and also recorded it from Yorkshire (though he had "no records further south than Nottingham"). Falk (1991) categorises it as "Rare", giving its distribution as "Widespread but localised in the Highlands of Scotland" and noting the records from Yorks and Notts (presumably from Collin, 1958). Biology unknown, but (according to Falk, 1991) the "larvae may breed in wet mud". It has been recorded from 21 hectads in total and from 15 since 1990. Distribution map.

World distribution: Palaearctic: Central belt and south of Western Europe. Kubain and Sayan Mountains of Russia. Northern China; **Nearctic**: Canada. The Species 2000 catalogue (and therefore GBIF), Fauna Europaea and Nearctic checklist still regard it as a synonym of *S. suilla* so it is difficult to determine an up-to-date world distribution.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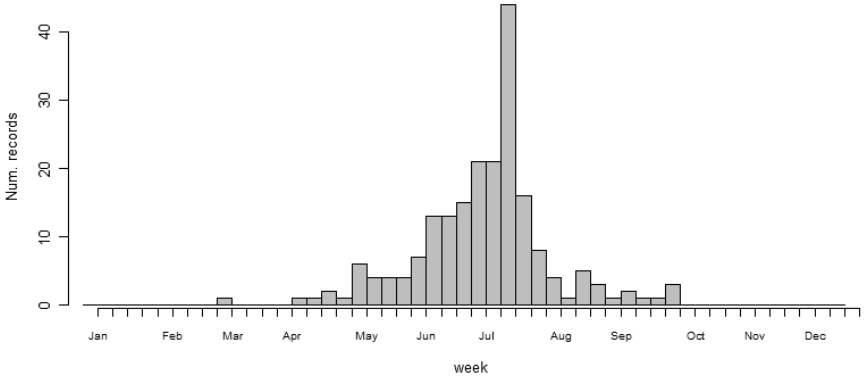
In the field this fly appears quite dark, long and thin and with a conspicuously yellow face. The legs are reddish and normally have dark rings on all femora, but the degree of darkening of the legs is very variable and Collin (1958) reports entirely pale-legged specimens. The thorax and abdomen are densely grey dusted with broad brownish stripes along the line of the dorsocentrals. Front half of the frons and the sides of the face reddish yellow, face and jowls pale yellowish dusted. Proboscis black. Palps pale, large, flattened and spoon shaped. Wing length: ♂ 5.7 - 7.5 - 8.6 mm (24); ♀ 5.5 - 6.0 - 6.8 mm (18).

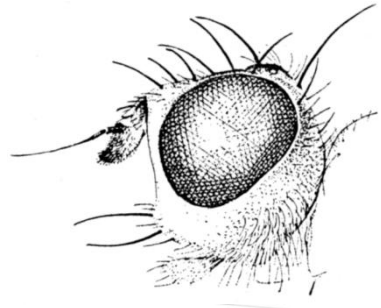
Spaziphora hydromyzina: head (above) and male genitalia (below)

Locally abundant besides water and usually swept from the marginal vegetation of still waters or slow flowing rivers. I have often swept it from beds of *Eleocharis* growing in the shallow edges of ponds or slow rivers. It can also be found on lily pads alongside *Hydromyza livens*. This is one of the better known species as a larva because of its association with sewage beds. The larvae grazes over pebbles on algae and the biological film of bacteria and other organisms, but will also feed on larger items such as the eggs and pupae of Chironomidae and worm cocoons (Graham, 1939; Lloyd, *et al*., 1940). However, this does not appear to be its only habitat and Collin (1958) reports rearing it from cabbage roots attacked by Club-root fungus. Nelson (1995) reports finding puparia in a coot's nest and also reports numerous specimens in the collection of the Royal Museum of Scotland reared from a similar situation by E.B.Basden. It appears to over winter in the pupal stage and has a long adult flight period (April to October). Irwin (1975) and Speight (1983) report that it is also widespread in Ireland. It has been recorded from 123 hectads in total and from 80 since 1990. Distribution map.

World distribution: Palaearctic:, Belgium, Czech Republic, Denmark, Estonia, Finland,

Germany, Hungary, Ireland, Netherlands, Norway, Poland, Sweden, Switzerland; Asia: Mongolia; Russia: north European region.



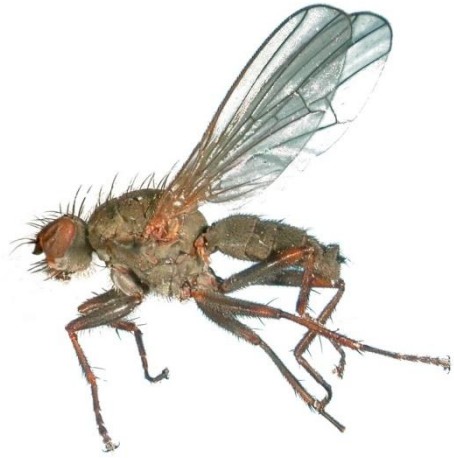


***Trichopalpus fraternus* (Meigen, 1826)** Return to generic key

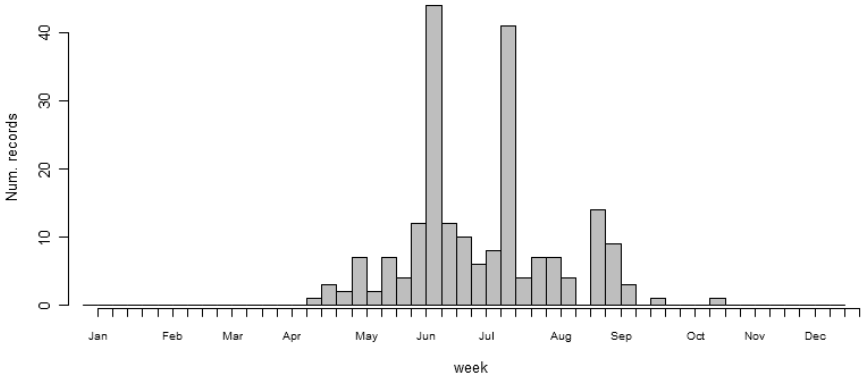
An unremarkable small greyish species with dark femora (narrowly yellow at the base and tip) which otherwise resembles *Chaetosa punctipes* (which has pale legs) in size and shape. Thorax and abdomen densely grey dusted. Front of frons and sides of the face with reddish ground colour. Palps, small and brown. Wing length: ♂ 4.5 - 4.5 - 4.5 mm (2); ♀ 5.2 - 5.3 - 5.5 mm (2).

Probably not as uncommon as earlier literature suggests. Recent records suggest that it is widespread and that adults can be swept from long, damp grassland. Speight (1983) confirms its presence in Ireland. It has been recorded from 75 hectads in total and from 47 since 1990. Distribution map. Larvae and pupae have been found associated with the nests of Coot (Nelson, 1995), but this may simply represent a heap of wet, rotting vegetation and the fact that it is a birds nest may not be significant. Cole (1997) also reports finding it in great abundance ("many hundreds") on a pile of rotting water plants (mainly the fleshy rootstocks of Yellow water lily *Nuphar lutea*) which had been pulled out of a Cambridgeshire gravel pit by fishermen and left piled up on the bank.

World distribution: Palaearctic: Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Lithuania, Netherlands, Norway, Poland, Slovakia, Sweden, Switzerland; Russia: north European region.



Trichopalpus fraternus: A: male 5th sternite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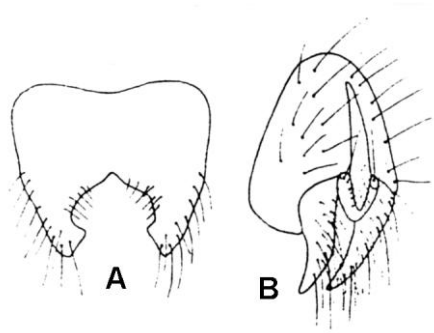
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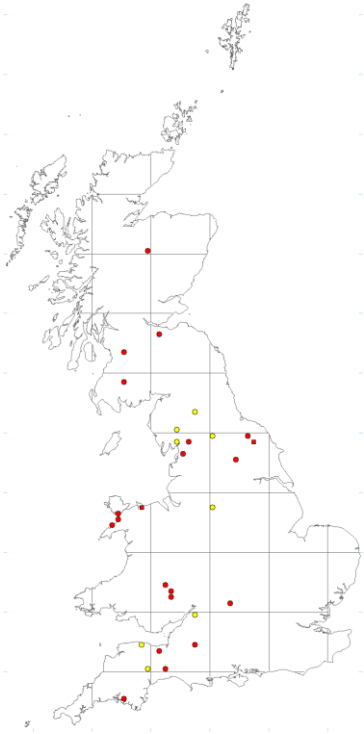
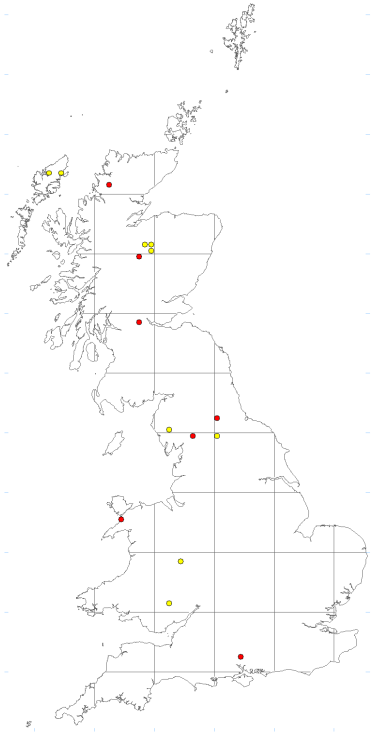
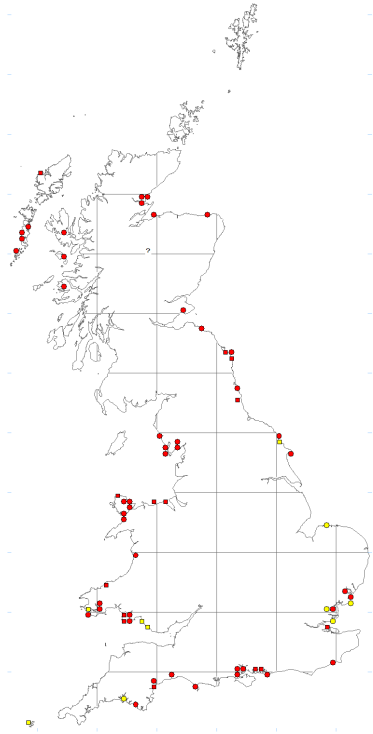
Acanthocnema glaucescens



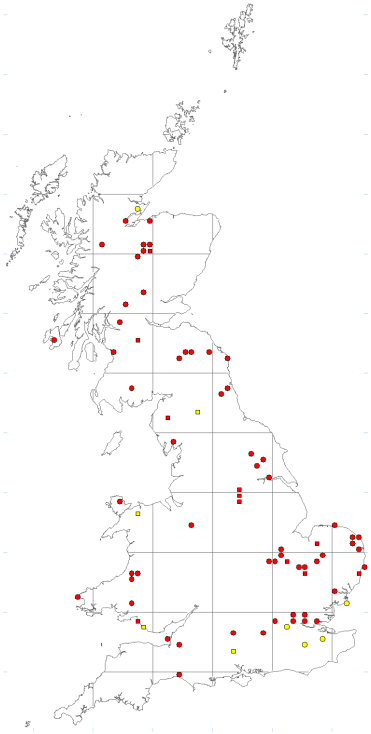
Acanthocnema nigrimana



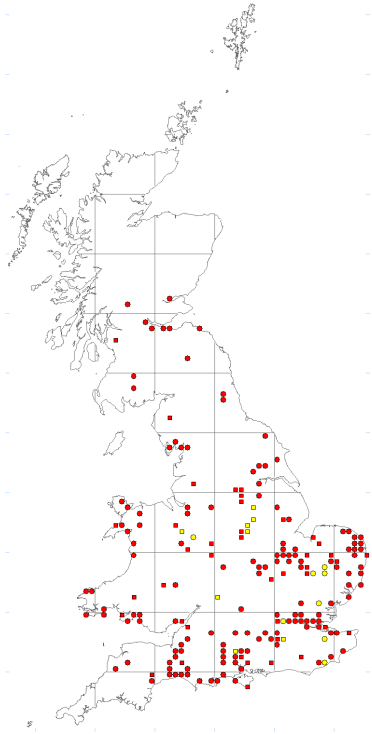
Ceratinostoma ostiorum



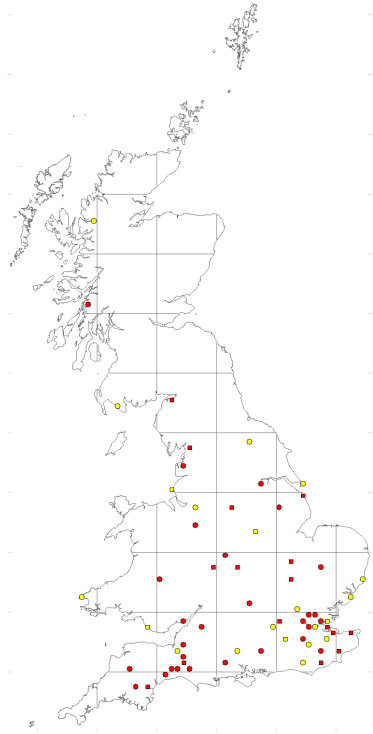
Chaetosa punctipes



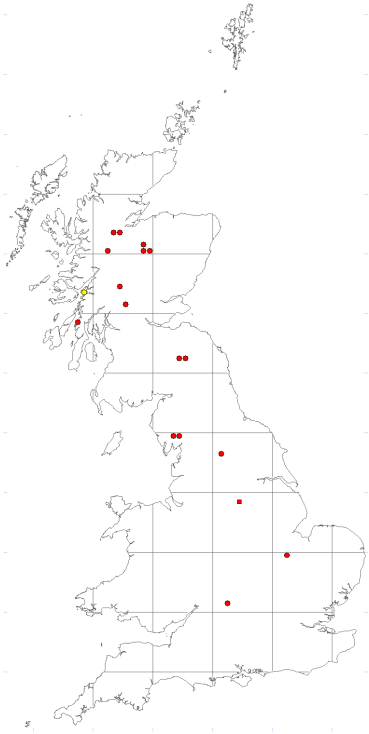
Cleigastra apicalis



Conisternum decipiens

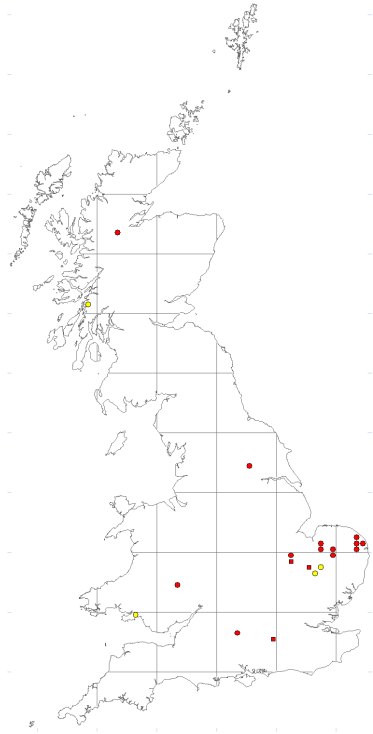


Conisternum obscurum

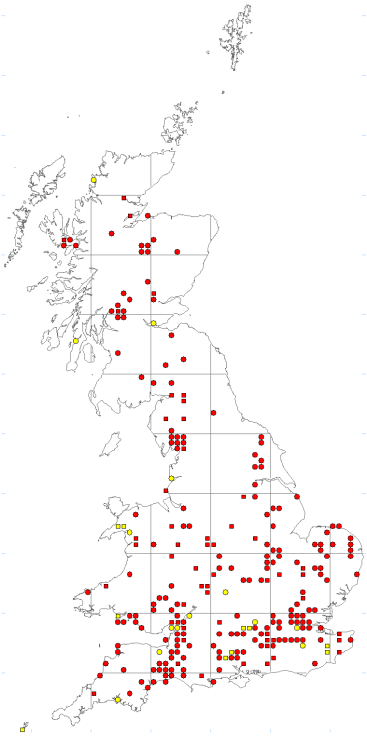


Conisternum tinctinerve

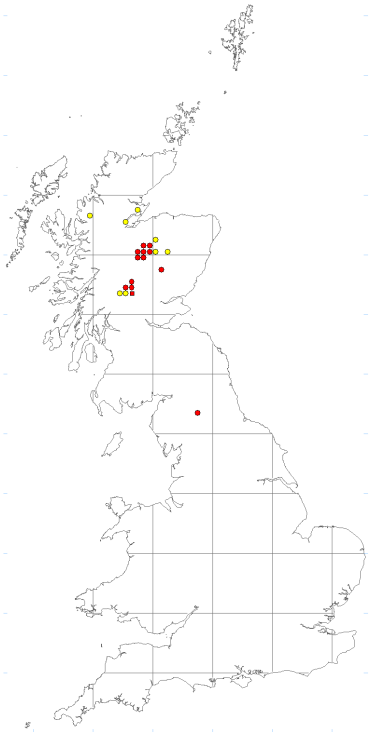
Cordilura aemula



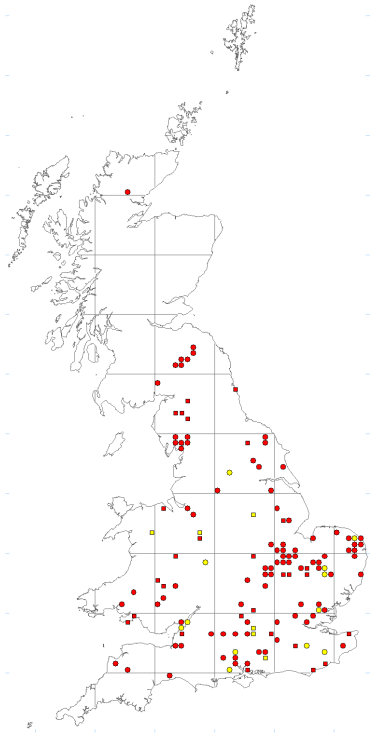
Cordilura albipes



Cordilura atrata

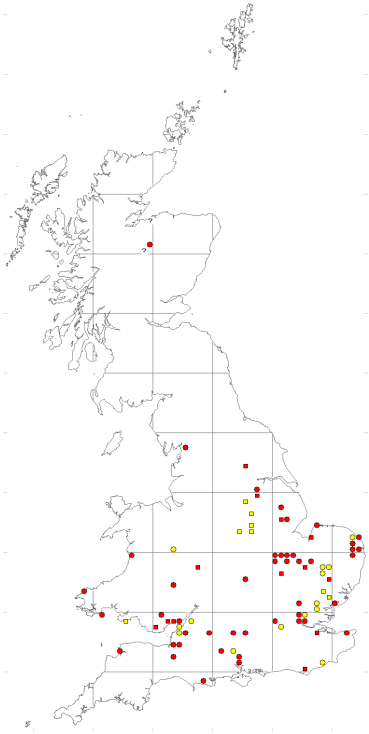


Cordilura ciliata

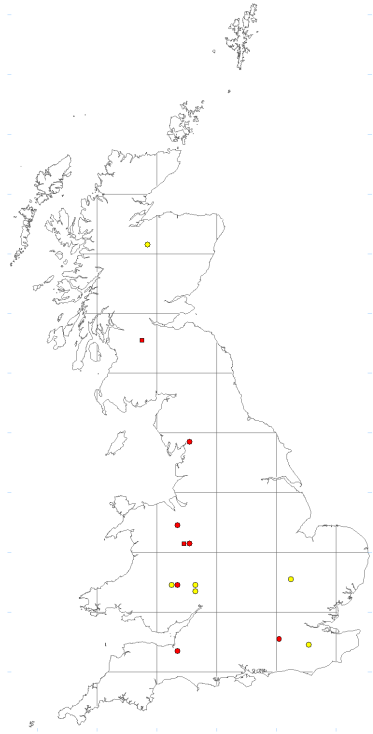


Cordilura hyalinipennis

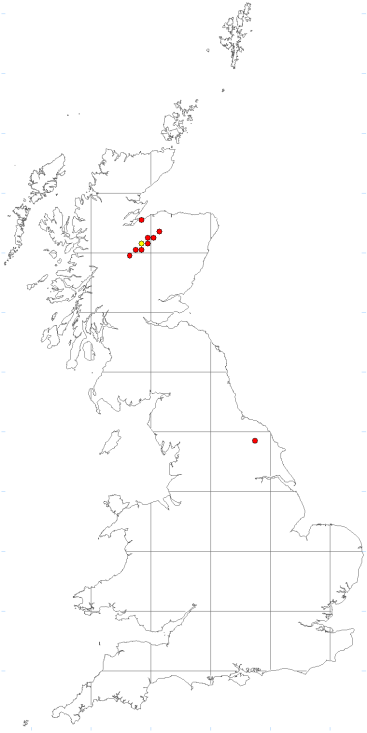
Cordilura impudica



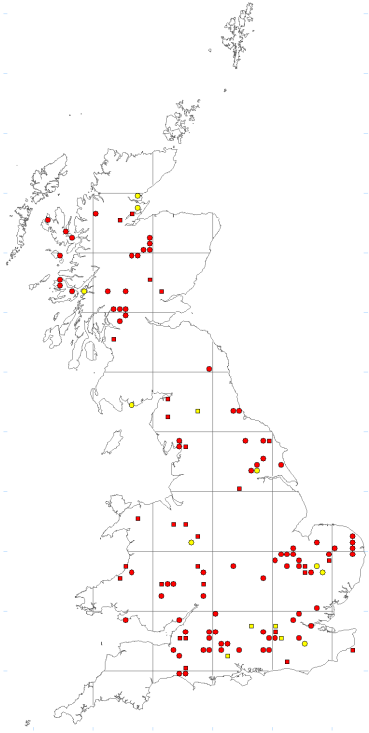
Cordilura picipes



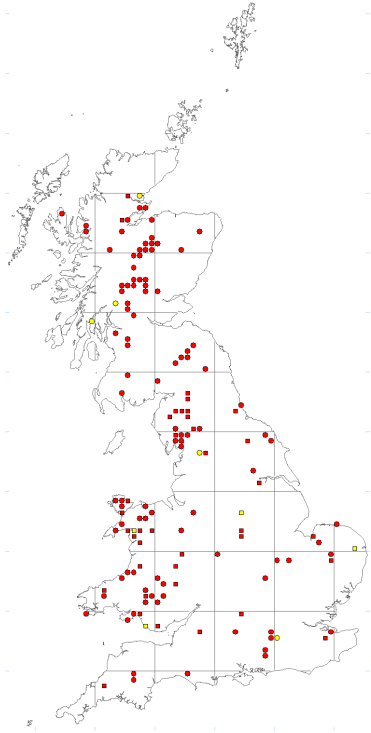
Cordilura picticornis



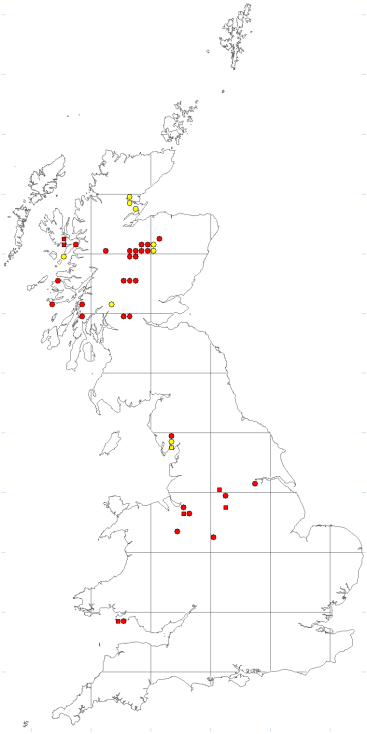
Cordilura pubera



Cordilura pudica



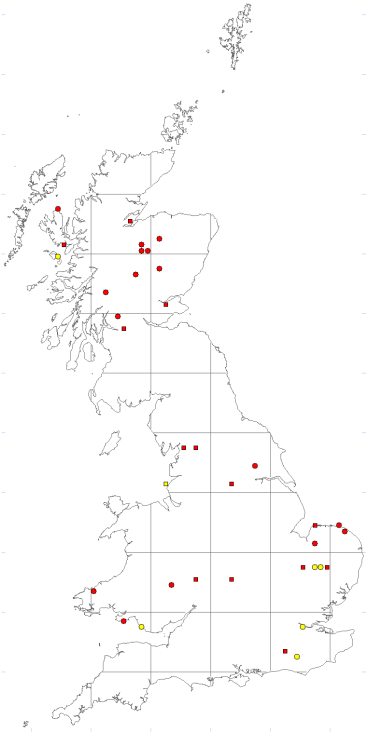
Cordilura rufimana



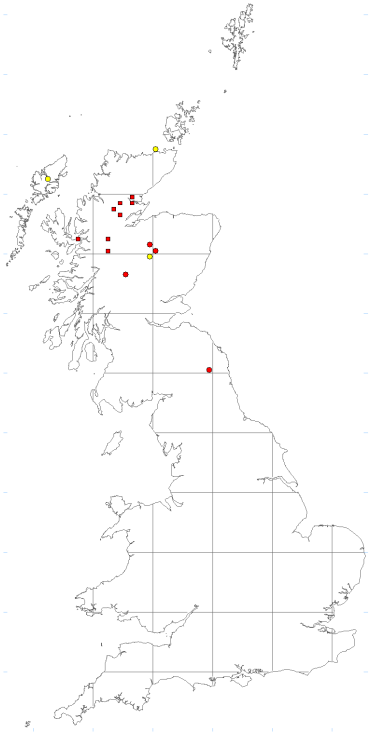
Cordilura ustulata

Cosmetopus dentimanus

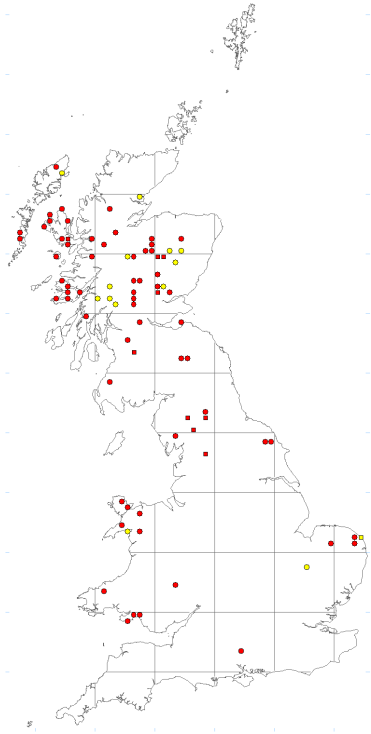
Delina nigrita



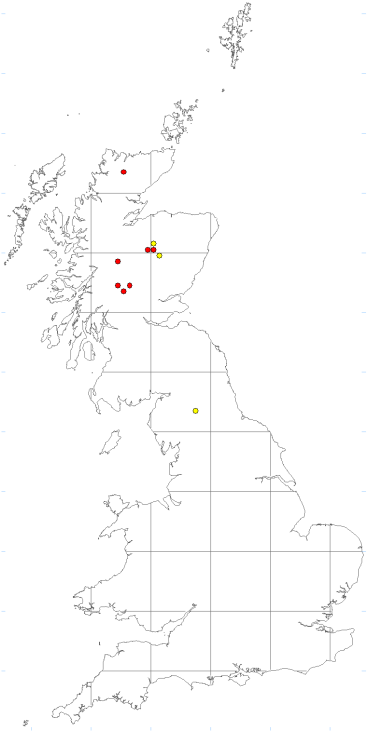
Ernoneura argus



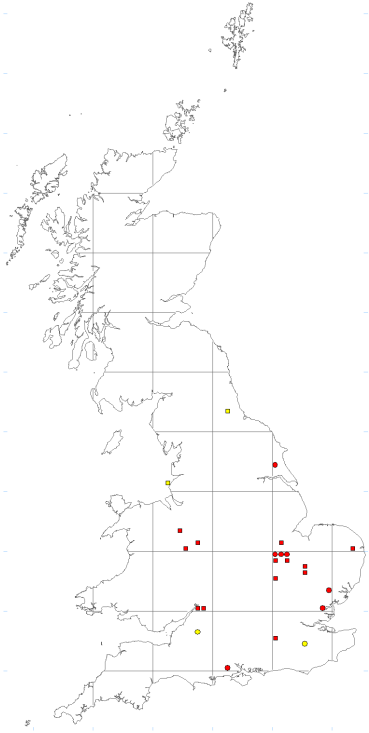
Gimnomera tarsea



Gonatherus planiceps



Hydromyza livens



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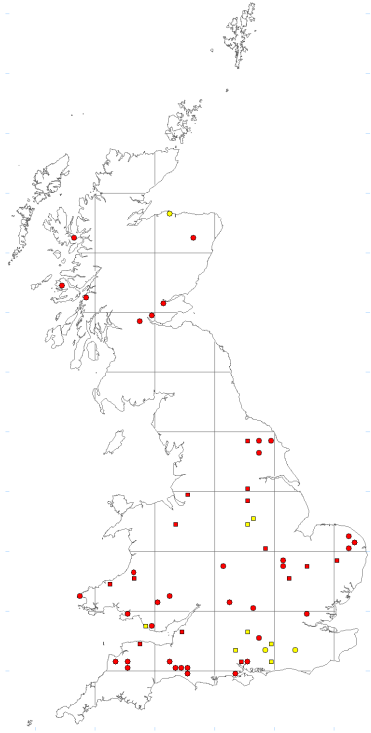

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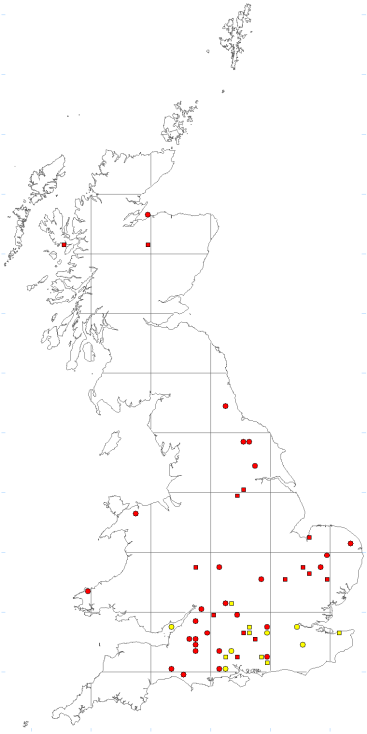
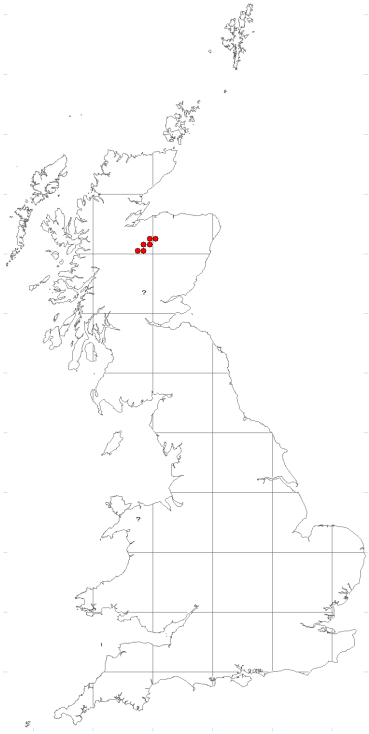
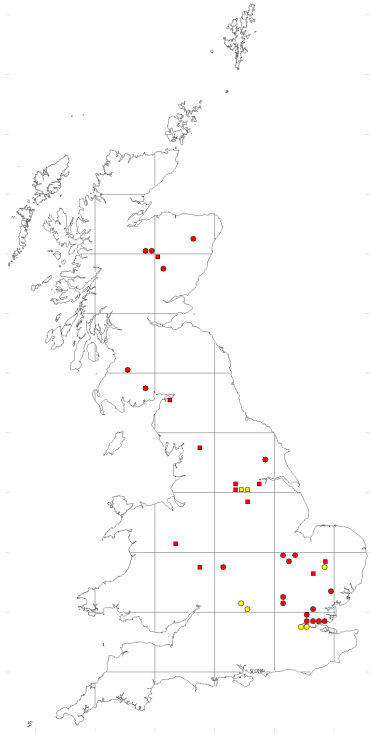


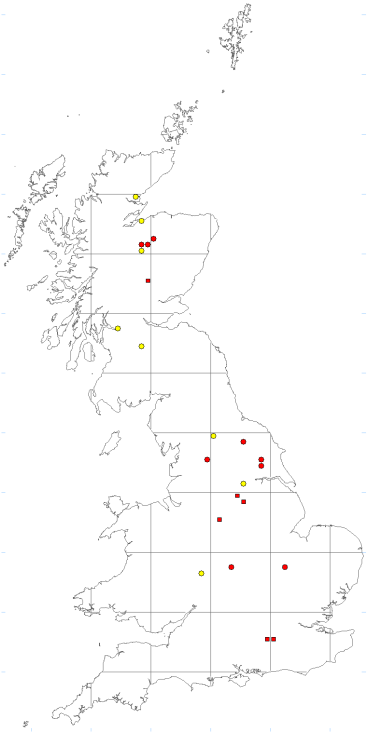
Microprosopa pallidicauda



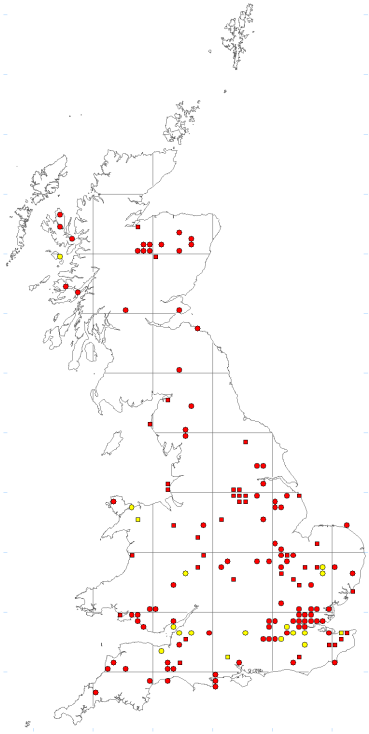
Nanna armillata



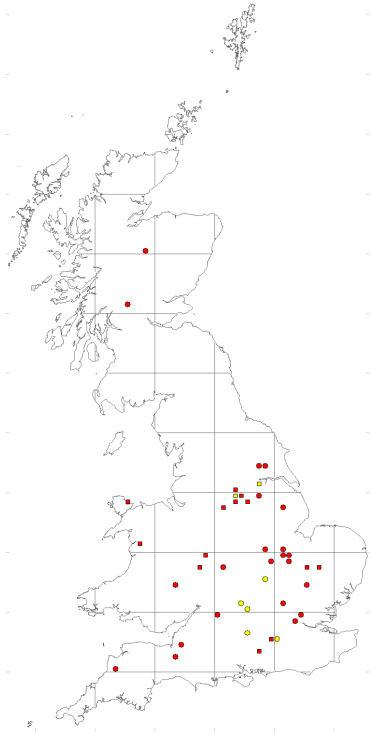
Nanna brevifrons



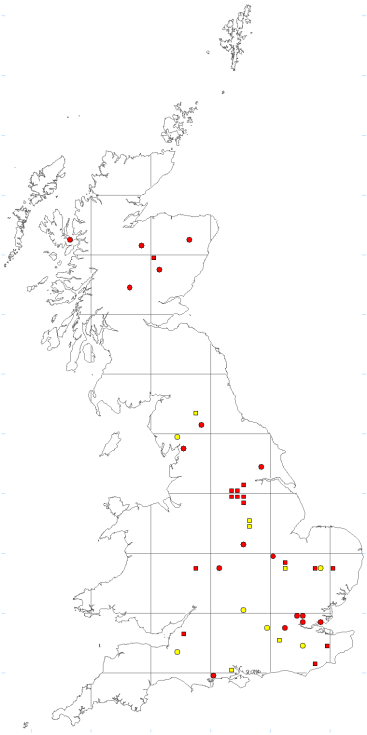
Nanna fasciata



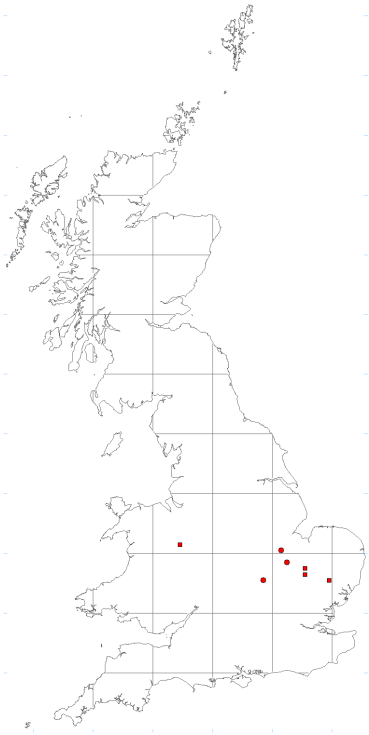
Nanna flavipes



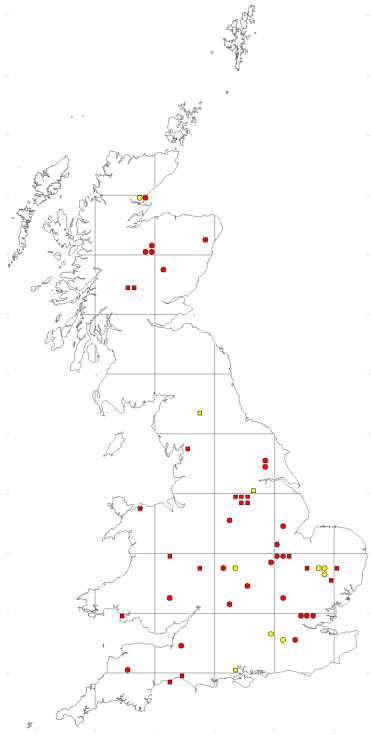
Nanna inermis



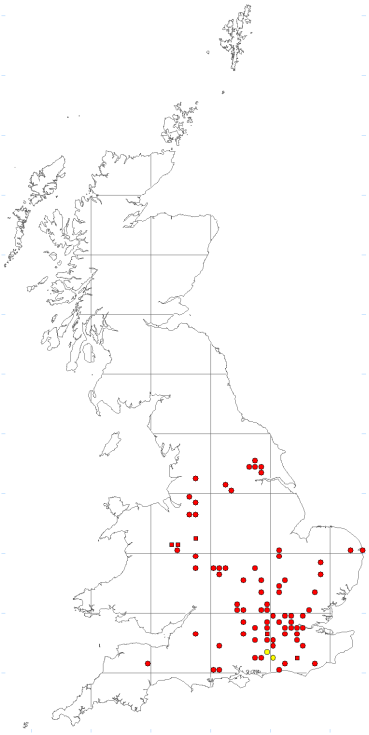
Nanna multisetosa



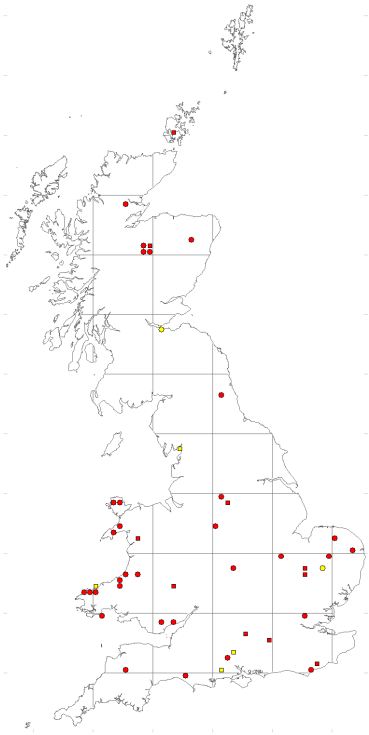
Nanna tibiella



Norellia spinipes



Norellisoma lituratum



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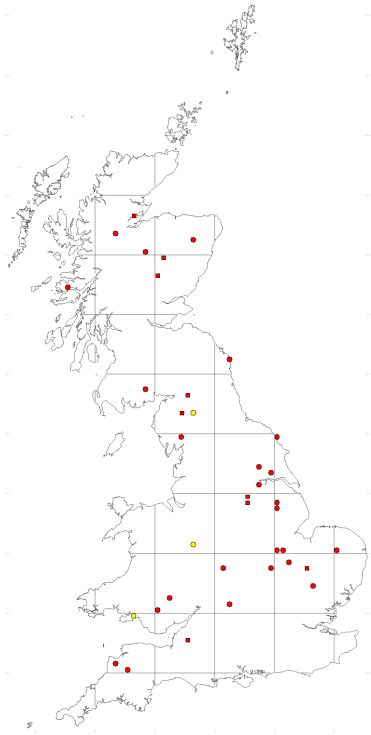

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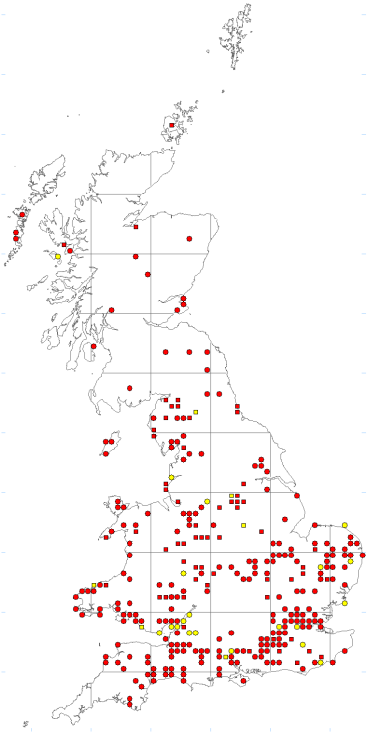
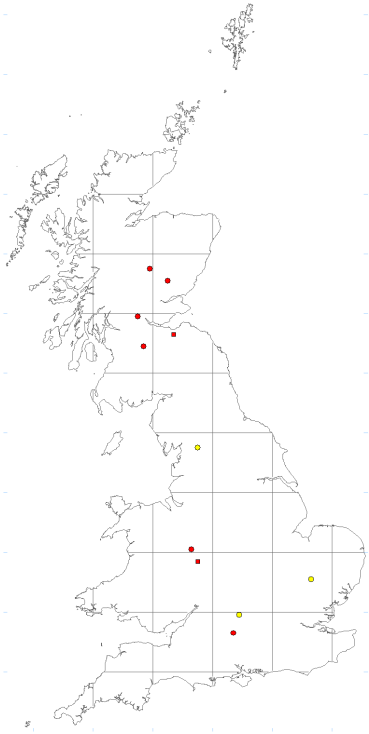


Parallelomma paridis



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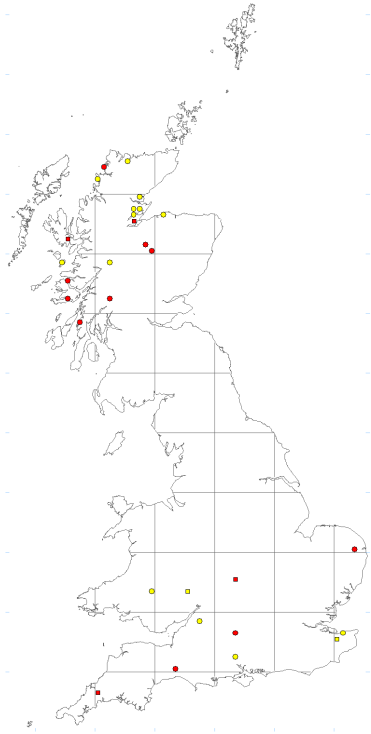
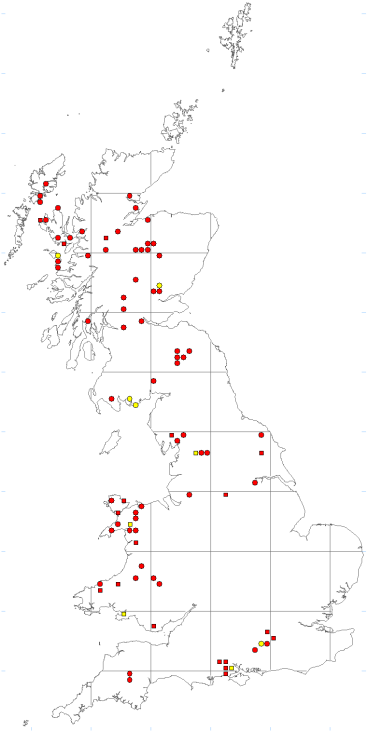
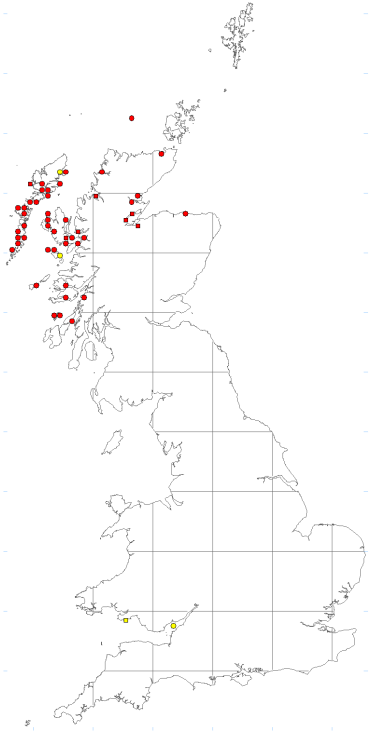


Pogonota barbata



Scathophaga calida



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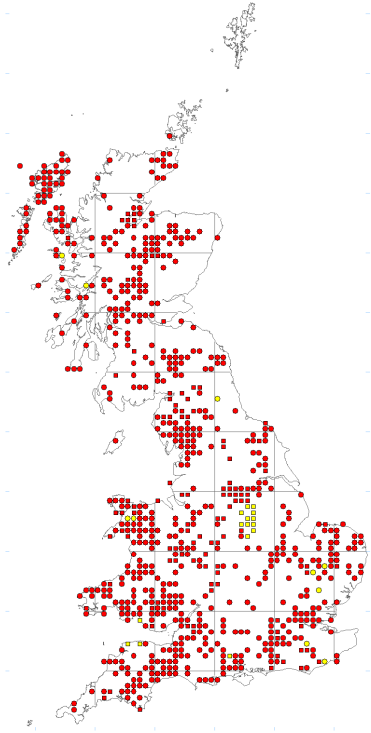

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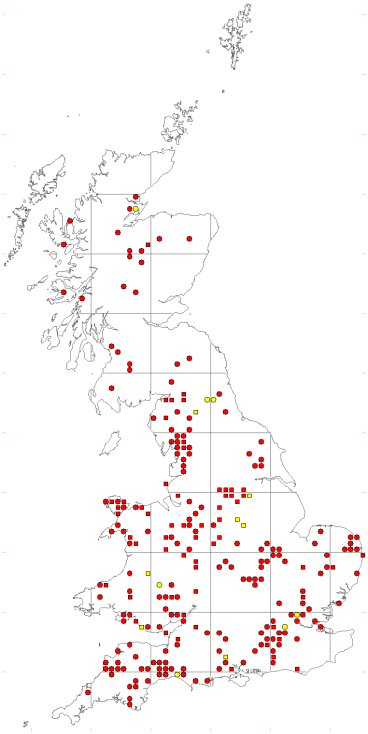

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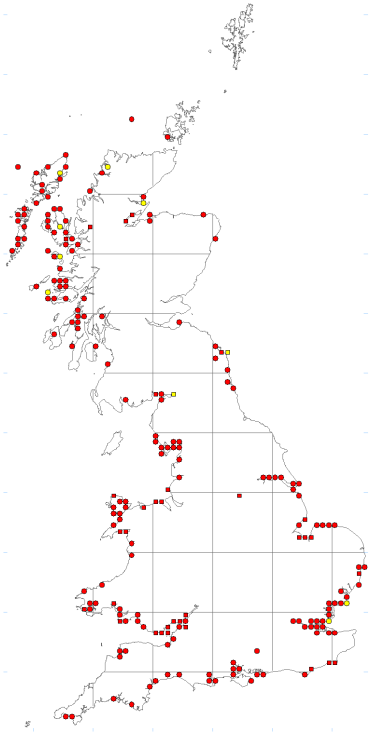

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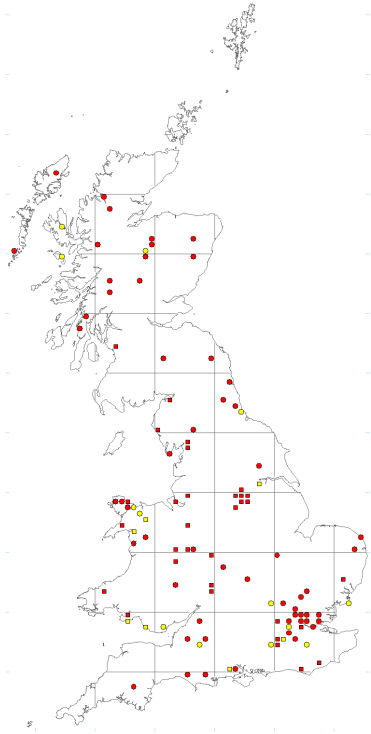

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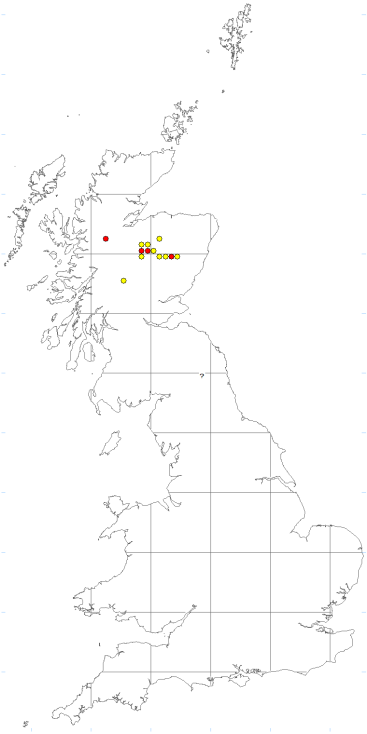

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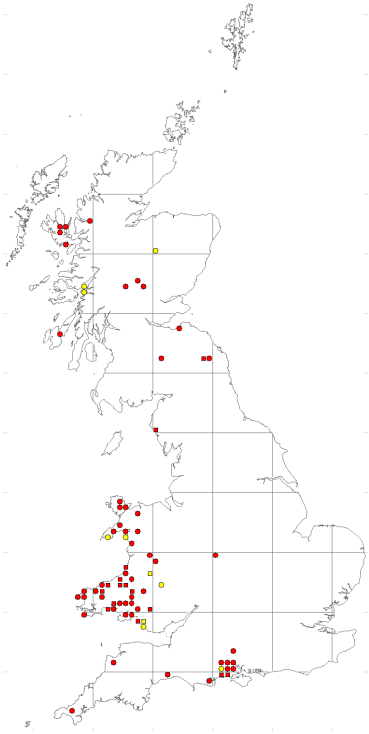
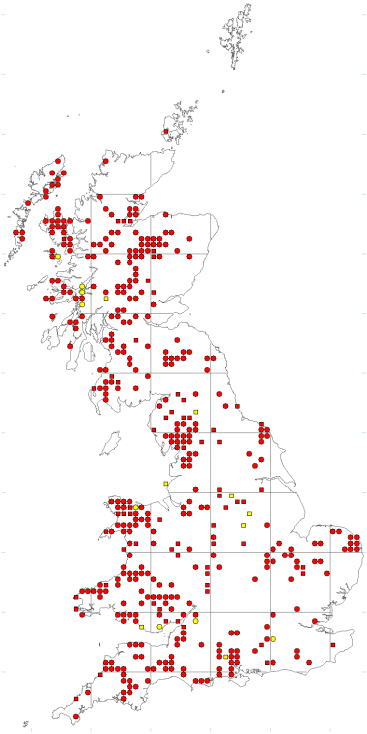


Scathophaga stercoraria

Scathophaga suilla



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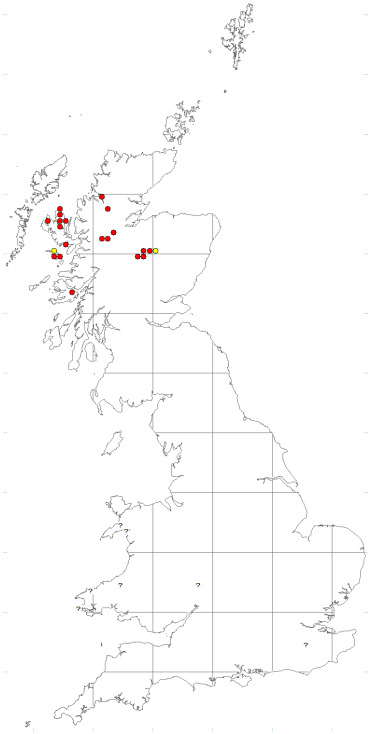
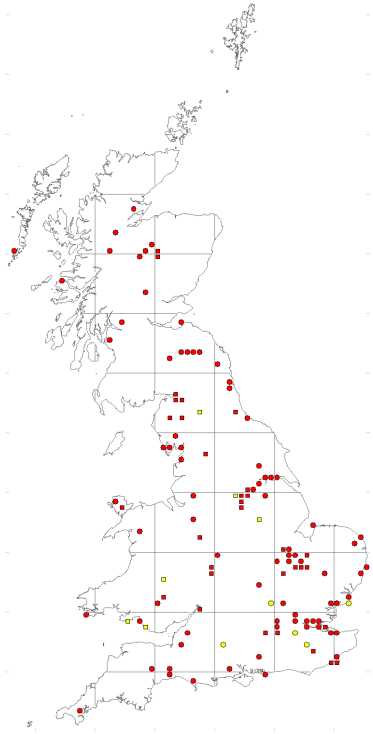
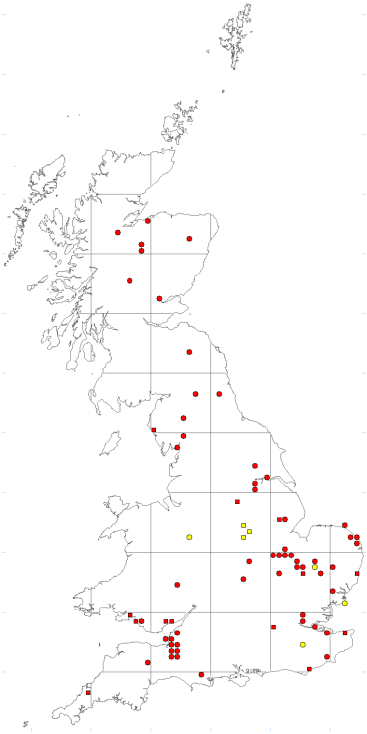


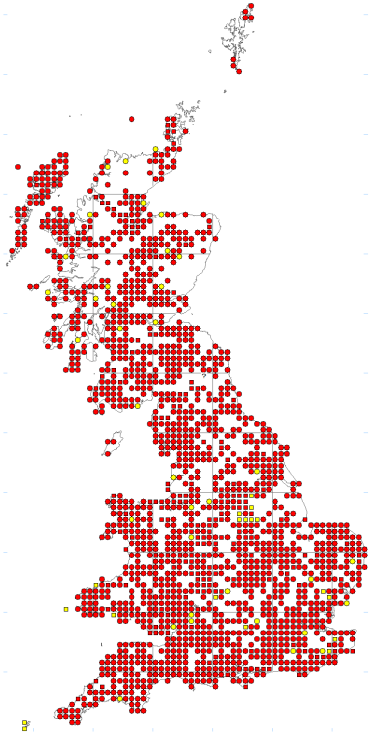
Spaziphora hydromyzina



Trichopalpus fraternus



Coverage



CHECKLIST

Scathophagidae
Scatophagidae
Cordyluridae
Scopeumatidae

DELININAE
DELINA Robineau-Desviody, 1830
CLIDOGASTRA: auctt., misident.
nigrita (Fallén, 1819)
dejeanii Robineau-Desviody, 1830

LEPTOPA Zetterstedt, 1838
filiformis Zetterstedt, 1838
flava (Haliday, 1836) preocc.
flaveola (Zetterstedt, 1838)
dorsata: auctt., misident.

PARALLELOMMA Becker in Strobl, 1894
AMERICINA Malloch, 1923
CHYLIZOSOMA Hendel, 1924
paridis Hering, 1923
vittatum (Meigen, 1826)

SCATHOPHAGINAE
ACANTHOCNEMA Becker, 1894
S. ACANTHOCNEMA sensu stricto
nigrimana (Zetterstedt, 1846)

S. CLINOCEROIDES Hendel, 1917
glaucescens (Loew, 1864)

CERATINOSTOMA Meade, 1885
ostiorum (Haliday in Curtis, 1832)
maritimum Meade, 1885

CHAETOSA Coquillett, 1898
punctipes (Meigen, 1826)

CLEIGASTRA Macquart, 1835
CNEMOPOGON Rondani, 1856
apicalis (Meigen, 1826)

CONISTERNUM Becker in Strobl, 1894
CONIOSTERNUM Becker, 1894
decipiens (Haliday in Curtis, 1832)
dalmatica (Becker, 1894)
obscura (Fallén, 1819)
tinctinerve (Becker, 1894)

CORDILURA Fallén, 1810
S. CORDILURA sensu stricto
CORDYLURA, error
aemula (Collin, 1958)
atrata (Zetterstedt, 1846)
ciliata (Meigen, 1826)
umbrosa Stephens, 1829, unavailable
impudica (Rondani, 1866)
umbrosa (Loew, 1873)
picipes (Meigen, 1826)
biseta (Loew, 1864)
picticornis Loew, 1864
similis (Siebke, 1872)
pubera (Linnaeus, 1758)
rufipes (Meigen 1826)
asiliformis Stephens, 1829, unavailable
pudica (Meigen, 1826)
rufimana (Meigen, 1826)

S. CORDILURINA James, 1955
PARALLELOMMA Becker, 1894, preocc.
albipes (Fallén, 1819)
ochroleuca Stephens, 1829, unavailable
dispar: auctt., misident.

S. SCOLIAPHLEPS
hyalinipennis (Ringdahl, 1936)
hyalipennis error
ustulata: Nelson, 1965, misident.
ustulata (Zetterstedt, 1838)

COSMETOPUS Becker, 1894
dentimanus (Zetterstedt, 1838)

ERNONEURA Becker, 1894
argus (Zetterstedt, 1838)

GIMNOMERA Rondani, 1866
GYMNOMERA emend.
tarsea (Fallén, 1819)

GONATHERUS Rondani, 1856
planiceps (Fallén, 1826)

HYDROMYZA Fallén, 1813
livens (Fabricius, 1794)
glabra (Walker, 1849)

MEGAPHTHALMA Becker, 1894
pallida (Fallén, 1819)

MICROPROSOPA Becker, 1894
pallidicauda (Zetterstedt, [1838])
pallicauda, error
haemorrhoidalis: auctt., Brit., misident.
pallipes: auctt., misident.

NANNA Becker, 1894
AMAUROSOMA Becker, 1894
armillata (Zetterstedt, 1846)
brevifrons (Zetterstedt, [1838])
fasciata (Meigen, 1826)
brevipennis (Curtis, 1834)
flavipes (Fallén, 1819)
inermis (Becker, 1894)
multisetosa (Hackman, 1956)
tibiella (Zetterstedt, [1838])

NORELLIA Robineau-Desviody, 1830
spinipes (Meigen, 1826)
pseudonarcissi Robineau-Desviody, 1830

NORELLISOMA Wahlgren, 1917
lituratum (Wiedemann in Meigen, 1826)
flavicorne (Meigen, 1826)
spinigera (Zetterstedt, 1838)
opacum (Loew, 1864)
flavicorne: Collin, 1958, misident.
spinimanum (Fallén, 1819)
nervosum: auctt., misident.
? *striolatum* (Meigen in Curtis, 1826)

POGONOTA Zetterstedt, 1860
barbata (Zetterstedt, [1838])
hircus (Zetterstedt, [1838])

SPAZIPHORA Rondani, 1856
SPATHIOPHORA, emend.
SPATHIPHORA, emend
hydromyzina (Fallén, 1819)
fallenii (Schiner, 1864)

SCATHOPHAGA Meigen, 1803
SCATOPHAGA, error
SCOPEUMA Meigen, 1800, suppr.
PYROPA Illiger, 1807
SCAPTOMYZA Fallén, 1810
SCATINA Robineau-Desviody, 1830
calida (Haliday in Curtis, 1832)
rudis (Haliday in Curtis, 1832)
villipes (Zetterstedt, [1838])
furcata (Say, 1832)
squalida (Meigen, 1826)
? *varipes*: Collin, 1958, misident.
inquinata (Meigen, 1926)
? *analis* (Meigen, 1826)
turpis (Curtis, 1832), unavailable
litorea (Fallén, 1819)
arrogans (Haliday in Curtis, 1832)
lutaria (Fabricius, 1794)
comito (Harris, [1780]), unavailable
maculipes (Zetterstedt, 1846)
pictipennis (Oldenberg, 1923)
maculipennis Verrall, 1901, nomen nudum
maculipennis (Ringdahl, 1936)
scybalaria (Linnaeus, 1758)
lucophaeus (Harris, [1780])
eximia (Haliday in Curtis, 1832), preocc.
anomola (Collin, 1958)
stercoraria (Linnaeus, 1758)
exilis (Harris, [1780])
merdaria (Fabricius, 1794)
suilla (Fabricius, 1794)
spurca (Meigen, 1826)
scatomyzoides (Zetterstedt, [1838])
taeniopa Rondani, 1866
ordinata (Becker, 1894)

TRICHOPALPUS Rondani, 1856
fraternus (Meigen, 1826)

55 species in 23 genera

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