Newsletter No. 24
Autumn 2019

Editorial

We are now three! Nigel Jones is taking responsibility for Empididae, leaving Stephen to concentrate on Hybotidae and making the distribution of effort more equitable. Nigel is the County Diptera Recorder for Shropshire and co-author of a provisional atlas of bees, wasps and ants in this county. He earlier worked for Natural England but is happier beavering away at insects.

Interesting dolichopodids from the Dipterists Forum meeting at Stoke, 23-30 June 2018

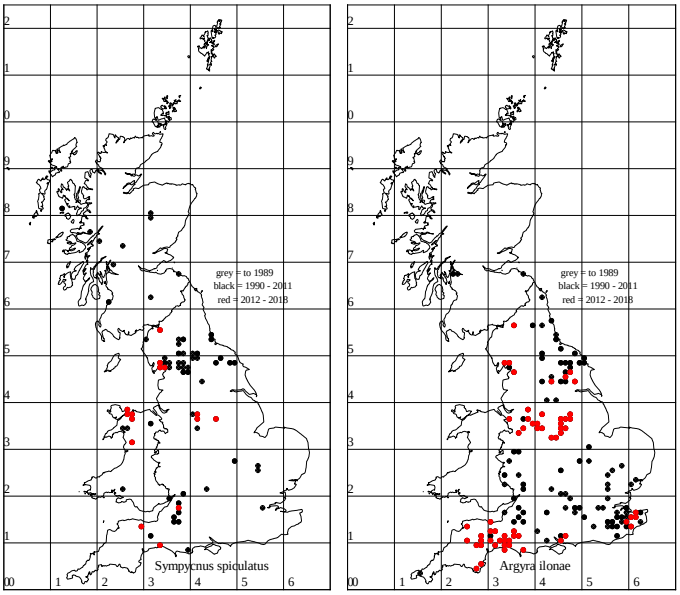
Martin Drake

We beat all previous records for the number of species, with 116 clearly distinct species. They came from 62 sites in 30 hectads. Top sites were Cholmondeley Park and Chee Dale with 34-35 species, and Lynton Moss, Jackson's Coppice and Shavington Park not far behind with 27-29 species. Unsurprisingly, these top sites also supported most uncommon species.

The ranking of the most frequent species was fairly predictable, with *Dolichopus plumipes* heading the field at 57 sites, followed by *Chrysotus gramineus* at 52 sites, but then a gap before the tail of slightly less frequent species starting with *Sympycnus pulicarius*, *D. trivialis* and *D. ungulatus* at 40 to 41 sites. Of the marginally less common species, it is worth mentioning that *Argyra ilonae* (12 sites) was the second most frequent in the genus, after the ubiquitous *A. leucocephala*, and as frequent than the usually common *A.* '*argyria*' group (females of three indistinguishable species, and frustratingly more common than their males)

There were a number of rare or scarce species. The most unexpected was *Campsicnemus magius* (Vulnerable) at the inland saltmarsh of the Northwich Flashes. This is published in our article in *Dipterists Digest* so I won't go into any more detail here. Among the nationally scarce or otherwise rare species, none was frequent although *Medetera* '*borealis*' and *Sympycnus spiculatus* were each found at four sites, and *Systenus bipartitus* at two, while the rest were found at just one site each.

Sympycnus spiculatus is an upland species closely associated with limestone geology, and usually found in woodlands, often but not always with streams and seepages. Three of the four sites for this species were squarely within the Carboniferous Limestone of the Dales and the last probably on the Permian or Triassic red sandstones, although of course there may have been base-rich influence here at Rod Wood. *Medetera* '*borealis*' is a species that I give several names to, depending on which way the wind is blowing, it seems. The



key will take you to four different names, *abstrusa*, *borealis*, *jugalis* and *oscillans*, that may or may not refer to a single species - their genitalia look very similar. Nevertheless, I came up with three of these names, *borealis* being the most frequent. *Medetera parenti* appeared to be a correct identification for this rarely recorded species (from the University's small lake reserve in the middle of town). *Systenus bipartitus* (Data Deficient) was an interesting find as whole genus is difficult to obtain by sweep-netting and many records are derived from rearing material from rot-holes. So getting it at two sites by sweeping was good (Loynton Moss, Millers Dale), and even more remarkable was finding a second poorly recorded species, *S. scholtzii*, at Loynton Moss – quite why these dead-wood species found this site so good is not clear. Other uncommon species included *Rhaphium antennatum* (Shavington Park) and *Thrypticus tarsalis* (Thorswood) which I regard as one of the genuinely uncommon *Thrypticus* (many records are misidentifications). Other uncommon species, which have Nationally Scarce status, although they are quite widespread, were *Neurigona suturalis*, *Syntormon fuscipes* and *S. monilis.*

I am most grateful to the other members of the field meeting, eleven of whom contributed specimens during the week, and

which contained 19 species that eluded me. I note that my top three contributors were also the top three for Andrew Halstead's Honeypot Challenge for the most sawflies.

Reflective surfaces of dolichopodids

Martin Drake

There's a general presumption that male dolichopodids use their fancy legs and sometimes their wings for courtship. However, there are other parts that may also be important in attracting likely mates. The 'flashing' palps of *Aphrosylus* on seashore rocks is very obvious, and must surely be a signal from males to females, wholse palps are less silvery. The scutellum of *Campsicnemus* is always shinier and more metallic than the rest of the thoracic dorsum, and may be used in recognising a likely partner when flying over grounded individuals, even if recognition cannot be not species-specific. Then the small flat area in front of the scutellum, given some prominance by dolichopodid taxonomists, can act as a brilliant mirror that shines a pinpoint of sunlight if viewed at the right angle – again, from above like the scutellum. I've seen this in a possible *Anepsiomyia* (it flew away too quickly to get a good view). So there's a field of endeavour for the lazy dipterist to look down at sitting flies to check how conspicuous they may be.

Dolichopodid name change

Marc Pollet and Andreas Stark have discovered that our *Orthoceratium lacustre* is in fact *O. sabulosum* (Becker) (Pollet & Stark 2018 – reference at end of newsletter). *O. lacustre* turns out to be a southern, more Mediterranean species, and the fly in the middle and north of Europe that everyone has been calling *lacustre* is *sabulosum*.

Females of the *Campsicnemus curvipes* group

Martin Drake

We've all struggled to identify females of the commonest *Campsicnemus* which fall into a group of convenience with no taxonomic justification comprising *armatus*, *curvipes*, *loripes* and *scambus*. They fall out together at the end of d'Assis Fonseca's (1978) key which is based on Parent's monograph (1938) with some re-arrangement and additional characters. I here show part of the reason why we fail to make sense of this key, and at the end I present a new set of couplets for this group.

To separate these four species, Fonseca uses two wing vein ratios, the relative width of the face and the colour of two characters. I have always had greatest trouble with the ratios, contrary to expectation, since structural characters are often more stable than colour. However, if it were not for the reliability of the colour, I would have been unable to put names to my specimens. To investigate the usefulness of the ratios, I measured the relevant vein lengths and minimum width of the epistoma (the narrow upper part of the face) and the widest bottom edge of the clypeus (the lower wide part of the face), although Fonseca compares the minimum face width to the distance between the ocellar setae which I find sometimes difficult to see except in tidy specimens. Fonseca and Parent say that the proximal section of vein M_1 is measured to the 'root' (racine in French, meaning root or base) – a term that is not defined and has always baffled me. So I measured the distance from the cross-vein dm-cu to three identifiable points near the base of the wing (see my points b, c & d on the *armatus* wing figure in key). Deciding where the base of the wing is in flies is easy at low magnification but when looked at closely it becomes very difficult to fix on an easily recognisable structure where the 'base' starts owing to the complexity of the emerging veins. I measured ten specimens since I have been measuring ten of each sex of every species for body and wing length for the handbook that is in progress. This is too low a number of specimens for a proper publication but adequate for the point that I am trying to make.

I ran a principal component analysis for the following ratios: a) apical section of Cu : dm-cu, b) M_1 from wing-tip to dm-cu : dm-cu to point b - the result was the same whichever 'root' point I used - and c) the face ratio. These three ratios separated *armatus*, *curvipes* and *scambus* into nearly non-overlapping clusters, but *loripes* was all over the place (yellow triangles in Fig. 1). I am fairly confident that my identification of *loripes* is correct because the face and front coxal colour fit consistently with what Parent and Fonseca say, even if these ratios do not; as *armatus* is an obligate saltmarsh species, that eases the identification of inland specimens. So the ratios are just, but only just, helpful for three of the species but become useless owing to the muddling by *loripes*.

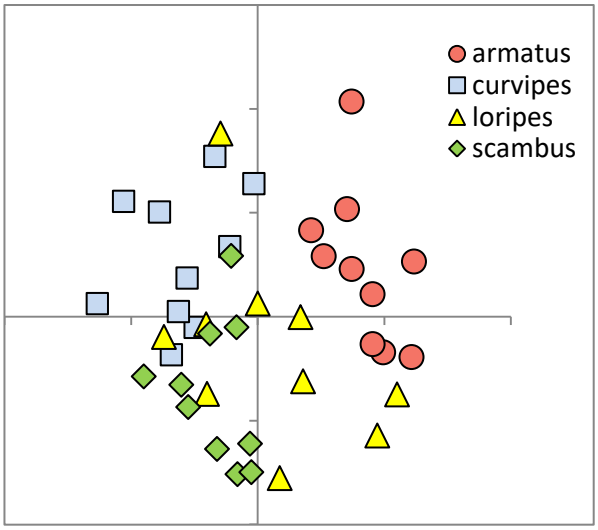


Fig. 1. First two axes of a principal component analysis for the four *Campsicnemus* species.

Are the ratios really different between species? Mean values are similar, although those for *curvipes* and *armatus* are probably significantly different as they lie at either end of the spectrum in Fig.2, but probably not different from the other species (if different, the 95% error bars do not overlap – I didn't bother with a formal test). But the ratios are too close for comfort in a key where most users will not actually measure the characters using an eye-piece graticule. And most damning is the opening part of the couplet saying "Basal section of discal vein [M_1], measured to root, obviously shorter than apical section" for *armatus*, compared with "Basal section of discal vein subequal in length to apical section" for the other three species. So is the root my point 'd' very close to the base, or my point 'b' which is the first clearest landmark moving back along M_1? Neither gives a workable fit to the Parent / Fonseca couplet.

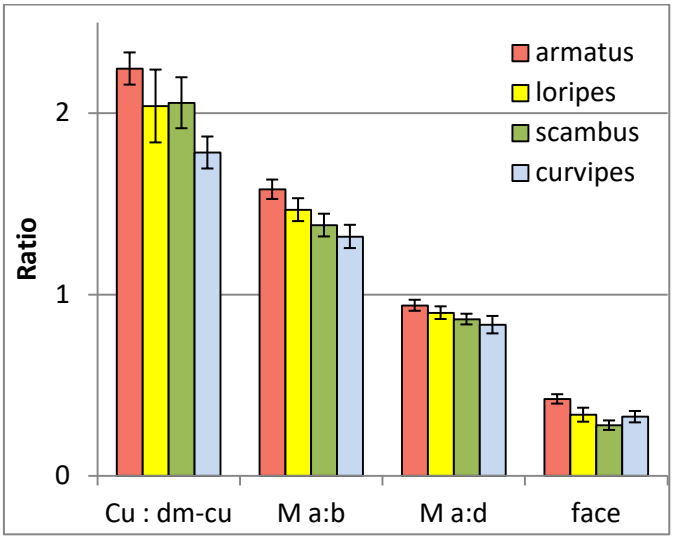


Fig. 2. Mean with 95% confidence limits of the ratios for the distal section of Cu to the dm-cu crossvein, the basal to distal sections of M_1 (two alternatives for M_1), and narrowest to widest parts of the face, for the four *Campsicnemus* species.

Enough of the minutiae! Ignore Fonseca's and Parent's last couplets and use mine instead, replacing couplet 8 onwards in Fonseca and couplet 16 in Parent. This is my provisional key for the handbook so the couplet number relates to its position there. Characters in square brackets are additional and may be shared with other species but are helpful pointers. My figures are pencil drawings so not perfectly crisp.

5(3) Lower postoculars black almost or completely to lower margin of eye, no or very few white setae (black setae may have yellow reflections so view from different angles); anal vein short and wide to its tip, fuzzy-edged, reaching no further than half-way to wing margin (if imaginarily extended), and no faint fold continuing its projection near margin; outline of hind margin to where anal vein points slightly indented so anal lobe is broader; costa spinules between R_1 and R_{2+3} always identical, none differentiated; clypeus brown, not or only slightly paler than brown epistoma. [epistoma narrow, about ½ width of tip of clypeus; front femur usually mostly yellow, always yellow on internal faces if largely black; frons shiny to front corners by antennae]. ..... *scambus*

- Lower postoculars black to about half-way down eye then obviously white in lower half; anal vein tapered from base to tip which extends more than half-way to wing margin and is extended by a curved fine fold running just posterior to vein, at low magnification appearing as vein itself reaching margin; outline of wing margin smoothly curved near end of anal vein; costa between R_1 and R_{2+3} with a few spinules near R_{2+3} slightly longer and stouter between every 2-5 fine setulae; clypeus usually a shade of yellow (sometimes almost pale grey), contrasting with paler grey epistoma. [occasional intermediate specimens of the following three widespread species cannot be identified] 6

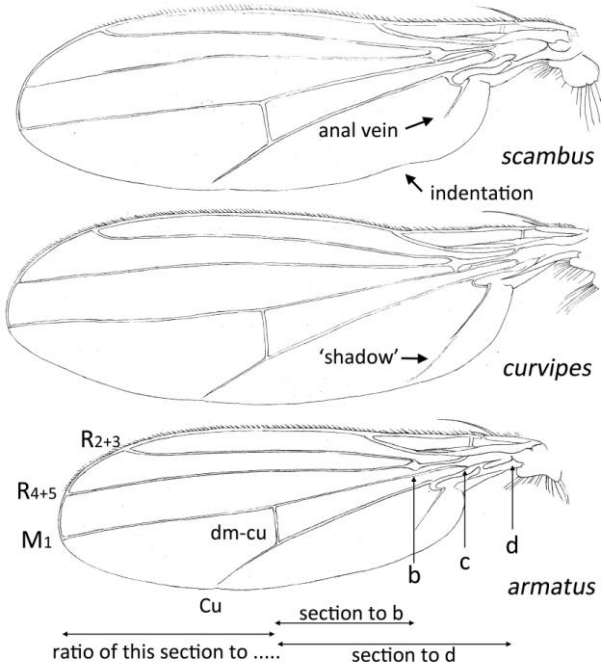
6 Front coxa black with yellow tip; frons pale-dusted in front corners next to antennae, completely obscuring ground colour, dusting continuing same quality as on epistoma. [crossvein dm-cu more than half length of apical section of Cu; apical section of M_1 beyond dm-cu less than 1.5 times distance from fat node on R to dm-cu; mid femur with well marked dark ventral streak in basal half; hind metatarsus slightly shorter than second segment]. ..... *curvipes*

- Front coxa yellow, at least on internal face in dark specimens; frons shining or glistening in front corners next to antennae, ground colour showing through, not dusted like epistoma. 7

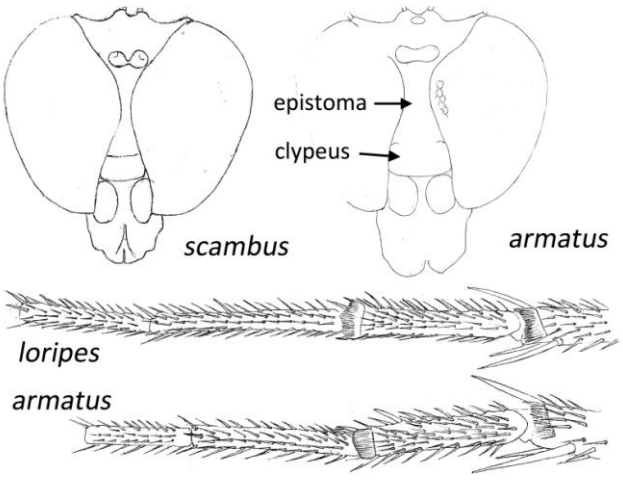
7 Clypeus pale yellow, contrasting clearly with pale grey epistoma; hind metatarsus slightly shorter than second segment when viewed on ventral or posterior faces; mid femora with dark ventral streak in basal half. .... *loripes*

- Clypeus very pale yellow-grey or sometimes pale grey, similar in colour and shade to epistoma; hind metatarsus and second segment same length when viewed on ventral or posterior faces; mid femora without dark ventral streak in basal half. [apical section of Cu twice length of crossvein dm-cu; apical section of M_1 beyond dm-cu more than 1.5 times distance from fat node on R to dm-cu; epistoma wider, about 0.4 times width of tip of clypeus; habitat saltmarsh]. ..... *armatus*

Wings of *Campsicnemus*



Face and hind tarsus of *Campsicnemus*



The Empids and Hybotids of Lancashire and Cheshire

Phil Brighton

The publication in 1959 of *The Diptera of Lancashire and Cheshire, Part I* by Leonard Kidd (see Obituary in DF Bulletin No 77) and Allan Brindle in 1959 was a landmark in going beyond a simple checklist to providing distributional and phenological data. This was in the form of the specific locations for species found at 4 or fewer sites in each of the three vice-counties of the region (VCs 58, 59, 60) and the seasonal range of dates. The main source of information was the record cards compiled by Harry Britten, a large of proportion of the data being from his own collecting in the region between 1920 and 1950 (see Ref 1). Part 1 covered the Nematocera and lower Brachycera, leaving the Acalyptrates and Calyptrates for a projected Part 2, which sadly never appeared. There were however two updates with newly recorded species in 1964 and 1971.

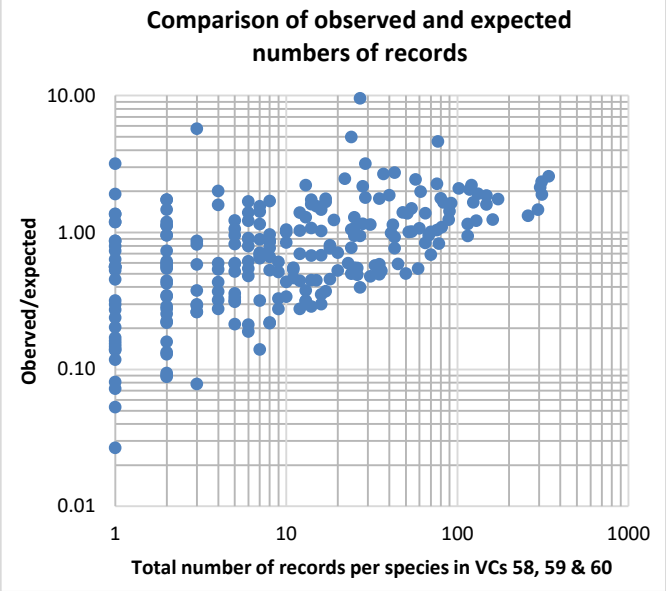
As mentioned in my "Beginners Corner?" article in the previous DF Bulletin (No 87) I have been engaged in updating this regional data review over the last few years. This project has grown out of my investigations of the large amount of Diptera data held in the Cheshire local records centre (see DF Bulletin No 77). I have also been inspired by Pete Boardman's atlas of the craneflies of Shropshire (ref 2) and Steve Hewitt's compendium of the Diptera of Cumbria published on the Carlisle Natural History Society website (ref 3). In Lancashire and Cheshire, the Tanyptera Project at Liverpool Museum has set up a website where comparable regional publications across the whole range of terrestrial invertebrates are being published (ref 4). These include a revision of Kidd and Brindle's list of fungus gnats published by Peter Chandler in 1991 in the journal of the Lancashire and Cheshire Entomological Society (ref 5), all the volumes of which from 1881 onwards are also available on the website.

Amongst this rapidly growing body of information, you can also find four new regional diptera lists by me, for Soldierflies and Allies, Sepsidae, Craneflies, and, most recently, Empidoidea, Part 1. This last rather clumsy title results from the division of Empididae as described in J. E. Collin's great monograph of 1961 into Empididae and Hybotidae and the two small families of Atelestidae and Brachystomatidae. The full superfamily Empidoidea also includes the Dolichopodidae for which Glenn Rostron is currently working on the regional data.

All my lists follow a similar format to that used for the Cumbrian lists, boiling down the available data into the number of records, the number of hectads and the earliest and latest years recorded for each species. I have combined data from the local records centres and national recording schemes, as well as my own records and also my transcriptions of the full data from Harry Britten record cards at Manchester Museum (ref 1).

In the case of the Empididae s. l., as we can perhaps call the Empidoidea minus the Dolichopodidae, few of the regional records are yet available on the NBN Atlas for various reasons. They amount to 7,232 in number across 243 species, amounting to 62% of the British checklist. As well as the individual vice-county lists in the alphabetical order of families and species, I have also compiled a regional list ranked in descending order of number of records. These statistics of observed relative abundance show a striking parallel with the figures derived from my own records across a wider range of Diptera in my article in Bulletin 87: 51% of the records come from just 8.6% of the species while at the other end of the scale just 2% of the records account for 32% of the species.

When I compiled the data for Sepsidae, I found that the ranking of numbers of records was very close to that for the national data published by Steve Crellin in DF Bulletin No 79. This suggests that the commonest species are the same everywhere in most of the UK. To investigate whether the same is true for the Empididae s. l., I have used numbers of site records kindly supplied from the national recording scheme by Martin Drake – a total of 69,045 records. With the much longer list of species, a comparison of ranks is more difficult, so instead I have plotted the number of regional records for each of the 243 species and the "expected" number based on the number of national records factored down by 7,232/69,045. Because of the large variation in both the numbers of records and the ratios of "observed" and "expected" numbers, logarithmic (base 10) scales are used on both axes.



This scatter plot shows that a large proportion of the data is within a factor 3 or so from equality of the observed and expected. The commonest species, with over 100 records, are almost all recorded more often than predicted. This may be partly because the ERS data refer only to presence at "sites" without account of repeated records, whereas most of the recent regional records are to 100m accuracy and resolved to specific dates. Another factor is that the ERS data of course includes data from species not yet recorded from the region.

At the lowest end of the scale, the singleton records have a wide range of observed/expected (O/E) ratios between 0.03 and 3.18. Lower values represent species which must be commoner in some other parts of the country, but scarce in north-west England, while high values relate to scarce or rare species which appear to have a regional stronghold. The three species with over 10 records and an O/E greater than 3 are *Dolichocephala guttata* (4.6), *Hilara clypeata* (5.0) and *Hilara albipennis* (9.6).

Following on from my article in the last Bulletin, I will wind up with the list of 20 most commonly recorded species in the Lancashire and Cheshire data – ones which are highly likely to be encountered very soon by anyone starting to record this group, accounting for 49.7% of all the regional records. Like almost all the Empididae and Hybotidae, these species are all predators on smaller insects to be found in well-vegetated habitats. Of course one would expect the commonest species to be generalists, but it seems that overall few Empids and Hybotids are specifically associated with wetland or coastal habitats, in contrast to the Dolichopodidae.

1. *Hybos culiciformis*

The two common *Hybos* species are instantly recognisable, though not separable, in the net by their long swollen (or "incrassated" according to Collin) hind femora. They start appearing relatively late in the season from July onwards in both open and shaded habitats. *H. culiciformis* records amount to 4.7% of the total number.

2. *Ocydromia glabricula*

This is a small (around 4mm) and slender hybotid which I associate much more with woodland. The short and rounded third antennal segment marks it out from the many rather similar genera. There is a second British species which is very much rarer.

3. *Bicellaria vana*

While the genus is readily identifiable from the pattern of wing veins, the identification of the 11 *Bicellaria* species covered in Collin (1961) relies on subtle differences in features such as the lengths of legs and the bristles on them. This is particularly true for distinguishing between *B. vana* and *B. sulcata.* In fact Kidd and Brindle (1959) listed only *sulcata* as occurring in Lancashire and Cheshire, while all the more recent records relate to *B. vana.* Collin's main character for separating the females is whether the thorax is more or less shining, and the differences in the male genitalia seem rather small from the diagrams in the book. In fact, Adrian Plant has reported that even Collin's separation of these two species has been found wanting (see DF Bulletin 72, ref 6). *B. sulcata* is regarded as much scarcer and more northern in distribution. Despite this aura of uncertainty about the status of these two species, it would be a greater error to leave these records out of the reckoning altogether.

4. *Empis tessellata*

As the largest of the group, around a centimetre in length, and with a penchant for feeding off hogweed flowers, this species must be the most obvious to the general recorder and a popular subject for the digital photographer, and so possibly better recorded than most.

5. *Empis livida*

This species is only slightly smaller than the previous one and similar in its habits. I am not sure that it is that easy to distinguish the two in the field or on photographs – the distinguishing feature of veins stopping short of the wing margin being difficult to see in such circumstances. It is the most frequently recorded species in the Recording Scheme database.

6. *Platypalpus pallidiventris*

It is quite surprising that a *Platypalpus* should be this high in the rankings, as individual species are not particularly memorable or noticeable in the field: *P. pallidiventris* is actually second in the national ranking. This genus has the most species within the group and they are all rather small, often 3mm or less. Nevertheless their thickened mid femora and their strutting gait as they march up the inside of the net make them not too difficult to pick out. Small trees or scrub and the edges of woods seem to be good places for finding the genus. Quite a few species have been added to Collin's (1961) list with a new key being provided by Adrian Plant in DF Bulletin No 73 (ref 7).

7. *Hilara maura*

Hilara is another large genus, for which Collin (1961) remains the main identification resource. While there are some tricky couplets comparing terms such as "greyish black" and "dull black" in the key, *H. maura* soon becomes familiar from its fairly large size (4mm) and the pattern the thorax of strong white bands which vanish or reappear with different angles of view. Like many other *Hilara*, the species tends to form large mating swarms over still or flowing waters.

8. *Hybos femoratus*

On close examination this is easily distinguished from the other *Hybos* species by the extensive yellow on the anterior legs and the shiny zones of the thorax. I have often found it together with *H. culiciformis* (No 1 above).

9. *Empis nigripes*

There are numerous small black *Empis* species, but the male genitalia are mostly distinctive. In the females the extent of fringes of pennate bristles on the legs can be helpful for identification as well as the colour of hairs on the abdomen and the number of bristles on the scutellum.

10. *Platypalpus longicornis*

Little more can be said than has been for *P. pallidiventris* at No 6 above. The regional top 20 includes 4 *Platypalpus* species which are also the top 4 nationally.

11. *Rhamphomyia sulcata*

There are several *Rhamphomyia* which can seem quite abundant early in the season, so it is surprising that only two appear in the top twenty (though No 19 was also a *Rhamphomyia* in Collin). They are generally distinguished from *Empis* species by lack of a fork near the apex of the cubital vein and a shorter proboscis. Also they mostly have very distinctive, even baroque, male genitalia.

12. *Platypalpus minutus*

In 1989, a very similar species *P. australominutus* was defined, with minor differences in the male genitalia and indistinguishable in the female. So many records of this species are best referred to as *P. minutus* agg. The national data indicate that *P. australominutus* constitutes over 10% of the combined population.

13. *Hilara obscura*

Specific names such as *variabilis*, *intermedia* and the like suggest that there may be difficulties in identification. *H. obscura* is no exception, being distinguished from *H. flavipes* mainly by the very long rear claws of the male. Furthermore both are reasonably common. The males are at least distinguished from almost all other *Hilara* in lacking the inflated metatarsus on the front legs. Both sexes have extensively yellow legs, another feature greatly narrowing the field. In the national data the ratio of *obscura* records to those of *flavipes* is 3.2:1 whereas for the regional data it is 2.2:1, a reasonable degree of consistency.

14. *Rhamphomyia nigripennis*

This is a rather small species but the dark wings and extent of yellow on the forelegs make it not too difficult to distinguish from the otherwise similar and not uncommon *R. umbripennis.*

15. *Empis trigramma*

This belongs to the subgenus *Xanthempis* containing 9 mainly yellow British species species. While they vary in the number of stripes on the thorax, some species pairs require care in separation, as with *trigramma* and *punctata*. The national ratio of records for these two is 1.6:1 while for the regional data it is 2.8:1.

16. *Hilara chorica*

This is small and all black like many other *Hilara*, but the very chunky swollen metatarsus on the forelegs make this species reasonably distinctive. Both sexes are also distinctive in having the second and third segments of the front tarsi broader than long. I have found that this species particularly numerous in open locations on moorland fringes.

17. *Platypalpus longiseta*

This species was named by Collin as *P. extricata*, but this was superseded later: Collin considered that *P. longiseta* (Zetterstedt, 1842) was a synonym for *P. pallidiventris* (Meigen, 1822), which stands at rank 6 above. The two species are similar with the males being distinguished by the presence or absence of dark annulation on the fore tarsi, though for the females a red tinge at the base of the third antennal segment is the main feature denoting *longiseta.* The ratios of the record numbers for *P. pallidiventris* and *longiseta* are very similar nationally and regionally, 2.0 and 2.3 respectively.

18. *Empis praevia*

This species stands out as the only one in the regional top twenty not to have been recorded in Kidd and Brindle (1959): the first regional record was in 1989. The species was first described by Collin in 1927, distinguishing it from *E. aestiva* Loew, 1867. Both belong to the subgenus *Empis* of small, black species which also includes *E. nigripes* at No 9 above. The male genitalia are quite distinct, and only the females of *aestiva* have pennate fringes on the legs. Interestingly, Collin described *E. aestiva* as common and widely distributed, whereas he had specimens of *E. praevia* from only six British locations. The *praevia*: *aestiva* ratio is 1.7 for the region but only 0.45 nationally. The NBN Atlas shows *praevia* having a southern range only just extending into South Lancashire while *E. aestiva* has been found up to Northern Scotland. So it appears that *E. praevia* may have both extended its range and increased in relative abundance in part of that range.

19. *Empis albohirta*

This species lacks the forked cubital vein of genus *Empis.* Until 2015, this species was a *Rhamphomyia*, along with *E. longipes* – both these species have a long proboscis like *Empis* rather than the shorter stubby one of most *Rhamphomyia*.

20. *Dolichocephala irrorata*

The *Dolichocephala* species are amongst the smallest of the strict Empids, but have a characteristic head shape and wing venation, which can be rather puzzling when first encountered. This species accounts for 90 or 1.3% of the regional records, which is a factor 1.43 greater than the proportion of national records – well within the range of variation seen in the scatter plot above.

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[2] P. Boardman, *Shropshire Craneflies*, Field Studies Council, 2016

[3] http://www.carlislenats.org.uk/public-resources/cumbria-checklists/

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[5] P. J. Chandler, "Some corrections to the fungus gnats (Diptera, Mycetophiloidea) of Lancashire and Cheshire", Lancs & Ches. Ent. Soc. 114th Annual Report and Proceedings (1991), pp38-53 [accessible via Ref 4]

[6] Empid and Dolichopodid Newsletter No 16, p3

[7] Empid and Dolichopodid Newsletter No 17, p1

Recent literature (dolichopodids)

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Crossley, R. 2019. Notes on the sub-family Hydrophorinae (Diptera Dolichopodidae) in Yorkshire. *The Naturalist.*

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