



Cranefly News

Dipterists Forum Cranefly Recording Scheme
For Superfamily Tipuloidea & Families Ptychopteridae & Trichoceridae

1973-2023
50 Years !

Newsletter No 40

Spring 2023

Editor: John Kramer



Ct. flaveolata Photo: Alan Watson Featherstone

Happy Official 50th Anniversary Cranefly Recording Scheme ! 1973-2023

Thanks to Alan Stubbs who, in April 1972, sent out the first proposal to about 50 people to form the Cranefly Recording Scheme (CRS). Most of these were amateurs but the first scheme organisers were Dick Vane-Wright at the British Museum (Natural History) [(BM(NH))] and Tony Hutson BM(NH) who had joint responsibility for taxonomy, identifying collections and covering literature, and Alan Stubbs who was responsible for the administration of the scheme, ecological matters and identifying unmounted material.

In February 1973 the CRS produced its first Newsletter and in March there was the first meeting, a workshop on craneflies held in the Diptera section at the (BM(NH)) in London, attended by 28 people. The first field meeting was held on 18-24 August 1973 in the Forest of Dean. The cost was £1.50/day and fourteen people booked. Newsletters 2 & 3 also followed in 1973. The first CRS 'Dipterists Day' was held at the BM(NH) in November 1973 when 31 people attended a series of lectures and practicals and the CRS was officially launched.

So that is how it all started and in May 1976 there was the first issue of the Diptera Recording Schemes Bulletin, announcing the inauguration of four further Recording Schemes (Hoverflies, Tabanoidea & Asiloidea, Conopidae and Sepsidae). Some study Groups were also formed and, to co-ordinate all this activity, this led to the official launch of the Dipterists Forum at the BM(NH) on Dipterists Day on 12 November 1994.

Thanks to Alan's vision and work we now have the nbn Atlas (NBN Atlas (www.nbnatlas.org)) with a good representation of the distribution of craneflies in Britain, and Alan's book, 'British Craneflies' so there is a good base on which to build. The Dipterists Forum provides an enjoyable and often jovial company of like-minded enthusiastic people who it is always a pleasure to be with. For that reason, and the need to monitor our environment in a time of rapid climate change, there is more reasons than ever to be a dipterist. **Ed.**

References

- Alan Stubbs, 1990. The beginning of Diptera recording schemes in Britain. Dipterists Digest, First Series. no. 6
Alan Stubbs, 2021. British Craneflies. BENHS
Alan Stubbs and Judy A. Webb. 2010. The History of the Dipterists Forum. In 'A Dipterist's Handbook' 2nd Edition. The Amateur Entomologist Vol 15. Published by the Amateur Entomologist's Society. Pp60-69.



A storebox for craneflies.

Following the Dipterists Day workshop in the Marmont Centre, NHM, Martin Greenland from Norfolk sent me this solution to the problem of storage of large tipulid specimens. He writes: 'The specimens are carded on pieces 50mm wide x 55mm high and then stored vertically in a wooden 35mm slide box bought on e-bay. It leaves plenty of room for the specimen. So far it is working well and saving a lot of space.'

Like the storage of microscope slides, it makes a very compact way of storing a reference collection and it is easy to wrap and put into a domestic freezer to keep it pest-free.

Crane fly training and 'Crane flies to Light' – Pete Boardman & Rachel Davies

During 2022, the Crane fly Recording Scheme (CRS) worked with the Field Studies Council (FSC) BioLinks project (2018 – 2022) to run a number of training days for BioLinks participants. These followed the standard BioLinks format of 'Learn to Love' events, field days, and microscope days. Events were run at the FSC's centres in Bishop's Wood, Worcestershire, and Bushy Park, London. Also, a residential course was added in the autumn of 2022 and run at the Preston Montford FSC centre. All crane fly, fold-wing crane fly, and winter gnat records made during the above events were added on i-Record by the secondary author and comprised a good range of common or local species.

The relationship between CRS and FSC was enhanced further by the 'Crane flies to Light' project, targeting moth trappers which was trialled for a six-month period, between 1st June to 1st December 2022. BioLinks asked participants and others to send in any records of crane flies that they had found attracted to light, or collect specimens if people were unable to identify them. These were identified at extra BioLinks volunteer days with the author overseeing identifications.

Over the 6 months, 50 crane fly samples were received from 5 different recorders, mostly based in Worcestershire. At the same time the Moth Trap Intruders Group were also asked for crane fly bycatch and during the same period of time and collected 156 samples. Between both groups of participants, a total of 24 species of crane fly, and a single winter gnat, were recorded as listed below. It is likely some of these species are new to light, but it is difficult to know fully as no comprehensive up to date list of species is known.

<u>Tipulidae – long-palped crane flies</u>	<i>Tipula maxima</i> – a long-palped crane fly
<i>Nephrotoma appendiculata</i> – a tiger crane fly	<i>Tipula obsoleta</i> – a long-palped crane fly
<i>Nephrotoma cornicina</i> – a tiger crane fly	<i>Tipula oleracea</i> – a long-palped crane fly
<i>Nephrotoma flavescens</i> – a tiger crane fly	<i>Tipula paludosa</i> – a long-palped crane fly
<i>Nephrotoma flavipalpis</i> – a tiger crane fly	<i>Tipula pagana</i> – a long-palped crane fly
<i>Nephrotoma guestfalica</i> – a tiger crane fly	<i>Tipula pierrei</i> – a long-palped crane fly
<i>Nephrotoma quadrifaria</i> – a tiger crane fly	<i>Tipula scripta</i> – a long-palped crane fly
<i>Nephrotoma scurra</i> – a tiger crane fly	
<i>Tipula confusa</i> – a long-palped crane fly	<u>Limoniidae – short-palped crane flies</u>
<i>Tipula fascipennis</i> – a long-palped crane fly	<i>Austrolimnophila ochracea</i> – a short-palped crane fly
<i>Tipula flavolineata</i> – a long-palped crane fly	<i>Dicranomyia chorea</i> – a short-palped crane fly
<i>Tipula fulvipennis</i> – a long-palped crane fly	<i>Rhipidia maculata</i> – a short-palped crane fly
<i>Tipula lateralis</i> – a long-palped crane fly	
<i>Tipula luna</i> – a long-palped crane fly	<u>Trichoceridae – winter gnats</u>
<i>Tipula lunata</i> – a long-palped crane fly	<i>Trichocera annulata</i> – a winter-gnat

We would like to thank staff and participants within the FSC BioLinks project, FSC Field Centres, and the Moth Trap Intruders group, including; Keiron Derek Brown, Gino Brignoli, Jean Young, Carol and John Taylor, Simon Dyer, and Mike Southall.

Pete Boardman & Rachel Davies

AGM Genitalia Preparation Workshop - NHM November 2022

Kit & Chemicals. It seems quite difficult to obtain the chemicals needed to carry out genitalia preparations, and a suggestion was made by Jenni Wilding that a 'starter pack' for the preparation of Diptera genitalia could be provided. Some of you may remember the very useful service that David Henshaw provided us before his retirement when he bought chemicals such as ethanol, ethyl acetate and potassium hydroxide pellets from suppliers, and sold them in small amounts to DF members. In these days of the internet it may not now be necessary, but if you would find this useful can you please let me know via email and I will explore the possibilities.



Light-trapping in Northants. VC 32. John Showers

Nearly all the results below come from Pitsford Water Nature Reserve except where otherwise stated. There are 2 MV traps. Trap 1 is on the shore line, close to reeds, bare margins, some grassland rides and mixed woodland. Trap 2 is set in a glade in the same stand of mixed woodland but further from the water.

[The Rothwell trap is actinic and on the patio in my garden, which has shrubs, herbaceous plants, an apple tree and a conifer tree but no lawn. The trap at Farthinghoe (F) is in a former railway cutting, then a landfill site and now a nature reserve with woodland and some grassland.]

List of Species trapped

Tipulidae	Limoniidae
<i>Nephrotoma appendiculata</i>	<i>Erioptera nielseni</i>
<i>Nephrotoma cornicina</i>	<i>Molophilus griseus</i>
<i>Nephrotoma flavescens</i>	<i>Molophilus ochraceus</i>
<i>Nephrotoma quadrifaria</i>	<i>Ormosia nodulosa</i>
<i>Nephrotoma scurra</i>	<i>Symplecta stictica</i>
<i>Tipula vittata</i>	<i>Symplecta hybrida</i>
<i>Tipula fascipennis</i>	<i>Trimicra pilipes</i>
<i>Tipula helvola</i>	<i>Austrolimnophyla ochracea</i>
<i>Tipula lunata</i>	<i>Euphyllidorea lineola</i>
<i>Tipula vernalis</i>	<i>Dicranophragma adjunctum</i>
<i>Tipula submarmorata</i>	<i>Dicranophragma nemorale</i>
<i>Tipula varipennis</i>	<i>Phyllidorea ferruginea</i>
<i>Tipula confusa</i>	<i>Phyllidorea fulvonervosa</i>
<i>Tipula obsoleta</i>	<i>Pilaria discicollis</i>
<i>Tipula pagana</i>	<i>Pilaria fuscipennis</i>
<i>Tipula staegeri</i> (G)	<i>Dicranomyia didyma</i>
<i>Tipula oleracea</i>	<i>Dicranomyia modesta</i>
<i>Tipula paludosa</i>	<i>Helius pallirostris</i>
<i>Tipula subcunctans</i>	<i>Limonia nubeculosa</i>
<i>Tipula scripta</i>	<i>Limonia phragmitidis</i>
<i>Tipula lateralis</i>	<i>Rhipidia maculata</i>
<i>Tipula montium</i>	
<i>Tipula pieriei</i>	Trichoceridae
	<i>Trichocera annulata</i>
Pediciidae	<i>Trichocera regelationis</i>
<i>Tricyphona immaculata</i>	<i>Trichocera saltator</i>
	<i>Trichocera hiemalis</i>
(G) Garden only	<i>Trichocera major</i>

Acknowledgements

Thanks to light-trappers and Recorders Mischa Crass and Dave Francis. See also Cranefly News #29, Spring 2015, and Cranefly News #32, Spring 2017.

John Showers

Light-trapping in Leicestershire – VC 55. John Kramer

Following Pete Boardman's initiative, I pulled the 'at light' records from the Leicestershire crane fly database of about 5,000 records. The earliest specimen recorded from light was in 1975, when a specimen of *Pedicia rivosa* was recorded by Peter Gamble in Grace Dieu Wood, the rest being recorded during this millenium. Moth-ers in VC55 are very active and have recorded a number of 'firsts' for the County from their light traps. It is evident that many crane flies are nocturnal or crepuscular, but are they all ?? This behaviour probably reduces dessication as well as avoiding some predators. But they are predated by bats and so a nocturnal habit may also be a seriously hazardous one.

List of Craneflies from Leicestershire light-traps.

Unless otherwise stated, specimens were trapped in gardens.

Tipulidae	Pediciidae
<i>Nephrotoma appendiculata</i> (W)	<i>Pedicia rivosa</i> (W)
<i>Nephrotoma flavescens</i>	<i>Tricyphona immaculata</i> (W)
<i>Nephrotoma quadrifaria</i>	
<i>Nigrotipula nigra</i>	Limoniidae
<i>Tipula maxima</i>	<i>Ormosia lineata</i>
<i>Tipula livida</i>	<i>Ormosia nodulosa</i> (W)
<i>Tipula lunata</i>	<i>Symplecta stictica</i>
<i>Tipula vernalis</i>	<i>Trimicra pilipes</i>
<i>Tipula luteipennis</i>	<i>Epiphragma ocellare</i> (W)
<i>Tipula confusa</i>	<i>Euphyllidorea lineola</i>
<i>Tipula pagana</i>	<i>Euphyllidorea dispar</i> (W)
<i>Tipula rufina</i>	<i>Dicranomyia chorea</i> (W)
<i>Tipula oleracea</i> (W)	<i>Limonia nubeculosa</i> (W)
	<i>Limonia phragmitidis</i> (W)
(W) Trapped in woodland	<i>Rhipidia maculata</i> (W)

Discussion.

Are all craneflies attracted to light or only a suite of nocturnal specialists? One factor influencing the results above must be where traps are located. Most of the results from Leicestershire are in gardens and it is surprising that so many non-garden species are trapped. It indicates that a lot of dispersal goes on at night. I have separated the relatively few woodland records to show that it is not only garden species that are attracted to light. This means that results from traps set up in more natural biotopes are especially interesting. (See John Showers' records above.) Another factor is the trapping date related to cranefly emergence. More work needs to be done to account for the absence of many common species, but more trapping at the right times and the right habitats would probably trap the missing species. The Leicestershire data above is probably an under-estimate of cranefly species light-trapped since the mode of capture is not always recorded especially if recorded in gardens. Specimens are photographed on house or garage walls after a light trapping session, so, although they are attracted to light, they are not actually recorded as being in the trap.

New VC 55 Species Recorded in garden Light traps

Nigrotipula nigra Leicester & Rutland Entomological Soc. (LRES) Newsletter #49, Sept. 2013
Tipula livida LRES Newsletter #61 Sept. 2019

Acknowledgements

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The Leicestershire & Rutland Entomological Society is producing a series of Status Reviews of the Diptera of VC55 up to 2020 to act as a baseline for future recording effort.

These, and the Newsletters, are available at: www.naturespot.org.uk/content/leicestershire-rutland-entomological-society

Conclusions

Although records of many genera are missing, this can be explained by the absence of light-trapping in their habitats. The three sets of results above from 3 of the tipuloid cranefly families, support the hypothesis that all of the Craneflies (Tipuloidea) and the Winter Gnats (Trichoceroidea) are attracted to light. Attempts could be made to light trap the missing species in their known locations. There must be many records out there of other cranefly species being attracted to light? If you send them in I can put together another article. The missing Cranefly Family seems to be Cylandrotomidae. Have any light-trappers found any of those 4 species in their traps ?? Ed.

Some suggested amendments to ‘British Craneflies’ Alan Stubbs and John Kramer

Suggestions would be welcomed and useful in the event of the publication of the second edition. Some suggestions from readers are as follows:

Part A (p198) *Ctenophora flaveolata* has now been confirmed from Scotland.



Ctenophora flaveolata resting on the bark of a mature oaks in Glen Affric NNR, Eastern Ross.
5 May 2022. Photo: A. Watson Featherstone

The first occurrence of this species in Glen Affric NNR, Eastern Ross, in the Highlands a little north of Loch Ness was recorded by Alan Watson Featherstone on 26th May 2018 when a male specimen crawling on a road was captured and sent to Peter Chandler to confirm the identification. (See the detailed note in Dipterists Digest 2018, Vol 25 No. 1). The second record by Alan Watson Featherstone, on 5 May 2022 (the third Scottish record) was of a male resting on the westernmost of a row of 20 or so mature oaks. (See photo above of specimen by A.W.F.) The sites where they were found were about 2km apart in a major stand of ancient Caledonian forest, famed for its native Scots pine. There is no beech on site hence the fly must be breeding in the very small population of surviving mature oak. Although not assessed, it seems unlikely that all of these trees provide a viable larval habitat, with the inference that long term survival is unlikely at this site. Early May is before the most active period of recording takes place in Scotland, (boosted by visits from southern dipterists) so the cranefly may be more widespread than realised. This is a very elusive species unless you are in the right spot on the right day.

Alan Watson Featherstone also located another Scottish record on the NBN Atlas (www.nbnatlas.org) from Fife, in 2021. The specimen was photographed on 9 June 2021 in the garden of Kim Worthington in Cubar, then posted on her Facebook page from where it was recorded by Wendy Irons. [Thanks to Peter Chandler for the information and for sending me Alan’s photo.]

Part B. *Nephrotoma appendiculata* v. *N. quadrifaria*.



Nephrotoma appendiculata



Nephrotoma quadrifaria

There has been a suggestion that there is a problem with the separation between *Nephrotoma appendiculata* and *N. quadrifaria*. There seems to me to be no problem, neither with the key nor the text, although I am willing to be persuaded otherwise if someone wishes to take up the debate. For example, there may be parts of the country where *N. quadrifaria* lacks the dark seam across the wings.

N. quadrifaria does not usually have a pale stigma spot in nature, but newly emerged (teneral) specimens of all species will always be more faintly marked and often it helps to tip the wing and view it at a narrow angle. Bleaching can also happen where malaise trap material in spirit has been placed in strong sunlight. In such cases of doubt, genitalia structures must be used and support is provided for this. (See Plates D & F).

In the key the species are separated by the pale or dark stigma together with the 'dark seam' on the wings of *N. quadrifaria*, features which are usually clearly visible. The 'inverted U-shaped mark' (arrowed) is used in conjunction with the pale stigma spot. In the text (p203) an inverted U-mark above the haltere of *Nephrotoma appendiculata* is said to be the confirming (not a diagnostic) character; ie it is the only pale stigma'd British species which has this 'inverted U' character. In fact *N. quadrifaria* (with dark stigma and dark seam) also has this mark, but it is not diagnostic of either species.



Female *appendiculata* have a uniformly broad dark stripe along the dorsal median axis of the abdomen. In addition to the dark seam, specimens of *N. quadrifaria* have a row of triangular dark markings although there is not a sharp discontinuity between these abdominal markings.

Part C. *Tipula* Key, Couplet 11 - Prescutal (dorsal thoracic) patterns (Key. Page 81)

Those used to using the test key for *Tipula* will be aware that Couplet 11 is a new and, with 4 choices, a rather unusual approach to this group of *Tipula*. We are directed first to the subgenera where species separation then occurs.

Subgenera *Acutipula*, *Schummelia*, *Vestiplex*, *Dendrotipula*, *Odonatisca*, *Mediotipula*, *T. (Lunatipula) vernalis*, and part of *Pterelachisus* are first removed to be keyed to species in the appropriate sections. This latter part of *Pterelachisus* comprises *T. mutila* (with R_2 absent) and *T. luridorostris* (with short R_2 , not reaching the margin.)

The key at Couplet 11 refers to prescutal (dorsal thoracic) patterns which are difficult illustrate by means of the thumb-nail sketches. Hence, plate 32 provides some photos and perhaps it would be helpful were more to be provided, and these to be cross-referenced in the key.

Couplet 11 offers 4 choices, in sequence designated a to d below.

11a) 'Prescutum with a pale median line clearly separating the subdorsal stripes, at least in the front three-quarters.' There is no photograph in the book to illustrate this pattern. Perhaps *T. unca* or *T. melanoceros* could be used as an example.

Presence of a pale median line sends us to **Couplet 12** where plain- and patterned-winged species are separated.

Plain winged species (Platytipula) at 13, are *T. luteipennis* and *T. melanoceros*. and the genera *Savtshenkia* (part)), and *Lunatipula* at Couplet 14, Patterned-winged species at Couplet 15 are: *Beringotipula* (Couplet 16) *Lindnerina* (couplet 17) *Pterelachisus* and *Savtshenkia* (Couplet 18).



T. unca



T. melanoceros



T. pabulina.

11b) 'Prescutum with five distinct dark stripes, the median one thin. The grey colour around these stripes is equally pale.' This leads to *Pterelachisus* (part) on p 90, which identifies *T. pabulina* and *T. truncorum*, and it is illustrated in the book by *Tipula pabulina*. (Plate 32c)



T. truncorum,



11c) 'Prescutum with dark median stripe resulting from fusion of subdorsal stripes, which, with lateral stripes are pale within dark margins.'

This leads to subgenus *Tipula* (*Yamatotipula*) and it is illustrated by *Tipula lateralis*. (Plate 32 a) Confusion might be possible with the *Vestiplex* pattern but, if the key is followed in full, this has been previously removed and the terminalia are very different.

T.lateralis



11d) 'Prescutum with a very dark median stripe, of almost uniform colour although it may have an even darker thin median stripe.'

This again leads to Couplet 12 where plain- and patterned-winged species are separated. *T. (Platytipula) luteipennis* is keyed out here with plain wings and it is illustrated by Plate 32d.

T.luteipennis

NB. It is important to follow the key until you are sufficiently experienced to know which characters are diagnostic. Many of these patterns also occur in species with hairy eyes, or with distinctly and differently patterned wings.

Crane-fly People: Osten Sacken's remarkable work on Crane-flies. John Kramer



Charles Robert Osten Sacken (OS) was born in St. Petersburg in 1828 and by the time that he wrote his first paper in 1854, the study of Crane-flies was well underway. In 1758 Linnaeus had introduced the only 2 genera, *Culex* and *Tipula* for those 'Nemocera' (Nematocera) with and without piercing mouthparts ('Bities' and 'non-bities'.) Latreille (1802) had established the family Tipulidae and separated them into those with long-palps and those with short palps (*Tipulidae longipalpi*, and *Tipulidae brevipalpi*); between 1803 and 1838 Johann Meigen had named many more crane-fly genera (eg *Erioptera*, *Limonia*, *Tipula*, *Nephrotoma*, *Ctenophora* etc) describing their differing venations but without attempting any key or system of classification.

Another French dipterist, Macquart in 1834, separated *Limnophila* from the genus *Limonia* ('Limnobia') by virtue of the differing venation, and the presence in *Limnophila* of a 'petiolate areolet', ie a stem vein ($R_2 + R_3$) from which branches veins R_2 and R_3 . In *Limonia* R_2 and R_3 are fused and so there is no fork here.

Macquart followed Latreille in subdividing the '*Tipula terricolae*' into the Tipulidae longipalpi and the Tipulidae brevipalpi and separated the genus *Pachyrhina* from *Tipula* on the difference in numbers of antennal flagellar segments. By 1854 most

of the key features of 'Tipulidae' had been observed and recorded.

Between 1854 and 1869 Osten Sacken, working in America, published a number of papers on crane-flies, leading to his major work, his Monograph *On the North American Diptera – Vol IV, Tipulidae* with 345 pages, published by the Smithsonian Institute in 1869. This dealt only with the short-palped crane-flies, Tipulidae brevipalpi. His stated intention was to cover the long-palped crane-flies in another volume, but this never happened, although in 1886 he published a brief Review of the Tipulidae longipalpi of the World. In this Monograph on the short-palped crane-flies he published a history of the subject, descriptions of all the then known species and keys to identify them. If you were beginning the study of crane-flies, this Monograph would make an excellent introduction to the subject. It was just what the Rev. William John Wingate was praying for in 1906, (See DF Bulletin 66, 2008) but alas, there was no internet and no Catalogue of Crane-flies of the World (CCW) at that time, and books from overseas were hard for most people to obtain. (OS's 1869 book is now available to download from CCW. See Oosterbroek, P. at <http://ccw.naturalis.nl> below.)

OS identified the ‘**Tipulidae longipalpi**’ as follows: Last joint of the palpi very long, whiplash-shaped, much longer than the three preceding joints taken together ; the auxiliary vein (subcosta) ends in the first longitudinal vein ; no cross-vein between it and either of the two veins running alongside of it

Regarding the ‘**Tipulidae brevipalpi**’, he noted that The bulk of the tribe, may be divided into two large sections:

- A. One radial area. Antennae, 14-jointed. No distinct pulvilli. Ungues (claws), with distinct teeth on the underside. No spurs at the tip of the tibiae. *Limnobia* (*Limonia*)
- B. Two radial areas. (ieAntennae, 16-jointed. Pulvilli distinct. Ungues(claws) smooth on the under Side:
Tibiae, with spurs. *Limnophila*
Tibiae, without spurs *Erioptera* etc

He allocated the ‘Tipulidae brevipalpi’ to 6 sections based on a combination of characters taken from: the number of submarginal cells, the number of antennal joints, the presence or absence of spurs at the tip of the tibiae, and the position of the subcostal cross-vein. The first submarginal cell is now called cell r2 between veins R₂₊₃ and R₄₊₅ and the second submarginal cell is now called cell r3, between veins R₃ and R₄₊₅. We now describe the Radial veins and their divisions, instead of the spaces between, ie the cells.

NB. Some non-European genera are included in the lists below. These sections were:

Section I. Limnobina - A single submarginal cell (cell r2 between veins R₂₊₃ and R₄₊₅) ie vein Rs forked once to separate veins R₂₊₃ and R₄₊₅. Antennae 14-jointed. - *Dicranomyia*, *Geranomyia*, *Rhipidia*, *Limnobia*, *Trochobola*. (Now Limoniinae)

Section II. Limnobina anomala - A single submarginal cell, Antennae 16-jointed. The first longitudinal vein ends in the costa ; tibiae without spurs at the tip – *Rhamphidia*, *Elephantomyia*, *Toxorhina*, *Dicranoptycha*, *Orimarga*, *Elliptera*, *Antocha*, *Atarba*, *Teucholabis*, *Thaumastoptera*.

Section III. Eriopterina – Two submarginal cells. (cell r₂ between veins R₂₊₃ and R₄₊₅, and cell r3 between veins R₃ and R₄₊₅) ie Vein R₂ and R₃ forked to give a second marginal cell. Tibiae without spurs at the tip. *Rhypholophus*. *Erioptera*, *Trimicra*, *Chionea*, *Symplecta*, *Gnophomyia*, *Psiloconopa*, *Goniomyia*, *Empeda*, *Cryptolabis*, *Cladura*. (Now Chioneinae)

Section IV. Limnophilina - Two submarginal cells. Antennae 16-jointed. Subcostal cross-vein posterior to the origin of the second longitudinal vein. Tibiae with spurs at the tip. – *Epiphragma*, *Limnophila*, *Ulomorpha*, *Trichocera* (Winter Gnats). (Now Limnophilinae)

Section V. Anisomerina - Two submarginal cells. Antennae from 6- to 10-jointed . Subcostal cross-vein posterior to the origin of the second longitudinal vein. Tibiae with spurs at the tip. – *Anisomera*, *Cladolipes*, *Eriocera*, *Penthoptera*.

Section VI. Amalopina - Two submarginal cells. Subcostal cross-vein anterior to the origin of the second longitudinal vein, tibiae always with spurs at the tip. **Eyes pubescent**. - *Amalopsis*, *Pedicia*, *Ula*, *Dicranota*, *Plectromia*, *Rhaphidolabis*. (Now Pediciidae)

The ‘hairy eyes of the current family Pediciidae were observed by Latreille in 1809 but the pediciids remained a Section (Amalopina) in the short-palped crane flies until it was made a first a tribe within Limoniidae and then a sub-family, Pediciinae, It was finally elevated to family status (Pediciidae) by Starý in 1992.

Section VII. Cyldrotomina - Antennae 16-jointed. The first longitudinal vein is incurved towards the second and usually ends in it ; tibiae always with spurs at the tip.- *Cylindrotoma*, *Triogma*, *Phalacrocer*

Table (Key) for determining the Sections

4. Antennae 14- (sometimes apparently 15-) jointed.	Section I. Limnobina
5. Antennae 16-jointed. The first longitudinal vein ends in the costa ; tibiae without spurs at I the tip.	Section II. Limnobina anomala
The first longitudinal vein is usually incurved towards the second and ends in it ; tibiae always with spurs at the tip.	Section VII. L Cyldrotomina
6. Tibiae without spurs at the tip.	Section III. Eriopterina
Tibiae with spurs at the tip.	- 7
7. Subcostal cross-vein posterior to the origin of the second longitudinal crossvein	- 8
Subcostal cross-vein anterior to the origin of the second longitudinal, vein	Section VI. Amalopina
8. Antennae 16-jointed	Section IV. Limnophilina
Antennae from 6- to 10-jointed	Section V. Anisomerina

Osten Sacken then continues the Monograph with a key to the genera and species in each section. Darwin published his 'Origin of Species' in 1858 and some ten years later Osten Sacken wrote:
The aim of all classification is to increase our knowledge of the structure of organic beings by illustrating their natural relationship. If the natural relationship of some organic form be obscure, we may, for the sake of convenience, locate it provisionally on account of some artificial character ; but this provisional state has to cease, as soon as the true relationship is found out.
 He designated the Limnobina anomala as one such artificial group.

Some more Biography

[A detailed and very interesting biography by C.P. Alexander (1969) is available to download from Catalogue of Craneflies of the World (CCW. Oosterbroek, P.) and is highly recommended.]

Born in 1828 into a family of Russian aristocrats, Baron Osten Sacken went as a Consular official to Washington, USA in 1856 and from then onwards, the craneflies of North America occupied much of his attention. He had a clear vision and was evidently a very effective project manager, organising collectors from across the USA, and working closely with Hermann Loew in Germany, then the foremost expert on Diptera, from 1850 until Loew's death in 1879. He was supported by the newly-formed Smithsonian Institute who published the first 3 volumes of Monographs of North American Diptera authored by Loew, and then in 1869, Vol. IV, authored by Osten Sacken, which dealt with the craneflies. He returned permanently to Europe in 1877. He published a total of 179 papers in total during his lifetime. Apart from autobiographies, the last paper that I know of was in 1897. He died in Heidelberg in 1906.

George Verrall (1848-1911) made a major contribution to the study of British craneflies, (Kramer 2022. Pont 2011) but as we follow in his footsteps so he followed in the footsteps of predecessors. Perhaps the most important of these was Baron R. J. Osten Sacken.

George Verrall, who had clearly studied his work, wrote as follows in an obituary to Osten Sacken, (Verrall, 1906):
"Probably no entomologist was ever more 'thorough' in his work. His bibliographical collection on Dipterology was unrivalled, and his was not merely a Library but notes were made by him from every work, so that he practically never missed a record of what had been previously written ... (He was an) absolute master of almost every European language; possessor of adequate means to associate in any company; of noble birth, which would give him admission to any rank of society; of diplomatic training which produced the most polished manners; all these qualities combined with an exceedingly retentive memory which he helped by detailed notes and exact observations, produced such a Master of Dipterology as we shall probably never see again.

Coming from George Verrall that was praise indeed.

From the eulogy above it would be surprising if Verrall did not have a copy of the 'Monograph' in his own library. Collin gave some items from this library to the Oxford Museum but when checked by Adrian Pont, the OUM copy of the 'Monograph' did not have the Verrall book plate in it. (Interestingly, there were 2 small annotations which seemed to be written by OS). The vast majority of the the Verrall-Collin library was purchased by E.C. Zimmerman and ended up in the library of CSIRO Canberra. (Adrian Pont. Pers. Com.) I have checked and it is not there, nor in the library of the University of Canberra, so the search goes on. I must now check the National Library of Australia.

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