Dipterists Digest

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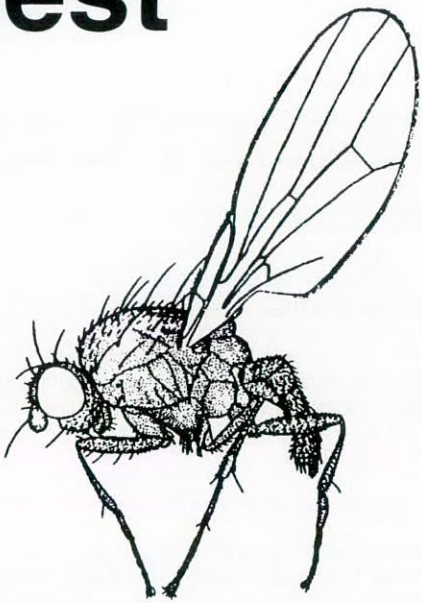
Cover illustration: ***Myennis octopunctata*** **(Coquebert, 1798), female, illustrating note by Jeremy Richardson on p. 77.**

Dipterists Digest



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Dipterists Digest

Dipterists Digest is the journal of the **Dipterists Forum**. It is intended for amateur, semi-professional and professional field dipterists with interests in British and European flies. All notes and papers submitted to **Dipterists Digest** are refereed.

The scope of **Dipterists Digest** is:

- the behaviour, ecology and natural history of flies;
- new and improved techniques (e.g. collecting, rearing etc.);
- the conservation of flies;
- provisional and interim reports from the Diptera Recording Schemes, including maps;
- records and assessments of rare or scarce species and those new to regions, countries etc.;
- local faunal accounts and field meeting results, especially if accompanied by good ecological or natural history interpretation;
- descriptions of species new to science;
- notes on identification and deletions or amendments to standard key works and checklists.

Articles must not have been accepted for publication elsewhere and should be written in clear and concise English. **Contributions should preferably be supplied either as E-mail attachments or on 3.5" computer disc or CD in Word or compatible formats and accompanied by hard copy.**

NEW INSTRUCTIONS: Articles should be supplied in A5 format with text in 9-point (preferably Times New Roman) font, title 12 point and author's name 10.5 point, with 0.55" side margins. Figures should be supplied separately as jpeg files to fit in the above page format, or as hard copy.

Style and format should follow articles published in the most recent issue. A short Summary (in the form of an Abstract) should be included at the beginning of each article. References to journals should give the title of the journal in full. Scientific names should be italicised. Authors of scientific names should be given in full and nomenclature should follow the most recent checklist, unless reflecting subsequent changes. Figures should be drawn in clear black ink, about 1.5 times their printed size and lettered clearly. **Colour photographs will also be considered.** Descriptions of new species should include a statement of the museum or institution in which type material is being deposited.

Authors will be provided with twenty separates of papers of two or more pages in length.

Articles and notes for publication should be sent to the Editor at the address given above.
Enquiries about subscriptions and information about the **Dipterists Forum** should be addressed to the Membership Secretary, John Showers, 103 Desborough Road, Rothwell, Kettering, Northamptonhire NN14 6JQ

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Louis Felix Henri Audcent and his contribution to British Diptera

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Editorial summary
An account is given of the life of the Bristol dipterist Henri Audcent and of his work on Diptera, based on a biography of Henri and his wife Henriette, written by his great grandson Geoffrey Audcent, augmented by information from other sources including his publications and correspondence. A manuscript of the full biography is deposited in the Bristol City Museum, where his collection is held. Also included here are an account of the composition and curation of the collection, provided by Rhian Rowson of the Bristol City Museum, and a bibliography of the papers and notes written by Henri Audcent. Details of the life of his mentor Henry Jules Charbonnier are included in an appendix

Introduction

Louis Felix Henri Audcent (1875-1951) was a well-known dipterist, who was actively researching and publishing on the Diptera fauna of the Bristol area for the last 35 years of his life. He is perhaps best known among dipterists for the series of publications listing the Diptera species known from that region, but he also made substantial contributions to the taxonomy of Tipulidae and Ptychopteridae, and latterly Tachinidae. Although Henri (as he was known) was born near Bristol, his parents were French, as was his wife Henriette. He also collected in France and was in frequent contact with Eugène Séguy of the Paris Museum, whose keys were so widely used for identification here in the days before there was much written in English on most families of Diptera. Henri's working career was as a teacher, initially of French but later also of biology. The Audcent collection, including most families of Diptera, is preserved in the Bristol City Museum, where it constitutes a significant part of the reference collection of Diptera held by the Museum.

The early life of Henri Audcent

He was born on 7 June 1875 at 'Chambord Cottage' (today No. 12), Dapps Lane, Dapps Hill, Keynsham – a small town in northern Somerset. Henri was the eldest child and only son of a brandy merchant (and former sailor) named Louis 'Arthur' Henri Felix Audcent, and his wife Hélène Marie 'Blanche' (née Pinot de Moira). His parents were first cousins and had settled in the United Kingdom only a few years before Henri was born, having emigrated from France. In 1871, Arthur (aged 32) was already resident at Prior Park RC College, Bath, where he was a teacher; and some years later his son Henri was to follow in his footsteps and become a teacher for a short while in that school.

Henri's birth was registered with the local registrar as well as with the French Consulate, thus confirming his French citizenship and giving him dual British and French nationality. Henri spent his earliest years in Keynsham, until around 1878 when the family moved to nearby Bristol, residing at Berkeley Villa, North Road in the St Andrews district of the city.

Orphaned at the age of five

Unfortunately, exactly one week after his fourth birthday, in June 1879, Henri's mother died. This trauma was compounded when his father died less than two years later, in February

1881, leaving as orphans five-year-old Henri and his two younger sisters. Fortunately, the three orphans had maternal grandparents (Hippolyte 'Henri' Pinot de Moira and his wife Hélène) and several aunts living nearby, who were prepared to take care of them within a stable and loving family environment. One consequence of being orphaned so young was that Henri remained blissfully unaware of several family secrets. In Victorian England even the slightest association with prison, the poorhouse or the lunatic asylum was considered shameful, and Henri's family had experienced all three: his father died in the Bristol lunatic asylum; his paternal-grandfather had died in the Paris poorhouse; and both his grandfathers had served time in prison. In fact only recently, with the advent of the internet, has it been discovered that his dearly-loved maternal grandfather had a secret past as a twice-convicted fraudster and high society confidence-trickster.

As an orphan, Henri went to live with his maternal grandparents at 26 Bath Place in the centre of Taunton. He is listed there (as 'Louis') in the 1881 census, together with his elderly grandparents, an aunt and the family's general servant.

Henri Audcent aged 14 in 1889

Henri's education and early academic career

Henri received a good education, but the details are sketchy. It seems that he attended a private day-school at Haygrass, near Taunton. This was probably the Weir Field House School, a small private secondary school in North Town, Taunton, where his grandfather had been a schoolmaster in the late 1860s. Henri left Taunton in 1887 and, with his grandparents, returned to live in Bristol, occupying a substantial Georgian terraced house at 3 Clifton Wood Road, which they named "Corazon villa".

Although the family could afford to employ a servant, it was necessary for them to manage their finances carefully, and several bursaries and scholarships assisted Henri's continued progress in education. He passed the Oxford Senior examination, and then in May 1890 (aged 14) sat exams set by the Department of Science and Art of the Committee of Her Majesty's most Honourable Privy Council, achieving a 2nd class pass at the elementary level in the subjects of Sound, Light and Heat, Magnetism and Electricity, Inorganic Chemistry (Theoretical), and in the first stage in Mathematics. In April 1891, he followed this with a 2nd class pass in Theoretical Mathematics. On the basis of these results, Henri was granted in 1891, a free studentship by the City of Bristol to attend University College, Bristol. Thus, at the age of 16, he was one of the first students, perhaps the first, in Bristol to receive such a grant, and he continued to study at the College until 1895. In 1894, he passed the intermediate Bachelor of Science exams, and later in the year sat and obtained the John Stewart Scholarship for the academic year 1894-95. In May 1895, he obtained a 2nd class pass in the advanced stage of Inorganic Chemistry (Theoretical).

Unfortunately, Henri was unable to complete his university education. He became ill shortly before he was due to sit the final examinations that would have earned him a Bachelor of Science degree. His illness was caused by overwork, and the pressure he felt under to win scholarships to alleviate the financial burden on his elderly grandparents.

Without a university degree, but with an excellent grasp of the French language and a love of the natural sciences, Henri embarked on a teaching career. In 1895, he was offered and accepted a position on the staff of Hanley Castle Grammar School, near Upton-on-Severn in Worcestershire, for a year. He then taught at Prior Park College, Bath, from 1898 until 1903. This was a Catholic boys' school within the diocese of Clifton, and was the same school at which his father had briefly been the French master in the 1870s. At the prize-giving ceremony in 1901, the headmaster thanked Henri for kindly lending some valuable botanical specimens to the school museum. For a month in the autumn of 1907, he taught at the Roman Catholic Institute in Liverpool, before finally obtaining a position that enabled him to return to Bristol, at Fairfield Secondary School.

Marriage to Henriette Marie Angèle Ferney

Henriette was born on 27 February 1881 in the lock-keeper's cottage at Montreux-Château, in the Territoire de Belfort, France, less than a mile from the German border. Although her parents were from humble stock, Henriette was brought up in comfortable surroundings, first at Versailles and then at St Cloud, a genteel suburb on the outskirts of Paris and within sight of the Eiffel Tower.

Henriette was a gifted singer and pianist, and attended the Conservatoire de Musique at Versailles, where she suffered an injury to her vocal cords and was told that she would never sing again. With her ambitions to become an opera singer dashed, and with no alternative career plans, it was decided that she should be married, and a match was arranged through mutual relations. Plans were made for Henri to travel to Paris to meet his prospective fiancée. The first meeting did not go well – Henriette was horrified when Henri stepped off the train at the Gare du Nord in a very shabby suit (the trains in France were filthy and careful people did not travel in their good clothes). However, their relationship recovered from the initial setback and they were soon engaged.

They were married on 14 May 1910 at the Church of the Holy Apostles (Pro-Cathedral), Clifton, Bristol. The newly married couple initially lived at 25 Mervyn Road in Bristol. This was a small end-of-terrace house in the Horfield district of the city, which they named "Le Repos". They continued to rent the property until around May 1914. By May 1915, they had moved to the St Andrew's district of the city, renting a semi-detached villa (which they occupied in full) at 34 Belvoir Road. Not only was this a larger property, but it was also closer to Fairfield School where Henri taught. They would continue to live there until at least December 1918, when they moved a short distance to 45 Belvoir Road, on the opposite side of the same road, where they rented the first floor flat.

Henri and Henriette had three children: Gerard Arthur Joseph, born 1911; Jacques Louis Alexis, born 1912; and Bernard Henry Robert, born 1918.

Henri's teaching career at Fairfield Secondary School

Henri joined the staff of Fairfield Secondary School in Montpelier, Bristol in October 1907 as a French master. He would later teach botany and biology as well. The school began its life in 1898 as Fairfield Secondary and Higher Grade School, and was described as having a "towering collection of gables". When it opened, it had 180 pupils; there were fees of £1 per term, but a quarter of the places in the school were available to non-fee-paying students, who

were selected by an annual competition. Coeducational from the beginning, it was intended for children who would stay at school until the age of 16 or 17. It aimed to give "a methodical and progressive course of education, physical, mental and moral, of a wider scope and more advanced degree than that given in Elementary Schools, combined with workshop and laboratory practice in general, scientific and commercial subjects".

Henri, who was nicknamed "Oaky" by the pupils, was clearly a much admired and greatly loved teacher and mentor (Gilkes 1998). Writing in the Golden Jubilee edition of the School Magazine, Ella Hatt, who, as Ella Thompson, had been one of his pupils, recalled meeting Henri after his retirement (Hatt 1948), describing him as having "thick, snow-white hair (we all helped to change its colour!) and eyes of intense cornflower blue (we never noticed these in the days of avoir, ayant, eu!)" and having "an indefinable luminosity and graciousness that are now inseparable from "Oaky's" countenance and bearing ... part of those elements in his make-up that we appreciate more and more as years go by – attributes of a scholar, near-saint, and gentleman, including human sympathy, modesty, integrity, a just sense of values, and humour inherited from the two most subtly humoured nations in the world". She added: "We made great jokes about the insects he captured in bottles – his "flies in school jerseys" – and liked to pretend that when lost on a botany ramble, he could always be found chin-deep in nettles, in quest of some pinhead-sized beetle. But we were very proud of his real achievements and his standing in a sphere of science beyond our comprehension."

Another former pupil, writing after Henri's death (Anon 1951), expressed similar sentiments: "His gentleness, humility and quiet, persuasive manner, and his smile that would transform a somewhat sad expression into one of radiant joy and appreciation, will not soon be forgotten by those who knew him. His greeting, Bonjour, mes enfants, as he started each

French lesson, and our reply, Bonjour, Monsieur, echo strangely back from a courteous past and evoke memories of spacious and gracious living."

Between 1915 and 1918, one of Henri pupils was a young lad named Archie Leach. Archie was a far from model pupil, perhaps because, like Henri, he had lost his mother at a young age. Archie Leach was expelled from Fairfield in 1918 and embarked on a show-business career, ending up as the famous Hollywood movie star 'Cary Grant'. Ironically, it later transpired that Archie's mother had not died but had instead been committed to a lunatic asylum, which by co-incidence was the same asylum in which Henri's father had died in 1881. Cary Grant never forgot his old teacher and renewed his acquaintance with Henri on at least one visit to England. Henri is mentioned in a number of Cary Grant biographies, including one written by Lionel Godfrey (Godfrey 1981). Henri met Cary Grant when the star visited his old school in 1933.

Gilkes (1948, pp 96-97) includes the following passage:

"In the Summer Holidays of 1937, further work was carried out to improve the facilities in the Science Labs, Art Room and Woodwork Room. The Biology Lab., which had only come into being in 1909, had already been completely transformed in 1934, so much so that one wonders how there could still be room for any pupils. 'The lofty end wall is no longer bare; on it are displayed fourteen fine heads of antlers, including a magnificent Koodoo, a fine springbok, gazelle, eland, reindeer, and red-deer. Above the blackboard is fastened, securely we hope! an enormous buffalo head weighing over half a hundredweight. Over the door crawls a small, but fearsome, alligator. All along the top of the cupboards and balance room there are cases of birds: birds of prey, seabirds, woodpeckers, ruffs, corncrake, and others. A huge case containing 22 birds of the seashore stands on the slate slab. Three large new cupboards just inside the door contain a library of over 500 books on natural history and hundreds of specimens of all kinds: complete skeletons of rabbit, bat, pigeon, frog; eggs and nests of birds; fruits and seeds; ferns, mosses, etc. For these aids to teaching, then considered so necessary in a town school, the School was indebted to past and present Fairfieldians and friends of the School: the alligator was given by Miss E. White, while the antlers and some 20 cases of birds came, so M. Audcent explained later, from the estate of Mr. A. Ford of Yatton, the other birds, the 90 nests and more than 3,000 eggs from the estate of Mr. James Stone of Bristol. Some of the collections were kept in the Upper Hall, where a large spread of buffalo horns remained fixed to the wall over the Headmaster's study well into the 1950s. Sadly for these collections, built up by M. Audcent over the course of his 31 years on the Staff, changing fashions in the approach to Science teaching saw no merit in cases of stuffed birds, their nests and eggs, sets of antlers and cabinets of shells, butterflies, and assorted insects. A good few glass cases of birds were banished to the room above the Prep. Room, at the top of the iron newel staircase. Over the years, they and the rest of these collections, gathered so lovingly, and some the product of a lifetime's enthusiasm and study, have disappeared or, simply been destroyed – if M. Audcent knew, how he would weep."

The First World War

On 1 June 1914, Henri was registered with the Teachers' Registration Council, and his career seemed mapped out as that of a schoolmaster. However, just as Henri was approaching his fortieth birthday Europe was plunged into the turmoil of the First World War. Like everyone else, Henri and Henriette would be affected by the War. Henriette's brother served as a sergeant in the French Army and was wounded, and one of her cousins was tragically killed in 1917. Henri and Henriette played a more modest role in the war effort.

Henri volunteered for enlistment in the British Army on 12 November 1915 (when aged 40) and again on 9 August 1916, but did not meet the required medical standard. Nevertheless, he contributed to the war effort in other ways. In October 1916, he helped to set up a War Savings Association at the school. As Secretary, Henri oversaw the collection of hundreds of pounds from teachers, staff and pupils. Henri and Henriette also established a home for Belgian refugees in a large house in Belvoir Road, funded by gifts of money and materials, and supported by labour on the part of boys, girls and staff outside of school hours. The Belvoir Home was an exercise in compassion, as well as in charity, and could not have succeeded without the School's active and constant involvement. "Fairfieldians," wrote Henri "may well be proud of the share they have taken in this work, and in the knowledge that they are continuing by their charity and self-sacrifice the noble traditions of the British race" (Gilkes 1998, pp 63-64).

Henri's entomological pursuits

Henri had always been interested in the natural sciences since, as he later wrote (quoted from his hand-written lecture notes entitled "The Beauties of Nature" (undated)):

"nature study appeals to all, learned and illiterate, young and old. It needs no preparation, merely the use of our five senses. It has infinite beauties to suit all tastes and nothing is ugly.... Beauties of nature are not merely in colour and form; they do not appeal solely to our five senses. What about the marvellous and beautiful devices and contrivances of animals? What about their instinct, intelligence, yea and even affection?"

He joined the Bristol Naturalists' Society before the First World War, serving as the Society's Honorary Reporting Secretary from 1909 to 1911 (stated in the Proceedings of the Bristol Naturalists' Society for the years 1909, 1910 and 1911). Henri was initially a botanist until his interests shifted towards entomology. His interest in entomology was sparked during a holiday on the borders of Devon and Somerset in August 1916, whilst he was convalescing from an illness. During the holiday, Henri assisted a friend and fellow member of Bristol Naturalists' Society – Mr H.J. Charbonnier – in catching and mounting insects, and from that moment entomology and insect taxonomy became his passion. Henri's life's work was to become the order Diptera, which had previously been studied by his mentor. This trip was the subject of his first published note on Diptera (Audcent 1917); in this he commented that the locality was very rich, with nearly 100 species recorded, of which 16 of the more interesting were mentioned. He concluded by saying that Charbonnier had identified his captures.

Henry Jules Charbonnier (1848-1931) had published a list of the Diptera of the Bristol district (1912), including 690 species. Then his list of the Diptera of Somerset appeared in four parts (1915-1919), in which he attributed a number of records to Henri Audcent among other collectors. Charbonnier was interested in Diptera at least from 1901, when his correspondence with George Verrall began; he had earlier published on vertebrates. He was born at St Helier, Jersey of French parents, so their shared French heritage may have influenced his friendship with Henri Audcent. See Appendix for more details of Charbonnier's life.

For Henri Audcent the Diptera, an important component of all ecosystems, and many of which can only be identified by expert study under a microscope, were a fascinating and challenging topic for amateur academic study. In the 1920s, there was little literature in his field of science and Henri therefore set about remedying the situation with relish. He prepared his own classification tables or keys to the genera and species that were not

satisfactorily catered for, and then (typically for him) selected two of the most difficult and neglected groups to specialise in, namely the Tipuloidea in the Nematocera, and the Tachinidae (then Larvaevoridae) in the Brachycera. His contributions to the literature for these groups have taken their place amongst the classic works on Diptera.

The work of insect taxonomists is exacting, as the identification requires library research, painstaking record-keeping, careful comparison of specimens and hours of study at the microscope. Over the next 35 years, Henri assembled a large personal collection of Diptera, containing specimens of some 3,000 species of flies. These he collected on numerous field trips around Bristol, Gloucestershire, Somerset and further afield. His papers on 'Bristol Insect Fauna (Diptera)' published between 1928 and 1934 – see below – give a good indication of number and destination of his field trips during these years. His visit to Shapwick in Somerset on 6 July 1927 must have been especially satisfying for on that day he identified a rare cranefly *Dicranomyia danica* Kuntze, 1919 (Limoniidae), which had never previously been recorded in the British Isles. He also collected specimens during family holidays in England and France.

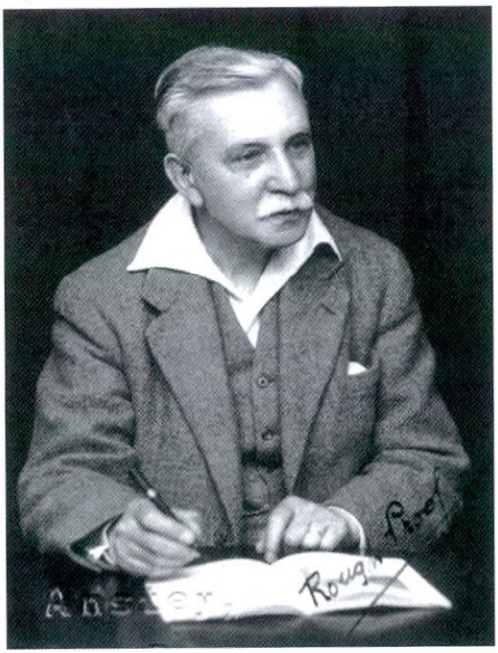
Henry W. Andrews (1940) stated in the *Entomologist's Record*: "In connection with my note in the July-August number of this magazine, I have had the following interesting confirmation from my friend Mr Audcent, who wrote to me as follows: "My experience confirms what you say, though I cannot give precise details except in one case. In 1919 we spent part of a summer holiday at Tickenham, close to Clevedon. The place was swarming with *Asilus crabroniformis*; I have seen as many as six at a time on a patch of cow-dung. My sons, lads of 7-9 years of age, caught them by hand and our host, a market gardener, brought them to me in numbers. Since then I have re-visited the spot and have seen either none or just an odd one. Last August I called on the market gardener, and he said "Do you remember them big waspies? I dunno as I have seen one since".

H.W. Andrews (1876-1955) was a close contemporary in the study of Diptera. Although he lived in Kent they collected together on at least one occasion; Chandler (2009), in an account of Andrews' life, noted the reference by Andrews (1932) to an excursion to Matley Bog in the New Forest, in the company of E. Rivenhall Goffe, F.H. Haines and H. Audcent, when he remarked that it was "a rare sight of four dipterists collecting together". They were searching for the rare syrphid *Eristalis cryptarum* (Fabricius), of which only one was seen on that occasion; this species was last recorded in the New Forest in 1951 and is now known in Britain only from Dartmoor.

Henri and the Bristol Naturalists' Society

Henri was a stalwart of the Entomological Section of the Bristol Naturalists' Society, contributing to both the *Proceedings* of the Society and to its meetings over many years. In 1946, he was elected an Honorary Member in recognition of his long and valuable work. Annual reports of the Entomological Section frequently mention Henri and the encouragement he gave to others. In the Section's Annual Report for 1933, Henri is mentioned thus: "At the end of 1932 a discussion on mimetic colouring led to a suggestion for a survey of comparisons and contrasts in colour and pattern of related and unrelated insects. This was considered at the January meeting, when most members had to admit inability to deal adequately with the subject, but, with his customary thoroughness, Mr H. Audcent tackled it so far as the *Diptera* were concerned. He exhibited sets of compared insects, each set consisting of two or more species belonging to different families (in one case, different orders) and with dissimilar biological histories, yet closely alike in form and colour. Only a few related insects showed marked contrasts. After referring to, and criticising, reasons that

might be advanced to account for the facts, Mr Audcent was of opinion that no satisfactory explanation was yet available".



In 1928, it was recorded that "for Diptera a special meeting was held, by kind invitation, at the house of Mr H. Audcent, where the gentleman's extensive collection was inspected." Likewise, the 1931 Report records that on 10 March "Mr and Mrs Audcent entertained the Section at their house. Mr Audcent showed members his large and growing collection of Diptera and explained his methods of cataloguing, labelling, preservation and examination." That same year, on 10 November, Henri gave a talk on Collecting Diptera in Southern France.

The 1934 Annual Report records that at the meeting on 9 October Henri spoke about his holiday in France, with special reference to Diptera, whilst on 11 December his "collection of 2,500 species of Diptera (one of the best in the country) was open to inspection, together with books, apparatus, etc, which were explained". It was also mentioned that Henri had read through, on behalf of the author, the large and exhaustive work by Monsieur Séguy on the 'Faune de France' Diptera.

In 1928, Henri published Part 1 of his 'Bristol Insect Fauna (Diptera)' in the *Proceedings of the Bristol Naturalists' Society,* and a further six instalments were published annually in the *Proceedings* up to 1934. These provided an account of the occurrence and distribution of Diptera in Bristol, Gloucestershire and Somerset. When the final part of the series was published in 1934 Henri ended in characteristic fashion with the words:

"The list of the records of Diptera for the Bristol District, begun in these Proceedings in 1928 and completed in this number, contains about 1,750 species. A rough computation gives about 4,000 known species of British Diptera. There should be at least 3,000 species in this district, so favoured with various habitats (moor, marsh, woods, meadows, seashore). The compiler of this list is the only collector of Diptera domiciled in this district. He would welcome colleagues, and would be delighted to help collectors in every possible way. Flies can be sent him for determination, and for that purpose he appends his address: 45 Belvoir Road, St Andrew's Park, Bristol, 6."

With net in hand at Vaucluse, France in August 1938 (identity of other person unknown)

Henri then updated '*Bristol Insect Fauna*' (Diptera) with the publication of supplementary lists every two or three years until 1947 at which point the lists were revised, new records made by himself and friends added, brief diagnostic characters of families and genera inserted and the whole republished in the *Proceedings* during 1948 and 1949 (Audcent 1949, 1950b), with the aid of a grant from the Royal Society. This was believed to be the most extensive and informative regional list of Diptera in existence at the time, containing records of more than 2,200 species.

Henri and the Society for British Entomology

In 1931, he was elected to membership of the Entomological Society of the South of England, which soon afterwards became the Society for British Entomology. He wrote a number of papers, which were published by this Society. Henri made a special study of the families Tipulidae (as subfamily Tipulinae) and Ptychopteridae (as Liriopeidae), and his papers on these groups were published in *Transactions of the Entomological Society of Southern England* and *Transactions of the Society of British Entomology* in 1932 and 1934 respectively. His son Jacques drew the illustrations to 'British Tipulinae' and 'British Liriopeidae'. These two works established Henri's reputation as a first-class dipterist, both in the UK and abroad. Later Henri turned his attention to the Tachinidae, a family of flies that are mainly parasitic. In 1942, he published a paper in the *Transactions* entitled 'A Preliminary list of the hosts of some British Tachinidae (Dipt)'. This contained the results of an immense amount of observation and research.

Although submitted to the Society of British Entomology, Henri's last work was unpublished at the time of his death. This was a paper on 'British Larvaevoridae (= Tachinidae) sensu lato' and was accompanied by a large number of beautiful drawings. This was based on years of careful examination, comparison and study, not only of the insects themselves but of European literature – no doubt his knowledge of the French language would have been a great advantage. This work provided a key to the identification of these insects and would have been of great assistance to students of the group, but appears not to have survived.

Collaboration with others in the field of entomology

During his years of entomological research, Henri collaborated with other experts in the field, at the local, national and international levels. He encouraged the work of local entomologists thorough his involvement in the Bristol Naturalists' Society, but also corresponded and collaborated with entomologists overseas. In 1932, he attended the International Congress of Entomology in Paris and played an active role as a member of a special committee to consider a question of nomenclature practice (reported in *Proceedings of Bristol Naturalists' Society*, 1932, p. 323).

Amongst colleagues and associates who collaborated with Henri were Mr E. Rivenhall Goffe (who wrote Henri's obituary in the *Transactions of the Society of British Entomology*), Eugène Séguy of the Muséum National d'Histoire Naturelle in Paris (45 rue de Buffon, Paris) and Professor Charles P. Alexander of the Massachusetts Agricultural College in the United States. Henri corresponded with the latter on several occasions from 1933 onwards and his letters are now preserved in the archives of the Smithsonian Institute in Washington DC (Smithsonian Institution. Record Unit 7298, Collection – Charles P Alexander Papers c. 1870-1979. Division 1 General Correspondence 1906-79 (Box 3, Folder 12: Audcent Henri, 1933-1940, 1947-1951, 1955, 1958). Division 2 (Box 59, Folder 7 Audcent Henri, Biographical information and photographs). Professor Alexander would later name a species of cranefly – *Indotipula audcentiana* – after Henri (see below).

In his British Tipulinae (1932a), Henri acknowledged co-operation from Dr F.W. Edwards, Mr C.A. Cheetham, Mr H. Britten, Mr A.H. Hamm, Dr M. Goetghebuer, Herr M.P. Riedel, and Dr P. Lackschewitz. Likewise in his British Liriopeidae (1934b): Mr A. Cheetham, Monsieur A. d'Orchymont (Brussels Museum), Monsieur E. Séguy (Paris Museum), Dr F.W. Edwards, Dr C.P. Alexander, and Herr P. Riedel. His work on 'British Tachinidae' (1942d) acknowledges the assistance of staff and the use of records from the collections at South Kensington, Tring, Oxford, Cambridge, Manchester, Leicester and Bristol. Over the years and commencing (according to the records in the family's possession) in 1929 up until 1950, the year before his death, Henri donated various specimens, collections and volumes to a number of institutions, including Bristol University, the British Museum, the Royal Albert Memorial Museum in Exeter and the National Museum of Wales in Cardiff.

Henri also lectured at various establishments and prepared other papers. The family have his lecture notes on the following subjects: 'The Aims and Scope of Nature Study', 'Nature Study', 'A chat on Plants', 'The beauties of Nature', 'La Mouche' (this one all in French). He also wrote minor papers such as: 'Hints on the Mounting of Diptera' and 'Parasites determined by H. Audcent and hosts determined by breeder'. Henri's other great interest was stamp collecting.

The University of Bristol, at the Degree Congregation held on 1 July 1939, awarded him the honorary degree of Master of Science, in recognition of his entomological work. He

therefore finally obtained a degree from the University, which was some recompense for his inability to complete his undergraduate studies forty years before.

Madame Henriette Audcent and her interests

Henriette also led an active life and like him was to be publicly honoured for the contribution she would make. However, her interests took her in a very different direction from her husband. She joined the 'Cercle française de Bristol' and eventually became its President. At the same time, she was Vice-President of the Bristol University French Circle, and Vice-President of the West of England Branch of the Modern Language Association. She acted as a hostess in Bristol during the British French week in 1930 and was involved with the United Associations of Great Britain and France.

She was President of the Cercle française de Bristol for the period 1933-35 (the Society was founded in 1905). The three years of her Presidency were very busy, and during that time she lectured, arranged visits to France and generally assumed a high profile and active role in promoting French culture and custom to the English, as well as English culture and custom to the French. The highlight of the period was her visit to France in June 1934 with a large contingent of mayors from many towns including London, Bristol, Dover and Hastings as well as officials of various organisations. The party was welcomed first in Rouen, and then La Havre, these visits occupying two days of celebration. She obviously held a position of high regard in the Bristol contingent, being photographed sitting close to the Mayor of Bristol and his counterpart the Maire of Rouen on board the Saint Briac, the steamer that transported the visitors to Rouen.

Henriette, throughout her life was to maintain an active interest in public affairs, particularly in matters relating to Anglo-French relations. During the Second World War Henriette was no supporter of the Vichy regime and on 26 October 1940 she registered with the Free French authorities at the Consulate de la France Libre in Bristol.

Retirement in Clevedon

The year 1939 would prove to be an eventful year for Henri and his wife, and not just because of the start of the Second World War. In March, their first grandchildren were born, and later in the year, Henri retired from teaching. In June, he received his honorary degree from Bristol University. Sometime after March 1939, the couple left Bristol (which had been their home for many years) and moved to Clevedon, a sea-side town in north Somerset. There they took on the lease of the top flat at Selwood House in Hill Road. They were to remain there until Henri's death.

Henri played his part in the war effort and returned to work, as an employee of the Ministry of Labour and National Service. His appointment was terminated on 21 December 1944 following his continued absence on sick leave, although he was thanked for the services he had rendered to the Department

In retirement, Henri continued his entomological studies, publishing a number of papers (as mentioned above). In 1949, he was approached by the British Museum's Department of Entomology, to assist in the translation of a work on lycaenid butterflies by the French author Stempffer. Henri mainly liaised with Norman D. Riley, the Keeper of Entomology. The project was supposed to have been a simple translation but appears to have turned into a major exercise. Whether it contributed to Henri's illness and death, we shall never know, but within a month or so of completing the work, Henri fell ill. It is clear from Riley's last letter dated 8 January 1951 that the work was basically complete and Riley was tying up the loose ends. Henri replied the following day, and within a month was dead.

Henri became ill and was taken to Clevedon Cottage Hospital, where he had a fall, following which he died on 9 February 1951. After a funeral service at the local Franciscan church, in Clevedon, on 13 February, he was buried at the churchyard of St Andrew's, overlooking the Bristol Channel. His grave stone reads: "*In loving memory of Henri Audcent MSc who died February 8 1951 aged 75 years. Also his wife Henriette, died October 10 1966. RIP.*" The stone is a horizontal slab with a large crucifix on its upper half. The wording on the grave stone is now almost completely illegible, but the grave can be found in the north west corner of the churchyard, in the seventh row back from a stone wall, and the twelfth grave in from the boundary with the coastal footpath.

Following Henri's death there were published several obituaries in the local and entomological press (Andrews 1951, Anon 1951, Goffe 1951, Lowe 1951). Eugène Séguy, of the Museum National d'Histoire Naturelle, Paris (and author of several volumes in the *Faune de France* series), wrote to Henri's sister Marguerite to pass on his condolences and added: "we were extremely sorry to hear of your great loss in the person of your brother. Please be assured that we share in your sorrow and prayers in this sad circumstance. May I also express the regrets of a scientist at this great and probably irreparable loss in one of the most difficult areas of the natural sciences" (letter dated 7 March 1951 from Marguerite Audcent to her sister-in-law Henriette Audcent).

In his will, Henri left his entire estate, valued at £880-11-9 (net), to his widow. The family decided to donate his collection of Diptera and related literature to the University of Bristol, and his stick insects were given to Bristol Zoo. Henriette continued to live in their flat in Hill Road, Clevedon.

The Audcent collection at the Bristol City Museum

The 'Audcent Collection' of Diptera was transferred from the University to the City of Bristol Museum & Art Gallery in the 1980s after suffering from an infestation by museum beetle (*Anthrenus verbasci*). The collection was fumigated and has been free of such problems since. Although some specimens were lost as a result of the infestation, the collection of about 12,000 specimens still contains around 3,000 British and European species and fills more than 160 store boxes (Ray Barnett *pers. comm.*). A great many specimens are local to Gloucestershire, Bristol and Somerset, and provided the source material for the Audcent lists of Diptera published in the *Proceedings of the Bristol Naturalists' Society*, and even after sixty years, it is still regarded as an excellent reference collection. For example, the record from Clevedon by Henri Audcent (Audcent 1942b) of a species of horsefly (*Tabanus bovinus* Linnaeus) was queried in 1998 during the research for a new book (Stubbs and Drake 2001). The only other confirmed records for the species in Britain were from the New Forest in the

19th century. Henri's specimens were still in the collection and these proved that his original identification was indeed correct.

The collection includes representatives of most families of Diptera, and is particularly strong in the groups in which Henri was most interested, such as craneflies and calyptrates, especially Tachinidae. The Syrphidae, Lower Brachycera, Empidoidea and some acalyptrate families are also well represented. Most of the collection is still housed in the small store boxes in which it was received, and remains under the original nomenclature. The Museum is now working, with the support of volunteers, towards bringing the curation of the collection up to date. The Syrphidae, Stratiomyidae and Conopidae have already been transferred to cabinet drawers and data for these families are being compiled to pass to their respective recording schemes; this part of the project is close to completion. The fungus gnat families are currently being curated and data-based. When the data has been passed on to the schemes, a request will be made for specimens to be donated to fill the gaps where species known to occur in the SW region are not currently represented in the Museum's collection. Any assistance with checking identity of specimens and/or extraction of data would be appreciated.

Kramer (2013) described the cranefly collection and made general comments about the type of store boxes, with photographs of examples of the layout of specimens. He also gave a short account of Audcent's life with particular reference to his contact with other cranefly workers, noting that the collection included specimens donated by C.A. Cheetham, J.W. Saunt, H. Womersley, E.C.M. d'Assis-Fonseca and F.W Edwards.

Postscript – species named after Henri Audcent

In 1966, a newly-discovered species of cranefly was named in Henri's honour by the renowned American entomologist Charles P. Alexander (with whom Henri had corresponded). *Indotipula audcentiana* (Alexander, 1966) occurs in the Philippines and was "named for Henri Louis Felix Audcent (1875-1951), capable student of the Diptera of Bristol, England, including the Ptychopteridae and Tipulidae". *Indotipula audcentiana* has an orange thorax with brownish-black legs and yellowish-brown wings (Alexander 1966).

John Bowden (1984) described the bee-fly *Bombylius audcenti* (Bombyliidae) from Morocco, commenting: "The species is named in memory of H.L.F. Audcent, my tutor in the study of Diptera." This species is said to be very like the British species *B. canescens* Mikan, but easily distinguished by its yellow femora. John Bowden was a member of the Bristol Naturalists' Society and was collecting Diptera in the district at least from 1945, according to records in Henri's papers on the Bristol insect fauna. Audcent (1945) reported, among other records contributed by John, that he had collected a muscid *Lispe superciliosa* Loew, at Long Ashton in 1945, which was new to Britain. However, this was evidently a misidentification of *L. litorea* Fallén, which was corrected before publication of the regional Diptera list in 1949-1950. In 1947, Henri sent a specimen to J.E. Collin for checking, and wrote that he wasn't sure how he had led Bowden astray, but would await John's return to England in April 1948 to resolve the matter, noting that John had compared it with specimens of *L. litorea* at the Cambridge University Museum.

David Gibbs (2004) described *Agromyza audcenti* (Agromyzidae) from the Forest of Dean, Gloucestershire, presumed to be a leaf or stem miner like other members of its family but the biology of this species is as yet unknown. It was named in commemoration of Henri Audcent's contribution to knowledge of the local Diptera fauna, with the comment: "He was a very popular dipterist, known for his wide knowledge and willingness to help others in their pursuit of entomology. In the final years of his life he published the first comprehensive list of the Diptera of Somerset and Gloucestershire, which has yet to be superseded."

Appendix – Henry Jules Charbonnier (1848-1931)

It has been related above that Charbonnier preceded Audcent in study of the Diptera of the west, publishing lists of the Diptera of the Bristol district (1912) and of Somerset (1915-1919), and that he was influential in Henri taking an interest in Diptera. Little appears to be known of how Charbonnier's interest in Diptera had developed. He was born on 7 August 1848 at St Helier, Jersey of French parents and was living in Bristol by 1865, the year in which he joined the Bristol Naturalists' Society. He appears to have been professionally a taxidermist. In the 1851 Jersey census, when he was aged 2, his father Theodore is listed as a naturalist, so it seems that he followed in the family business. In 1901, he was at Ivydene, 15 Cranbrook Road, Bristol with his wife, daughter and elderly mother, and was described as a "naturalist (bird preserver) on his own account at home". His wife and mother both died in 1902 and he wrote to George Verrall in December 1902 to say that he hoped to resume entomology in 1903 after the sad troubles of that year. In 1906-08, he was at 25 Berkeley Square, Bristol. In 1908, he remarried and by July 1909 had moved to Applin Cottage, Shepton Mallet, writing to Verrall on 6 July of that year that he hoped to do more entomology. In the 1911 census, aged 62, he describes himself as a "retired naturalist (bird stuffer etc)". By 1913, he had moved to Olveston, Gloucestershire.

There does not appear to be a full obituary of Charbonnier; his death is simply mentioned in the Council's report of the Bristol Naturalists' Society for 1931, where it is stated that he had been made an honorary member of the Society when he left Bristol. Hudd and Griffiths (1914) referred to his donation of collections of Hymenoptera and Diptera to the Bristol Museum, and to his contributions to the literature on widely differing branches of zoology. His interest in vertebrates was shown by his earlier publications in the Bristol Naturalists' Society Proceedings, on fish, amphibians and reptiles (Charbonnier 1886) and mammals (Rudge and Charbonnier 1909). In a summary of 50 years of Bristol zoology (Charbonnier 1914), he referred to his contributions to other publications including the journal *Scientific News* (1888), the British Association *Local Handbook* (1898) and the *Victoria County History* (1903). Hudd and Griffiths (*op. cit.*) mentioned his rearing from *Narcissus* bulbs of the sciarid *Pnyxia* [as *Epidapus*] *scabiei* (Hopkins, 1895), the first British record of that species described from North America, in which the males are fully winged while the females lack both wings and halteres. He had reported the discovery of males running about on the earth around these bulbs at a meeting in 1908, and in 1914, spoke on and exhibited the sexual dimorphism in this and another species of Sciaridae, the newly described *Pseudolycoriella semialata* (Edwards, 1914), which conversely has the males short-winged and fully winged females.

Charbonnier (1912) stated that the flies on which his paper was based were now in the Bristol or Taunton Museums. The Bristol City Museum has a collection of British Diptera, including 812 specimens of 322 species, presented by him in 1904. Charbonnier wrote to J.E. Collin on 18 December 1910 that, within a few weeks, he was going to send his Diptera collection to the Taunton Museum, presumably as a result of his move to Shepton Mallet. A record of where his subsequent collections were deposited has not been found.

Acknowledgements

Hannah Lowery (Archivist, Special Collections, University Library, University of Bristol), kindly supplied information in 2003 on the transfer of the collection to the City Museum, and Ray Barnett of the City Museum informed me about the composition of the collection at that time. Rhian Rowson of the City Museum provided the latest information on the curation of the collection and was helpful throughout the preparation of this paper. Kate Santry, librarian

at the Oxford University Museum of National History, kindly forwarded to Peter Chandler pdfs of the letters written to J.E. Collin by Henri Audcent, and those written to Collin and to George Verrall by H.J. Charbonnier.

Peter Chandler was responsible for selection of text from the biography of Henri Audcent for inclusion here. He also compiled the bibliography, added details of the *Bombylius* and *Agromyza* species named after Henri Audcent, and provided the information on H.J. Charbonnier and H.W. Andrews.

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An additional British site for *Dasysyrphus pauxillus* (Williston) (Diptera, Syrphidae) – This species was added to the British list by Ian Rabarts (2011. *Dasysyrphus pauxillus* (Williston, 1837) (Diptera Syrphidae) new to Britain in Breckland. *Dipterists Digest* (*Second Series*) **17**(2010), 157-161). I can now add a further record, this time from Southern England. This capture was of one female taken on wood spurge *Euphorbia amygdaloides* flowers at Oakers Wood (SY805915), Dorset, V.C. 9, on 11 May 2012.

Oakers Wood is an ancient deciduous woodland, and is one of Dorset's finer woodlands, enhanced to the north and to the east by a mosaic of heathland types. With dry heath dominating in the north and wet heath dominating to the east, these areas have been to a lesser or greater extent planted by conifers, although there has been significant clear felling recently. Despite this, ample conifers remain to support conifer-dependent species and Oakers Wood has a history of such conifer-dependent vagrants such as *Didea intermedia* Loew and *Parasyrphus malinellus* (Collin), and it is from these conifers that *D. pauxillus* is most likely to have wandered. Needless to say, this is a very welcome addition to the Oakers Wood hoverfly list, which now exceeds 130 species.

I thank Roger Morris for confirming that this was a new regional record for *D. pauxillus* **– MICK PARKER,** 9 East Wyld Road, Weymouth, Dorset, DT4 0RP

Dipterists Day Exhibits 2012 – compiled by Editor from exhibitors' notes

The exhibit by Martin Drake has already been the subject of his article on Stenomicridae in the previous issue. The only other exhibit that did not also appear at the Exhibition of the British Entomological and Natural History Society was the following.

PARKER, M.J. – Uncommon or interesting species recorded in 2011 and 2012, mostly in Dorset.

Stratiomyidae: *Odontomyia tigrina* (Fabricius, 1781) 1♀, on umbel flowers, Lodmoor, Weymouth, SY691812, Dorset (V.C. 9), 11.vi.2012

Syrphidae: *Chalcosyrphus eunotus* (Loew, 1873) 1♂, perched on *Urtica dioica* within Long Coppice, Ashley Chase, SY560883, Dorset (V.C. 9), 26.v.2012, only the second Dorset locality, the first having been in the north-west of the county very close to the Somerset border, while this site is much further south and only two miles from the south coast; *Dasysyrphus pauxillus* (Williston, 1887) 1♀, on *Euphorbia amygdaloides*, Oakers Wood, SY805915, Dorset (V.C. 9), 11.v.2012, a recent addition to the British List (see note on page 17 above); *Epistrophe melanostoma* (Zetterstedt, 1843) 1♂, on *Euphorbia amygdaloides*, Oakers Wood, SY805915, Dorset (V.C. 9), 27.v.2012; *Platycheirus ramsarensis* Goeldlin, Maibach & Speight, 1990 1♂, on umbel flowers at Lodmoor, Weymouth, SY691812, Dorset (V.C. 9), 8.vi.2012, a rather surprising appearance of this predominantly northern species, with a habitat association similar to known sites in Devon; *Triglyphus primus* Loew, 1840 1♂, of several seen adjacent to or on umbel flowers within a small copse, Throop area near Turnerspuddle, SY824934, Dorset (V.C. 9), 2.ix.2011, new to V.C. 9; *Xanthandrus comtus* (Harris, 1780) 1♂, on *Hedera helix* on a coastal track at Wyke Regis, Weymouth, SY673774, Dorset (V.C. 9), 18.ix.2012; *Xanthogramma stackelbergi* Violovitsh, 1975, 1♂, Manswood area, ST9708, Dorset (V.C. 9), 19.vi.2011.

Tephritidae: *Cryptaciura rotundiventris* (Fallén, 1814) 1♂, swept from *Corylus avellana*, Whiddon Deer Park, SX724888, South Devon (V.C. 3). 6.vii.2011, only the second Devon Record, the first being in 1892; *Tephritis matricariae* (Loew, 1844) 1♀, swept from chalk grassland, Grove area, Portland, SY699727, Dorset (V.C. 9), 22.vii.2011.

Calliphoridae: *Stomorhina lunata* (Fabricius, 1805), a rare vagrant from southern Europe and North Africa, where it is known to be a parasitoid of locusts, 1♂, on *Pulicaria dysenterica*, on a coast path east of Bowleaze Cove, Weymouth, SY714818, Dorset (V.C. 9), 25.ix.2009; 1♀, on *Smyrnium olusatrum*, one of several seen on or adjacent to this plant, on a coast path south of Weston, Portland, SY679707, Dorset (V.C. 9), 28.x.2011.

Tachinidae: *Carcelia puberula* Mesnil, 1941 1♂, on *Euphorbia amygdaloides*, Delcombe Wood, ST7805, Dorset (V.C. 9), 12.v.2012; *Catharosia pygmaea* (Fallén, 1815) 1♂, swept from chalk grassland, White Horse Hill, SY709847, Dorset (V.C. 9), 19.vii.2011; *Gonia picea* (Robineau-Desvoidy, 1830) 1♀, on *Ranunculus ficaria*, Osmington Mills, SY731822, Dorset (V.C. 9), 19.iii.2012; *Subclytia rotundiventris* (Fallén, 1820) 1♀, Yellowham Wood, SY732935, Dorset (V.C. 9), 9.vi.2011.

Dipterists Digest 2013 **20,** 121-130

Hercostomus rothi (Zetterstedt) (Diptera, Dolichopodidae) stat. nov., new to Britain

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Summary

Hercostomus rothi (Zetterstedt, 1859) has been re-instated as a valid name with *H. praeceps* Loew, 1869 as its synonym. This species is added to the British fauna, based on a male collected in a Cambridge garden in 2005. Couplets and figures are given to allow both sexes to be separated from the similar *H. fulvicaudis* (Haliday in Walker). Attention is drawn to the conspicuous thumb-like projection of the second antennal segment, as in *Syntormon* species. Other English records are included from west Norfolk and Cambridgeshire; *H. rothi* has a moderately broad distribution in Belgium. In northern Europe it occupies a wide range of wet and dry habitats including grasslands, arable land, gardens, fens and deciduous woodland.

Introduction

On 12-13 July 2005, MHS operated a Malaise trap in the Cambridge garden of Henry Disney (TL452602), V.C. 29. Amongst the material collected was a male dolichopodid which defied identification, having the conspicuous thumb-like projection of the second antennal segment typical of *Syntormon* species, and which could not be named to species from the key in d'Assis-Fonseca (1978). The specimen was shown to RC in the following March at a meeting at Preston Montford Field Study Centre, Shropshire. He was equally baffled and subsequently arranged for it to be sent to the late C.E. (Peter) Dyte for an opinion.

Peter Dyte's initial reaction, on acknowledging safe receipt of the specimen (*in litt.* to RC), was that on a preliminary look, his very tentative hypothesis was that it could be the unknown male of *Syntormon luteicornis* Parent. However, following further correspondence with RC, in which attention was drawn to the Dolichopodinae nature of the genitalia, he named the specimen as *Hercostomus praeceps* Loew (= *H. rothi* (Zetterstedt)), which has not previously been reported from Britain.

Several more records of *H. praeceps* came to light after Peter Dyte alerted several dipterists to its presence in Britain, and later enquiries by CMD uncovered more records submitted to the Empididae & Dolichopodidae Recording Scheme as *H. fulvicaudis* (Haliday in Walker).

Although the initial purpose of this paper was simply to add a species to the British list, the opportunity arose to confirm the nomenclature, which is explained first to prevent confusion since the species has been known for many years under a different name.

Nomenclature

Two species, *Dolichopus bicingulatus* Zetterstedt, 1859, and *D. rothi* Zetterstedt, 1859, were described from Sweden ten years earlier than *H. praeceps* but have been treated as synonyms of that species. Hedström (1966) provided a clear exposition of the problem surrounding

these names, which is whether these species are the same as *H. praeceps* or *H. fulvicaudis*. Hedström examined the type specimens of both Zetterstedt's species. The only remaining specimen of *D. rothi* appeared to be a female lacking its antennae, although Hedström decided that the hind tibia was that of *H. praeceps*. The remaining type specimen of *D. bicingulatus* was so badly damaged that Hedström could not identify it beyond it being either *H. praeceps* or *H. fulvicaudis*. Although Zetterstedt's species could be conspecific with *H. fulvicaudis*, Hedström decided that they were more likely to be *H. praeceps* as this was the only one of the two species that he had seen from Sweden. However, he felt that it was imprudent to assume that the specimen of *D. rothi* was indeed the same as the species called *H. praeceps* and recommended that the name *H. praeceps* continued to be used, as it had since the publication of the principal identification guides of Stackelberg (1933) and Parent (1938). The synonymy of *D. bicingulatus* was questioned by Negrobov (1991), and Grichanov (2002) was of the opinion that *D. rothi* was the senior synonym of *H. praeceps* but provided no explanation, although he designated lectotypes and paralectotypes for a number of species including *D. rothi*. It is unfortunate that Stackelberg was apparently unaware of the earlier synonymy of *praeceps* with *rothi* proposed by Mik (1884), as pointed out by Hedström, as this would have resolved the issue long ago (the authors have not seen this paper).

A recent examination by MP of one lectotype specimen (female), and two paralectotype specimens (one male, one female) of *H. rothi* revealed its synonymy with *H. praeceps* convincingly. The abdominal pattern of the lectotype and the female paralectotype corresponded completely with that of *H. praeceps* (the remaining paralectotype lacked the abdomen). Moreover, the male paralectotype, though lacking its abdomen and hypopygium, featured the characteristic thin preapical posterodorsal bristle on the hind tibia. As a result, *Hercostomus rothi* is herewith re-instated as a valid name, with *H. praeceps* as its synonym. Also the synonymy of *H. bicingulatus* with *H. rothi* is maintained.

Identification

Hercostomus rothi can be readily distinguished from other Dolichopodinae by its largely yellow antenna and abdomen, two features that are shared with *H. fulvicaudis*. Some *Sybistroma* Meigen species, formerly in *Ludovicius* Rondani, also show these features but have not yet been found in Britain. Using the generic key of d'Assis-Fonseca (1978), a problem will be encountered at the second couplet for both males and females in which *Syntormon* is separated on the basis of a thumb-like projection on the second antennal segment (pedicel). This character (Fig. 1) is present in *H. rothi*, *H. fulvicaudis* and, to a lesser extent, *H. nanus* (Macquart). The confusion of *H. fulvicaudis* and *H. rothi* with *Syntormon* is compounded by their partly yellow abdomen and antennae, and comb of posterodorsal setulae on the front tibia in both sexes, which are characters found in *Syntormon*. However, all *Syntormon* species have small genitalia with inconspicuous and usually hidden appendages, and tiny pale scattered hairs on the pteropleura (anepimera) and metepimera which are absent in Dolichopodinae, although the latter character is hardly appropriate for the early couplets of a key to genera. Both *Hercostomus* species can be easily separated from *Syntormon bicolorellus* (Zetterstedt) by the biserial acrostichal bristles (uniserial in *S. bicolorellus*), and a different colour pattern of the abdominal tergites.

Hercostomus rothi closely resembles *H. fulvicaudis* in its small size and the mainly yellow colour of the legs, antennae, first abdominal segment and male genitalia. These two species are the alternatives in one couplet in the key by Stackelberg (1933), later repeated by Parent (1938) and Grichanov (2006). Males of *H. rothi* will run to couplet 7 in d'Assis-Fonseca (1978), p. 32, which should be amended as follows:

7	Squamal fringe pale. Hypopygium mainly yellow. 2.5-3.5 mm	
(a)	Genital lamella very small, about a quarter the length of the hypopygium, widening gradually towards the darkened tip into a long triangle with inconspicuous apical hairs (Fig. 2). Third antennal segment (first flagellomere, postpedicel) slightly longer than wide (Fig. 1)	*rothi* (Zetterstedt)
(b)	Genital lamella larger, almost half the length of the hypopygium, strongly expanded at the apex into a broadly rounded tip with a conspicuous fringe of long hairs, brown or black with a yellow base. Third antennal segment (first flagellomere, postpedicel) quite large, about 1.5 times as long as wide	*fulvicaudis* (Haliday in Walker)
-	Squamal fringe black. Hypopygium black. 3-3.5 mm	*plagiatus* (Loew)

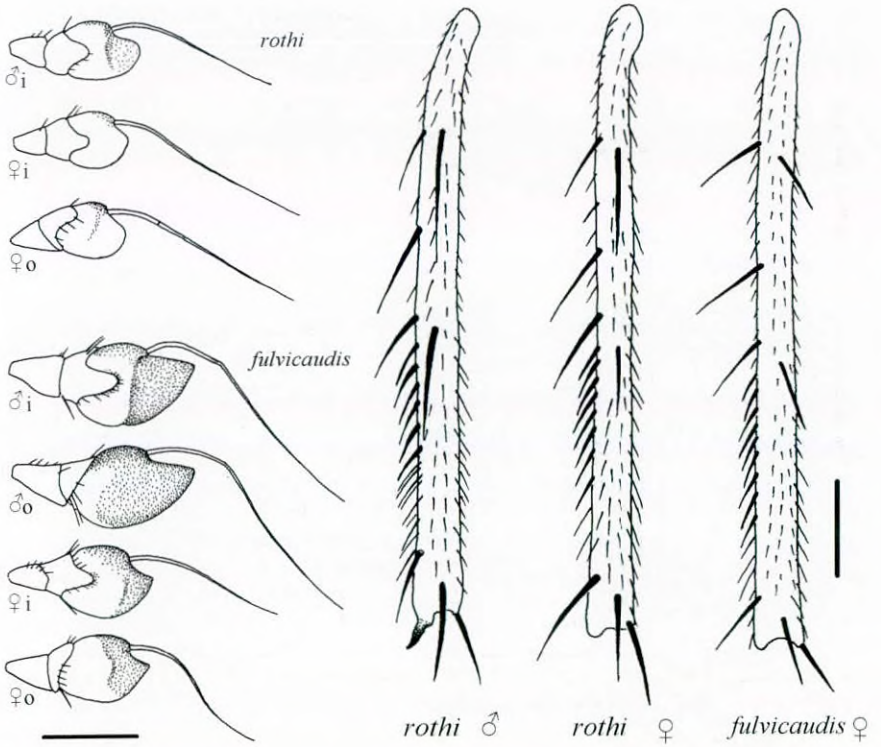

Fig. 1. Antennae and hind tibiae of *Hercostomus rothi* and *H. fulvicaudis*. Antennae show inner (i) and outer (o) faces of both sexes (only inner face of male *rothi*). Right hind tibia in anterodorsal view of male and female *H. rothi* and female *H. fulvicaudis*. Scale bars = 0.25mm.

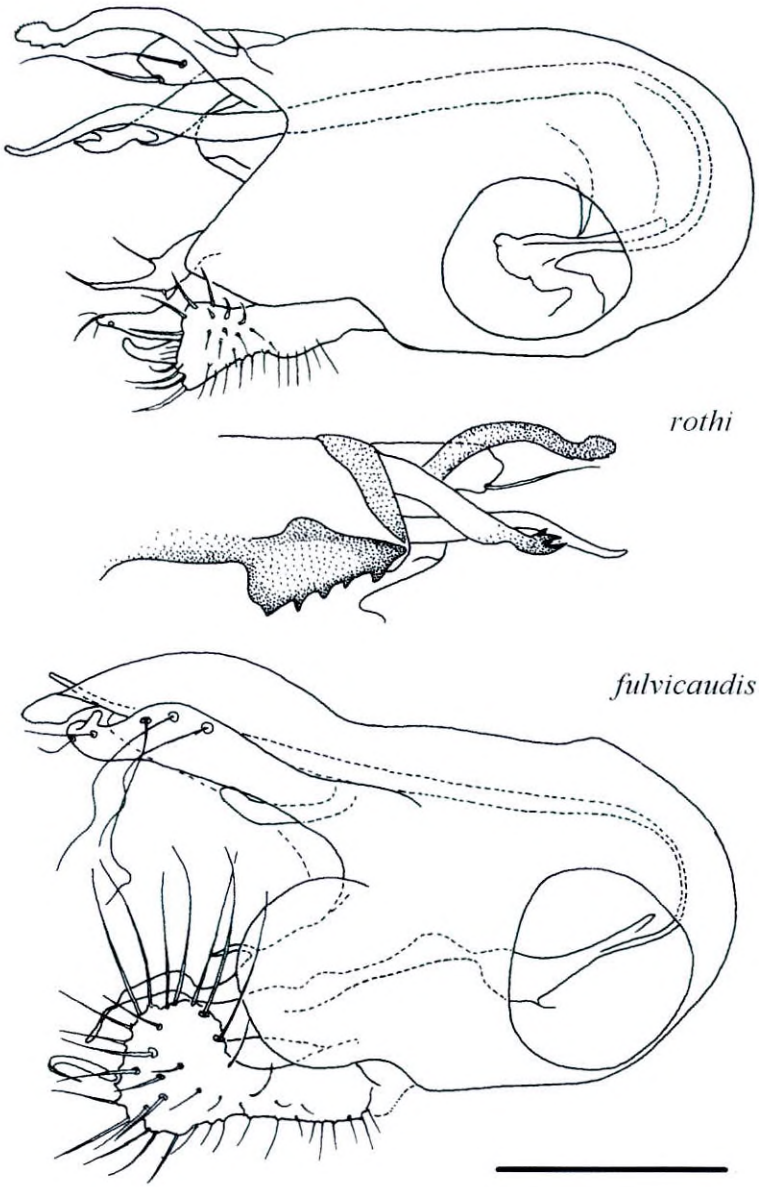

Fig. 2. Male genitalia of *Hercostomus rothi* and *H. fulvicaudis* viewed from right (entire capsule) and from left (*rothi*, appendages only). Scale bar = 0.25mm.

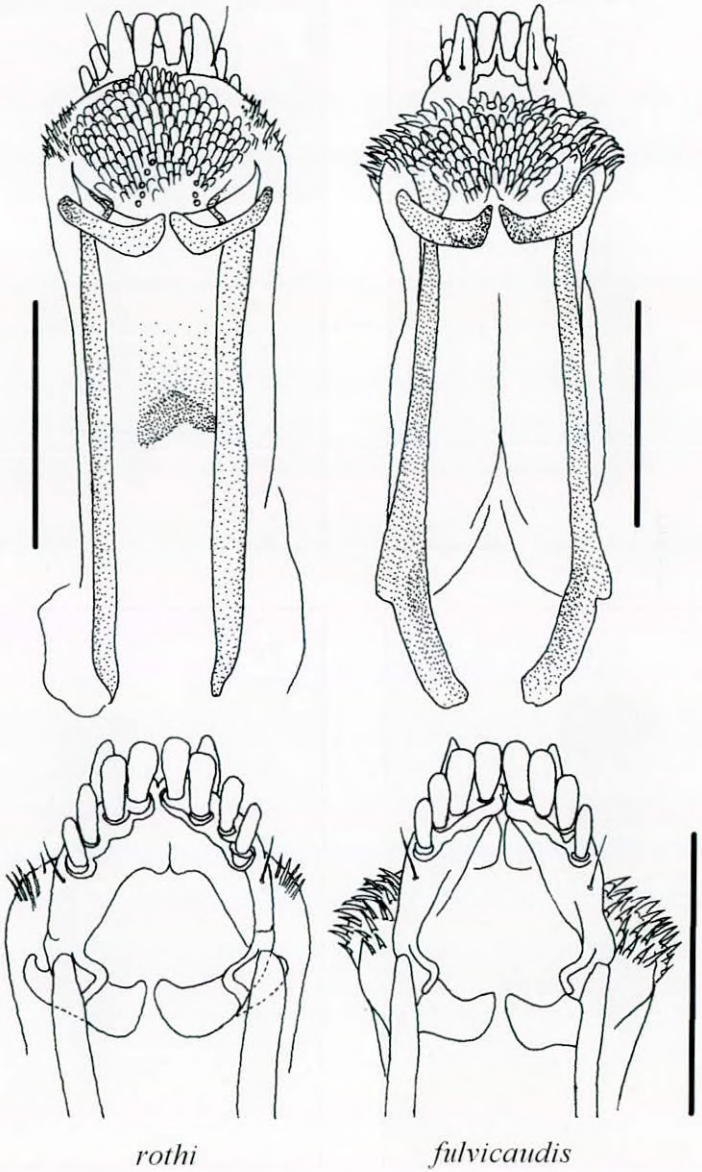

Fig. 3. Female ovipositor of *Hercostomus rothi* and *H. fulvicaudis* in dorsal view (entire ovipositor) and ventral view (terminal section). Scale bars = 0.25mm.

Hercostomus rothi
St-Jan-in-Eremo (Belgium)

Hercostomus rothi
Halle/Saale (Germany)

Hercostomus fulvicaudis
Ingelmunster (Belgium)

Hercostomus fulvicaudis
Halle/Saale (Germany)

Fig. 4. Dorsal views of females of *H. praeceps* (A, B) and *H. fulvicaudis* (C, D).

The male genitalia of both *H. rothi* and *H. fulvicaudis* share four derived character states with species of the *H. longiventris* (Loew) lineage, the three first of which are also observed only in the *Sybistroma* clade: (i) pointed or frayed, knob-like tip on one of both basiventral epandrial lobes, (ii) hypandrium laterally flanked by basiventral epandrial lobes, appearing tripartite in ventral view, (iii) hypandrium forming a complex of entangled, asymmetrical lobes (see Fig. 2), and (iv) hypandrium fused to epandrium laterally near base of basiventral epandrial lobe (Pollet *et al.* 2010). Both are distinct from other species included under *Hercostomus* by d'Assis-Fonseca (1978) in having a predominantly yellow capsule (also observed in the closely related *H. tibialis* (Van Duzee) from the Nearctic). The genitalia of *H. rothi* and *H. fulvicaudis* are clearly different from one another. Both species have a panoply of varied appendages but the most obvious difference is that used by Stackelberg (1933), which is the rather inconspicuous genital lamella of *H. rothi* compared to the larger bulbous lamella typical of most *Hercostomus* and which is found in *H. fulvicaudis*. Most of the capsule and appendages are pale but *H. rothi* has a conspicuous triangular inner appendage with several coarse teeth, visible on the left side (Fig. 2).

Parent (1938) used a leg-bristle character for males, *H. rothi* having three posterodorsal setae distal to (above) the comb of short stout setae but *H. fulvicaudis* having only two posterodorsal setae. However, this does not agree with Parent's own descriptions or with his diagrammatic figure of the hind tibia; it also did not apply to a British specimen of *H. fulvicaudis*, whose tibia was indistinguishable from that of *H. rothi* (Fig. 1). Stackelberg and Grichanov did not use this character. In contrast, the shape of the preapical posterodorsal flattened dark bristle on the hind tibia in the male seems to be a reliable character: whereas it is rather thin in *H. rothi* (Fig. 1), it is only slightly broader than long in *H. fulvicaudis*.

The characters used in previous keys to separate females are difficult to appreciate, even with comparative material. Females examined and drawn for this paper were collected with males on the same occasion and were assumed to be the same species, as it was considered highly improbable that both of these rare species would be present together. In Belgium and Germany, though, sympatric populations of both species have been encountered (see further). The only character used by Stackelberg (and repeated by Parent and Grichanov) that appears to be reliable is the difference in colour of the third antennal segment (first flagellomere, postpedicel), which is almost entirely yellow apart from slight dorsal darkening in *H. rothi* compared to more extensive dark colouring in *H. fulvicaudis* (Fig. 1). The differences in the proportions of the third antennal segment are trivial and, although *H. fulvicaudis* does have a marginally longer antenna than *H. rothi*, the length:depth ratios are 1.15 and 1.07, respectively, which is not a workable difference. *Hercostomus fulvicaudis* has a more pointed tip, compared to the rounded tip of *H. rothi,* but this difference may be due to comparing material of *H. rothi* in alcohol with dry specimens of *H. fulvicaudis*.

The female ovipositors were examined. Minor differences were apparent: the lateral spines of the terminal armament are weaker and less dense in *H. rothi* compared to those of *H. fulvicaudis*, and in *H. rothi* there is a weakly darkened patch half-way along the dorsal surface of the clear integument of the last segment of the ovipositor (Fig. 3). These characters were examined in only one specimen of each species, using preparations viewed under a compound microscope at between x100 and x200 magnification. Thus, even if the differences are consistent, they are of little practical value.

The most reliable character to separate females of both species seems to be the colour pattern of the abdominal tergites (Fig. 4). Photographs were taken of females from the largest populations found thus far in Belgium and Germany (see further). Females of *H. rothi* will run to couplet 5, p. 34 in d'Assis-Fonseca (1978), which should be amended as follows (biometrics are based on 8 and 10 specimens of *H. rothi* and *H. fulvicaudis* respectively, retrieved from the largest Belgian and German samples):

5	Abdomen translucent yellow about base. 2.5-3 mm	
(a)	First abdominal tergite entirely yellow; second tergite usually entirely yellow on anterior 2/3, at most with diffuse narrow central darkened zone on anterior 1/3; third tergite dark with two large triangular lateral yellow patches, clearly visible in dorsal view (Fig. 4). Third antennal segment (first flagellomere, postpedicel) as wide as long, weakly darkened dorsally and at the apex (Fig. 1). Smaller species, wing length 2.6-2.9 mm	*rothi* (Zetterstedt)
(b)	First abdominal tergite yellow, slightly to distinctly darkened centrally; second tergite yellow with broad dark central zone borne on posterior margin and approaching or reaching anterior margin; third tergite with small lateral yellow patches, often hard to see in dorsal view. Third antennal segment (first flagellomere, postpedicel) a little longer than wide, distinctly brown and darkened on the dorsal edge and at the apex. Larger species, wing length 3.0-3.4 mm	*fulvicaudis* (Haliday in Walker)
-	Abdomen entirely dark in ground-colour	6

Distribution and habitat

Further records of *H. rothi* have been made in England since recorders were alerted to its occurrence here: 1♂, Wicken Fen NNR (Adventurers' Fen, Compartment 53), Cambridgeshire (V.C. 29), TL551695, 18.viii.1991, swept from edge of reed-bed, I. Perry; 1♂ Wicken Fen (Sedge Fen compartment) TL5570, 8.vii.1989, P.J. Chandler; 1♂, Wicken Fen NNR (Sedge Fen compartment), Cambridgeshire (V.C. 29), TL554701, 3.vii.2010, vacuum sample, P. Kirby; 10♂, 4♀ Woodwalton Fen NNR, TL2384, 26.vi-20.vii.2002, water traps in five locations in *Salix* scrub or scrub edge (but not in open fen a few metres away at three of these locations), P. Kirby; 1♂ Pashford Fen, Suffolk (V.C. 26), TL733836, 29.vii.1995, swept from edge of spring-fed stream, I. Perry; 1♂ Devil's Punch Bowl, Norfolk (V.C. 28), TL878892, 19.vii.1986, swept from edge of pool, I. Perry; 1♀, Laurels Farm, Terrington St Clement, Norfolk (V.C. 28), TF537223, 16.vii.2007, water trap in a potato field, D.J. Gibbs. The localities are all within a small area of Fenland about 30km in radius.

Hercostomus rothi has been recorded from Austria, Belgium, the Czech Republic, Denmark, France, Germany, Netherlands, Poland and Sweden (Pollet *et al.* 2012). It appears to be associated with cultivated sites as well as semi-natural countryside. Steinborn and Meyer (1994) classified *H. rothi* as a 'praticole' (i.e. grassland) species. In studies in Schleswig-Holstein, northern Germany, they recorded it in several arable fields growing grain, maize and fruit, and Meyer and Heydemann (1990) caught *H. rothi* in an arable field with summer barley and in a thistly brackish meadow. In Belgium, *H. rothi* has been collected in 26 different UTM 10km squares, distributed over all Flemish and three Wallony provinces. About 91% (= 361/396) of all Belgian specimens were collected in the Oost-Vlaanderen province, with the largest population encountered in a park landscape (Malaise trap sample). The other seven samples with over ten specimens from pitfalls or white pan

traps were all collected in reedmarsh habitats situated in Het Meetjeslandse Krekengebied (Pollet 1992). As well as these habitats, *H. rothi* also occurs in grasslands, meadows and pastures, willow carr, deciduous forests and gardens (even in MP's present garden). In comparison, *H. fulvicaudis* is considerably rarer in Belgium, with 12 UTM 10km squares distributed over three Flemish and two Wallony provinces. One site in the province of West-Vlaanderen yielded about 78% (= 63/81) of all Belgian specimens. This sampling site consisted of a very humid willow *Salix* carr along a rather polluted brook, with a well-developed herb layer, where *H. fulvicaudis* was found in both well lit and strongly canopied parts (Pollet *et al.* 1992). Contrary to *H. rothi*, *H. fulvicaudis* clearly prefers wooded or at least canopied habitats. In only four of the 78 Belgian sampling locations, both species were collected, always as singletons or with very few specimens. In June 2000 MP encountered thriving populations of both species in grassy brackish grassland at Salzersee, near Halle/Saale in Sachsen-Anhalt (Germany). The British records agree with the apparently unexpected occurrence of *H. rothi* in cultivated sites, including as they do an urban garden and a potato field as well as old fenland habitat.

Acknowledgements

We thank Henry Disney for permission to release details of his garden and for running the Malaise trap, and David Gibbs, Ivan Perry, Peter Chandler and Peter Kirby for supplying information about their records and allowing them to be published, with particular thanks to Peter Kirby for providing males and females used for the drawings. The late Peter Dyte made the initial identification and helpfully alerted others to the occurrence of *H. rothi* in Britain. We are also indebted to Rune Bygebjerg (Museum of Zoology, Lund University, Lund, Sweden), who kindly provided MP with the type specimens of *H. rothi*.

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Records of some marine Telmatogetoninae and Orthocladiinae (Diptera, Chironomidae) from Wales – Whilst reviewing slide preparations of coastal marine Chironomidae I noticed some pupal exuviae of species which I had collected by skim-netting the surface water of small rock-pools in Trearddur Bay, near Holyhead, Anglesey, Wales (UTM 30U 3959) in 1999 and 2000, that remained undocumented until now. A collection made on 13 August 1999 contained exuviae of *Thalassomyia frauenfeldi* Schiner, 1856 and *Telmatogeton japonicus* Tokunaga, 1933 (subfamily Telmatogetoninae) as well as *Halocladius fucicola* (Edwards, 1926) and *Halocladius variabilis* (Staeger, 1839) (subfamily Orthocladiinae). At the same location, almost a year later, on 10 July 2000 exuviae of *Telmatogeton pectinatus* (Deby, 1889) and *H. variabilis* were collected. The distinct exuviae key readily in Langton, P.H. (1991. A key to the pupal exuviae of West Palaearctic Chironomidae. Privately published by the author) and in Langton, P.H. and Visser, H. (2003. Chironomidae exuviae - A key to pupal exuviae of the West Palaearctic Region. Amsterdam, Biodiversity Centre of ETI, UNESCO Publishing, Paris CD-ROM). Skim-netting surface waters for chironomid pupal exuviae has proved to be a valuable technique in freshwater faunistic studies and I first successfully applied the technique for coastal marine collections at Kilkee, Co. Clare, Ireland in 1999 (Murray, D.A. 2000. First record of *Telmatogeton japonicus* Tokunaga (Dipt., Chironomidae) from the British Isles and additional records of halobiontic Chironomidae from Ireland. *Entomologist's monthly Magazine* **136,** 157-159) some weeks before making the collections in Anglesey – **DECLAN A. MURRAY,** Freshwater Biodiversity, Ecology and Fisheries Research Group, School of Biology and Environmental Science, University College Dublin, Belfield, Dublin 4, Ireland; declan.murray@ucd.ie

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The psilid fly *Imantimyia albiseta* (Schrank) (Diptera, Psilidae) in Scotland

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Summary
The extent of occurrence in Scotland of *Imantimyia* (formerly *Loxocera*) *albiseta* (Schrank) (Diptera, Psilidae) is unclear. Thirteen apparent Scottish records were found. Five are unverifiable due to an apparent lack of voucher specimens, 3 are misidentifications of *Loxocera aristata* (Panzer) and 5 are validated as *I. albiseta*. On the basis of validated records, *I. albiseta* appears to exhibit a British distribution pattern of becoming scarcer towards northern England and in Scotland, being confined mainly to coastal regions and river valleys.

Introduction

The genus *Loxocera* Meigen (Diptera, Psilidae) has been revised recently and four of the five British species, including *Loxocera albiseta* (Schrank), placed in the resurrected genus, *Imantimyia* Frey, 1925 with only *L. aristata* Panzer retained in *Loxocera* (see Chandler 2012). According to Collin (1944), three of these five species occur in Scotland. However, misidentification of *I. albiseta* and *L. aristata*, and their confusion under various names especially the Linnaean name, *Musca ichneumonea* Linnaeus, 1761 (Collin 1944, Chandler 1998), has made it difficult to determine whether records of *I. albiseta* in Scotland are valid.

Austen (1899), Collin (1944) and Chandler (1975) stated that *I. albiseta* is unknown in Scotland. Despite this, a search through the literature and examination of museum and other collections has revealed 13 apparent Scottish records covering the period 1901 to 2009. The work reported here evaluates these records and begins the process of clarifying the status and distribution of *I. albiseta* in Scotland.

Methods

In this paper, a capture is an unpublished instance of a species, i.e. a specimen in a collection. A citation is an instance of a capture mentioned in a publication and a record is a citation or capture validated by re-identifying a voucher specimen. To locate citations of *I. albiseta*, we consulted SIRI (Scottish Insects Records Index) which, up to 2006, is an almost complete index of published citations of Scottish insects maintained by the National Museums of Scotland (Shaw 1987). For the subsequent period to 2012, a journal search for records was conducted. To locate captures, the following collections were examined: the National Museums of Scotland, Edinburgh; the Hunterian Museum, University of Glasgow; the Natural History Museum, London and the Oxford University Museum of National History, Oxford. In addition, Jeanne Robinson checked the collections at Kelvingrove Museum, Glasgow, some members of the Malloch Society provided information from their private collections and Darwyn Sumner (*pers. comm.*) provided data from the Stilt & Stalk Fly Recording Scheme. Finally, Derek Whiteley kindly donated material to the National Museums of Scotland. *Imantimyia albiseta* vouchers and captured specimens were validated using keys in Collin (1944), the Stilt & Stalk Fly identification guide produced by Darwyn Sumner (downloadable

at *www.dipteristsforum.org.uk*) and by comparison with named specimens in museum collections.

Results

Citations

Five citations of *I. albiseta* from six Scottish localities were found in publications. The first citation is Carter (1907), who referred to a male sunning itself on leaves in a recently felled, oak (*Quercus*) plantation near Aberfoyle, Stirlingshire on 1 September 1905. Second, Murray (1935) stated that *I. albiseta* was frequent, but not as much as *L. aristata*, on waste ground in Dumfriesshire, presumably near Gretna from where he was writing. Steele and Woodroffe (1968) referred to *I. albiseta* as frequent about rushes at Kinloch on the Hebridean Island of Rum. Nelson (1982) reported that a single specimen was caught in a pan trap, in August 1981 at Murder Moss, a fen near Selkirk, Selkirkshire in the Scottish Borders. Most recently, Whiteley (1994) found it on Harris and along stream margins near Kinloch Castle on Rum.

The only vouchers located for these citations are those for Harris and Rum in Whiteley (1994). The two voucher specimens for Harris are now in the collections of the National Museums of Scotland and those from Kinloch Castle are in the Kelvingrove Museum, Glasgow but when their identity was checked, they were all found to be *L. aristata*.

Captures

Two specimens standing under *I. albiseta* were found in the collections of the NHM, London that were also *L. aristata*. From their labels, one was caught by J.W. Yerbury at Nethy Bridge, Inverness-shire sometime during June and July 1911 and the other was captured by C.H. Andrewes at Aviemore, Inverness-shire on 26.xi.1959.

Five validated captures of *I. albiseta* in Scotland were located. Details of the specimens are:

- 1 male collected by R. Henderson, from Kilmun, head of Holy Loch, Argyll and Bute, 27.vii.1901;
- 1 female collected by E.G. Hancock, from marsh at Loch Lomond NNR, NS428899, West Dunbartonshire, 1-5.ix.1989;
- 1 male collected by R.M. Lyszkowski, from Gullane, East Lothian, 16.vii.1991;
- 1 female swept from *Juncus* (Juncaceae) by G.E. Rotheray at Threave wetlands, Castle Douglas, Dumfriesshire, 6.vii.2009;
- 1 female swept from an aphid-infested patch of *Urtica dioica* (Urticaceae) by G.E. Rotheray at Gordon Moss SSSI, Berwickshire, 16.viii.2013.

The first two specimens are in the collections of Kelvingrove Museum, Glasgow and the other three are in the National Museums of Scotland.

Discussion

Austen (1899) reported that all specimens of *I. albiseta* in the Natural History Museum were from counties in southern England, and Collin (1944) stated that he knew of no specimens from Scotland. Chandler (1975) stated that the apparent northern limit of *I. albiseta* in Great Britain is Yorkshire and Lancashire. Yet published citations of Scottish *I. albiseta* exist prior to Collin (1944), such as Carter (1907) and Murray (1935). It is possible that Collin examined the specimens cited by Carter and Murray and found them to be misidentified, but if this occurred, he did not give details in his 1944 account of the British fauna.

Of the 13 Scottish *I. albiseta* citations and captures considered here, 7 could be assessed by examination of voucher specimens and 5 were validated. It is possible that vouchers for the others exist, but they were not located during this study. The validated Scottish localities are either near coastlines (two near Glasgow, one near Edinburgh and one from Dumfriesshire) or in a river valley (one in Berwickshire).

Of the *I. albiseta* citations not assessed, the one from Dumfriesshire (Murray 1935) is probable given the distribution of validated records and the fact that Murray (1935) referred to both *I. albiseta* and *L. aristata* being present near Gretna, showing that he was aware of and presumably able to distinguish the two species. Also probable is the citation from Aberfoyle (Carter 1907), this locality being only about 32 kilometres north east of Loch Lomond, one of the localities for *I. albiseta*. The citation from Murder Moss in Selkirkshire (Nelson 1982) is also likely. Not only was a specimen taken in August 2013 at Gordon Moss, which is only about 20 kilometres to the north-east, but both mosses are not far from the river Tweed and it is possible that the river valley was a route of colonisation from the east coast where the Tweed meets the sea. Interestingly, all Scottish records are based on captures of single specimens, suggesting that, in Scotland, populations exist in low numbers or, adult flies are well dispersed and solitary in habit.

Imantimyia albiseta is almost certainly under-recorded in Scotland but nonetheless, validated records suggest that the British distribution conforms to a particular biogeographical pattern. This involves a change from being widespread in southern England to being less frequent and more isolated in northern England and having even fewer Scottish populations, which are confined mostly to coastal regions and in one case a river valley, especially in the southern half of Scotland. The hoverfly *Tropidia scita* (Harris) (Diptera, Syrphidae) conforms to such a pattern (Ball *et al.* 2011). Both *I. albiseta* and *L. aristata* are thought to develop in association with *Juncus* (de Meijere 1947, Brindle 1965). *Juncus* is common and widespread in northern Britain and it is unlikely to be limiting the distribution of *I. albiseta*. Other more important factors are probably that *I. albiseta* is warmth-loving and the colder temperatures of northern England and upland Scotland do not suit it. Hence low temperatures may confine *I. albiseta* and *T. scita* to the milder, coastal regions and river valleys. This contrasts with *L. aristata*, which is widespread and frequent in Scotland, but less frequent in southern England (Chandler 1975), suggesting that it is cold-adapted.

As pointed out by Crowson (1966) in reference to the Solway coast of Dumfriesshire and Galloway, Scottish populations of warmth-loving species may have been isolated for as much as 5000 years and can be expected to have undergone local adaptation. The most probable adaptations are phenological, such as flight periods that are later and shorter relative to those characterising southern populations (Sparks and Menzel 2002). Whether or not such features characterise *I. albiseta* is unknown, but local adaptations can also involve morphological and ecological features. Perhaps *L. yerburyi* Austen 1899, which is a dark variety of *L. aristata*, is an example of a local adaptation to the lower temperatures of Scotland (and northern Europe). Dark bodies absorb heat more readily than light ones and hence, dark individuals can initiate and maintain activity at lower temperatures (Gilbert 1984). How frequent local adaptations are in British Isles insect populations has yet to be clarified, but the probability of their existence has obvious implications for assessing biodiversity and investigating effects of climate change, etc.

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Stalk Fly Recording Scheme. We also thank fellow members of the Malloch Society and Derek Whiteley for specimens and information. GER also thanks Nigel Wyatt and Erica McAlister for access to the Diptera collection at the Natural History Museum, London and to Amoret Spooner and Darren Mann for similar access at the Oxford University Museum of Natural History. GER is also grateful to Lindsay Mackinley of the National Trust for Scotland for arranging access to Threave wetlands.

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Dipterists Digest 2013 **20,** 135-139

The pine heartwood clusiid *Clusiodes geomyzinus* (Fallén) (Diptera, Clusiidae) in Scotland

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Summary
The status and distribution of the UK Biodiversity Action Plan fly *Clusiodes geomyzinus* (Fallén) (Diptera, Clusiidae) is assessed. Although known from Britain for nearly 120 years, knowledge of this species is limited to about 16 captured specimens from northern Scotland, although two unconfirmed captures exist from England. Most records are from the area between Aviemore and Grantown in Strathspey, Inverness-shire. The development site is dead *Pinus* wood, particularly cut stumps, which have decayed to the point that the whitewood is soft and moist. Surveys in Strathspey for the distinctive puparium from 2000 onwards and particularly in 2012, revealed the presence of only one extant population near Grantown, suggesting the species has declined since the 1980s.

Introduction

Clusiodes geomyzinus (Fallén) (Diptera, Clusiidae) is readily distinguished from other British clusiids in being shiny black with a distinctive, black-marked costal wing margin (Stubbs 1982). In the British Isles, *C. geomyzinus* is known only from a handful of localities where it is associated with dead *Pinus* (Yerbury 1913, Stubbs 1982). Falk (1991) designated it as a UK Red Data Book category 3 (Rare) species, meaning that it was known from up to fifteen 10km squares and occurs in small populations that are at risk. More recently, following unsuccessful searches throughout Scotland by the Malloch Society, *C. geomyzinus* is included in the Biodiversity Action Plan Process (BAP) as a Priority Species with the vernacular name, 'the pine heartwood clusiid' (http://jncc.defra.gov.uk/page-5169).

Clusiodes geomyzinus is considered uncommon in Central Europe, but may be locally abundant (Roháček 1995). In Northern Europe, however, it may be more common. In Finland for instance, Tuomikoski (1936) stated that it was frequent on fallen, deciduous trees and Greve (2005) reported it as common in Norway. In continental Europe adults are associated with *Populus*, *Betula* and, particularly, *Picea* (Tuomikoski 1933, Roháček 1995). In Finland and Russia, it has been reared from dead wood of *Picea*, *Pinus* and possibly also, from *Betula* (Rotheray and Horsfield 2013). To assist future work on this Priority species and based on historical citations, captured specimens and recent surveys, we review the status and distribution of *C. geomyzinus* in Britain.

Methods

To locate citations of *C. geomyzinus*, SIRI (Scottish Insects Records Index) was consulted which, up to 2006, is an almost complete index of published citations of Scottish insects maintained by the National Museums of Scotland (Shaw 1987). For the subsequent period to 2013, a journal search was conducted. To locate vouchers for citations and unpublished captures, the following collections were examined: the National Museums of Scotland, Edinburgh; the Hunterian Museum, University of Glasgow; the Natural History Museum, London and the Oxford University Museum of National History, Oxford. In addition, John Ismay (2001, *pers. comm.*) kindly provided data obtained by him for the Acalyptrate Review

(*in prep*) from the Invertebrate Site Register and from NCC (now Natural England) card indices.

In August 2012, a renewed search for extant populations was undertaken in the area of Scotland of most historical captures, Strathspey, Inverness-shire. Searches were based on puparia from which the adult had eclosed. Such puparia remain in the development site and sampling has little impact on the population, apart from disturbing dead wood to find them. Prior experience in Finland and Russia showed that empty puparia can be found in dead wood that has decayed to the point that the bark is intact but the whitewood is moist, soft and pliable (Rotheray and Horsfield 2013). Searches for empty puparia took place in the following Strathspey pinewoods: Abernethy, NJ0108; Curr Wood, NH9923; Grantown, NJ0327; Loch Garten, NH9717; Nethy Bridge, NJ0020 and Rothiemurchus, NH9110. Each pinewood visited was walked over slowly and pine stumps and fallen trees and branches that contained soft whitewood were spot-sampled using hand searches and empty clusiid puparia removed. Clusiid puparia are easily recognised by the red-brown, curved hooks associated with each posterior spiracular plate (Rotheray and Horsfield 2013). In the laboratory, puparia were identified to species using the key in Rotheray and Horsfield (2013) and by reference to named specimens in the collections of the National Museums of Scotland. In particular, the puparium of *C. geomyzinus* is distinguished from all others by the anterior spiracles having 7-8 respiratory bulbs, absence of pupal spiracles, wrinkled rather than smooth anal segment and, in profile view, the slight, not sharply curved hooks associated with the posterior spiracular plates (Rotheray and Horsfield 2013). The clusiid most frequently occurring in pine in Scotland is *Clusiodes caledonicus* (Collin), but the puparium of this species has anterior spiracles with 3-5 respiratory bulbs and possesses pupal spiracles.

Results

Citations and captures

The first British capture of *C. geomyzinus* was apparently made at Nethy Bridge on 16.vi.1895. The specimen is extant in the collections of the Natural History Museum and was acquired as part of the G.H. Verrall bequest. The name of the collector is unknown (Nigel Wyatt *pers. comm.*), but the collector may have been Verrall himself as the other likely collector, Col. J.W. Yerbury, did not visit Scotland in 1895 (Rotheray 1997). There are, however, Yerbury specimens in the Natural History Museum: 2 from Nethy Bridge collected 12 and 13.vi.1900 and one from Lochinver, Sutherland, collected 24.vi.1911. The latter is one of two vouchers for the citation of this species by Yerbury (1913), where he states that specimens were swept from a pine stump. The additional voucher is in the Oxford University Museum of Natural History. Also in the Oxford University Museum is a further Nethy Bridge specimen, collected by Yerbury on 3.vii.1905. Other early records are those extracted from the Cambridge University Museum (J. Ismay *pers. comm.*). They are based on specimens collected by C.G. Lamb, F. Jenkinson and D. Sharp from Nethy Bridge in June 1906-7, Logie, south of Forres, on 18.ix.1909 and the Aviemore area from 20.v to 1.vi.1934. The only other Scottish *C. geomyzinus* in the Natural History Museum, London is a specimen collected by R.L. Coe at Loch Garten on 21.vii.1933.

Additional records in the Invertebrate Site Register (ISR) and the NCC card index (J. Ismay *pers. comm.*) are from Loch Garten: J. Cole, date unknown and specimens collected by the Diptera Recording Scheme, 1982 field meeting to Speyside, 15 and 17.vi.1982, e.g. 1 male at Rothiemurchus, I. Perry and, from Abernethy Forest: A.E. Stubbs, 19.vi.1984 and M.R. Young in 1991. Also from the ISR, are two captures apparently from England: Birklands and Billhaugh, SK620683, just north of Nottingham by J.W. Carr in 1918 and

Wychwood Forest, Oxfordshire by E.C.M. d'Assis-Fonseca in 1970. The most recent Scottish captures appear to be 2 males from the cut surface of a pine stump at Anagach Wood, Grantown-on-Spey, Inverness-shire, NJ038270, by David Robertson on 4.vi.2001.

New records

Empty clusiid puparia were frequently found at all pinewood localities visited, but they were almost all *C. caledonicus*. Only in pine stumps at Cemetery Wood, Grantown-on-Spey, NJ0020, was the distinctive puparium of *C. geomyzinus* found: two individuals in one pine stump on 12.viii.2012. The condition of these puparia was good, suggesting recent adult emergence i.e. they showed no evidence of decay, such as losing their shiny appearance or being fragmented.

Discussion

Knowledge of *C. geomyzinus* in Britain is based on only about 16 captures covering a period of almost 120 years. From the few recorded dates, the flight period spans mid-May to mid-September with a peak from early-June to mid-July. Assuming the English records are misidentifications, the eight localities are all in northern Scotland. Of these, all but two are in Strathspey, between Aviemore and Grantown-on-Spey, and all post 1975 records are from this area. For the two localities outwith Strathspey, only records older than 100 years exist: 1909 for Logie south of Forres and, 1911 for Lochinver, on the north-west coast of Scotland, north of Ullapool. Perry (2007) noted Jenkinson's record from Logie as one of several species associated with Caledonian pine forest found by him in that area, where this habitat no longer existed.

Despite exhaustive surveys by the Malloch Society throughout Scotland from 2000 to 2012, including historical sites at Abernethy, Aviemore, Loch Garten and Grantown-on-Spey, *C. geomyzinus* could only be confirmed from just one historical site. This was Grantown-on-Spey, where two empty puparia were found in 2012 at Cemetery Wood. The condition of these puparia was good suggesting that adults had emerged only recently, probably in June or July of that year. The next most recent record came from the adjacent Anagach Wood in 2001; both woods are part of contiguous pinewood around Grantown. The lack of records from elsewhere is of concern as it suggests *C. geomyzinus* has declined in Strathspey since the 1980s. In comparison with Norway where *C. geomyzinus* is considered common (Greve 2005) and our impression of a similar level of frequency in Finland and Russia, *C. geomyzinus* appears to be much rarer in Scotland.

Furthermore, in Scotland *C. geomyzinus* has only been found in association with *Pinus* (Yerbury 1913, Stubbs 1982, plus data given here). This contrasts with populations in mainland Europe that are associated with a wider range of tree species including *Betula*, *Populus* and *Picea* (Tuomikoski 1933, Roháček 1995, Rotheray and Horsfield 2013). In Scotland, the Malloch Society has reared many clusiids from these tree species, but *C. geomyzinus* was not one of them (Rotheray and Horsfield 2013). Once established in Scotland, which was dominated by *Pinus*, *C. geomyzinus* perhaps changed and became specialised on only this host tree; likely mechanisms and processes were described by Reznick and Ghalambor (2001). If so, Scottish populations of *C. geomyzinus* have a unique evolutionary trajectory and thus, considerable significance in terms of biodiversity conservation. Taken as a whole, the data presented in this paper supports the inclusion of *C. geomyzinus* in the UK BAP process and with only one extant population discovered to date, monitoring and recovery work is urgently required.

The rarity of *C. geomyzinus* in Scotland compared to Scandinavia is difficult to explain. Breeding habitat in the form of moist, decay-softened pine wood is widespread in Scotland. *Clusiodes caledonicus* shares with *C. geomyzinus* the same development habitat and host tree, but the former species was discovered frequently and commonly in the pinewoods examined for this study. The disparity in abundance between these two species is equally difficult to explain. This raises the possibility that *C. caledonicus* may be outcompeting *C. geomyzinus*. Yet the quantity of dead wood in a pine stump, tree or branch relative to the number of clusiids we have recorded, suggests that food and living space is not in such short supply that larvae compete. However, if Scottish *C. geomyzinus* is confined to fewer dead wood types than *C. caledonicus*, such as snags and stumps rather than fallen trunks and branches, this could explain the disparity in abundance between these two species.

Determining the factors governing the distribution of *C. geomyzinus* is an important part of recovering the species. It is, for instance, important to be more certain that *Picea* is not a host tree in Scotland, given the number of plantations starting to develop old growth features (i.e. accumulations of dead wood) and the poor state of many semi-natural pine woods (Humphrey 2005). In addition, Scottish records of *C. geomyzinus* are strongly associated with stumps and it is important to clarify how restricted it is to this wood type. Future survey work in the woodlands of Strathspey and further afield will provide answers to these critical questions as well as clarifying the status of the single known, extant population.

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Unusual numbers of *Tachina grossa* (Linnaeus) (Diptera, Tachinidae) in East Norfolk – Having monitored my home site (Waxham, Norfolk, TG4424) for the past twenty years, ten of those specifically for Diptera, I recorded my first *Tachina grossa* (Linnaeus, 1758) on a flowering head of *Angelica sylvestris* (Apiaceae) on 18.vii.13. Subsequently, through to the middle of August, I noted one or two individuals daily, invariably on the flowers of white umbels (Apiaceae). The site is predominately drained, coastal grazing levels bordered by drained alder carr.

On 8.viii.13 I visited Horsey Gap, Norfolk, which lies c. 2.5 km SE of my home site. It marks the northern limit of the National Trust's Winterton - Horsey Dune System. Several individual *T. grossa* were seen along the track leading to the dunes proper but, c. 0.5 km south of the main car park, I was amazed by their numbers.

The site at TG467238 is a narrow strip of rank vegetation dividing the sand dunes from grazing levels in which are stands of *Salix cinerea* (grey sallow). The flies were confined to an area of c. 150m x 4m containing a concentration of white Apiaceae, for which they had a marked preference with from 1-6 individuals present on most flower heads. Less populated were *Eupatorium cannabinum* (hemp agrimony), *Senecio jacobaea* (ragwort) and *Rubus fruticosus* agg. (bramble). An approximate 'block' count gave numbers of at least 100+. The condition of the flies varied from very worn with frayed wings to those with hardly a bristle missing.

I returned to the site the following day (with camera this time), when the numbers had decreased to c. 40; the day after there were c. 20, at which level they remained for another week. As the flower heads went to seed so the number of flies decreased proportionately, until 21.viii.13 there was but one individual on the site itself though several more were dispersed along the pathways leading to it.

Of their behaviour – at the height of their numbers there would be a certain amount of jostling for position if a fly landed on an already occupied flower head but, occasionally, a fly would approach very quickly, grasp another and they would immediately fall into the undergrowth. Possible mating behaviour? Despite protracted searching I could never find them again – **NEIL MARKS,** Cross Sands, Waxham, Norfolk, NR12 0ED

First records of *Lispocephala brachialis* (Rondani) (Diptera, Muscidae) from northern Scotland – On 15 April 2013 Jimmy McKellar found a female *Lispocephala* at Torvean Quarry on the outskirts of Inverness near the River Ness (NH647433, V.C. 96, Easterness). The specimen was identified as *Lispocephala brachialis* (Rondani) by Murdo Macdonald and sent to me at the National Museums of Scotland (NMS) at Granton, Edinburgh, where I confirmed the identification. Murdo Macdonald also reported a female of *L. brachialis* taken on 24 April 2013 from Evanton Wood by the River Glass near the Cromarty Firth (NH5966, V.C. 106, East Ross), and another female on 24 May 2013 taken while it was basking on a wooden gate by boggy woodland on Monadh Mór on the Black Isle near Inverness (NH579526, V.C. 106, East Ross).

Horsfield (1999. *Lispocephala brachialis* Rondani (Dipt., Muscidae) new to Scotland. *Entomologist's monthly Magazine* **135,** 42) introduced *L. brachialis* as new to Scotland based on specimens found in central Scotland in Edinburgh and south of Edinburgh, near Penicuik. Subsequently, on 25 April 1999, I found a male and a female *L. brachialis* in woodland in the Hermitage of Braid close to the Braid Burn (NT2570, V.C. 83, Edinburgh). I took two more specimens recently from the same Edinburgh locality: a female on 2 May 2013 and a male on 17 May 2013.

The previously known distribution of *L. brachialis* in Great Britain was in western parts of England and Wales (d'Assis-Fonseca, E.C.M. 1968. Diptera Cyclorrhapha Calyptrata. Section (b). Muscidae. *Handbooks for the Identification of British Insects*, Vol. **10** Part (4b), 119 pp. Royal Entomological Society of London; Falk, S. and Pont, A.C. 1995. *Review of the Scarce and Threatened Flies of Great Britain: Muscoidea and Calliphoridae*. Unpublished draft). However, recently the species has been taken in East Anglia (Perry, I. 2012. Annual Exhibition Report. *British Journal of Entomology and Natural History* **25,** 168; Paston, S. 2012. *Lispocephala brachialis* (Rondani) (Diptera, Muscidae), a second East Anglian record. *Dipterists Digest (Second Series)* **19,** 178), while there is another recent record by John Bratton from Anglesey (Diptera.info website). These English and Welsh records take in the counties of Gloucester, Herefordshire, Staffordshire, Glamorgan, Shropshire, Anglesey, Suffolk, Norfolk and Lancashire.

Lispocephala brachialis is a Western Palaearctic species that occurs across Europe from Poland, Bulgaria and Greece to Spain, France and Denmark (Pont, A.C. 2013. Fauna Europaea: Muscidae. **In** Pape, T. and Beuk, P. Fauna Europaea: Diptera, Brachycera. Version 2.6 http:/www. faunaeur.org (accessed 24 May 2013)). The species also occurs in Morocco, while Scotland and Denmark are the most northerly parts of its range.

I thank Jimmy McKellar for donating his specimen of *L. brachialis* to the NMS, and Murdo Macdonald for additional records – **DAVID HORSFIELD,** National Museums Collection Centre, 242 West Granton Road, Edinburgh, EH5 1JA

Dipterists Digest 2013 **20,** 141-149

The early stages of *Neoleria maritima* (Villeneuve) (Diptera, Heleomyzidae) reared from a *Cepaea* snail

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Summary

The third stage larva and puparium of the heleomyzid, *Neoleria maritima* (Villeneuve, 1921) (Diptera, Heleomyzidae), reared from a dead *Cepaea* snail, are described and compared with other known heleomyzid larvae and puparia. The early stages of *N. maritima* are readily distinguished by features of the head skeleton and the anal segment, in particular, the inclined posterior respiratory organs. Comparing morphological data from *N. maritima* with other heleomyzids, early stage characters are given that possibly distinguish *Neoleria* from other genera in the Heleomyzinae and distinguish the Heleomyzidae from other families of the Sphaeroceroidea, the superfamily to which it has been referred.

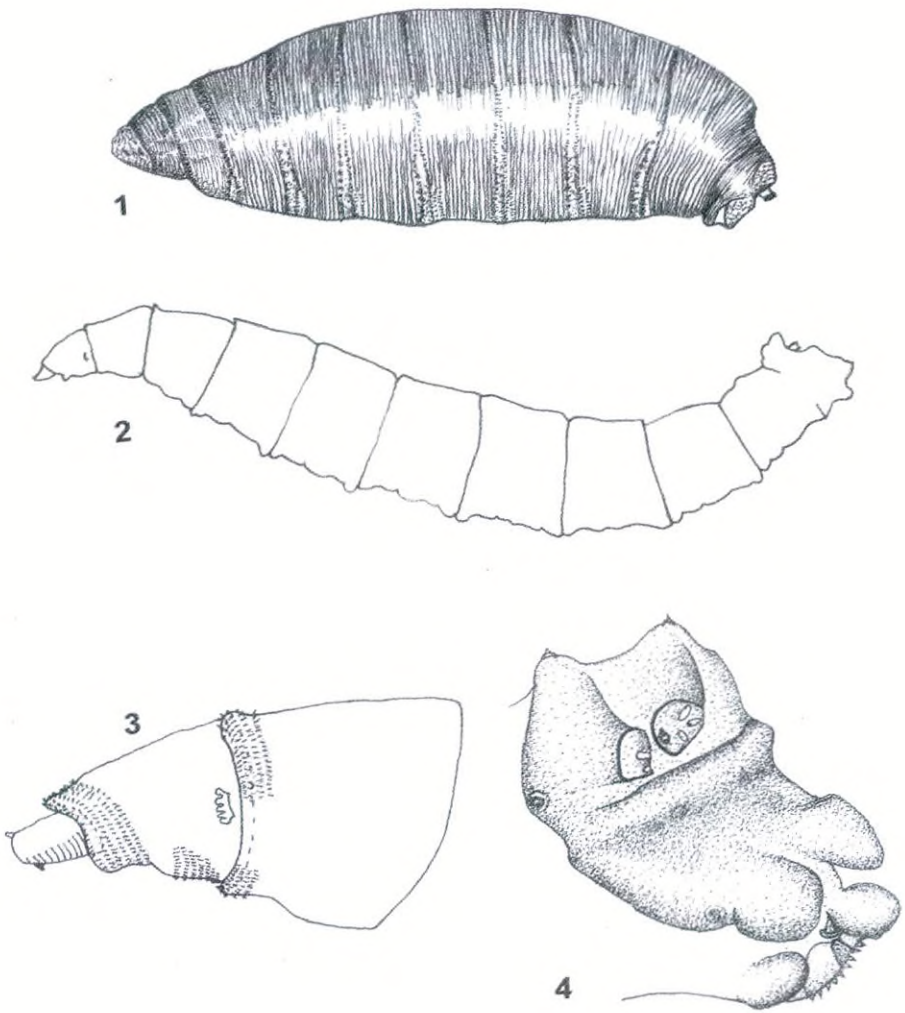
Introduction

The Holarctic heleomyzid genus, *Neoleria* Malloch, 1919 (Diptera, Heleomyzidae) is represented in the Palaearctic by 10 species (Papp 1998) and in the British Isles by 6 species (Chandler 1998). Adult *Neoleria* are frequently seen on or near carrion where they breed (Séguy 1934, Hicks 1959, Skidmore 1962, Hackman 1963, Beaver 1972, Smith 1975), but they also develop in fungi (Buxton 1960, Chandler 1978) and bird guano (Sendstad 1977). However, the early stages are apparently only described for one species in the genus, *Neoleria inscripta* (Meigen, 1830) (Lobanov 1970). In this paper, we describe the third stage larva and puparium and provide ecological details of *Neoleria maritima* (Villeneuve, 1921) which one of us, KA, reared from a snail.

Methods

The *N. maritima* larvae and puparia examined were obtained from a single, dead *Cepaea nemoralis* snail, which was found in a sand dune hollow at Cheswick Dunes, Northumberland, NU041471, on 21.xi. 2007. The snail was infested with Diptera larvae when it was collected and the soft parts of the snail were liquefied and putrid. The infested snail was placed in a screw topped, 9x2.5cm, plastic tube. On 23.xi.2007 two larvae were removed from the snail and preserved in 70% alcohol. Due to finding two similar active larvae on a live *Cepaea* snail at Cheswick Dunes, to investigate the possibility they could act as predators, a further six larvae were removed from the infected snail and placed in pairs in specimen tubes with a single, live slug of one of the following species found in a garden: *Tandonia budapestensis* (Hasay, 1880), *Deroceras panormitanum* (Lessona & Pollonera, 1882) and *Lehmannia valentiana* (Ferussac, 1821) (Mollusca).

On 1 and 5 December 2007, a further ten and six larvae respectively were removed from the snail and placed in glass culture jars into which were added at various times, up to five, *C. nemoralis* snails freshly killed by immersion in just boiled water. Jars were stored in an unheated garage and later moved to an unheated and shaded wooden shed in the spring of 2008.



Figs 1-4. *N. maritima*, **1, whole puparium, lateral view, head to the left, length 5mm; 2, whole third stage larva, lateral view, head to the left, length 7mm; 3, pseudocephalon, prothorax and mesothorax, lateral view, pseudocephalon to the left, length about 1.3mm; 4, anal segment, lateral view, apex to the right, length about 0.3mm.**

To describe the larva and puparium of *N. maritima*, each of two larvae and three puparia that were available were placed in alcohol in a solid watch glass and examined using binocular and compound microscopy. The other preserved larva and two puparia, were not in as good a condition and were used to confirm characters. The head skeleton was prepared for examination by soaking the anteroventral plate of the puparium in a solution of hot KOH for about 10 minutes and extracting the head skeleton with pins. It was examined in alcohol and glycerol using binocular and compound microscopy. Head skeletons of the other two puparia were examined in situ. Unless otherwise stated, the size of a structure was the mid-dorsal length taken with a measuring eyepiece and measurements are accurate to 0.1mm. Illustrations were made using a drawing tube attached to the binocular microscope or traced from printed images obtained from a camera attached to the compound microscope; drawings overcame problems of poor image quality. Following examination, larvae and puparia were stored in 70% alcohol and the head skeleton in a separate microtube in a drop of glycerol. Terminology for head skeletons follows Courtney *et al.* (2000), with minor changes noted by Rotheray and Gilbert (2008).

Results

Predation and larval development

In total, twenty-four *N. maritima* larvae were obtained from the *Cepaea* snail found at Cheswick Dunes. Six adults emerged during August and September 2008, nearly ten months after larvae were collected. The overwintering stage was the larva. No predation occurred by *N. maritima* larvae on live slugs. The two larvae found crawling on the live snail also failed to develop, although they may not have been *N. maritima*. Larvae of *N. maritima* did, however, complete development on the dead snails provided, although it was noticeable that larvae frequently quit dead snails and moved about the glass jars in which they were kept.

Description of the larva and puparium of *N. maritima*

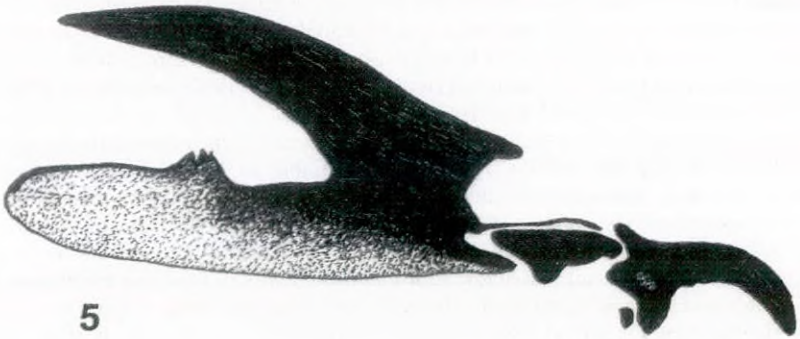
Third stage larva: body length 7mm (Fig. 2); **head skeleton**: mandible comprising a subrectangular base and a long, curved hook, length 0.2mm (Figs 5-6); mandible sclerotised black except for a vague window in the centre of the base; abductor and adductor muscle attachment apodemes i.e. posterodorsal and anteroventral corners of the base respectively, conspicuously drawn out, at least as long as basally wide; dental sclerites just posterior to the adductor apodeme incurved and almost meeting mid-ventrally; intermediate sclerite black, sclerotised and separate from the basal sclerite (Figs 5-6); bar-shaped in lateral view, about 0.1mm long and half as deep as long at the ventral bridge; bridge not so sclerotised as the arms and about 0.1mm wide (Fig. 6); basal sclerite about 0.5mm long and at the anterior margin, about 0.1mm high (Fig. 5); dorsal bridge fenestrated but fenestrations faint due to sclerotisation; ventral and dorsal cornu about as equally long, ventral cornu not as sclerotised and with a conspicuous dorsal apodeme bearing a serrated upper margin (Fig. 5); parastomal bars separate from the intermediate sclerite, in lateral view appearing as a single linear structure but below, a second less sclerotised bar is present which diverges from the upper one at the anterior end and probably represents the lateral margins of the epipharygneal plate; cibarial ridges apparently absent; **pseudocephalon**: bilobed apically about 0.2mm long and 0.1mm high (Fig. 3); lateral and ventral margins with cirri and ensheathing each mandible separately except at the inner, apical end of each lobe from which the mouth hooks protrude; **thorax**: thorax tapering smoothly from about 1mm high and wide at the posterior margin of the metathorax to 0.2mm high and wide at the prothoracic apex; thoracic segments trapezoidal in shape, being longer at dorsal than ventral margins: length of dorsal v. ventral margins of the

metathorax 0.7 v. 0.5mm; mesothorax 0.6 v. 0.5mm; prothorax 0.5 v. 0.3mm (Figs 2-3); from the folding pattern at segment boundaries, each thoracic segment retractile into the segment behind it, but by how much is not measurable; anterior third of prothorax with circumventing rows of backwardly inclined spicules and another patch of ventral spicules behind (Fig. 3); similar spicules in 6-8 transverse rows on the anterodorsal and ventral margins of the mesothorax and metathorax; **anterior spiracles**: on the upper lateral, posterior margins of the prothorax, pale brown with 7 bulbs arranged in a transverse fan (Fig. 7); **abdomen**: abdominal segments 1-7 subrectangular in shape, being slightly higher than wide or long, 0.8 high v. 0.6 wide and 0.6mm long (Fig. 2); anal segment differently shaped with a narrow anterior section and an inflated and inclined apex, bearing a pair of fleshy dorsal lobes and two pairs of fleshy lobes ventrally, lower pair on either side of the anus (Figs 2, 4); anal segment deeply indented just below the downwardly-directed, posterior spiracles; 5 smaller lobes bearing sensilla present on the inflated margin of the anal segment, two pairs ventral to the posterior spiracles; one pair lateral to the spiracles; one pair next to the lobes above the anus and a single lobe above the anus (Fig. 4); abdominal segments 3-6 each retractile into the segment anterior to it, but the extent not measurable; abdominal segments 1 and 2 apparently not, or less retractile; abdominal segments 1-6 lacking dorsal spicules, dorsal and ventral margins of abdominal segment 7 with spicules, those on the dorsal surface comprising numerous, short bars of 3-6 spicules each, those ventrally comprising 3 groups: a mid-ventral group and a group on each side; locomotory organs at the boundaries between segments 1-6 comprising: one anterior line of spicules on a projecting fold running transversely across the ventral surface and two posterior, interrupted lines of spicules on a similar projecting fold (Fig. 9); anal opening parallel to the length of the body and with spicules only on the anterior margin (Fig. 4); **posterior spiracles**: pale brown, on short, inclined projections, projections separated by about the height of a spiracular plate (Fig. 4); ecdysial scar on the inner, sloped margin of each plate and 3 spiracular openings on raised projections and arranged in a radial pattern, openings longer than their width (Fig. 8); interspiracular setae present but not describable due to their being broken off in the specimens examined.

Puparium: length 5mm, height 2mm, width 2mm (Fig. 1); red-brown and coated in transverse striae; tapering anteriorly; truncate posteriorly with anal segment conspicuously narrower than preceding segment and inclined downwards; segment boundaries vaguely visible as slightly darker rings dorsally and paler rings ventrally; lobes of the anal segment inconspicuous due to the processes of pupariation; pupal spiracles absent.

Material examined: England, Northumberland, Cheswick Dunes, November 2007, 2 larvae and 3 puparia all ex a single *Cepaea nemoralis* snail found dead in a sand dune hollow, K. Ayre.

Figs 5-9. ***N. maritima*****, 5, head skeleton, lateral view, mandible to the right, length about 0.8mm; 6, intermediate sclerite and mandibles, dorsal view, mandibles to the right, length about 0.3mm; 7, anterior spiracle, posterior view, length less than 0.1mm; 8, posterior spiracular plate, apical view, dorsal margin uppermost, inner margin to the right, height about 0.1mm; 9, third stage larva, third abdominal segment, locomotory spicules, apical view, dorsal side uppermost, length across rows about 0.6mm.**



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Discussion

Neoleria maritima is a coastal species (Collin 1943, Skidmore 1962) and the record presented here, from sand dunes on the Northumberland coast, supports this. Apparently, the only previous rearing records of *N. maritima* are those of Beaver (1972): one female each from two dead *C. nemoralis* snails collected from sand dunes at Newborough Warren, Anglesey in 1965-67. *Neoleria maritima* appears to be the only species in the genus reared from snails.

However, too few rearing records are available to know whether *N. maritima* is confined to snails and whether other species in the genus use snails. Suggesting that *N. maritima* uses other types of host, Skidmore (1962) referred to observations of adults on dead birds washed up by the tide. Beaver (1972) commented that *N. maritima* is a species active during winter. This is supported by adults collected in October and November from the Netherlands and Portugal respectively (Woźnica and Andrade 2008).

Beaver (1977) investigated Diptera communities developing in dead snails and suggested that each dead snail is a discrete 'ecological island' within which larvae feed and complete all their development. Beaver (1977) described the characteristics of a successful strategy for species utilising dead snails as including early reproduction, batched oviposition and rapid larval development with the possibility therefore, of several annual generations. Observations from our study suggest that *N. maritima* exhibits only some of these characteristics. For example, eggs laid in batches are not inconsistent with the discovery of 24 larvae from the single dead snail we examined. The early stage development time of 9+ months that we recorded is not, however, consistent with a polyvoltine life history. Nor is it clear that a single snail provides sufficient resources for as many as 24 larvae. In culture, we noticed that larvae often came out of their snails and were very active, raising the possibility that if resources run out, larvae may leave and search out another dead snail. This may explain our observation of larvae on a live snail, although we cannot be sure they were *N. maritima*. Furthermore, active larvae searching for new dead snails may explain the results obtained by Beaver (1972) of an adult fly emerging in April from a dead snail placed out in February. The 3 month development time that this rearing apparently entails, is not what we found in our larvae, but it would be explained if a well-developed and actively searching larva had found the snail put out by Beaver (1972).

In a recent assessment of heleomyzid early stages, Rotheray (2012) identified characters that appear to distinguish the family. Not all of these, however, characterize the early stages of *N. maritima*. In particular, the middle spiracular slit of the posterior spiracular plate is not at right angles to the upper and lower slits, the anal segment is smooth, lacking vestiture and the basal sclerite is complete, without windows. The characters *N. maritima* shares with the heleomyzids examined by Rotheray (2012) are: sloping spiracular plates with ecdysial scars on the inner margin; anus with one posterior and a pair of lateral projections, fleshy projections round the apex of the anal segment and head skeleton apparently lacking cibarial ridges and with a serrated dorsal apodeme. This group of characters may distinguish the Heleomyzidae among those of the Sphaeroceroidea to which McAlpine (1989) referred the family.

The only previous description of *Neoleria* early stages appears to be that of Lobanov (1970) for *N. inscripta*; Smith (1989) reproduced some of the figures. One character shared between *N. inscripta* and *N. maritima* that may distinguish the genus, is the arrangement of two lines of locomotory spicules, each on a separate projecting fold. Other heleomyzids have very different arrangements of locomotory spicules; usually they are more numerous (Rotheray 2012). It is difficult to judge from the description and figures in Lobanov (1970) what other early stage characters *N. inscripta* and *N. maritima* share that might further

distinguish the genus. The form of the anal segment appears similar although in *N. inscripta*, if an indentation is present below the posterior spiracles, it is very slight. This feature may depend on how inflated the larva becomes during fixation. It would appear that the posterior spiracular plates are inclined at a much greater angle in *N. maritima* than in *N. inscripta*. This character will separate these two species and they are also separated by the head skeleton, in which the dorsal and ventral cornua are about equal in length and width in *N. maritima*, but, according to the figure in Lobanov (1970), in *N. inscripta*, the dorsal cornu is narrower and slightly shorter than the ventral cornu.

In the general shape, degree and extent of sclerotisation and having a dorsal apodeme with a serrated margin, the head skeleton of *N. maritima* is similar to that of other heleomyzids (Rotheray 2012). However, among Heleomyzinae to which subfamily *Neoleria* was referred by Gorodkov (1984) and Papp (1998), the intermediate sclerite of *N. maritima* differs. It is short relative to the mandible, about half the length, and it is deep, depth about half the length of the intermediate sclerite (Figs 5-6). These states contrast with the heleomyzines, *Eccoptomera microps* (Meigen), *Scoliocentra* (*Leriola*) *collini* Woźnica (= *brachypterna* Collin) and *Heleomyza borealis* Boheman, in which the intermediate sclerite is as long or longer than the mandible and more than 5x longer than deep (Rotheray 2012). The intermediate sclerite of *N. maritima* is closer in size and shape to that of the heteromyzines and suilliines described by Rotheray (2012). From the head skeleton figure given by Lobanov (1970), the intermediate sclerite of *N. inscripta* is similar to that of *N. maritima*. If this suggests *Neoleria* is misplaced in the Heleomyzinae, much more study is required to evaluate such a possibility.

Functionally however, the intermediate sclerite buttresses the mandibles and supports the atrium (Roberts 1971, Rotheray and Gilbert 2008). The significance of a short, deep intermediate sclerite is in providing extra buttressing to the mandibles, usually due to the food being characteristically firm, lumpy or hard which is more challenging to gather and imbibe than low viscosity food (Rotheray 2012). A deep atrium provides space for it to be mixed with saliva. We did not, unfortunately, assess the state of snail tissues during the period larvae were feeding to determine whether they were firm, lumpy or hard which might corroborate the form of the intermediate sclerite in *N. maritima*.

The fleshy lobes above the posterior spiracles, the downwardly inclined basal projections supporting the spiracular plates and the deep indentation below them appear to be mechanisms for protecting the spiracular slits from being blocked or inundated. Furthermore, the direction in which the posterior segments of the abdomen are retractile, within the segment in front, reveals that this part of the abdomen can be lifted up and, by analogy with unpublished observations of live larvae belonging to other cyclorrhaphan families, such as Lonchaeidae and Pallopteridae, having similar retractability, this enables the posterior spiracles to be raised out of a fluid medium and to be anchored at the surface for respiration. These states contrast with the opposite direction of retractability in the thorax, in which each segment can retract into the one behind, so enabling downward movement and facilitating lunging into the food. These characteristics are, however, frequent in saprophagous cyclorrhaphan larvae and not specific to *N. maritima*.

Combined with those described by Rotheray (2012), the larva and puparium of *N. maritima* described here reveal that heleomyzid early stages are diverse in form and function. The potential they provide for analysing the systematics, ecology and phylogeny of this interesting family of flies has yet to be realised. We suggest that it is no longer feasible to view early stage characters as mere adjuncts to other sources of data, notably from adults and molecular characters, but information from all such sources requires integration into more

holistic analyses. For this to be achieved, however, emphasis must be given to rearing more species.

Acknowledgements
We are grateful to Peter Chandler for confirming the identity of this species.

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Sarcophaga teretirostris Pandellé (Diptera, Sarcophagidae) new to Scotland – Keith Bland reared a male of *Sarcophaga teretirostris* Pandellé from a shell of *Cepaea nemoralis* (Linnaeus) taken on 25 August 2007 in a limestone quarry at Middleton to the south-east of Edinburgh (NT3457, V.C. 83, Edinburgh). Gordon Corbet sent me for confirmation a male specimen of *S. teretirostris* that had been collected on 1 July 2012 from flowers of *Heracleum sphondylium* on dune grassland at Dumbarnie Links Wildlife Reserve (Scottish Wildlife Trust), by Largo Bay on the north side of the Firth of Forth (NO4302, V.C. 85, Fife).

There are no references to records of *S. teretirostris* in Scotland in the Scottish Insects Record Index (SIRI) maintained at the National Museums of Scotland (NMS) at Granton, Edinburgh, while no specimens under this species are in the main collections at the NMS. F.I. van Emden (1954. Diptera Cyclorrhapha Calyptrata (1). Section (a). Tachinidae and Calliphoridae. *Handbooks for the Identification of British Insects* Vol. **10** Part (4a), 133pp. Royal Entomological Society of London) gave the county distribution in Britain as bounded by Kent to Cornwall and Pembrokeshire to Norfolk.

The 10km square distribution map on the NBN website shows records further north than this to northern Lancashire (SD57) and south-east Yorkshire (SE86). This species was also recorded at three localities during the Dipterists Forum 2013 summer field meeting based at Lancaster University. These specimens were collected by Daniel Whitmore, who has kindly allowed me to report his records here: 1♂, Cumbria, Dalton Crags, 165m, SD552763, 7.vii.2013; 1♂, Cumbria, Hutton Roof Crags, 200m, SD553785, 7.vii.2013; 2♂, Lancashire, Warton, Warton Crag Quarry, 55m, SD491724, 12.vii.2013.

R. Richet, R.M. Blackith and T. Pape (2011. *Sarcophaga of France (Diptera: Sarcophagidae)*. Pensoft, Sofia-Moscow) regard *S. teretirostris* as a common and widespread species in the Palaearctic Region.

I thank Keith Bland and Gordon Corbet for their specimens of *S. teretirostris*, which are now housed in the main collections at the NMS – **DAVID HORSFIELD,** National Museums Collection Centre, 242 West Granton Road, Edinburgh, EH5 1JA

Recent British records for _Musca osiris_ Wiedemann (Diptera, Muscidae) – The first British record of *Musca osiris* Wiedemann, 1830 was made 138 years ago when a male was taken on 25 August 1875, at Seaford in Sussex, by G H Verrall, reported by E.C.M. d'Assis-Fonseca (1968. Muscidae. *Handbooks for the Identification of*

British Insects **10**(4b), 1-119). No further records were made until 2006, when three individuals were found – a gap of 131 years. In 2013, the next hot summer after 2006, a fourth recent record was made. These records are reported here.

The first two of the 2006 records were made by SF in Sussex, a female at Birling Gap (TV554959) on 24 July 2006, and a male at Deep Dean (TQ538024) on 28 July 2006. Both sites are cattle-grazed chalk downland, within a few miles of Seaford. Nine days later, on 6 August 2006, PH took a third specimen, a female from grassland at East Tilbury Silt Lagoons (TQ6977), Essex, which was recognised by DS, kindly confirmed by Adrian Pont; and published by D.A. Smith (2009. A Preliminary List of Essex Diptera. Part 3 Calyptratae. *Essex Naturalist* (New Series) **27,** 231-242).

The 2013 record is of a female swept by RW on 13 August, from coastal vegetation near Start Point, close to Devon's most southerly point. The precise location was Great Mattiscombe Sand at SX816369. RW is most grateful to Howard Bentley for provisionally confirming his identification, and to NW for making the final determination. This specimen has been deposited in the Natural History Museum collection.

Musca osiris is very similar to *M. vitripennis* Meigen, 1826, which has a slightly more southerly distribution in Europe and is not yet correctly recorded from the British Isles. The two species have been thoroughly confused in the past, with each one being known as the other for a time! They can, however, be readily distinguished from other central and western European members of the genus by having hairy eyes. Their males are relatively straightforward to separate, using frons width: in *M. osiris* the eyes are separated at the narrowest point by almost twice the width of the third antennal segment (postpedicel, first flagellomere), and the frontal setae and setulae on each side are in more than one row, while in *M. vitripennis*, the eyes are very close together, separated by a distance not exceeding 1.5 times the width of the anterior ocellus, and the frontal setae are only in a single row. Females are more subtle to distinguish, with the main difference being the hairing on the frons: in *M. osiris* the orbital setae, outside the single row of strong incurved fronto-orbital setae, are weak and hair-like, while in *M. vitripennis* the orbital setae are stronger and often form a secondary row of incurved setae.

Musca osiris usually develops in cow dung, although it has also been found associated with human, sheep and horse dung (Skidmore, P. 2010. Dung. pp 157-165. **In** Chandler, P. J. (Ed). *A Dipterist's Handbook* (2nd edition). 525pp. The Amateur Entomologists' Society, Orpington, Kent).

All five known British specimens of *M. osiris* are from south or south-east coasts, in prime locations for migrants from more southerly parts of Europe. K.G.V. Smith (1974. Changes in the British Dipterous Fauna. pp. 371-391. **In** Hawksworth, D.L. (Ed.). *The Changing Flora and Fauna of Britain.* Academic Press, London and New York.) suggested that *M. osiris* occurred in Britain in the 19th century, during a period of milder climate, although only the one record mentioned above was known and no other specimens appear to have been collected in that period. Perhaps with global warming it will become a resident soon, whether or not it was once one before.

We thank Peter Chandler for help in preparing this note – **STEVEN FALK**, Buglife, Bug House, Ham Lane, Orton Waterville, Peterborough, PE2 5UU; **PETER HARVEY**, 32 Lodge Lane, Grays, Essex. RM16 2YP; **DEL SMITH,** Milltown of Dunnideer, Insch, Aberdeenshire.AB52 6XQ; **ROBERT WOLTON,** Locks Park Farm, Hatherleigh, Okehampton, Devon EX20 3LZ; **NIGEL WYATT,** Department of Life Sciences, The Natural History Museum, Cromwell Road, London SW7 5BD

Dipterists Digest 2013 **20**, 151-152

Scaeva dignota (Rondani) (Diptera, Syrphidae) new to Britain

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Summary
Scaeva dignota (Rondani, 1857) is recorded for the first time in Britain, from two sites (one of them an area of chalk grassland) on the Isle of Wight. Notes on the habitat preferences and ecology of the species are given.

During fieldwork on 12 July 2013 at Knighton Down, Isle of Wight, the author collected a male *Scaeva* species superficially resembling a small *S. selenitica* (Meigen, 1822). It was hovering close to the ground over a flower of common rock–rose *Helianthemum nummularium*, at the eastern end of Knighton Down (around SZ57588730), where there are a series of short sward terraces running across a calcareous slope. Patchy scrub is also present, containing elder *Sambucus nigra*, wayfaring tree *Viburnum lantana* and bramble *Rubus fruticosus* agg. The site is a Hampshire and Isle of Wight Wildlife Trust reserve.

A second specimen, a female, was taken on 24 July 2013 during survey at Bardon Vectis quarry (SZ51698634). It was found hovering around flowers of bramble within a sheltered area previously used for gravel and sand extraction. Again, it was the small size that initially drew my attention, and made me think that the specimen was unlikely to be *S. selenitica*. This site is only around 5km from the site where the male was found.

The fact that two specimens were found in relatively close proximity may be an indication that a population exists locally, particularly since the dates of capture suggest that they are likely to be from the first generation of the year. Typically, migration is most commonly recorded from the second generation, and would be expected to occur in August or September. Hopefully, further survey will confirm the presence of a local population.

Identification

Upon microscopical examination, both specimens were identified as *Scaeva dignota* (Rondani, 1857), using the keys provided by Speight *et al.* (1986) and van Veen (2004). Stubbs and Falk (2002) also keyed *S. dignota* as a potential addition to the British list. Separation of male *S. dignota* from those of *S. selenitica* is straightforward by reference to the angle between the eyes, frons profile and the spots on the tergites broadly reaching the side margins. Differences between female *S. dignota* and *S. selenitica* are somewhat subtler, but the frons is slightly concave in *S. dignota*, and there is a lack of black hairs around the facial prominence in *S. dignota*. Furthermore, the yellow abdominal markings broadly reach the side margins of the tergites, as shown in the photograph (Fig. 1).

Distribution and ecology

Scaeva dignota has previously been recorded from nearby continental Europe including France, Belgium, the Netherlands, Germany and Denmark and occurs within central and southern Europe and North Africa.

According to Speight (2012) preferred habitats include open areas in both coniferous and deciduous woodland, and also scrub and mature gardens. Adults have been noted visiting white umbels and yellow composites. The flight periods in southern Europe extend from May

to July, and August to September. The aphidophagous larvae have been noted on fruit trees and shrubs including elder. Speight (2012) provides further information.

Fig. 1. ***Scaeva dignota*** **(Rondani), female from Bardon Vectis Quarry, Isle of Wight.**

Acknowledgements

I would like to thank Martin Speight for examining the specimens of *Scaeva dignota* and confirming my determinations, for photographing my female specimen, and for providing considerable information on European *Scaeva* species.

Thanks are also due to Richard Grogan of the Hampshire and Isle of Wight Wildlife Trust, for granting me permission to record on Knighton Down, and to Steve Burton for allowing me access to the Bardon Vectis site.

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Some new records of Anthomyiidae (Diptera) from Scotland and Wales, and a summary of *Chirosia* host ferns

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Summary
Recent British records are presented for four of the less frequently recorded anthomyiids: *Anthomyia bazini* Séguy, *Botanophila discreta* (Meigen), *Chirosia similata* (Tiensuu) and *Delia lavata* (Boheman). The associations between *Chirosia* species and their fern hosts are briefly discussed, to draw attention to discrepancies in some identification literature.

Introduction

The following records arise from a batch of anthomyiids recently submitted by JHB for determination or confirmation by DMA.

Anthomyia

During a survey of abandoned slate quarries commissioned by Gwynedd Council, two *Anthomyia* males were swept from the trunk of an ash *Fraxinus excelsior* at the edge of a small patch of scrubby woodland on a slate tip in Dorothea Quarries, Caernarvonshire, SH496532, in the sunny afternoon of 7 August 2012. These proved to be *A. bazini* Séguy, only the fourth and fifth specimens found in Britain. The previous finds were one specimen from Alfrick, Worcestershire, in July 1941 and two in a Merionethshire oak and ash wood in July 2006. The full details are given by Ackland (1997) and Ackland *et al.* (2007). That this species has been found twice in north-west Wales without any focused survey effort suggests that it is quite frequent in this area.

Botanophila

The removal of *Botanophila discreta* (Meigen) from synonymy with *B. striolata* (Fallen) by Michelsen (2004) allows us to record a male of the former from willow *Salix* blossom on the edge of broad-leaved woodland in Treborth Botanic Garden, within Coedydd Afon Menai SSSI, Caernarvonshire, SH546710 on 7 April 2008. *Botanophila discreta* differs from *B. striolata* as follows: upper frons broader than distance between outer margins of upper ocelli; postoculars fewer and coarser; genal setae fewer and biserial rather than multiserial; vein C with some setulae dorsally and ventrally on basal part rather than bare; head proportionally smaller and abdomen proportionally longer (Verner Michelsen *pers. comm.*).

Chirosia

A single male *Chirosia similata* (Tiensuu), the first Welsh record of this fly, was swept from unfurling fronds of broad buckler fern *Dryopteris dilatata* in birch woodland at Llandegfan Common, Anglesey, SH578750, on 25 May 2010. Every year this patch of ferns develops tightly coiled rachides, some of which have been collected in previous years in the hope of rearing the larvae feeding on them, but without success. This Anglesey record of *C. similata* is far from proof that it is a rachis feeder on *D. dilatata*, but it does raise that possibility.

Griffiths (2004: 2575) stated that *Chirosia betuleti* (Ringdahl) is the only species of *Chirosia* whose larvae form galls. It has been reared from bracken *Pteridium aquilinum* in Japan (Suwa 1999: 219), *Athyrium felix-femina* (de Meijere 1911: 98) in Europe (the male genitalia from this rearing were figured by Hennig (1966b: 58)), and in North America on the ostrich fern *Matteuccia struthiopteris* (Aderkas and Petersen 1987: 532, the specimens examined by Griffiths (2004: 2575)).

There are reports to the contrary in the gall identification literature which require verification: Darlington and Hirons (1968) attributed 'galls' in male-fern *Dryopteris felix-mas* and narrow buckler-fern *D. carthusiana* to *C. grossicauda* (Strobl), under the name *C. parvicornis*; while Redfern *et al.* (2002) and Chinery (2011) say *C. grossicauda* 'galls' bracken. Reflecting the state of knowledge at the time, Taylor (2002) erroneously reported *Lasiomma latipenne* (Zetterstedt) (as *Acrostilpna latipennis)* as the gall-causer in *Athyrium filix-femina* on the Isle of Skye, though it has since been established that *Lasiomma* species do not develop in ferns and *C. griseifrons* (Séguy) is a more likely candidate (Ackland 2002). The larvae of *L. latipenne* are unknown but assumed to be saprophagous (Griffiths 2003: 2380). Owing to the widespread practice of repeating host plant records for *Chirosia* species in the literature without verification by identification of the reared adult fly, it is unwise to rely on host plant records for *Chirosia* without knowing their basis. Those mentioned by Darlington and Hirons (1968) require investigation.

In addition to the records above for *C. betuleti* and *C. griseifrons*, the following British species have been confirmed as developing in bracken, *Pteridium aquilinum* (Brown and McGavin 1982; Ackland 2010), for which the adult flies were identified by Adrian Pont (*loc. cit.*: 517): *C. nigripes* Bezzi (as *C. albifrons* Tiensuu); *C. histricina* (Rondani); *C. grossicauda* (Strobl) (as *C. parvicornis* (Zetterstedt)); *C. albitarsis* (Zetterstedt); *C. crassiseta* Stein. *Chirosia flavipennis* (Fallén) can be added to this list from a record in Griffiths (2004: 2593), reared from bracken collected at Bookham Common, Surrey in 1963.

Delia

The opportunity was taken to collect invertebrates while attending a botany field meeting on North Uist in 2010. On 5 August a number of flies were swept from the sparse seaweed driftline on Traeth Iar, a broad expanse of northwest-facing white sandy beach, NF816767. One was a male *Delia* whose terminalia best matched *D. lavata* in the unpublished provisional keys distributed by DMA in 2005. As this species was previously known in Britain only from two specimens collected on the south-east coast of England (Roper and Ackland 2002), this identity seemed unlikely to the collector, but has proved to be correct.

The specimen of *Delia lavata*, and one male of *Anthomyia bazini* are in DMA's collection. The rest are retained by JHB.

Acknowledgements

We are grateful to Verner Michelsen for providing information on the characters of *Botanophila striolata* and *B. discreta*.

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***Dorycera graminum* (Fabricius) (Diptera, Ulidiidae) in a Berkshire parkland** – On 18 June 2013, I swept two adult *Dorycera graminum* (Fabricius) from under a large veteran oak (*Quercus*) tree set in the 'Capability' Brown landscaped park at Benham Place, near Newbury, Berkshire (SU4367). The grassland is currently managed by regular tractor mowing at least three times a year and thus very little structure develops, and no likely host plants could be identified. It would appear that this species is undergoing a rapid reversal in its fortunes, despite the recent run of poor summers! – **JONTY DENTON,** 31 Thorn Lane, Four Marks, Hants, GU34 5BX

Notes and observations on some Tachinidae (Diptera) in Dorset – My increasing interest in the Tachinidae has recently yielded some interesting records and observations, with the coastal area to the west of Abbotsbury in West Dorset featuring favourably, the capture of the RDB2 species *Policheta unicolor* (Fallén, 1820) being particularly pleasing. With this site near to Abbotsbury (SY549852) appearing to be one of the most easterly sites for this species, the only previous Dorset record is an undated literature record close to this very site. With the exception of an old literature record for the New Forest, all the other known records are in the west of Britain, the majority from Devon and Cornwall, a few sites in Wales and one site in Ireland. These recent Dorset specimens (all female) were taken on 4 September 2013, and all from vegetation adjacent to or on shingle, which is a totally expected situation given that *P. unicolor* is known to be a coastal species that is a parasitoid of beetles of the family Chrysomelidae, *Chrysolina banksi* (Fabricius, 1775) in particular.

In addition to *P. unicolor*, two of the three species of the genus *Loewia* were also recorded here at SY552850. The two species concerned, *Loewia foeda* (Meigen, 1824) and *L. submetallica* (Macquart, 1855), are considered Notable and RDB3 respectively and were caught in very much the same habitat situation as *P. unicolor*, which is surprising, as this is a habitat not previously recorded in British populations; most site localities referring to these species are usually described as woodland, scrub edge or gardens. Therefore, the occurrence of these species at this site is significant, and as far as is known the host species are centipedes of the genus *Lithobius*; presumably the species used here is *Lithobius melanops* (Newport, 1845), a common species that is known to occur on the coast, with some records actually from the seashore. One male of each species was found on 14 July 2013.

I am grateful to Chris Raper for confirming my identification of the species mentioned in this note – **MICK PARKER,** 9 East Wyld Road, Weymouth, Dorset, DT4 0RP

***Didea intermedia* (Loew) (Diptera, Syrphidae), a first record for Northamptonshire, vice-county 32 –** Whilst conducting a survey of Diptera in Scotland Wood (SP735782), part of the Kelmarsh Estate in Northamptonshire on 27 August 2013, I noticed a *Syrphus*-like hoverfly feeding on Bramble *Rubus fruticosus* flowers. A closer inspection revealed black hind femora and I realised that it was not *Syrphus* and managed to catch it in a tube. It would have been impossible to net it in the tangle of thorns. On bringing it home I determined it as *Didea intermedia* (Loew) and was able to confirm it against a couple of voucher specimens of this species that I had previously collected on Speyside. According to the vice-county distribution map on the Hoverfly Recording Scheme website (updated in August 2013), this is the first record for the vice county.

The wood is a planted ancient woodland site (PAWS), which had been near clear-felled around the Second World War and subsequently planted with conifers, including Scots pine *Pinus sylvestris*. The compartment where I found the specimen was in the process of being thinned of conifers as part of a scheme to restore deciduous woodland, although there were still large stands of conifers within 100 metres. As this species is associated with conifer aphids, especially Scots Pine, I have passed these notes to the Estate's Operations Manager.

My thanks go to Des Brack, the Kelmarsh Estate's Operations Manager for permission to access the property – **JOHN SHOWERS,** 103, Desborough Road, Rothwell, Kettering, Northants, NN14 6JQ

Dipterists Digest 2013 **20**, 157-160

Telmatogeton murrayi Sæther and *T. japonicus* Tokunaga (Diptera, Chironomidae) new to Britain

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Summary

Adult males of *Telmatogeton murrayi* Sæther, 2009 were collected at Scalloway, the Shetlands, Scotland (HU393400), by EGH on 19 June 2008. An adult male of *T. japonicus* Tokunaga, 1933 was collected from Hirta, St Kilda archipelago, Scotland (NF1099) by M. Macdonald on 29 May 2010. Morphological differences between these species are discussed.

Introduction

Specimens of *Telmatogeton* Schiner from northern Scottish islands in the Hunterian Museum were sent to PHL for identification by EGH. Those from the Shetlands are *T. murrayi,* which was described by O.A. Sæther (2009) from material collected by Declan Murray from Iceland (Murray 1999). These are the first specimens of the species recorded outside Iceland. The specimen from the island of Hirta is *T. japonicus* Tokunaga, a widespread species included in Sæther's paper on specimens from Madeira, also by Murray (Murray and Hughes 2000). Murray (2000) recorded *T. japonicus* from Ireland.

Identification

Telmatogeton japonicus can be identified using Langton and Pinder (2007). It runs to *Thalassomya frauenfeldi* Schiner in the main key and thence to the supplement in volume 2. *Telmatogeton japonicus* and *T. murrayi* share characters that isolate them from other members of the genus: bifid, asymmetrical male claws, simple mid trochanters, pedicel with 9-21 setae, no setae on flagellomeres 2-5, scutellum with 12-30 setae, and prescutellum with 2-10 setae (Sæther 2009; present study). The original description of *T. murrayi* is based on a single specimen. Sæther stated that it differs from *T. japonicus* by much larger body size (standard wing length 4.3mm versus 2.0-2.9mm). The specimen from Hirta has a wing length of 4.8 mm, which would appear to be overly large for *T. japonicus.* However, Tokunaga (1933) gave a range of 2.1-4.0mm, demonstrating that intraspecific variation in this character is considerable. Another character reported as diagnostic by Sæther (2009), one apparently unaffected by allometry, is the relative size of the apical hooks on the mesal apodemes in the male hypopygium (Fig. 1). Based on this character, the specimen from Hirta is *T. japonicus*, whereas those from the Shetlands are *T. murrayi*.

Parametric and numeric characters of the Scotland specimens

The following data emend those given in the earlier descriptions referred to.

Telmatogeton murrayi

(holotype data from Sæther (*op. cit.*) in parenthesis).

Leg measurements (in µm) and ratios (LR = length of metatarsus/length of tibia; BV = combined length of femur, tibia and metatarsus/combined lengths of the remaining tarsomeres; SV = length of femur + tibia/length of metatarsus):

	fe	ti	ta_1	ta_2	ta_3
p_1	1540-2200 (2064)	1540-1900 (1924)	800-1000 (985)	280-360 (411)	160-220 (211)
p_2	2520-3100 (3002)	1800-2340 (2323)	700-900 (845)	240-300 (317)	140-180 (164)
p_3	2400-3080 (3002)	1960-2500 (2534)	860-1140 (1161)	440-560 (610)	160-200 (188)

ta_4	ta_5	LR	BV	SV	BR
140-200 (164)	140-220 (220)	0.51-0.53 (0.51)	5.1-5.4 (6.06)	3.85-4.3 (4.05)	1.0 (1.1)
120-160 (152)	140-220 (129)	0.34-0.39 (0.36)	7.4-7.95 (8.09)	6.0-6.75 (6.31)	1.0 (1.2)
140-180 (164)	140-200 (129)	0.43-0.46 (0.46)	6.0 (6.14)	4.85-5.15 (4.77)	1.0 (1.3)

Setal counts:
Antepronotals 1-3 (9); prescutellars 2 (10); scutellars 18-29 (24); setae on wing vein R 14-15 (26), on R_1 6-7 (7), on R_{4+5} 8-13 (14); squamals 30-46 (38).

It would require many more specimens from both localities to determine whether the occasional differences in the above data between the Shetland and Iceland specimens represent a trend towards endemism in the populations.

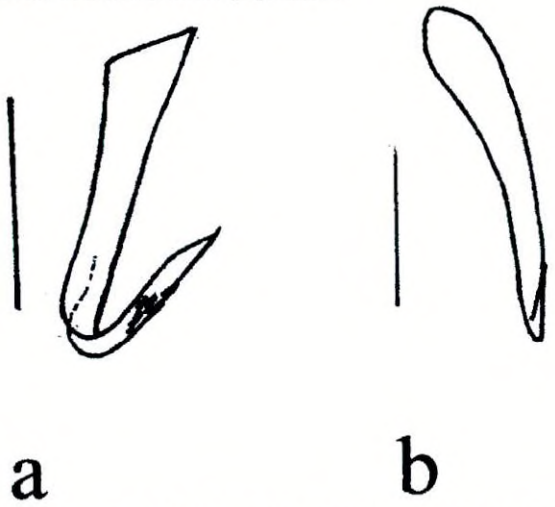

Fig. 1. Left mesal apodemes: a, *Telmatogeton japonicus*; b, *T. murrayi* (scale lines 0.1 mm).

Telmatogeton japonicus
(data on the Madeira specimens described by Sæther (*op. cit.*) in parenthesis; where there is a second parenthesis it encloses additional data from Tokunaga (1933), Wirth (1946), Remmert (1963) and Szadziewski (1977))

Leg measurements (in µm) and ratios:

	fe	ti	ta_1	ta_2	ta_3
p_1	2500 (1032-1548)	2260 (985-1478)	1200 (540-774)	440 (188-293)	240 (117-164)
p_2	3600 (1455-2252)	2820 (1161-1713)	1000 (469-657)	380 (164-235)	220 (94-129)
p_3	3440 (1525-2299)	3000 (1173-1806)	1280 (587-891)	680 (281-446)	240 (106-141)

ta_4	ta_5	LR	BV	SV	BR
220 (106-141)	320 (94-117)	0.53 (0.52-0.56) (0.48-0.55)	4.9 (4.51-4.68)	4.0 (3.53-3.68)	0.7 (1.2-1.6)
200 (82-129)	240 (94-117)	0.35 (0.38-0.40) (0.34-0.41)	7.1 (6.49-7.14)	6.4 (5.25-5.66)	0.75 (1.3-1.5)
220 (94-141)	280 (94)	0.43 (0.49-0.51) (0.41-0.52)	5.4 (5.66-6.00)	5.0 (4.52-4.79)	1.2 (1.4-2.2)

Setal counts:
Antepronotals 7 (1-4) (2-5); prescutellar 10 (3-5) (2-10); scutellars c.70 (12-23) (18-30); setae on wing vein R 24 (8-11) (10-15); on R_1 10 (2-4) (2-7); on R_{4+5} 13 (10-12) (8-13); squamals 57 (16-29)(20-25).

The very small size of the Madeira specimens may be the result of relatively rapid development at higher sea temperature. Sæther (1989) described a *Metriocnemus obscuripes* var. from Madeira for which all measurements are at the low end of the range for the species, and noted that 'Generally the northern populations contain the largest specimens although those examined from Sweden are almost equally large.' *Metriocnemus eurynotus* (Holmgren) (= *M. obscuripes* (Holmgren)), though semi-terrestrial in the larval stage, would appear to be affected in a similar fashion.

Habitat data for the Scottish specimens of *T. murrayi* and *T. japonicus*
The specimens of *T. murrayi* were all collected while they were walking on algae on the sides of floating pontoons in Scalloway harbour. They flitted about in the sunshine for short distances, sometimes across the surface of the water, but were fairly easily trapped in small glass tubes when at rest. On St Kilda the situation was provided by the pier walls in Village Bay, where *T. japonicus* was collected over the algae.

Acknowledgements
Murdo Macdonald, of the Highland Biological Recording Group, collected on Hirta, St Kilda, and donated the samples of insects to the Hunterian (Entry No. 835). David Thompson of Ardnave, Islay, kindly makes it possible for EGH to visit remote places on his yacht.

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***Thienemannimyia fusciceps* (Edwards) (Diptera, Chironomidae) new to Ireland** – In a surface skim for chironomid pupal exuviae of the lower River Bann in Coleraine, Co. Londonderry, Northern Ireland, C854304, on 14 July 2013, was a pupal exuviae of *Thienemannimyia fusciceps*, identified from P.H. Langton and H. Visser (2003. Chironomidae exuviae – a key to pupal exuviae of the West Palaearctic Region. CD-ROM, Expert center for Taxonomic Information, Amsterdam). This species is not recorded for Ireland by P.J. Chandler, J.P. O'Connor and R. Nash (2008. An annotated checklist of the Irish two-winged flies (Diptera) published by The Irish Biogeographical Society in association with The National Museum of Ireland). Declan Murray has kindly confirmed that it has not been recorded since – **PETER H. LANGTON,** University Museum of Zoology, Downing Street, Cambridge (address for correspondence: 16 Irish Society Court, Coleraine, Co. Derry, BT52 1GX)

Dipterists Digest 2013 **20,** 161-176

The habitat affinities of the Dolichopodidae (Diptera) found at Walberswick National Nature Reserve (Suffolk) and their importance as bioindicators

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Summary

This study investigates the habitat preferences of the Dolichopodidae of Walberswick NNR, Suffolk. Eight habitat types were investigated; wet woodland, dry woodland, grazing marsh, fen, reed marsh, heathland, saltmarsh and saline lagoons. Each was sampled by means of pan traps, for an entire period of maximum dolichopodid adult activity. A total of 11,790 Dolichopodidae of 76 species were collected and identified including a number of species of conservation concern. Of these, it was possible to recognise potential bioindicator species for all habitats and to identify 27 species with distinct habitat preferences.

Introduction

Bioindication has become an important tool in addressing the threat to global biodiversity (McGeoch 2007). Although, many taxa have been suggested as bioindicators, invertebrates, because of their generally higher species diversity and abundance, diverse physical and habitat requirements, and their sensitive and subtler responses to environmental changes, are widely regarded as more informative ecological indicators than vertebrates or vascular plants (Kremen *et al.* 1993; Thomas 2005).

Diptera, although constituting one of the most diverse order of insects, remain some of the least investigated animals (Hughes *et al.* 2003). Comparatively few studies have used Diptera as bioindicators; possibly because few dipteran families have the well-documented ecological data necessary to permit valid bioindication research (Pollet 2009). Many authors have considered the use of Syrphidae as bioindicators (e.g. Sommaggio 1999; Speight and Castella 2001, Dziok 2006; Burgio and Sommaggio 2007). While syrphid ecology and taxonomy is well understood and habitat preferences especially of larval stages varied, the flower feeding adults are often wide-ranging and have only limited habitat affinity (Sommaggio 1999, Dziok 2006). Other dipteran studies have used Sciomyzidae as bioindicators in assessing the management of ephemeral Irish wet grasslands (Williams *et al.* 2009), Tipuloidea assemblages as indicators of the trophic status of boreal mires (Salmela and Ilmonen 2005) and Simuliidae as indicators of habitat characteristics and eutrophication of a river ecosystem (Illesova *et al.* 2008).

Species of the superfamily Empidoidea have been suggested as possible bioindicators (Crossley 1996, Delettre *et al.* 1998, Pollet 2009). They are considered to be among the most diverse and abundant flies in temperate zones, with species displaying a wide range of life history traits, using different habitats to complete their life cycle (Delettre *et al.* 1998). Dolichopodidae, particularly because of their species diversity, frequenting most terrestrial habitats, having specific habitat requirements and affinities and reacting quickly to environmental alterations, have been shown to have the prerequisites to make good bioindicators for site quality assessment and conservation purposes (Pollet 1992a, 2000, 2001; Pollet and Grootaert 1991, 1996).

Dolichopodids occur in many habitats, especially humid areas, such as bogs, fens, wet woodlands, grasslands, freshwater marshes, reedbeds, saltmarshes and alongside running and stagnant water, often in large numbers (Pollet *et al.* 1992). However, despite being characterised as predominantly hygrophilous (Dyte 1959), some species occur in drier habitats such as heathland (Pollet *et al.* 1989) and dunes (Pollet and Grootaert 1996), with species diversity and abundance tending to increase from dry to wet habitats (Pollet and Grootaert 1996). Peak adult activity occurs between May and August, although some species are active throughout the year (Pollet and Grootaert 1999).

To establish potential bioindicators it is essential that the ecology or at least the habitat affinity of the selected species be known and that it is possible to provide predictable correlations between species and habitat. To determine the habitat affinities of Dolichopodidae it has been necessary to sample particular habitats in order to ascertain the relationship between the collected flies and the recorded features of the habitat (Pollet and De Bruyn 2000). The ecological characteristics and affinities of many Western European dolichopodid species have been established (e.g. Meyer *et al.* 1995; Meyer and Heydemann 1990; Pollet 1992, 2001; Pollet and Grootaert 1994b; Pollet *et al.* 1989). These studies have enabled the ecological status of most species to be defined and species assigned to particular ecological groups (Pollet 2009).

The purpose of this study is to demonstrate that Dolichopodidae have distinct habitat preferences and to identify these preferences. To do this, the Dolichopodidae of eight habitat types – wet woodland, dry woodland, grazing marsh, fen, reed marsh, heathland, saltmarsh and saline lagoon were sampled. The number of different Dolichopodidae species collected from each habitat type was then calculated, so that it was established which species were characteristic of the various habitats. Those that can be shown to have distinct habitat affinities render them possible habitat indicators.

Methods

Study Site

The area chosen for this study was the Walberswick National Nature Reserve (NNR), Suffolk. This is an 810ha site on the East coast of Suffolk, forming part of the 2326ha Minsmere - Walberswick Heaths and Marshes SSSI. Much of the site has been designated a Special Protection Area, and as a Wetland of International Importance under the Ramsar Convention (Natural England 2011).

The locations at Walberswick NNR of the eight habitat types sampled for this study are shown in Fig. 1. These are broadly described as: wet woodland, dry woodland, grazing marsh, fen, reed marsh, dry heathland, saltmarsh and saline lagoon. Each sampling site consists of a homogeneous area of that particular broad habitat type, the largest being the reed marsh of 190ha and the smallest being the fen at 1.1ha and with all sampling sites separated by at least 300m. A National Vegetation Classification (NVC) survey of all the habitats at Walberswick NNR was undertaken during 1997 (English Nature 1997); this report is used below to describe the vegetation and NVC habitat classifications.

Wet woodland (TM4673). Much of the 20ha of Fen Covert is quite dry and dominated by *Betula pubescens*; however, the 3.5ha wet woodland surveyed lies on the western side of Fen Covert where it grades into reedbed and fen of Westwood marsh. This area is wet, with areas of standing water and mud present. The canopy is dominated by *Alnus glutinosa* with some *B. pubescens* and *Salix cinerea* and the shrub layer by saplings of *A. glutinosa* and *B.*

pubescens. The ground flora is dominated by *Phragmites australis* and *Carex riparia* (NVC, W2a *Salix cinerea- Betula pubescens- Phragmites australis* woodland *Alnus glutinosa-Filipendula ulmaria* sub-community).

Fig. 1. Indication of the location of the sampled habitats at Walberswick NNR.

Dry Woodland (TM4874). Hoist Covert is mature woodland of about 9ha, on sandy loam soil. The ground is mostly bare with a deep litter layer of 5-8cm. The canopy is characterised by *Quercus robur, Castanea sativa and Betula pendula* and the sparse shrub layer with occasional *Ilex aquifolium* and *Q. robur* seedlings. The ground flora is sparse with areas of *Pteridium aquilinum* and *Rubus fruticosus,* with lesser amounts of *Corydalis claviculata, Holcus mollis and H. lanatus* woodland (NVC, W10d *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland, *Holcus lanatus* sub-community).

Grazing Marsh (TM4875). The 53ha of coastal grazing marsh of Tinkers Marsh consists of eight fields that lie alongside the River Blyth. These fields had previously been ungrazed, but grazing had commenced again within two years prior to sampling. The marshes have also been subject to salt-water incursion over the years, the last occasion being in 2009. These factors have resulted in a varied vegetation, although the areas sampled are in the main mesotrophic grassland, with small areas of rush pasture of *Juncus inflexus* and saltmarsh dominated by *Puccinellia distans* and *Spergularia marina.* The sampling points were positioned on the wet grassland away from the surrounding dykes which themselves can display a distinct dolichopodid fauna (Drake 2004). (NVC, MG6a *Lolium perenne-Cynosurus*

cristatus grassland, typical sub-community; MG10b *Holcus lanatus-Juncus effusus* rush pasture, SM23 *Spergularia marina- Puccinellia distans* saltmarsh).

Fen (TM4673). The fen sampled is the largest (approximately 1ha) of three plots of similar habitat on the edge of Westwood Marshes near to Fen Covert. These fens have a very wet organic soil and a rich flora with small areas of mud present. Management is by annual mowing in late summer. Across the fen, *J. subnodulosus* is abundant, with the flora also including *Cirsium palustre, J. articulatus, Carex canescens, Pedicularis palustris, Menyanthes trifoliata, Mentha aquatica* and *Equisetum fluviatille* (NVC, M22a *Juncus subnodulosus-Cirsium palustre* fen meadow, typical sub-community).

Reed marsh (TM4873). The extensive reed beds of Westwood Marshes cover an area of over 190ha. These are managed for reed thatch by keeping the marshes flooded during the spring and summer, lowering the water levels for the annual / bi-annual winter harvest period. To fully investigate this habitat, half of the water traps were positioned in cut reedbed, which grew to over 1.4m during the collection period, and half were in an adjacent area of uncut reeds. The vegetation is dominated by stands of a single\species, *P. australis* (NVC, S4d *Phragmites australis* swamp, *Atriplex prostrata* sub-community and S4a *Phragmites australis* sub-community).

Heathland (TM4873). East Hill contains a mix of some 26ha of dry heath and acid grassland. The vegetation of the sampling site is a matrix of heath, mostly *Calluna vulgaris* but *Erica cinerea* and *R. fruticosus* are also present, and grassland consisting mostly of *Deschampsia flexuosa,* with *Festuca ovina, Lonicera periclymenum* and *Galium saxatile* present. There are also areas of *Ulex gallii, U. europaeus* and *Cytisus scoparius* (NVC, H8a *Calluna vulgaris-Ulex gallii* heath, U2a *Deschampsia flexuosa* grassland).

Saltmarsh (TM4775). The surveyed saltmarsh is positioned to the south of the Blyth Estuary and is some 8ha in extent. The saltmarsh is crossed by irregular muddy tidal creeks and with pools of open water. The sampling points were spaced across the marsh from near the landward rough grassland to near to the estuary mudflats and also near to and away from the tidal creeks and pools. The vegetation is a species-rich mix of *Limonium vulgare, Suaeda maritima, Halimione portulacoides, Plantago maritima, Salicornia* spp., *Triglochin maritima, Aster tripolium, Puccinellia maritima* and *Armeria maritima* (NVC, SM13 *Puccinellia maritima* saltmarsh, *Limonium - Armeria* sub-community).

Saline lagoon (TM4974). The saline lagoons are part of a 1km long narrow chain of shallow pools that has formed on clay trapped behind a shingle bank, through which there is percolation of seawater. The saline lagoons are bordered by shingle on the seaward bank and by saltmarsh on the landward side. Sampling points were positioned equally to the seaward and landward side of the lagoons. The lagoons consist of areas of bare mud, shingle, and pools of open water with algal communities (*Enteromorpha, Cladophora*) varying in depth and extent depending on weather and tidal conditions. To the seaward side the shingle vegetation is limited to species such as *Glaucium flavum, Senicio viscosus, Rumex crispus* and *Beta maritima* (NVC, SD1a *Rumex crispus- Glaucium flavum* shingle community, typical sub-community). The landward side has a mosaic of vegetation types, but nearest to the lagoons is formed mainly of *Spartina anglica, H. portulacoides P. maritima* and *S. maritima*

(NVC, SM6 *Spartina anglica* saltmarsh, SM9 *Suaeda maritima* saltmarsh, SM14 *Halimione portulacoides* saltmarsh).

Sampling

The Dolichopodidae from each habitat type were sampled by means of white water traps, six traps per habitat. For general ecological research of Dolichopodidae, white water traps placed at soil surface level are considered to be the most appropriate devices (Pollet and Grootaert 1994a). The traps were installed at surface level and fixed to the ground with metal tent pegs; each trap consisting of a shallow white plastic tray 250mm x 175mm and 60mm in depth (≅ 2.5l), three-quarters filled with 25% propylene glycol. Detergent (about 0.5ml per litre of water) was added so that captured insects wetted quickly and sank. Sampling points were distributed widely across each site, but away from habitat boundaries, so as to reduce edge effects. The sampling points were positioned in different microhabitats within each of the sites, in areas of varying aspect, light, moisture, structure and vegetation

For each habitat the moisture content of the substrate (Table 1) was obtained by taking a sample of soil from the direct vicinity of each trap. Average percentage water content was calculated after drying at room temperature for 36 days. Samples were taken on 10 July 2010.

Table 1. Percentage moisture content of the substrate of 8 habitat types at Walberswick NNR.

Habitat type	Percentage moisture content
Wet woodland	58.5
Dry woodland	24.2
Grazing marsh	31.6
Fen	61.5
Reed marsh	64.2
Heathland	7.2
Saltmarsh	44.2
Saline lagoon	39.6

The water traps were set on 29 April 2010 and were in continuous operation until 4 September 2010. At no more than two weekly intervals (on 9 May, 28 May, 3 June, 12 June, 26 June, 10 July, 24 July, 7 August, 21 August, 4 September) the traps were emptied of all material and the liquid contents refreshed. All material was collected in a fine sieve and placed in a labelled collecting jar. All contents were pooled for each habitat type on each date. In the workshop, dolichopodids were sorted from all other material and stored in 70% alcohol. The specimens were then identified to species and sex and enumerated.

Identification

The specimens were identified using the standard key to British Dolichopodidae compiled by d'Assis-Fonseca (1978); species of *Sciapus* and *Gymnopternus* were identified using the keys in the revisions respectively by Meuffels and Grootaert (1990) and Pollet (1993). Examples of *Hercostomus plagiatus* (Loew) were checked against possible sibling species (Pollet 1993) and *Syntormon monilis* (Haliday) against the more common *S. silvianus* Pârvu (Pârvu 2009). The specimen of *Dolichopus excisus* Loew was determined using the modification to the d'Assis-Fonseca key (Gibbs 2006). *Syntormon pallipes* (Fabricius) var. *pseudospicatus* Strobl

was also recorded. Males can be recognised by bright yellow hind tibiae with minimal bristling (females cannot be separated). It has been treated by some as a full species (Parent 1938) but is currently listed as subspecies of *S. pallipes* (Pollet 2011). Nevertheless, its true identity is the subject of a current investigation (M. Pollet *pers. comm.*). In this study no effort was made to distinguish these varieties in the results and analysis. Examples of all species were examined by Roy Crossley, who confirmed the determinations. All Dolichopodidae from this study are housed in the private collection of the author.

Data analysis

The percentage of the total catch obtained from each habitat type, species-richness, number of genera, number of unique species and the Shannon-Wiener diversity index from each habitat was measured (Table 2). The Shannon-Wiener index, providing a comparison of species diversity between the habitat types sampled in this survey, with high values representative of more diverse communities, and being the most popular index in literature, facilitates comparison with other studies (De Bruyn *et al.* 2001). Only species represented by 15 or more individuals in the total catch were considered in the detailed analyses. To identify species with habitat affinity the percentage of each species from each habitat type was calculated. Additionally to reduce the effects of the variation in catch size from each habitat type upon the analysis, the results were weighted. This was done by calculating the percentage of each species from each habitat type as opposed to the un-weighted value calculated as a percentage of each species in the total catch. This weighting has the effect of evening out the results by emphasising the importance of the species found in the dolichopodid-poor habitat types such as heathland and reducing the importance of the richer habitat types such as wet woodland. A χ^2 test was applied to the habitat-species data to reject the null hypothesis that there is no correlation between species and habitat and each species is just as likely to be found in any habitat type. By computing the adjusted residual values, which take into account overall sample size, it is possible to determine what values in the contingency table are significant contributors in obtaining the χ^2 test statistic; the positive value of the residual indicating that the observed value is above the expected frequency and a negative value below the expected frequency. Any residual with a value that is greater than the critical 0.01 value $z_{.01} = 2.58$ is significant (Sheskin 2003), the higher the residual value the further from the expected result it is. In this study there was a high level of association between species and habitat type, therefore only those species with an adjusted residual value greater than +5.0 were considered to indicate habitat preference.

Results

A total of 11,790 Dolichopodidae belonging to 76 species of 23 genera were collected and identified during this study. However, 23 *Medetera* females of the *M. jacula* species group and one female *Rhaphium* were not identified to species level. Eight of the species collected were listed by Falk and Crossley (2005) to be of conservation concern. *Dolichopus agilis* Meigen, *Dolichopus notatus* Staeger, *Dolichopus strigipes* Verrall, *Hercostomus plagiatus*, *Thinophilus ruficornis* (Haliday) and *Telmaturgus tumidulus* (Raddatz) are categorised as Lower Risk (Nationally Scarce). *Dolichopus laticola* Verrall is classified as Endangered and a Red Data Book Category 1 species, and is one of only 35 dipteran BAP species (Chandler 2010). The records of *D. laticola* collected during this study are considered to be the first recent British records of this species outside the River Bure catchment of the Norfolk Broads (Falk and Crossley 2005, Vincent 2011b). The single male *Dolichopus excisus* collected from

the fen habitat on 10 July 2010 is the third British record (Vincent 2011a), following the original discovery in Dorset in 2005 (Gibbs 2006).

Relevant parameters of the dolichopodid community of each habitat type are presented in Table 2. The wet woodland and saline lagoon habitats were shown to have greater abundance than the other habitat types sampled (a combined total of over 60% of the total catch). Heathland provided the least number of specimens, although the species-richness was comparable with other habitat types. The fen and the wet woodland were the most species-rich habitat types with 40 and 36 species respectively; the other six habitat types were of a similar species-richness ranging from 17 to 24 species per habitat. The number of unique species was highest in the species-rich fen habitat and in the coastal grazing marsh habitat that exhibited comparatively low species-richness. The saltmarsh and heathland habitats each had only one unique species. As the wet woodland and fen habitat types have the greatest species-richness, they unsurprisingly have the highest Shannon-Wiener diversity; the lowest Shannon-Wiener diversity being for the less species-rich dry woodland and coastal grazing marsh habitats. Reed marsh, which is the third most species-rich habitat type, has the third lowest Shannon-Wiener index, this is a result of the dominance of two species *Ethiromyia chalybea* (Wiedemann) and *Dolichopus nubilus* Meigen in the sample.

Table 2. Measurements of species composition, and of Shannon-Wiener index, of the eight habitat types sampled at Walberswick NNR during 2010.

Habitat type	Abundance	Abundance of each habitat type as percentage of total abundance	Species-richness	Number of unique species	Shannon-Wiener diversity index (ln)
Wet woodland	4217	35.5	36	3	2.27
Dry woodland	660	5.6	20	2	1.55
Grazing marsh	412	3.7	18	5	1.62
Fen	1406	11.8	40	6	2.53
Reed marsh	662	5.6	24	3	1.69
Heathland	119	1.0	17	1	1.73
Saltmarsh	1150	9.7	19	1	1.74
Saline lagoon	3255	27.4	19	3	1.92

The distribution of those species with 15 or more occurrences (the 41 most abundant species) across the eight habitat types is shown in Table 3; these constitute 98.6% of the total number of dolichopodids collected. The habitat distribution of the 36 least abundant species is shown in Table 4. The ten most numerous species contribute 65.23% of the total, with *Campsicnemus scambus* (Fallén) *D. nubilus, S. pallipes* and *D. strigipes* all with over 1000 records, whereas 24 species were recorded fewer than five times and 10 species were recorded only once. Of the species with fewer than 15 occurrences, most of these were obtained from fen, wet woodland and reed bed with fewest from saltmarsh and saline lagoon.

The association between habitat type and species was very highly significant: χ^2= 37498, df = 280, p-value < 0.00001. Results from the three ways of analysis applied to the data, that is the weighted indicator value, the un-weighted indicator value, and the χ^2 residual values are shown in Table 5. Potential indicator species have been identified for all of the eight habitat types. These consist of species with an indicator value of either more than 70% in the un-weighted or weighted indicator species analysis, or a χ^2 residual value of greater than +5 for any of the habitats. For each habitat type, the species are ranked in order, based

on the sum of the rank in each of these three analyses; the smallest sum of ranks the greater the habitat affinity. The table also shows the number of individual habitats recorded for each of the species.

Table 3. Overview of Dolichopodidae collected in eight habitat types at Walberswick NNR during 2010, for abundant species with ≥ 15 occurrences.

Species	Habitat Type								
	Wet woodland	Dry woodland	Grazing marsh	Fen	Reed marsh	Heath	Saltmarsh	Saline lagoon	Total
Argyra diaphana	30	3	-	-	-	-	-	-	33
Argyra vestita	-	-	-	2	-	-	53	-	55
Campsicnemus armatus	1	2	43	5	2	-	41	86	180
Campsicnemus curvipes	40	4	-	7	4	2	-	-	57
Campsicnemus loripes	92	-	3	2	-	-	-	-	97
Campsicnemus scambus	879	51	1	112	63	-	-	-	1106
Chrysotus cilipes	-	-	1	38	2	1	2	-	44
Chrysotus gramineus	3	-	14	14	-	1	-	-	32
Dolichopus atratus	354	-	-	16	-	-	-	-	370
Dolichopus atripes	807	-	-	21	-	-	-	-	828
Dolichopus campestris	1	-	-	27	-	-	1	-	29
Dolichopus diadema	-	-	7	1	-	-	147	322	475
Dolichopus discifer	203	-	-	3	-	-	-	-	206
Dolichopus laticola	31	-	-	103	-	-	-	-	134
Dolichopus nubilus	18	1	228	126	165	14	100	436	1088
Dolichopus picipes	523	4	-	134	-	-	-	-	661
Dolichopus plumipes	1	3	71	1	2	1	2	-	81
Dolichopus popularis	-	2	-	-	95	-	-	-	97
Dolichopus sabinus	-	-	-	-	-	-	-	57	57
Dolichopus strigipes	1	-	-	-	-	-	587	546	1134
Dolichopus ungulatus	147	38	18	15	7	-	9	1	235
Ethiromyia chalybea	129	-	-	289	245	2	-	-	665
Gymnopternus aerosus	517	49	-	28	17	-	-	-	611
Gymnopternus cupreus	319	328	-	6	22	1	-	-	676
Gymnopternus metallicus	78	16	-	-	2	1	-	-	97
Hercostomus nigripennis	1	8	1	-	-	14	-	-	24
Hydrophorus oceanus	-	-	-	-	-	-	22	4	26
Hydrophorus praecox	-	-	3	-	-	-	-	514	517
Machaerium maritimae	-	-	-	-	-	-	15	1	16
Medetera saxatilis	1	-	1	2	-	41	1	2	48
Rhaphium consobrinum	-	-	-	-	-	-	7	81	88
Sciapus contristans	1	-	-	6	-	11	-	-	18
Sciapus platypterus	1	137	-	-	8	1	-	1	148
Syntormon monilis	1	-	-	21	-	-	-	-	22
Syntormon pallipes	6	2	10	8	1	2	91	1012	1132
Syntormon pumilus	1	-	-	136	3	-	-	-	140
Tachytrechus notatus	-	-	-	74	-	-	-	-	74
Telmaturgus tumidulus	-	-	-	179	-	-	-	-	179
Teuchophorus monacanthus	-	-	-	-	-	-	16	-	16
Thinophilus flavipalpis	-	-	-	-	-	-	24	127	151
Thinophilus ruficornis	-	-	-	-	-	-	25	40	65
Total	4186	648	401	1376	638	92	1143	3230	11712

Table 4. Overview of Dolichopodidae collected in eight habitat types at Walberswick NNR during 2010, for species with <15 occurrences (plus *Medetera* and *Rhaphium* spp not determined to species).

Species	Habitat Type								
	Wet woodland	Dry woodland	Grazing marsh	Fen	Reed marsh	Heath	Saltmarsh	Saline lagoon	Total
Achalcus cinereus	1	-	-	1	-	-	-	-	2
Campsicnemus picticornis	-	-	-	1	1	-	-	-	2
Campsicnemus pusillus	-	-	-	1	-	-	-	-	1
Chrysotus femoratus	-	-	2	-	-	-	-	-	2
Dolichopus agilis	-	-	1	-	-	-	-	-	1
Dolichopus brevipennis	-	-	3	-	-	-	-	-	3
Dolichopus excisus	-	-	-	1	-	-	-	-	1
Dolichopus latilimbatus	-	-	-	3	6	-	-	-	9
Dolichopus lepidus	7	-	-	6	-	-	-	-	13
Dolichopus longitarsis	6	2	-	-	1	-	-	-	9
Dolichopus notatus	-	-	-	-	-	-	-	9	9
Dolichopus subpennatus	-	-	-	-	1	-	-	-	1
Dolichopus urbanus	-	-	-	1	-	-	-	-	1
Gymnopternus assimilis	1	-	-	-	1	-	-	-	2
Gymnopternus blankaartensis	-	5	-	-	1	-	-	-	6
Hercostomus nanus	-	1	-	-	1	-	-	-	2
Hercostomus plagiatus	-	-	-	-	11	-	-	-	11
Hydrophorus bipunctatus	-	-	-	1	-	-	-	-	1
Medetera micacea	-	-	-	-	-	2	-	-	2
Medetera truncorum	-	-	-	-	-	4	-	4	8
Orthoceratium lacustre	-	-	-	-	-	-	-	3	3
Poecilobothrus chrysozygos	4	-	-	-	-	-	-	-	4
Poecilobothrus nobilitatus	-	-	2	-	-	-	-	-	2
Rhaphium appendiculatum	2	-	-	-	-	-	-	-	2
Rhaphium auctum	-	-	-	1	-	-	-	-	1
Rhaphium caliginosum	2	-	-	-	-	-	-	-	2
Rhaphium fasciatum	-	-	-	-	1	-	-	-	1
Rhaphium monotrichum	3	-	-	1	-	-	6	-	10
Sciapus wiedemanni	-	-	-	-	-	5	1	-	6
Sybistroma obscurellum	-	1	-	-	-	-	-	-	1
Sympycnus desoutteri	-	-	3	-	-	-	-	9	12
Syntormon denticulatus	1	-	-	8	-	-	-	-	9
Syntormon tarsatus	3	-	-	-	-	-	-	-	3
Teuchophorus spinigerellus	-	-	-	1	-	-	-	-	1
Thrypticus bellus	-	3	-	-	-	-	-	-	3
Medetera sp	1	-	1	5	-	16	-	-	23
Rhaphium sp	-	-	-	-	-	-	1	-	1
Total	31	12	12	30	24	27	8	25	169

Table 5. Evaluation of indicator species of 8 habitat types. Ranking based on the summation of ranks of un-weighted indicator value, weighted indicator value and χ^2 adjusted residual value

Habitat type	Species	No of habitats recorded	Un-weighted indicator value (%)	Weighted indicator value (%)	χ^2 adjusted residual value	Sum of ranks
Wet woodland	*Dolichopus atripes*	2	97.46	92.65	29.57	5
	Dolichopus discifer	2	98.54	95.66	15.08	8
	Dolichopus atratus	2	95.68	87.94	19.29	10
	Campsicnemus loripes	3	94.85	70.97	9.74	15
	Gymnopternus aerosus	4	84.62	50.16	20.22	16
	Campsicnemus scambus	5	79.48	44.55	25.71	18
	Argyra diaphana	2	90.91	61.02	5.27	19
	Dolichopus picipes	3	79.12	54.66	18.55	20
	Gymnopternus metallicus	4	80.41	32.46	7.36	24
Dry woodland	*Sciapus platypterus*	5	92.57	89.84	46.95	4
	Gymnopternus cupreus	5	47.19	80.07	49.80	5
Grazing marsh	*Dolichopus plumipes*	7	87.65	89.26	40.88	3
	Chrysotus gramineus	4	43.75	61.55	12.28	8
	Campsicnemus armatus	7	23.89	59.65	14.77	9
	Dolichopus nubilus	8	20.96	43.76	31.16	10
Fen	*Telmaturgus tumidulus*	1	100.0	100.0	34.36	3
	Tachytrechus notatus	1	100.0	100.0	22.09	6
	Syntormon pumilus	2	97.14	95.28	29.40	9
	Syntormon monilis	3	95.45	98.71	11.42	15
	Dolichopus laticola	2	76.87	91.00	21.93	17
	Dolichopus campestris	3	93.10	94.69	12.75	17
	Chrysotus cilipes	5	86.36	65.13	14.40	19
	Ethiromyia chalybea	4	45.51	32.48	23.77	19
Reed marsh	*Dolichopus popularis*	2	97.94	97.96	38.94	3
	Ethiromyia chalybea	4	36.84	59.40	34.59	6
	Dolichopus nubilus	8	15.17	19.90	13.67	9
Heathland	*Medetera saxatilis*	6	85.42	98.73	60.02	3
	Hercostomus nigripennis	4	58.33	90.97	31.74	7
	Sciapus contristans	3	61.11	96.37	28.81	8
Saltmarsh	*Teuchophorus monacanthus*	1	100.0	100.0	11.53	7
	Argyra vestita	2	96.36	96.87	20.51	7
	Machaerium maritimae	2	93.75	97.76	10.73	11
	Hydrophorus oceanus	2	84.62	94.14	12.19	11
	Dolichopus strigipes	3	51.76	75.24	45.14	12
	Dolichopus diadema	4	30.82	52.17	14.66	15
Saline lagoon	*Hydrophorus praecox*	2	99.41	95.50	30.99	6
	Dolichopus sabinus	1	100.0	100.0	10.37	9
	Syntormon pallipes	8	89.40	69.41	39.45	9
	Rhaphium consobrinum	2	92.05	80.45	11.47	14
	Thinophilus flavipalpis	2	84.11	65.17	13.17	14
	Dolichopus diadema	4	67.51	40.45	16.52	15
	Dolichopus strigipes	3	48.15	24.76	13.09	20

Discussion

This study has been able to determine habitat affinities exhibited by some Dolichopodidae in one area of Britain. While certain habitats, such as wet woodland and fen, display greater abundance and species-richness, significant populations of dolichopodids occur in other habitats such as heathland and dry woodland. Though abundance in the less favourable habitats was lower, the species-richness was comparable to other habitats.

The most distinct suite of indicator species are those of the saline habitats. This study identified eleven species as being possible indicators of the saltmarsh and coastal lagoon

habitats. Many of these are true halophilous species, although others also occur in non-saline environments but are found in their greatest abundance in these saline habitats. The saltmarsh and saline lagoon habitat types appear similar in many respects, with areas of mud and saltmarsh flora, but each was identified as having distinct dolichopodid fauna. This study identified the species *Argyra vestita* (Wiedemann), *Machaerium maritimae* Haliday, *Hydrophorus oceanus* (Macquart) and *Teuchophorus monacanthus* Loew as indicators of 'true' saltmarsh. The species *M. maritimae* and *H. oceanus* are exclusively maritime (Meyer and Heydemann 1990), with *H. oceanus* as one of only a few of the dolichopodids able to tolerate twice daily flooding of the lower saltmarsh (Crossley 2007). *Argyra vestita* and *T. monacanthus*, even though recorded only from the saltmarsh in this study are often looked upon as marsh species (Pollet 2000). *Argyra vestita* is regarded as a stenotopic indicator of true reed marsh (Pollet and De Bruyn 2000, Pollet 2001); however, in this study only two occurrences were from freshwater habitats, while 96% of records were from saltmarsh. The reason for this apparent difference in habitat association is unclear; the saltmarsh is surrounded by grazed farmland with no reed marsh in the immediate vicinity, so there is unlikely to have been any migration from elsewhere. However, d'Assis-Fonseca (1978) mentioned *A. vestita* often occurring on seaweed-covered rocks; therefore it seems that *A. vestita* exhibits at least bimodal habitat preferences, occurring in reed marshes and also in saline habitats. The species *D. sabinus* Haliday, *Hydrophorus praecox* (Lehmann) and *Rhaphium consobrinum* Zetterstedt were found in this study to be indicators of saline lagoon habitats, while *D. diadema* Haliday, *D. strigipes, Thinophilus flavipalpis* (Zetterstedt) and *T. ruficornis* (Haliday) were common to both habitats and can be considered indicators of saline environments. The literature states that *D. sabinus, R. consobrinum, D. diadema, D. strigipes, T. flavipalpis* and *T. ruficornis* are all salt tolerant species (Meyer and Heydemann 1990, Pollet 2000, Crossley 2007). However, *D. diadema* and *D. sabinus* are also found in freshwater marshes particularly reed marsh (Pollet 2000) and *R. consobrinum* is also recorded inland along riverbanks (Crossley 2007). *Hydrophorus praecox*, while primarily appearing to be a coastal species, is also found inland (NBN 2011). Of the less abundant species *Orthoceratium lacustre* (Scopoli) and *D. notatus* were both recorded from the saline lagoon and these are very typical saltmarsh species (Meyer and Heydemann 1990, Crossley 2007), although *D. notatus* has also been recorded from sand dunes (Falk and Crossley 2005) and reed marshes (Pollet 2000). *Dolichopus nubilus* is considered to be halophilous (Meyer and Heydemann 1990), but is also described as riparian (Pollet and De Bruyn 2000) and as a reed marsh species (Bernasconi *et al.* 2007). This study found *D. nubilus* to be eurytopic, although most abundant in saline habitats especially from the saline lagoon. Almost 70% of records of *Campsicnemus armatus* (Zetterstedt) were collected from the saline habitats; however 24% were collected from grazing marsh habitat. The coastal grazing marshes at Tinkers Marsh are subjected to periodic saltwater invasion and exhibit areas of saltmarsh fauna and this saline influence is likely to account for the presence of *C. armatus* in this habitat. Therefore, *C. armatus* may also be considered an indicator of saline habitats. It is regarded as a typical saltmarsh species (Crossley 2007) and is the only *Campsicnemus* species characteristic of coastal habitats, particularly saltmarshes (Pollet and Grootaert 1994b). The same reasons may also account for the collection of the otherwise halophilous species *D. diadema* and *H. praecox* from the grazing marsh. Although *S. pallipes* was mostly collected from saline habitats it was also found in all the other habitats, which suggests it to be more eurytopic. It has been classified as a riparian species (Pollet and De Bruyn 2000), but was found to be a common saltmarsh species in Schleswig Holstein (Meyer and Heydemann 1990). *Syntormon*

pallipes var. *pseudospicatus* forms an important part of the dolichopodid fauna of saline environments and is particularly an indicator of the saline lagoon habitat.

Dry habitats such as heathland and dry woodland do not appear suitable habitats for what is usually assumed to be hygrophilous taxa. This study identified three possible heathland indicator species. *Hercostomus nigripennis* (Fallén) and *Sciapus contristans* (Wiedemann) are considered indicators of dry habitats such as heathland (Pollet and Grootaert 1994b, Pollet 2000) and *Medetera saxatilis* Collin is eurytopic, although with some preference for open grassland (Pollet and Grootaert 1994b). *Hercostomus nigripennis* was found in both heathland and dry woodland and can be assumed to have affinities to xerophilous habitats. In this study two species were identified as indicators of dry woodland: of these *Sciapus platypterus* (Fabricius) shows a high level of affinity to this habitat, in accord with Pollet *et al.* (1989), although it is also described as a more general woodland species (Pollet and De Bruyn 2000), while *Gymnopternus cupreus* (Fallén) was also collected readily from wet woodland and is thus probably best considered a woodland species, in agreement with the literature (Pollet 1990, Pollet and Grootaert 1991). Of the less abundant species collected from the heathland habitat *Medetera micacea* Loew and *M. truncorum* Meigen are considered xerophilous (Meyer and Heydemann 1990). *Medetera micacea* in particular is an indicator of open sandy habitats (Pollet and Grootaert 1994b), and *M. truncorum* being more eurytopic (Pollet and Grootaert 1996). *Sciapus wiedemanni* (Fallén) is termed eurytopic although appearing to favour drier habitats, both open and woodland (Pollet and Grootaert 1996) and *G. blankaartensis* Pollet, which was found in this study almost exclusively from dry woodland, is reported in the literature as a stenotopic reed marsh species (Pollet 1990) although also occurring in humid woodland (Pollet 2000).

The wet woodland site provided the greatest abundance of flies, and it clearly provides favourable conditions for dolichopodid development; however, other habitat features present, such as standing water and mud found at this site are likely to have influenced abundance. Nine indicators of wet woodland were identified. The literature suggests that *D. discifer* Stannius and *C. loripes* (Haliday) are found in all woodland types (Pollet and Grootaert 1991) while *D. atripes* Meigen and *D. atratus* Meigen are more associated with heathland (Pollet 2000). In this study *D. picipes* exhibited more of a bimodal distribution occurring in wet woodland and fen habitats, although it is considered typical of marshland (Pollet 2000). In this study *G. aerosus* (Fallén), *G. metallicus* (Stannius) and *A. diaphana* (Fabricius) were also found in the dry woodland habitat, so together with *G. cupreus* provide a suite of species with a habitat affinity to woodland *per se*. These species are all described as characteristic woodland species (Pollet 1990); however, *G. aerosus* is included in a list of species typical of heathland (Pollet *et al.* 1989), although none was collected from heathland during this study. It was found that, while *C. scambus* was very abundant in the wet woodland habitat and *C. curvipes* (Fallén) also reached its highest abundances here, these two very common species are best described as eurytopic. They are described in the literature as eurytopic although exhibiting a preference for woodland (Pollet and Grootaert 1994b), *C. scambus* preferring the wetter places and *C. curvipes* more evenly distributed (Pollet *et al.* 1989).

The habitat types of fen, grazing marsh and reed marsh can be broadly classified under the general terms of marsh or wetlands. However, each habitat type provides very different ecological conditions, which was reflected in the differing dolichopodid communities collected from each habitat. Similar differences in the species composition of dolichopodid populations were found between fens and wet meadows on the one hand and reed and sedge marshes on the other (Laurence 1995). *Syntormon monilis* and *Chrysotus cilipes* Meigen are considered as typical marsh grassland species (Pollet 2001) and *S. pumilus* (Meigen) has been

collected by pools in grassland (Pollet *et al.* 1989). *Telmaturgus tumidulus* is a species of very wet heathland (Pollet 2000) and also marsh (Pollet 2001). An association with peat has been suggested (Martin Drake *pers comm.*), which may account for this bimodal distribution. Laurence (1995) considered that *D. campestris* Meigen, *T. tumidulus, S. monilis* and *D. laticola* were all typical fen and open marshland species.

A number of species have been found to be indicative of grassland and reed marsh (Pollet 2001). In this study *D. popularis* Wiedemann was identified as a possible reed marsh indicator, although included in a list of grassland species (Pollet 2001), whereas the grazing marsh indicator identified from this study, *D. plumipes* (Scopoli) was found to be a possible indicator of wet grassland (Pollet 2001), although it is also considered to be eurytopic (Pollet and De Bruyn 2000). *Ethiromyia chalybea* was abundant in the fen and reed marsh habitats and also in the wet woodland. This species has been described as showing a bimodal ecological distribution pattern occurring in both marshes and wet woodlands (Pollet 2001), with which the results from this investigation concur. *Hercostomus plagiatus* also displays a similar bimodal distribution (Pollet 2001), although in this study it was only recorded from the reed marsh, whereas *D. lepidus* Staeger, which was recorded equally from the wet woodland and fen habitats is termed a riparian species (Pollet and De Bruyn 2000) and heathland species (Pollet 2000).

It must be noted that the scope of this study is limited and a number of factors need to be taken into consideration before any conclusions can be drawn. The first and most significant limitation is the restriction of only having one sampling site per habitat; this restriction has the effect of emphasising the number of potential indicator species recognised. Therefore, some species highlighted in this study as indicators are found readily across a number of habitat types and should not be considered habitat specialists. Species such as *D. plumipes* and *D. popularis* are common wetland species and *G. aerosus* is a widespread species of acidic wetlands. Likewise, it is unwise to infer that differences between the habitat preferences of species found in this study and the habitat preferences reported elsewhere are significant. For instance, species of humid acidic conditions such as *D. atripes* and *D. atratus,* which in this study are found predominantly in wet woodland, are found in other humid acidic habitats such as wet heathland (Pollet 2000). However, real differences in habitat preferences have been shown, for instance *A. vestita* although regarded as a stenotopic reed marsh species (Pollet 2001) was considered in this study to be a saltmarsh indicator.

The results of this study would be of greater significance if additional sampling sites of the eight habitat types were surveyed at Walberswick, or by repeating a similar survey on other sites and if possible in differing geographical areas. The breadth of the survey could likewise be improved by sampling additional habitats. Undoubtedly, some species were under-recorded, although it is difficult to speculate whether this is due to the rarity of some species and indicative of low population densities or due to inadequacies of the sampling methodology. Some genera respond better to different trapping methods, for example, many arboreal species, e.g. species of *Medetera* and *Sciapus*, are more attracted to blue or bluish green traps and/or to elevated traps (Pollet and Grootaert 1991, 1994a). Some adult Dolichopodidae are present all year round and others such as *Achalcus cinereus* (Haliday in Walker) are predominantly winter species (Pollet *et al.* 1992): therefore, a longer survey period would provide a more accurate assessment of populations. However, this is subject to the law of diminishing returns and the information gained would not necessarily prove to be of significant extra ecological value. As some species can show considerable annual population variations (Pollet 2009), repeating the survey over a period of years would be worthwhile. Rarely have dolichopodid populations been investigated for more than one

season, so annual fluctuations in population size and composition has not been fully evaluated (Pollet 2009).

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A record of *Chaetocladius algericus* Moubayed (Chironomidae) from Sowley Pond, New Forest, England

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Summary

Chaetocladius algericus Moubayed, 1989 is a rare species, locally distributed in West Mediterranean coastal areas. Its detection in an English coastal pond is the first record in northern Europe. Reference is made to other Mediterranean chironomid species found in Atlantic and northern regions.

Site description

Sowley Pond (SZ376967) was formed by the monks of Beaulieu Abbey constructing a dam about 650 years ago; it has four small inlet streams. It is a Site of Special Scientific Interest within the South Hampshire Coastal Area of Outstanding Natural Beauty, and at a distance of 250m from tidal marshland. The pond has the following physical and chemical characteristics; altitude 5 metres, surface area 16 ha, mean depth 0.6 m, catchment area 1377 ha, mean pH 8.2, alkalinity 56 mg $CaCO_3$ l^{-1}, conductivity 244 µS cm^{-1}, total nitrogen 1.73 mg l^{-1}, total phosphorus 0.146 mg l^{-1}, chlorophyll *a* 64 µg l^{-1}.

Collection and remarks

A routine sample taken from Sowley Pond on 24 August 2010 by the Environment Agency was audited by LR, who identified one male pupal exuviae of *Chaetocladius algericus* Moubayed, 1989 using the original description and the key of Langton and Visser (2003) and sent it to JM-B for confirmation. Compared with associated pupal exuviae in the collection of JM-B, major and relevant diagnostic features were noted in the armament and chaetotaxy of the cephalothorax, abdominal tergites and anal segment. Only minor morphological variation was detected, in the distribution pattern of spinules and shagreen on sternites V-VIII, which is consistent with normal geographical variation. The collection of a shed pupal skin indicates development within Sowley Pond, even if the individual had arrived there attached to a migratory bird, possibly as part of an egg mass. There have been three subsequent visits to Sowley Pond by LR, to collect pupal exuviae and adult chironomids in May, June and July 2012, but no further specimens of *Chaetocladius algericus* have been found.

Geographical distribution

Chaetocladius algericus was described from Algeria (Moubayed 1989); it has also been reported from Spain and Mediterranean France, including Corsica (Laville and Langton 2002, Moubayed-Breil 2008, Moubayed-Breil and Ashe 2012, Sæther and Spies 2013).

Other chironomid species found in both, circum- or west-Mediterranean areas and in Atlantic or northern regions, are: *Eukiefferiella bedmari* Vilchez-Quero & Laville, 1987. Previously reported as circum-Mediterranean (Laville and Reiss 1993), recently recorded from French Atlantic coastal areas (Moubayed-Breil 2008); *Limnophyes gelasinus* Sæther, 1990. The male adult was described from North Korea (Sæther 1990); pharate males have

been recorded from Algeria (Moubayed *et al.* 2007), Russia (Makarchenko *et al.* 2008), southern France (Moubayed-Breil 2008) and Corsica (Moubayed-Breil and Ashe 2012). Pupal exuviae from French Provence have been described (Moubayed-Breil and Ashe 2011); *Parakiefferiella wuelkeri* Moubayed, 1994. Western Mediterranean (Moubayed 1994); widespread among foothills in Scotland, northern England and Germany (Langton 1994).

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We are grateful to Barry Byatt of the Environment Agency for originally alerting LR to an unidentifiable pupal exuviae. The Agency also provided most of the reported chemical data.

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Myennis octopunctata (Coquebert) (Diptera, Ulidiidae) in Hackney

– On 31 July at TQ370861 a male *Myennis octopunctata* (Coquebert, 1798) (Fig. 1) was found on a bench beside the river Lea on Hackney Marshes. A strip of mixed woodland consisting mainly of poplar, London plane, ash and willow follows the river and completely encircles the large recreation ground, known for its many football pitches.

Fig. 1-2. *Myennis octopunctata*, male on left, female on right.

Subsequent searches of the area concentrated on fissures in mature poplar bark as well as log-piles and park furniture, and a female (Fig. 2 and cover illustration) was found on 14 August at TQ369858, again on a bench approximately 200 yards south of the male.

A survey of the area by M.W. Hanson (2004. Hackney Marshes: Wildlife Survey and Management Plan 2004, commissioned by Hackney Biodiversity Partnership) includes this species, which was found during one of six visits between 22 April and 8 September on a wood-pile in the park's depot car-park (approx. TQ370855, a further 200 yards south of the female recorded here).

Nationally records are few, though with several in the London area. Trees listed in the 2004 report include a number of poplar species and hybrids, and the survey highlighted the population of native black or water poplar (*Populus nigra* var. *betulifolia*) along the riverbank as the largest in London – **JEREMY RICHARDSON,** 12 Martlesham, Adams Road, London N17 6HT; drawlight1@gmail.com

Changes to the Irish Diptera List (20) – Editor

This section appears as necessary to keep up to date the initial update of the Irish list in Vol. **10,** 135-146 and the latest checklist of Irish Diptera (Chandler *et al.* 2008). Species are listed under families, but with references listed separately (unless within the present issue). The 6 additions cited below bring the total Irish list to **3386** species.

Mycetophilidae

Exechiopsis fimbriata (Lundström, 1909) (added by Deady 2013)
Mycetophila abiecta (Laštovka, 1963) (confirmed as Irish by Deady 2013)
Phthinia humilis (Winnertrz, 1863) (confirmed as Irish by Deady 2013)
Trichonta vulcani (Dziedzicki, 1889) (added by Deady 2013)

Chironomidae

Metriocnemus alisonae Langton, 2013 (added by Langton from Ireland only in the present issue)
Thienemannimyia fusciceps (Edwards, 1929) (added by Langton in the present issue)

References

Deady, R.J. 2013. Four species of Mycetophilidae (Diptera) new to Ireland. *Irish Naturalists' Journal* **32,** 145-147.

Correction: First European record of a forcipomyiine midge (Diptera, Ceratopogonidae) feeding on a cranefly (Diptera, Limoniidae), and first record of an *Atrichopogon* species exhibiting this behaviour

– In our note published in the previous issue, we suggested that the midge was apparently feeding at the basal part of the abdomen of the cranefly. Pjotr Oosterbroek (*pers. comm.*) subsequently pointed out that this was an incorrect assumption. The midge was evidently sitting on the base of the cranefly's wing, and the short length of its proboscis suggests that it was probably feeding on a wing vein. The large genera *Forcipomyia* and *Atrichopogon* are well known to include species that feed on haemolymph by piercing the wing veins of many insects, including species that specialise in Lepidoptera, Neuroptera and Odonata. This observation indicates that craneflies are also attacked in this way, and Diptera can be added to the insect orders on whose wings forcipomyiine midges may be sought – **ALAN WATSON FEATHERSTONE,** Trees for Life, The Park, Findhorn Bay, Forres IV36 3TZ and **PETER J. CHANDLER,** 606B Berryfield Lane, Melksham, Wilts SN12 6EL

Dipterists Digest 2013 **20,** 181-185

A new species of *Metriocnemus* van der Wulp (Diptera, Chironomidae) from Northern Ireland

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Summary
A new species of *Metriocnemus* van der Wulp is described from two adult males collected in Co. Londonderry, Northern Ireland.

Introduction

As part of a survey of the Chironomidae of the River Bann in Coleraine, Co. Londonderry, Northern Ireland, weekly collections of floating pupal exuviae are being made at a small tidal bay just below the weir and sluice gates known as 'The Cutts'. Frequently, the samples include drowned adults; for example, on 22.ii.2013 a black adult male superficially resembling the seasonally common *Metriocnemus eurynotus* (Holmgren) was collected. This ran to *Metriocnemus fuscipes* (Meigen) in Langton and Pinder (2007), but various character states do not accord with that species, nor do they fit any species in Sæther's revisions (1989, 1995) of the genus. A male collected in 2004 was then recognised to be conspecific. The species is here described as *Metriocnemus alisonae* sp.n.

Metriocnemus alisonae **sp. n.**

Etymology

The species epithet honours Alison Wade, for her friendship and encouragement.

Holotype male: NORTHERN IRELAND: Co. Londonderry, Coleraine, R. Bann, C854305, drift, 22.ii.2013, leg. P.H. Langton. To be deposited in NMI (National Museum of Ireland, Dublin). **Paratype male**: NORTHERN IRELAND: Co. Londonderry, 5 Kylebeg Avenue, Coleraine, C858304, at lighted window, 24.iii.2004, leg. P.H. Langton.

Description.

The description is modelled after those in Sæther's (1989, 1995) revisions of the genus *Metriocnemus* van der Wulp.

Total length 3.6, 3.86mm. Wing length 2.4, 2.8mm; width 0.66mm; width at anal lobe 0.34 mm. Total length/wing length 1.5, 1.6. Wing length/length of profemur 2.3, 2.7. Coloration black (brown after maceration in KOH), knob of haltere paler, abdominal sternites colourless.
Head. Antenna of 13 flagellomeres (Fig. 1c). AR 1.09 (n=2). Terminal flagellomere 480µm long (n=2). Eye bare. Temporal setae at least 24/27; including 16/19 inner verticals, 8 outer verticals. Clypeus with 19 setae. Palpomere lengths: 28, 36; 56, 64; 240, 260; 180, 200; 168, 192µm.
Thorax (Fig. 1b). Antepronotum with 10, 20 lateral setae. Acrostichal setae apparently absent; dorsocentrals 77, 81, including 18 (n=2) in humeral area; prealars 49, 51; supraalars absent. Scutellar setae 26, 27 on the respective left half of the sclerite.

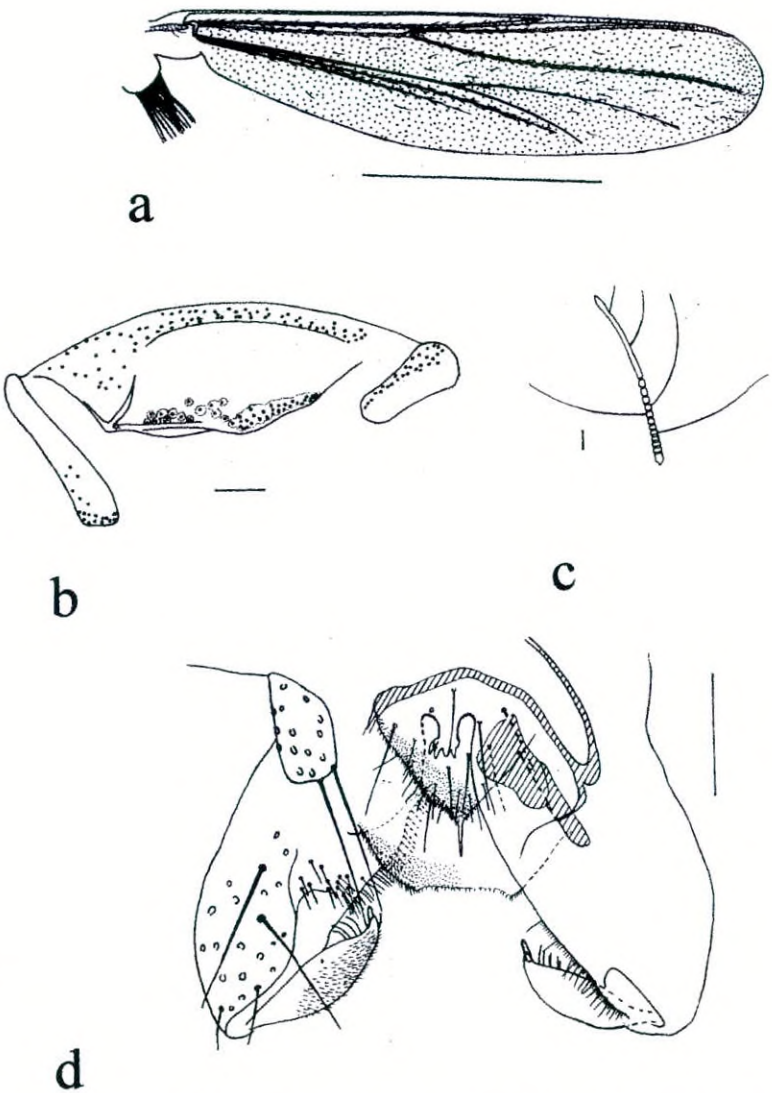

Fig. 1. ***Metriocnemus alisonae*** **sp.n., holotype: a, wing; b, thorax, lateral; c, antenna; d, hypopygium, left: dorsal, right: ventral/internal. Scale lines a = 1.0mm; b-d 0.1mm.**

Wing (n = 1; Fig. 1a). Wing narrowed to base, anal lobe practically absent. VR 1.17. Costal extension 144µm long. Cu_1 gently curved. Brachiolum with 20 setae; R with 79; R_1 with 62; R_{4+5} with 123; RM with 3; M with 37; M_{1+2} with 82; M_{3+4} with 33; Cu too faint to count the

setae on it; Cu_1 with 15; Pcu with 61; An with 43 setae. Wing membrane covered with macrotrichia, with about 160 in cell m basally of RM, macrotrichia length 40-50μm. Squama with 39 setae.

Legs. Spur of front tibia 84 and 84μm long; spurs of middle tibia 48 and 44, 56 and 40μm long; of hind tibia 128 and 32, 120 and 48μm. Comb of 9, 11 spines the longest about 50, 52μm long. Tarsomeres with pseudospurs: 2 on ta_1 and ta_2 of mid- and hindlegs. Pulvilli absent. Lengths (in μm) and proportions of legs:

	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5
p_1	1040, 1040	1200, 1240	680, 700	400, 420	280, 280	160, 180	140, 140
p_2	1160, 1240	1200, 1280	480, 500	260, 300	200, 220	140, 148	132, 140
p_3	1360, 1360	1700, 1720	640, 660	420,420	320, 320	200, 200	140, 160

•	**LR**	**BV**	**SV**	**BR**
p_1	0.55, 0.56	2.9, 3.0	3.2, 3.35	2.4, 2.6
p_2	0.375, 0.42	3.65, 3.97	4.9, 5.1	2.1, 2.5
p_3	0.375, 0.39	3.36, 3.44	4.6, 4.8	1.6, 3.2

Abdomen. Tergites densely clothed with setae.

Hypopygium (Fig. 1d). Anal point transparent, bare, narrow, parallel-sided (20, 32μm long, 2 μm wide), sharply pointed at tip, set on a conical pubescent base, which merges with the narrowing apex of tergite IX; tergite IX with 28 setae of various lengths; laterosternite IX with 14, 16 long setae. Phallapodeme 76μm long; transverse sternapodeme 120μm long (n=2), oral projections weak. Virga absent. Gonocoxite 280, 290μm long; inferior volsella narrow, reaching to 0.82, 0.84 gonocoxite length, hardly expanded apically. On the ventral connection between the gonocoxites is a knob-like, posteriorly directed projection, in the holotype bearing short, conical projections (not discernible in the paratype). Gonostylus 120μm long (n=2), medially expanded, thereafter narrowed to tip. Megaseta 16, 18μm long. HR 2.3, 2.4. HV 3.0, 3.2.

Distribution.

Known only from Coleraine in Northern Ireland. The collection of an adult on the surface of the River Bann does not necessarily mean that the specimen spent its larval time in the river. Most drowned adults taken there do develop from truly aquatic larvae, but *Metriocnemus fuscipes* (Meigen) has been reared from moss on rocks submerged by the River Bann at each high tide.

Discussion.

The general morphological features of the specimen initially suggested a *Metriocnemus eurynotus* (Holmgren), an abundant chironomid during the winter months in the locality. When keyed in Langton and Pinder (2007) the specimen ran to *M. fuscipes*, but a number of hypopygial characters (shape of anal point, gonostylus and inferior volsella, projection between the gonocoxite bases) are too different from the norm for that species, even for inferring an extreme aberration. In Sæther's (1995) key to males of the genus, at couplet 27, the parallel-sided anal point causes the new species to run to *M. exilacies* Sæther, but in the latter there are far fewer setae on the wing veins and no basal expansion on the inferior volsella. If the anal point of the River Bann specimen is assumed to be exceptional for the species and the alternative route is taken in couplet 27, the result is *M. fuscipes*. Som *et al.*

(2013) present a key to the genus *Metriocnemus* that is Sæther's key with some Oriental species inserted. The couplets referred to above are not affected.

The author has checked syntype specimens at the Natural History Museum (NHM), London, for three Walker (1856) species names treated as synonyms of *M. fuscipes* by Edwards (1929) and Sæther (1989), namely *Chironomus alligatus*, *C. fertus* and *C. obsistens*. For one adult male syntype of each species the hypopygium had been mounted on a strip of celluloid in a drop of mountant by Edwards. Over time the mountant has cracked and in the cases of *M. alligatus* and *M. fertus* the hypopygia have flaked off and are missing. The hypopygium of the *M. obsistens* syntype examined is still attached and confirms the synonymy with *M. fuscipes*.

Zavřel (1941) divided *Metriocnemus* on larval and pupal characters into two species groups: the *fuscipes* group and the *hygropetricus* group, whilst pointing out that in some species characters of both groups are expressed. Sæther (1989) stated: 'These groups, the *fuscipes* and the *hygropetricus* groups, may not be fully congruent with those of the adults, or there may be more than two groups'. In this paper, Sæther showed that *Chironomus obscuripes* Holmgren is a senior synonym of *M. hygropetricus* and renames the *hygropetricus* group as the *obscuripes* group. Later, Sæther (1995) renamed the *obscuripes* group as the *eurynotus* group, noting that *Chironomus obscuripes* Holmgren is preoccupied by *Chironomus obscuripes* Meigen as mentioned by Sublette and Sublette (1965). He divides the adults of the *eurynotus* group from the *fuscipes* group on the presence of a well-developed virga, which is lacking in the *fuscipes* group. *Metriocnemus alisonae* thus belongs to Sæther's *fuscipes* group. However, Sæther noted that some *Metriocenemus* species show characters of both groups as do other authors (Donato and Paggi 2005). Donato and Siri (2010) presented a tentative phylogeny of *Metriocnemus* based on 42 continuous and 7 discrete characters, mostly derived from literature. Their phylogeny does not recover the *fuscipes* and *eurynotus* groups as discrete entities. Nevertheless, it will be interesting to discover whether the juvenile stages of *M. alisonae* conform to Zavřel's *fuscipes* group.

Acknowledgements

I am grateful to Erica McAlister and Duncan Sivell for access to the Walker types in the NHM, and to Martin Spies and Declan Murray for their helpful comments on the original manuscript.

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A fifth British locality for *Lonchaea bukowskii* Czerny (Diptera, Lonchaeidae) – During the July 2013 Dipterists Forum field meeting, based at Lancaster University, Martin Drake passed me two female *Lonchaea* specimens he had collected from Park Wood, Whitbarrow (SD433875), in vice-county Westmorland. I determined these as *L. bukowskii* Czerny, 1934, which is described as "a rather enigmatic species, turning up as single females between May and October in widely separated localities" (MacGowan, I. and Rotheray, G.E. 2008. British Lonchaeidae. Diptera, Cyclorrhapha, Acalyptratae. *Handbooks for the Identification of British Insects* Vol. 10(15). 142 pp. Royal Entomological Society, London). There are just four previous British localities for *L. bukowskii,* with records from Perthshire, Buckinghamshire and Somerset (MacGowan and Rotheray *op. cit.*), plus Hampshire (Perry, I. 2010. A second British locality for *Earomyia netherlandica* MacGowan, 2004 and records of other Lonchaeidae. *Dipterists Digest* (*Second Series*) **17,** 73-75).

The preferred habitat of *L. bukowskii* is poorly understood, although Iain MacGowan (2012. A description of the male of *Lonchaea bukowskii* Czerny (Diptera, Lonchaeidae). *Dipterists Digest* (*Second Series*) **19,** 73-76) suggested that it occurs in greatest numbers in boreal woodland. The Westmorland specimens were collected from an area described as a small stony-silty stream with much dead wood, under light birch cover, with some planted conifers. The woodland here overlies limestone, and in the immediate vicinity of the capture location, *Juncus* and other herbs of damp ground were much in evidence (Martin Drake *pers. comm.*).

I thank Martin Drake for providing specimens and details of the capture site, plus useful comment on the draft note, and Iain MacGowan for information about British records for *L. bukowskii* – **NIGEL P. JONES,** 22 Oak Street, Shrewsbury, SY3 7RQ

Notes and observations on *Gonia picea* (Robineau-Desvoidy) (Diptera, Tachinidae) – During an early spring day in 2012, it was my good fortune to encounter *Gonia picea* (Robineau-Desvoidy, 1830). As chance would have it, this was one of three occasions that I would meet with this species in the course of a week, and where at one site, it was common enough to make observations quite easily. My first encounter with *G. picea* was on 19 March 2012 at Osmington Mills (SY731822), Dorset (V.C. 9), and here

one female was caught near the ground, visiting flowers of lesser celandine *Ranunculus ficaria*. This was a fairly open site, bordered by hedgerows and periodically grazed by cattle, but with some raised ground adjacent, which supports some typical downland species, characterised in season by Lepidoptera such as *Polyommatus bellargus* (Rottemburg, 1775) and *Thymelicus acteon* (Rottemburg, 1775).

The second occasion was on 23 March 2012 and was at Sutton Poyntz (SY706842), Dorset (V.C. 9), where they occurred in grassland at the foot of steep chalk hills and adjacent to a small wooded copse; this area is largely sheltered with *Ranunculus ficaria* frequent. Here it was present in reasonable numbers and was always noted at ground level, either alighting onto the ground or visiting the flowers; it was not seen in any other situation.

My final observation of the year, took place at the Upton Fort area (SY743817), Dorset (V.C. 9), on 25 March 2012. This site consists of cattle/horse grazed fields bordered by hedges and scattered trees and, for whatever reason, the grass here was markedly longer than at the two previously mentioned sites and the possibility of *G. picea* occurring here was not even considered. However, whilst drawn to a flowering *Salix cinerea* I was surprised to see numbers of *G. picea* at the flowers of this *Salix*, in contrast to its behavour at the other sites. It soon became clear that it occurred in good numbers at various heights in this and some adjacent flowering *Salix* trees. This is not something that I had ever witnessed in all my years of checking flowering *Salix cinerea* or any *Salix* for that matter, and in forthcoming springs it may well be worth checking for it in any of the situations here described – **MICK PARKER,** 9 East Wyld Road, Weymouth, Dorset, DT4 0RP

***Pseudoseps signata* (Fallén) (Diptera, Piophilidae) found in Somerset –** In 2011 I was contracted by Wessex Water to take part in a survey of grassland blocks around Clatworthy Reservoir (ST0331) in Somerset, V.C. 5. As part of one of my timed sweep-net samples in one compartment at the north-west end of the reservoir, I swept a flowering hawthorn (*Crataegus*). On examining the contents of the net, I saw a very small fly with a strikingly snowy-white frons and infuscated wing tips that I could not even place in a family. Once home it readily keyed to Piophilidae, and then to *Pseudoseps signata*, despite it not looking much like the usual members of this family encountered. The specimen was exhibited at the 2011 Exhibition of the British Entomological Society (Gibbs, D. 2012. **In** 2011 Annual Exhibition. *British Journal of Entomology anf Natural History* **25,** 167), when only details of the locality and date were reported.

This fly seems to be very rare in Britain, with the only previous records coming from five localities in Speyside, Scotland. It was first recorded from Britain by B.H. Cogan and J.P Dear (1975. Additions and corrections to the list of British acalyptrate Diptera. *Entomologist's monthly Magazine* **110,** 173-181) from Aviemore (25 May to 9 June 1913) and Nethy Bridge (1 and 7 June 1934). There was one other earlier record from Craigellachie NNR, near Aviemore (26 June 1967, D.M. Ackland). More recently, it has only been recorded by Ivan Perry (*pers. comm.*) at two sites: Loch an Eilein NNR (23 May 1991) and Kinrara (12 June 1998). It is a boreal species, apparently only otherwise known from Denmark, Sweden and Finland. This record from Somerset is well outside its previous British range, the site being lowland (about 240m asl) and any woodland present is predominantly broad-leaved.

The specimen is currently retained in my own collection. I would like to thank Wessex Water for funding the work – **DAVID GIBBS,** 6 Stephen Street, Redfield, Bristol BS5 9DY

Dipterists Digest 2013 **20**, 187-190

A new species of *Chrysotus* Meigen (Diptera, Dolichopodidae) from Primorye

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Summary
A new species *Chrysotus brooksi* Negrobov, Selivanova & Maslova, sp.n. (Dolichopodidae) is described from Primorye, Russia. It is close to *Chrysotus melampodius* Loew, but differs by the chaetotaxy of the hind tibia and in having black legs.

Introduction

The genus *Chrysotus* Meigen, 1824, comprising more than 320 species, is distributed all over the world (Grichanov 2013). From the Palaearctic region 70 species have been described. The species of this genus have a relatively small number of diagnostic morphological characters, but most species are very well distinguished by the shape of the apex of the phallus.

The Palaearctic species of *Chrysotus* were revised by Negrobov and his co-workers in a series of publications (Negrobov 1980, Negrobov and Maslova 1995; Negrobov *et al.* 2000, 2003). Later Wang and Yang (2006, 2008, 2009) and Wei and Yang (2007) described a number of new Palaearctic species of *Chrysotus* from China. Naglis (2010) described a new species *C. dischmaensis* Naglis, 2010 from Switzerland, and Grichanov (2012) described *C. chukotkensis* Grichanov, 2012 from Chukotka (Far East of Russia). Negrobov *et al.* (2000) published the most recent key to males of the Palaearctic species. Yang *et al.* (2011) published a key to males of the known Chinese species.

For the fauna of Primorye and Sakhalin 10 *Chrysotus* species are currently known – *C. cilipes* Meigen, 1824 – Primorye, Europe; *C. corniger* Negrobov & Maslova, 1995 – Primorye; *C. glebi* Negrobov & Maslova, 1995 – Primorye; *C. gramineus* (Fallén, 1823) – Sakhalin, Europe; *C. logvinovskii* Negrobov & Zurikov, 2000 – Sakhalin; *C. nudisetus* Negrobov & Maslova, 1995 – Sakhalin; *C. parilis* Parent, 1926 – Primorye, China; *C. pseudocilipes* Hollis, 1964 – Primorye, China, Nepal; *C. suavis* Loew, 1857– Sakhalin, Europe; *C. zlobiniani* Negrobov & Maslova, 1995 – Sakhalin (Negrobov *et al.* 2013). Here we describe a further species from Primorye.

***Chrysotus brooksi* Negrobov, Selivanova & Maslova, sp.n.** (Figs 1-5)

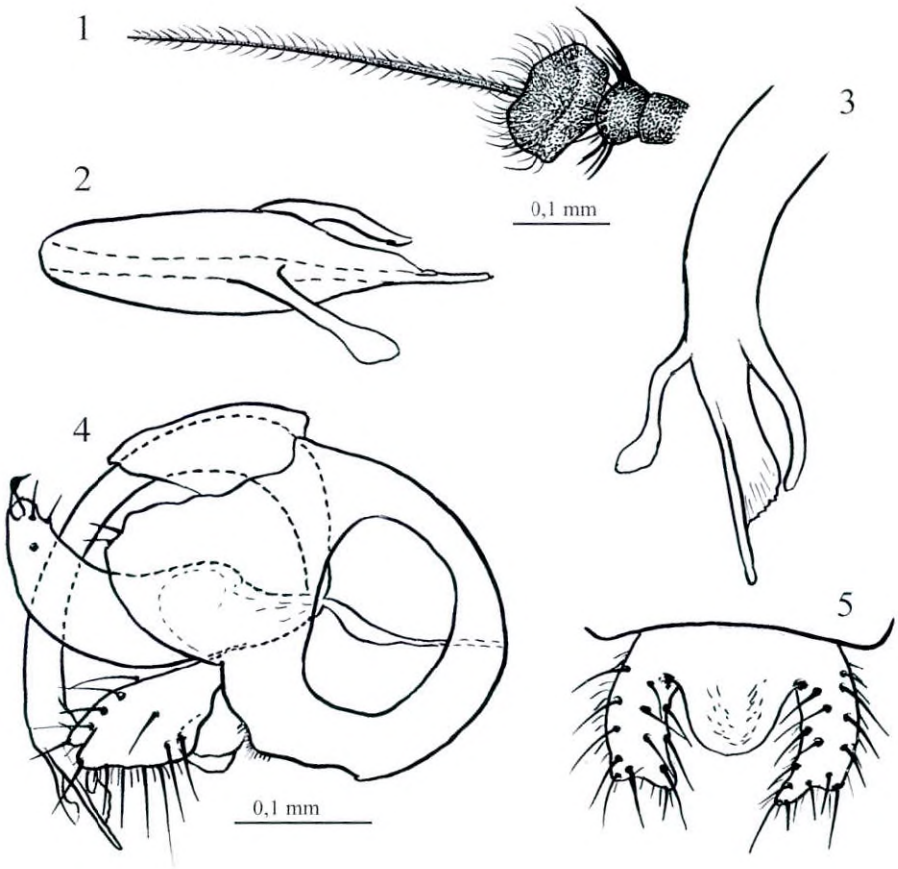
Diagnosis. Antenna black, postpedicel (first flagellomere) small, oval, with rounded apex, eyes almost contiguous on the face, lower postoculars white, legs black, fore coxa with black hairs, fore tibia with 1 strong anterodorsal seta, mid tibia with 3 anterodorsal setae and 1 posterodorsal seta, hind femur without long anteroventral hairs, hind tibia with long ventral hairs that are longer than the diameter of tibia, hind tarsus with short ventral hairs, lower calypter with black cilia, haltere yellow, phallus with two lateral preapical processes at left and right sides.

Description. Length (mm): body 2.0-2.2, wing 1.8-1.9.

Male. *Head.* Frons metallic green, shining; face brown; eyes almost contiguous; antenna

(Fig. 1) black, postpedicel small, oval, with rounded apex, higher than long, shortly white pubescent; stylus apical, shortly pubescent, more than twice as long as first three antennal segments together; palpus small, brown with long black setae; proboscis brown; lower postoculars white.

Thorax. Shining green, weakly grey pollinose; pleura grey pollinose; acrostichals biseriate, well developed; 6 pairs of strong dorsocentral bristles; proepisternum with black setae; scutellum with 1 pair of strong medial scutellars and 1 smaller pair laterad.



Figs 1-5. ***Chrysotus brooksi*****, sp.n. 1, antenna; 2, phallus, right lateral view; 3, phallus, ventral view; 4, hypopygium, left lateral view; 5, cerci, dorsal view.**

Legs black. Fore coxa with black hairs. Fore tibia with 1 strong anterodorsal seta and short hairs. Fore tarsus with short ventral hairs, which are not longer than the diameter of tarsus. Mid tibia with 3 anterodorsal, 1 posterodorsal and short ventral hairs. Hind femur

with 2-3 preapical anteroventral setae and short anteroventral hairs. Hind tibia with 3 anterodorsals, 1 posterodorsal and, along its entire length, long black ventral hairs that are longer than the diameter of tibia. Hind tarsus with short ventral hairs, which are not longer than the diameter of tarsus. Length ratio from tibia to fifth tarsomere: fore leg: 2.8: 1.9: 0.6: 0.5: 0.3: 0.3, mid leg: 2.9: 1.6: 0.7: 0.6: 0.3: 0.4, hind leg: 3.3: 1.9: 0.8: 0.6: 0.3: 0.3.

Wing. Membrane slightly darkened; veins dark; R_{4+5} and M_{1+2} parallel; costal section between R_{2+3} and R_{4+5} about twice that of costal section between R_{4+5} and M_{1+2} (2.0: 1.1); distal section of M_{1+2} 1.8 times as longer as basal section; distal part of CuA_1 5.5 times as long as crossvein dm-cu; lower calypter with black cilia; haltere yellow.

Abdomen. Metallic green, grey pollinose, covered with black hairs. Hypopygium (Fig. 4) with epandrium nearly circular; surstylus wide, crescent-shaped, curved ventrally at apex, with small setae on apical part; apex of the phallus (Figs 2-3) with a short straight process, to the left of an oval plate, and with two lateral preapical processes, on the left and right side respectively; cercus wide oval, with short hairs.

Female unknown.

Type material. Holotype ♂, RUSSIA, Primorye, State Nature Preserve " Kedrovaja Padj", 4. 09.1978 (Sviridova) (Zoological Institute in St Petersburg). Paratypes: 1 ♂, same data as holotype (Zoological Institute in St Petersburg); 1 ♂, RUSSIA, Primorye, Ternej, 08.06.1977 (Zlobin) (University of Voronezh).

Etymology
The species is named after the Canadian dipterist Dr Scott Brooks.

Remarks
According to the key to the Palaearctic representatives of the genus *Chrysotus* (Negrobov *et al*. 2000), the new species is close to *Chrysotus melampodius* Loew, 1957. It differs from *C. melampodius* by the following characters:

- Hind tibia without long hairs. Fore trochanter yellow–brown, mid and hind knees yellow (south of Europe) ..... *Chrysotus melampodius* Loew
- Hind tibia with long hairs, which are longer than the diameter of tibia. Fore trochanter, mid and hind knees black (Primorye) ..... *Chrysotus brooksi* sp.n.

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The distribution and abundance of the rare flies *Dolichopus laticola* Verrall and *D. nigripes* Fallén in Norfolk fens (Diptera, Dolichopodidae)

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Summary
The distribution of *Dolichopus laticola* Verrall, 1904 and *D. nigripes* Fallén, 1823 was investigated in Norfolk Broadland fens over two years. *Dolichopus laticola* had a wider distribution than previously thought, occurring in many freshwater fens but avoiding mildly brackish sites. It was re-found at Verrall's type locality. *Dolichopus nigripes* was far more restricted to the Bure valley fens, where it has long been known, but with newly discovered populations nearby in the Ant valley fens. *Dolichopus nigripes* is particularly vulnerable, whereas the British populations of *D. laticola* are probably of international importance.

Introduction

The two species *Dolichopus laticola* Verrall, 1904 and *D. nigripes* Fallén, 1823 were included in the UK Biodiversity Action Plan when it was revised in 2007 (Biodiversity Reporting and Information Group 2007). They are considered Endangered (Falk and Crossley 2005) as they have exceedingly limited distributions, primarily in high quality fenland in Norfolk. This paper describes their distribution in these fens. Their relationships with environmental features and with the dolichopodid assemblage are described elsewhere (Drake *in prep.*).

Dolichopus laticola was, until 2010, known only from the fens of the Norfolk Broads (Falk and Crossley 2005). Verrall (1904) described it as new to science from specimens caught at Ormesby Broad in 1888, and later Collin (1952) recorded it from near Horning Ferry in the Bure valley in 1939 and 1952. A record from 1979 extended its distribution to Sutton Fen in the Ant valley, and an extensive survey by the Nature Conservancy Council confirmed that the Bure and Ant valleys were the only known areas for *D. laticola*, which was found in a few samples in 1988 (Laurence 1995). More records from within this geographic range were obtained in surveys by the author in 2007-2009 (Drake 2007; Lott *et al.* 2009, 2010). In 2010 a strong population was discovered at Walberswick National Nature Reserve, a large wetland reserve in Suffolk about 40km south of the Broads (Vincent 2011b). A single male was recorded in 2012 at Thompson Common, Norfolk, about 45km west of the Broadland fens (James McGill *pers. comm*). Outside Britain, *D. laticola* is known only from Belgium and Denmark (Pollet *et al.* 2012).

Dolichopus nigripes was added to the British list on the basis of a single male caught by Dale on 2 August 1839, labelled from Glanvilles Wootton, Dorset (c. ST6708), which is the village where Dale lived, although the fly was presumably caught at one of the valley fens in this area. The species is not mentioned in C.W. Dale's *History of Glanville's Wootton* (Dale 1851). This isolated and old record remains the only one outside Norfolk, but is likely to be correct as the specimen was seen and its identity verified by Verrall (1904) under its synonym *D. falleni* Loew. All other published records are from the Bure valley fens in Norfolk, where it appeared to be restricted to the Bure Marshes National Nature Reserve where Collin (1952) first found it. Elsewhere in Europe, it has been recorded from Hungary to Scandinavia and central Russia (Pollet *et al.* 2012).

Methods

The aim of the project in the first year was to determine the habitat requirements of the two *Dolichopus* species, and for this purpose intensive sampling was undertaken on six fens of high quality where one or both *Dolichopus* species had been recorded in a recent survey undertaken for the Broad Authority (Lott *et al.* 2009, 2010). Sampling took place on ten consecutive days from 20 to 29 June 2010, when the weather was almost constantly fine. The period was chosen as both species of *Dolichopus* had been recorded between these dates in 2007-2009; this period was later shown to be the peak flight period for *D. laticola* (Vincent 2011b). In the second year, fens with a broader range of quality were sampled over a wide area that encompassed much of the range of fen habitat in the river valleys of the Broads. Sites were selected using the distribution of fen shown by George (1992). Sixteen sites were visited in the period 16 to 23 June 2011, including Sutton Fen which had been visited in the previous year. This period followed an exceptionally dry and warm spring when many adult insects were active earlier than normal. Official drought was declared on 10 June in eastern England, although the survey coincided with the onset of very unsettled weather, with rain falling for long periods or in heavy frequent showers on every day of the survey.

Samples were collected using a standard 10 minute sweep-net sample which consisted of sweeping vegetation for about 25 sweeps and removing the flies from the net using a pooter, then repeating this until 10 minutes had elapsed. All larger dolichopodids were collected but tiny species such as those in the genera *Achalcus*, *Micromorphus*, *Telmaturgus* and *Teuchophorus* were probably often overlooked. Large dark *Dolichopus* were often noted flying rapidly out of the net away from the light so the net had to be entered carefully. Some *D. nigripes* or *D. laticola* may have been under-recorded in the first day or two before this unusual behaviour had been noticed. In 2010 the area swept was usually about 30-40m across or a 50-80m length of ditch margin, and was selected using a stratified-random method. In the second year, the aim was to record distribution, so there was no need to restrict sampling to small randomly selected patches and instead the patches were often up to 100m across. Distribution data from surveys undertaken by the author in 2007-2009 were included in the analysis (Drake 2007; Lott *et al.* 2009, 2010).

The fen habitats surveyed

Fen and wet woodland occupy about 55km^2 in the Norfolk Broads, representing the largest single block of this habitat in Britain (George 1992). Most of the fen is base-rich flood-plain mire but two valley mires, both sampled, are found in the north of the area. The fen communities are exceptionally varied but three are widespread in the Broads, and all were included in the samples. The characteristic and species-rich plant community of the Ant and Bure floodplains is *Phragmites australis-Peucedanum palustre* tall-herb fen (S24) which Harding *et al.* (2010) described as having an eclectic mix of abundant species, often with no single dominant, although Rodwell (1995) gave *Phragmites australis* (reed), *Calamagrostis canescens* and *Cladium mariscus* as the dominant tall monocotyledons, with *Lythrum salicaria*, *Eupatorium cannabinum* and *Filipendula ulmaria* (among others) as the most frequent tall herbs. The lowest layer of herbs includes *Mentha aquatica* and *Galium palustre*. With increasing nutrient enrichment or reduced management, this community grades into a more species-poor version *Phragmites australis-Eupatorium cannabinum* tall-herb fen (S25). Fewer samples were taken from other communities which included *Phragmites australis* reedbeds (S4), *Juncus subnodulosus-Cirsium palustre* fen-meadow (M22), *Glyceria maxima* swamps (S5) in the tidal Yare fens, and carr woodland or scrub, often dominated by *Salix cinerea* or *Alnus glutinosa*.

Results

General

In 2010, 70 species of dolichopodids were recorded from 179 samples (four contained no dolichopodids, see Table 1) in the six fens, all of which were of high quality for their fauna and flora. *Dolichopus laticola* was the fifth most frequent species of dolichopodid and the second most frequent of 21 species of *Dolichopus* recorded. *Dolichopus nigripes* was the 13th most frequent species in the family and seventh most frequent species of *Dolichopus*. Both species were therefore important constituents of the family in the fens. The following year, when a range of fens of differing conservation interest were sampled, 68 species of dolichopodids were present in 120 of the 124 samples. *Dolichopus laticola* was present in 14% of samples and was ranked 18th in order of frequency of all species recorded, and was the ninth most frequent of the 21 species of *Dolichopus* in the samples. *Dolichopus nigripes* was present in only about 4% of samples and ranked 35th of all dolichopodids and was the 17th most frequent species of *Dolichopus*. These between-year differences almost certainly reflected the difference in overall quality of the fens.

In surveys conducted in all five years from 2007 to 2011, records of *D. laticola* were made on 23 May, 16-17 June and 20-29 June, while those of *D. nigripes* were made on 16, 21, 23 and 25-28 June [precise dates: *D. laticola*: 23.v.2007, 17-23.vi.2007, 28-29.vi.2008, 22-23.vi.2009, 21-29.vi.2010, 16-22.vi.2011; *D. nigripes*: 23.vi.2007, 22-23.vi.2009, 21-28.vi.2010, 16.vi.2011]. In these surveys, the numbers of each sex of *D. laticola* recorded were 99 males and 145 females, and those of *D. nigripes* were 58 males and 52 females. No importance is attached to the sex ratio since it varied widely in other frequently occurring *Dolichopus* on the fens, for example, low values for *D. pennatus* Meigen (0.70) and *D. picipes* Meigen (0.67) and high values for *D. plumipes* (Scopoli) (1.48) and *D. simplex* Meigen (1.73) in the six fens sampled intensively in 2010.

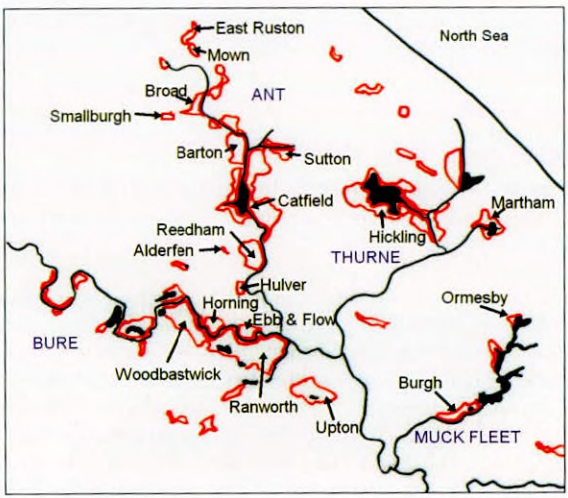

Fig. 1. Rivers and broads (black), and fens (red outline) in northern Broadland, Norfolk. Surveyed fens are labeled.

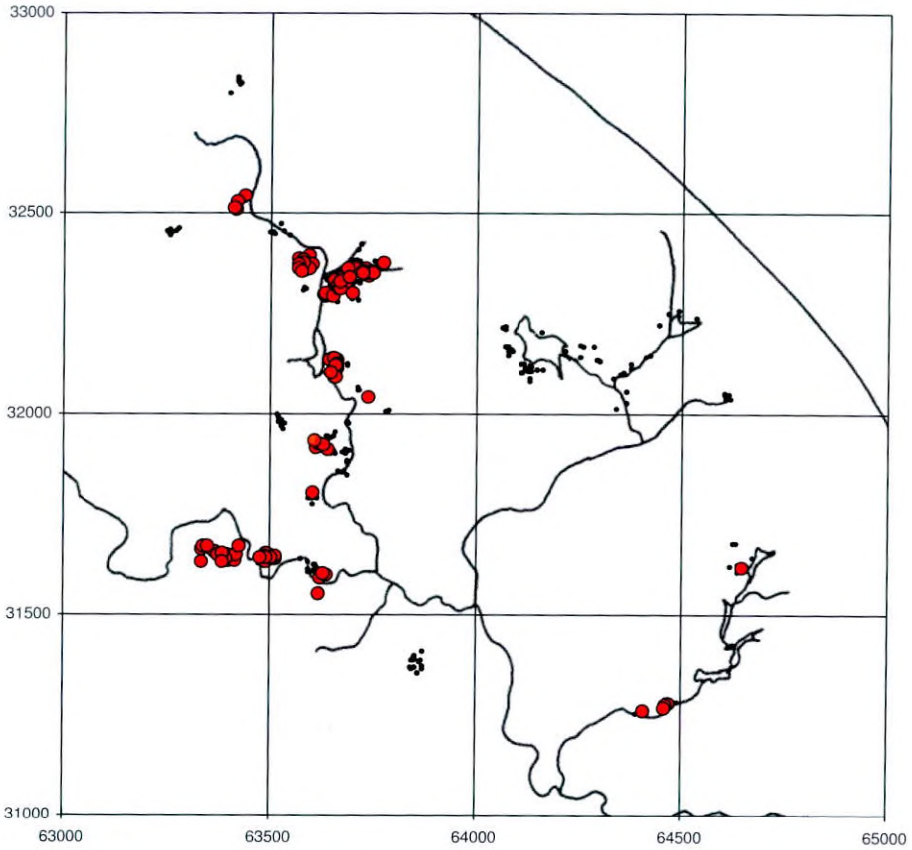

Fig. 2. Distribution of *Dolichopus laticola* in northern Broadland fens. Red circles – recorded in 1979-2010; black circles – no records. Grid squares are at 5km intervals.

Distribution

The distribution of both species in Norfolk is shown using all available records included in the national recording scheme for Empidoidea (Figs 1-3, showing only northern rivers where either species were recorded). About 625 standard 10-minute sweep-net samples were taken in the period from 2007 to 2011 by the author, and those without either *Dolichopus* species show where they are almost certainly absent or very scarce. *Dolichopus laticola* was moderately widespread and occupied blocks of fen that were more-or-less connected along the rivers (Table 1, Fig. 2). In 2010 it was more frequent in the Ant fens, where it was present in about half to three-quarters of samples, than in the Bure fens where it was found in a third or fewer samples (Table 1). The numbers per sample were highest at Sutton and Barton, much lower at Horning and Ebb & Flow, and with an intermediate value at Catfield and Woodbastwick. These averages included samples made up from different proportions of habitat types, so were not directly equivalent but they did give an indication of the largest and

smallest populations. In 2011, again more were found in the Ant valley than elsewhere but the records from the Ormesby Broad area represented the first since Verrall (1904) found the species here in 1888. No *D. laticola* were found on the Yare or Waveney sites, which might be due to the fact that surveys of these were marred by showers and wet vegetation, so that few samples were taken in relation to the available habitat.

Dolichopus nigripes was frequent in 2010 at Woodbastwick Fen in the Bure Marshes NNR and smaller numbers were present in the adjacent Horning Marsh (Table 1, Fig. 3). A single female from Catfield Great Fen in 2010 and a strong population at Reedham Marsh in 2011 were the first records outside the Bure valley, albeit only a few kilometres distant.

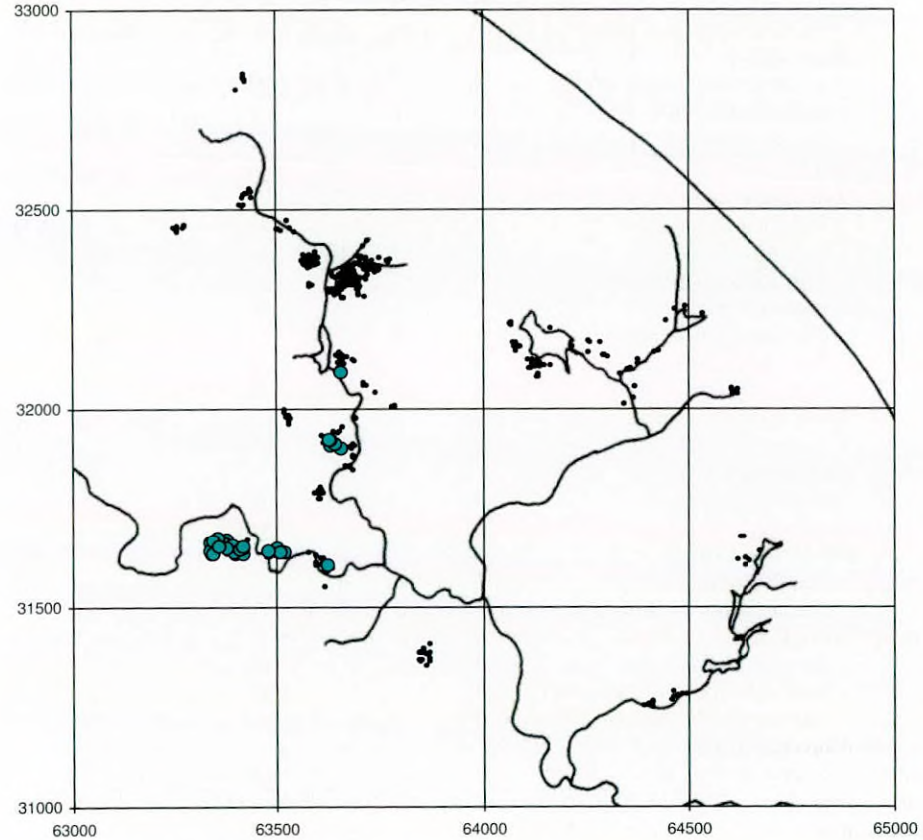

Fig. 3. Distribution of *Dolichopus nigripes* in Norfolk fens. Blue circles – recorded in 1979-2010; black circles – no records.

Table 1. Records of *Dolichopus laticola* and *D. nigripes* in 2010 and 2011, giving the number of samples containing each species (Oc), number of individuals (No) and the relative abundance (Ra) of the species per site, expressed as the average number of specimens per sample (including samples without the species).

Site	*D. laticola*			*D. nigripes*		
(total samples in brackets)	Oc	No	Ra	OC	No	Ra
2010						
Ant valley						
Barton Fen (32)	17	40	1.25	0		
Sutton Fen (39)	29	72	1.85	0		
Catfield Great Fen (21)	11	20	0.95	1	1	0.05
Bure valley						
Woodbastwick Fen (45)	15	37	0.82	27	88	1.96
Horning Fen (29)	9	10	0.34	3	6	0.21
Ebb & Flow (17)	3	4	0.24	0		
2011						
Ant valley						
Alderfen Broad (8)	0			0		
Broad Fen (10)	4	12	1.20	0		
East Ruston Allotments (6)	0			0		
Hulver Ground (7)	1	1	0.14	0		
Reedham Marsh (13)	5	10	0.77	5	7	0.54
Smallburgh Fen (10)	0			0		
Sutton Fen (4)	2	4	1.00	0		
Bure valley						
Upton Fen (11)	0			0		
Thurne valley						
Hickling Broad (8)	0			0		
Martham Broad (6)	0			0		
Muck Fleet valley						
Burgh Common (11)	4	7	0.64	0		
Ormesby Broad (8)	1	1	0.13	0		
Yare valley						
Strumpshaw Fen (7)	0			0		
Surlingham Church Marsh (7)	0			0		
Surlingham Marsh (5)	0			0		
Waveney valley						
Stanley Carrs (3)	0			0		

Discussion

Many more records of both species were made than in all previous recording, both in terms of sites and numbers of individuals. *Dolichopus laticola* was more widespread in Broadland than previously thought and the survey extended its range slightly to the north and east, beyond that previously recorded in the last c. 125 years. The highest density of this species was centred in the Ant valley fens. The discovery in 2010 of a large population at Walberswick Marshes in Suffolk (Vincent 2011b) suggests that the species may occur at other fens of high quality between here and the Bure catchment, but it was not found on the Yare in

recent surveys. Its occurrence at Thompson Common is remarkable as this site is not primarily old fenland, although it does have ancient wetlands in the form of pingo pools surrounded by fen vegetation.

Of particular interest was the occurrence of *D. laticola* at the south-eastern sites of Ormesby Broad and Burgh Common. Verrall (1904) described the species as new to science from Ormesby Broad, where he collected it on 28 June 1888, and he mentions "If my memory serves me true they were taken in marshy rushy ground near the north-west of the Broad." The population recorded in the present survey at Ormesby Broad may represent the same population as the original specimens, perhaps collected close to Verrall's site. This area was not typical fen in 2011, being instead composed of wide wet rides with fen or swamp vegetation within deciduous woodland. Burgh Common was traditional fen with cattle grazing tall reed-dominated fen or shorter mixed fen herb vegetation.

The absence of *D. laticola* from the catchments of the Thurne and Yare rivers may be real. Not much ground was surveyed in 2011 in the Thurne valley at Hickling or Martham broads in the present survey but many samples were taken in 2007-2009 at sites around the Hickling Broad and at adjacent sites along the Meadow Dyke to Heigham Sound and Horsey Mere. The area is slightly brackish and this may be one reason for the fly's absence here. This cluster of wetlands is also isolated by grazing marsh from the Ant and Bure populations. Poor water quality may be implicated in the apparent absence of *D. laticola* from the Yare valley as the river passes through the city of Norwich a few kilometres upstream of the fens, and the adjacent fens also suffer occasional brackish incursions as the river is tidal, although they are fresh for most of the year. The two effects of more nutrient-rich and occasionally brackish water feeding into the fens have resulted in vegetation of relatively low botanical interest, which seems to be reflected in a similarly lower entomological value.

The patchy distribution of *D. laticola* suggested that barriers that appear trivial may hinder movement, as exemplified by two sites of high botanical quality where the species' absence was unexpected. Upton Fen in the Bure floodplain is separated from the nearest record of *D. laticola* at Ranworth Marshes by about 1km of grazing marsh. This marsh may have been more intensively farmed and perhaps even converted to arable land in the past, although the ditches now have a moderately high quality for aquatic invertebrates (Drake *et al.* 2010). In the north of the Ant valley, the small atypical spring-fed valley mire of Smallburgh Fen is separated by about 1km from the large populations of *D. laticola* at Broad Fen, by a main road and a small hamlet. These two fens are the only examples surveyed that are situated well away (about 1km) from the main rivers, which provide obvious corridors for insect movement. However, the possibly century-old population at Ormesby Broad may indicate that small, isolated populations of *D. laticola* can survive for long periods.

In contrast to the fairly wide occurrence of *D. laticola*, the distribution of *D. nigripes* remained small although not confined entirely to the Bure Marshes as previously thought. A thriving population was located at Reedham Marsh, and a single female recorded from Catfield Great Fen in 2010 suggested a sparse population along some of the Ant fens. However, intensive surveys in 2007-2009 of Catfield Great Fen, Sutton Fen and Barton Fen revealed no *D. nigripes* so possible populations here must have been tiny. It is not clear why this species did not occur on these exceptional fens north of Catfield, despite there being more-or-less continuous wetland habitat along the River Ant.

The two species illustrate the misleading impression of population vulnerability when distributions are viewed at different scales (Thomas and Abery 1995). In Broadland, *D. laticola* has been recorded from 127 100x100m squares in three hectads ("10 km squares"), whereas *D. nigripes* was found in 44 100x100m squares in two hectads. The ratio of 3:2

hectads compared to 127:44 small squares suggests that *D. nigripes* is more liable to local extinction, despite appearing at a large scale to be only a little less widespread than *D. laticola*. In a British context, *D. nigripes* should be considered particularly vulnerable, although at a European scale it has a wide distribution. However, *D. laticola* is found elsewhere only in Denmark and Belgium (Pollet *et al.* 2012), so the British populations should be considered of international importance.

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***Dolichocephala thomasi* Wagner (Diptera, Empididae) in Speyside, Scotland** – The genus *Dolichocephala* includes some of the smallest aquatic empids but their conspicuously marked wings makes them obvious once caught in the net.

Dolichocephala thomasi Wagner, 1983 is a relatively recently described species, which was added to the British list when it was found at three widely separated sites in the Scottish Highlands (MacGowan, I. 1996. The occurrence of *Dolichocephala thomasi* (Diptera, Empididae) in Scotland. *Dipterists Digest (Second Series)* **2,** 80-81). The only other published British record is that by Roy Crossley (2004. Entomological report Diptera: Tipuloidea and Empidoidea. *The Naturalist* **129,** 153-156), who reported a 1984 record by Tony Irwin from Malham in the English Pennines. It is a North European species, otherwise known from Germany, Poland, the Czech Republic and Norway.

During the Dipterists Forum summer field meeting based at Lagganlia, Inverness-shire (Highland region), in the summer of 2012, I found *D. thomasi* at two adjacent sites in the Insh Marshes in the floodplain of the River Spey: Insh Marshes, 1♂ at a wide and well-vegetated ditch in unshaded flat pasture, NH806017, 25 July 2012; 3♂, 4♀ on a narrow (<5m wide) sandy shore of the River Spey at a point where it is uncharacteristically sluggish and with almost no flow at the shore line, which was trampled by cattle and sparsely shaded by small alders (*Alnus glutinosa*), same date, NH802018. The marshes fall between two of McGowan's sites so the records are not unexpected. On the same day, Adrian Plant found a female, which is almost certainly this species at Uath Lochans (NH8302), about 3km from the Insh Marshes localities. It was taken from the *Sphagnum* and *Juncus* zone at the margin of a small lake surrounded by woodland, mainly of pine.

McGowan (*op. cit.*) suggested that the habitat may be wooded streams, whereas the Insh Marshes localities were open cattle-grazed sites in a broad floodplain where the water was still or almost so. It is possible that the microhabitat – muddy or sandy water margin, which are typical of the commoner species in the genus – is more important than the wider habitat. I thank Adrian Plant for permission to publish his record – **C. MARTIN DRAKE,** Orchid House, Burridge, Axminster, Devon, EX13 7DF

Corrections and changes to the Diptera Checklist (30) – Editor

It is intended to publish here any corrections to the text of the latest Diptera checklist (publication date was 13 November 1998; the final 'cut-off' date for included information was 17 June 1998) and to draw attention to any subsequent changes. All readers are asked to inform me of errors or changes and I thank all those who have already brought these to my attention.

Changes are listed under families; names new to the British Isles list are in bold type. The notes below refer to addition of 7 species and deletion of 3 species, resulting in a new total of **7083** species (of which 38 are recorded only from Ireland). As in the 1998 checklist, + indicates occurrence in Ireland (as well as Britain) and ++ in Ireland but unrecorded from Britain.

An updated version of the checklist, incorporating all corrections and changes that have been reported in *Dipterists Digest*, is now available for download from the Dipterists Forum website. It is intended to update this regularly.

Cecidomyiidae. A monograph by M. JASCHHOF and C. JASCHHOF (2013. The Porricondylinae of Sweden (Diptera: Cecidomyiidae) with notes on extralimital species. *Studia dipterologica Supplement* **20,** 1-391) has resulted in the following changes to the British list [although this work has joint authorship it is stated that all new names should be attributed to Mathias Jaschhof and the work is written in the first person throughout]:

Tribes Heteropezini and Winnertziini are referred to a new subfamily **WINNERTZIINAE**, which also includes tribe Diallactiini (not recorded from Britain).

The remaining tribes are retained in PORRICONDYLINAE, in which tribes Dicerurini, Poricondylini and Asynaptini are recognised.

Tribe Dirhizini is included in Tribe Dicerurini

Tribe Holoneurini is included in Tribe Porricondylini, restoring the situation prior to its elevation in the world catalogue (Gagné 2004).

Asynapta ***saliciperda*** Felt, 1908 [= *populnea* Panelius, 1965]

Coccopsilis paneliusi (Yukawa, 1971 – *Holoneurus*) [transferred from *Holoneurus*, which is now unrecorded from the British Isles]

Cassidoides ***fulvus*** (Kieffer, 1896 – *Holoneurus*) [new to Britain in this paper]

Claspettomyia ***toelgii*** (Kieffer, 1913 – *Epidosis*) [= *chrysanthemi* (Panelius, 1965 – *Pachylabis*)]

Parepidosis ***arcuata*** Mamaev, 1964 [= *longinodis* Panelius, 1965]

Porricondyla lata Mamaev in Mamaev & Krivosheina, 1965 [authorship amended]

SERRATYLA Jaschhof, 2013

Serratyla pubescens (Walker, 1856 – Cecidomyia) [transferred from *Porricondyla*]

Winnertzia ***nigra*** Mamaev, 1963 [accepted as British due to record by Panelius 1965]

The following species, placed in *Porricondyla* by Panelius (1965) and accepted as a valid species by Gagné (2004) is returned to nomina dubia by Jaschhof and Jaschhof (2013):

albiceps Walker 1856 (*Cecidomyia*)

In addition to the above it is noted that *Porricondyla dilatata* Felt, 1908, a Nearctic species, should have been deleted from the British list when it was recognised, following the world

catalogue (Gagné 2004), that *P. lata* Mamaev, 1965 (recorded from Britain by Panelius 1965) was not synonymous with *P. dilatata*. Also *pini* Mamaev, 1960 should have been deleted under *Holoneurus* when it was transferred to the genus *Cassidoides*, also following Gagné (2004).

The following generic change results from R.J. GAGNÉ (2013. Four new genera of Nearctic Cecidomyiidae (Diptera) previously incorrectly placed. *Zootaxa* **3701**(2), 148-158):
CUPRESSATIA Gagné, 2013
Cupressatia siskiyou (Felt, 1917 – *Janetiella*) [this is an introduced species, feeding in seeds within cones of *Chamaecyparis lawsoniana*; the British record cited in this paper is from the New Forest, Minstead, 25.iv.1964, leg. C.R. Vardy]

Chironomidae. The following species are added in the present issue, and *Telmatogeton japonicus* Tokunaga, 1933, previously recorded from Ireland, is newly recorded from Britain:
Chaetocladius ***algericus*** Moubayed, 1989
Metriocnemus ***alisonae*** Langton, 2013 ++
Telmatogeton ***murrayi*** Sæther, 2009

Dolichopodidae. The following species is added in the present issue:
Hercostomus ***rothi*** (Zetterstedt, 1859 – *Dolichopus*)

I.Y. GRICHANOV (2013. Systematic notes on West-Palaearctic species of the genus *Syntormon* Loew (Diptera: Dolichopodidae). pp 3-26. **In** Grichanov, I.Y and Negrobov, O.P. (Eds) *Fauna and taxonomy of Dolichopodidae (Diptera).* Collection of papers. 96 pp. Plant Protection News Supplement. All Russian Institute of Plant Protection RAAS, St Petersburg) proposes that *Syntormon* should be accorded masculine gender, as this was proposed in the original description by Loew. Other changes in this paper are removal of *S. spicatus* (not British) from synonymy of *S. fuscipes*, of which the name of the British species is unchanged, and restoring of *S. pseudospicatus* to synonymy with *S. pallipes*. Other names changing their endings to masculine gender are: *S. aulicus*, *S. bicolorellus*, *S. monilis*, *S. pumilus*, *S. setosus*, *S. silvianus*, *S. tarsatus*. The original genus for the nomen dubium *decoratus* Haliday should be *Plectropus*, not *Porphyrops* as stated.

Syrphidae. The following species is added in the present issue:
Scaeva ***dignota*** (Rondani, 1857 – *Lasiophthicus*)

Lonchaeidae. The following generic synonymy, and nomenclatural change to a British species, results from I. MacGOWAN and T. OKAMOTO (2013. New species of Lonchaeidae (Diptera: Schizophora) from Japan and a re-evaluation of genus *Setisquamalonchaea* Morge. *Entomological Science* **19,** 196-202):
Setisquamalonchaea Morge, 1963 = **SILBA** Macquart, 1851
Silba fumosa (Egger, 1862 – *Lonchaea*)

Tephritidae. *Rhagoletis* should be listed under tribe Carpomyiini (not Trypetini) in the imported species section, as well as in the main list.

Agromyzidae. The author's name of the following species requires a spelling correction:
Ophiomyia heringi Starý, 1930

Dipterists Digest 2013 **20,** 202-204

The distribution and ecology of the freeloader fly *Madiza britannica* Hennig (Diptera, Milichiidae)

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Summary
British records of *Madiza britannica* Hennig, 1937 are detailed and the habitat associations discussed.

Introduction

Madiza britannica Hennig, 1937 is a little-known species, only reported globally from Britain, Denmark, Switzerland, Slovakia, Hungary and Poland (Brake 2013), suggesting a European endemic. It was given RDB 2 - Vulnerable status by Falk (1992). Members of this family have been referred to as freeloader flies, due to the habit of the adults of 'sharing' the meals of predatory spiders and insects, but this behaviour has not been recorded in the genus *Madiza*; the larvae are saprophagous.

British records

In Britain there are two main clusters of records for *Madiza britannica*: the Cambridgeshire fens and adjoining areas of East Anglia (V.C.s 26, 29 and 31), and the historic parklands of the northern and western English Midlands (V.C.s 36, 57 and 58). Additionally there is a single record from the south-west (V.C. 6).

V.C. 6 North Somerset

Failand (ST5271), a series reared from detritus under a dead bird in a hollow elm *Ulmus*, collected 20.iv.1963, 8♂ and 2♀ emerged 29.v-1.vi.1963, J.C. Deeming and A.C. Pont, Oxford University Museum of National History and Natural History Museum, London.

V.C. 26 West Suffolk

Bradfield Woods NNR (TL930573), 1♀ swept, 28.v.2009, IP. The part of the wood it was found in is a typical Boulder Clay ancient coppice woodland with oak *Quercus*, ash *Fraxinus* and hazel *Corylus* as the main components.

V.C. 29 Cambridgeshire

Cambridge (TL45), 1♀ 13.vii.1916 and 1♀ 17.vi.1922, F. Jenkinson, Cambridge University Museum.

Lode (TL527626), reared by IP from a sappy rot hole about 1.5m up in a sycamore *Acer pseudoplatanus* tree, material collected on 2.iv.2008; the top half of the trunk had broken off revealing a large area of heart rot; this part of the trunk regularly has *Polyporus squamosus*; 1♀ emerged 13.v.2008 and 1♀ 14.v.2008; the tree is in a mature plantation of mainly sycamore and beech; also reared were *Drapetis arcuata* Loew, 1859 (Hybotidae), *Systenus leucurus* Loew, 1859 (Dolichopodidae) and *Phaonia cincta* (Zetterstedt, 1846) (Muscidae).

Snailwell (TL6467), 1♂ and 1♀ reared by J.E. Collin from decaying wood debris in June 1906, Oxford University Museum of National History; these are syntypes as this material was used by Hennig (1937) for the species description (there is 1♂ of *M. pachymera* Becker, 1908, in Collin's collection with the same data, which is presumably not a syntype).

Wandlebury (TL495533), reared by IP from a sappy rot hole in a fallen sycamore (height, etc., not noted) collected on 31.xii.1987; 1♂emerged 28.iv.1998, 1♂ and 2♀ on 5.v.1988; also reared was *Drapetis simulans* Collin, 1961 (Hybotidae). The site is mainly mature beech *Fagus sylvatica* woodland on Chalk.

Wicken Fen NNR (TL560708), reared by IP from a sappy rot hole about 1m up in a mature poplar *Populus*, collected 7.iii.1993; 1♀ emerged 5.v.1993, 1♂ 7.v.1993, 1♀ 11.v.1993, and 1♂ 12.v.1993. The tree was at the edge of a ride, in an area of scrub/woodland which developed quite recently, at least after the tree had matured. Also reared were *Drapetis simulans* and *Australachalcus melanotrichus* (Mik, 1879) (Dolichopodidae).

V.C. 31 Huntingdonshire
Woodwalton Fen NNR (TL2284), 1995 record (Chandler *pers. comm.*).

V.C. 36 Herefordshire
Moccas Park NNR (SO34), 2♂ and 3♀ in water trap, 20.vii.2002, A. Godfrey (Chandler *pers. comm.*)

V.C. 57 Derbyshire
Calke Park NNR (SK3622): FIT (flight interception trap: see *Digest* 2011 **18,** 37) placed by KA at opening to large wet rot-hole in an old horse chestnut *Aesculus hippocastanum*, one of a line of veteran horse chestnut trees, many with fruiting *Polyporus squamosus* associated with rot-holes formed following amputation of lateral branches; operated from late v.2012, emptied and re-set 11.vii, and closed down in x.2012; 1♀ found in the trap 11.vii.2012; 1♀ was also found in another FIT placed inside a hollow ancient small-leaved lime *Tilia cordata*, placed late May 2012, emptied in mid July, and found when closed down, 18.x.2012.

V.C. 58 Cheshire
Dunham Park SSSI (SJ7387): FIT placed by KA in vi.2008 under large bracket of *Ganoderma australe*, fruiting from side of a large shattered beech snag, the top collapsed a few years previously revealed extensive white-rotten heartwood, 1♀ found when emptied 30.vii.2008; trap operated through to late October 2008, but no further specimens captured.

Tatton Park (SJ7481): FIT placed by KA inside hollow ancient common lime *Tilia* X *europaea* in mid v.2011, 1♀ found when emptied and re-set 21.vi.2011, but none found subsequently.

Discussion
The two main clusters appear distinctly different in character, but this pattern perhaps reflects more the behaviour of the recorders concerned rather than any distinct landscape associations. Most of the Fen area specimens were reared from material taken from rot-holes in trees, whereas the Midland sites were all the result of trapping. What is clear is that this is not a woodland species in the conventional sense, despite being associated with trees. While there

is an association with woodlands in the eastern counties and to some extent in the Fens area, there is none apparent in the Midlands, although comparable surveys have not been carried out in woodlands in that region. The key feature of the trees, with which KA has found it to be associated, is that they are mature trees which have had enough space to develop lateral branching – and hence the potential to form rot-holes when branches break off – something not normally possible within woodlands, where lateral branch development is suppressed by heavy shading of the trunks.

Where the type of rot is apparent, it is white-rot, and the bracket fungus *Polyporus squamosus* is the wood-decay fungus in all except one case where the host fungus was noted. This is the most widespread fungus involved in the formation of rot-holes, especially in horse chestnut, sycamore and poplars. *Ganoderma australe* was the key heartwood-decay fungus noted in the Dunham Park site where the tree was beech.

Associated species in the Fen area rot-holes were *Drapetis arcuata*, *D. simulans*, *Australachalcus melanotrichus*, *Systenus leucurus* and *Phaonia cincta*. The *Drapetis* species have not been found in FITs operated by KA at parkland sites, but he has found *D. arcuata* at Rough Hill Orchard, Worcestershire (SO929442) in an FIT placed in a hollow apple tree (1♂ 19.v-10.vii, 1♂ and 4♀ 10.vii-20.viii.2013). *Systenus leucurus* was also taken from the horse chestnut rot-hole site in Calke Park. *Australachalcus melanotrichus* has been taken in FITs but, again, not ones with *Madiza britannica*. *Phaonia cincta* has not been taken in the FITs. This may suggest some overlap in the faunal assemblages, but not a significant one. This may also indicate real differences in the habitat associations between the East Anglian sites and the Midland ones. Alexander (2003) suggested that the saproxylic tipulid *Dictenidia bimaculata* (Linnaeus, 1761) may be more associated with damper situations in the relatively hot and dry landscapes of East Anglia, in comparison to western sites. A similar factor may be involved with *Madiza britannica*.

It is of interest that the more widespread species *M. pachymera* Becker, 1908, which has been reared from similar rot holes to *M. britannica*, also occurs in the eastern counties (Cambridgeshire, Huntingdonshire, Suffolk), has not yet been found in the Midland parklands. It also occurs widely in the south, with records from Berkshire (Windsor Forest), Buckinghamshire, Dorset, Essex, Hampshire (New Forest), the Isle of Wight, Kent, Oxfordshire and Sussex. In addition to rearing from rot holes, although not in company with *M. britannica*, IP also reared it from a rotten elm log at Wandlebury, Cambridgeshire in 1988, suggesting that it may utilise a wider range of saproxylic habitats than does *M. britannica*.

Acknowledgements

KA's site surveys were commissioned by the local office of the National Trust and the flies were identified for him by Peter Chandler, who also provided details of the material of *M. britannica* in museum collections.

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