

# A study of horseflies (Diptera: Tabanidae) on Cheshire Plain area mires in 2022

A survey to conclude investigative work that commenced in 2018



***Hybomitra lurida*** (Fallén)

A female at Basin Mire B01 in Delamere Forest on 14<sup>th</sup> June 2022



***Hybomitra lurida*** (Fallén)

The same Delamere Forest female in dorsal view



***Atylotus plebeius*** (Fallén)

A female at Central Moss on Little Budworth Common on 15<sup>th</sup> June



***Haematopota pluvialis*** (Linnaeus)

A female 'biting' the author at Brookhouse Moss on 16<sup>th</sup> June



This project was aided by an award made on 19<sup>th</sup> May 2022 through the Small Grants Scheme of the Tanyptera Trust

## PHOTOGRAPHS ON THE FRONT COVER

***Hybomitra lurida*** (Fallén) [Broad-headed Horsefly]: the re-discovery of this horsefly in the Cheshire Plain area during 2022 was the highlight of the 2022 survey, and provided an acceptable conclusion to investigations that began in 2018.

***Atylotus plebeius*** (Fallén) [Cheshire Horsefly]: this national rarity was present in sufficient numbers on Little Budworth Common during 2022 for further behavioural observations to be made (see page 21). Its continued presence was also noted at Wybunbury Moss.

***Haematopota pluvialis*** (Linnaeus) [Notch-horned Cleg]: overall, this familiar cleg was the most numerous tabanid in the Cheshire Plain area during the 2022 survey; however, its numbers were far fewer than in the studies of 2018 and 2019, and also far fewer as a percentage of the overall Tabanidae fauna compared with 2018 and 2019.

# **A study of horseflies (Diptera: Tabanidae) on Cheshire Plain area mires in 2022**

**A survey to conclude investigative work that commenced in 2018**



**A report to the**

**by Andrew Grayson**

This report was submitted by Andrew Grayson to Gary Hedges on 27<sup>th</sup> **June 2023**

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Appendix 2 is a Microsoft Excel Spreadsheet that accompanies this report  
It is not paginated, but is taken to represent pages 47 to 115

# INTRODUCTION

## BACKGROUND TO THE SURVEY

An extensive horsefly survey was carried out on Cheshire Plain area mires by Andrew Grayson ('the author') during 2018, on behalf of the World Museum, Liverpool. A report (Grayson, 2019) was produced subsequently for the Tanyptera Trust. This is available online via the website of North West Invertebrates <https://www.northwestinvertebrates.org.uk>.

For the 2018 survey, permissions were obtained to visit such a large number of basin mires and other wetland habitats in the broad Cheshire Plain area that it was impossible, in a single year, to visit all the target mire and wetland localities during the optimum period for horsefly activity, which is usually early June to mid July.

The author offered to correct this fieldwork deficiency during 2019 by re-visiting many of the sites during the optimum period for horsefly activity. Fieldwork plans were also extended to include additional outlying mire sites in the Cheshire Plain region that were not investigated during the 2018 baseline survey. The 2019 survey work was aided by funding for expenses obtained via the Tanyptera Trust, and the report (Grayson, 2021) is also available via the website of North West Invertebrates.

Very regrettably, much of the North West horsefly season in 2019 was greatly affected by inclement weather, or at least, windy or cool conditions that were not conducive to horsefly activity. This problem was exacerbated by generally inaccurate short-term weather forecasts. For the programme to be carried out successfully, optimum hot and sunny conditions were required, combined with little or no breeze. In summary, the planned programme of fieldwork for 2019 could not be fully carried out.

As it was not possible to satisfactorily conclude horsefly studies in the Cheshire Plain area during 2019, the author planned to do so during 2020; however, no survey work was possible in 2020 due to restrictions caused by the Covid-19 (Coronavirus Disease 2019) pandemic. The pandemic also prevented horsefly studies being satisfactorily concluded in 2021; although, some horsefly recording was done at Dunham Park and Tatton Park (both in Cheshire – VC58). With the easing of Covid-19 restrictions in 2022, it was feasible to attempt a satisfactory conclusion to the Cheshire Plain tabanid survey work that had commenced in 2018.

## BACKGROUND INFORMATION

Previous reports (Grayson, 2019 & 2021) included basic notes on the Cheshire Plain and its basin mires, and gave detailed historical background information on the two main target species for the studies (*Atylotus plebeius* and *Hybomitra lurida*). Brief notes were also given on other horseflies that have been recorded in the Cheshire Plain region. As this background information has already been divulged, it is not repeated in the current report.

The appendices of these previously-published reports (Grayson, 2019 & 2021) also included plans (produced by Gary Hedges) that showed the locations of the surveyed basin mires within the broad Cheshire Plain area, plus the locations of some associated and supplementary localities. The current report does not include any further plans. Most of the additional basin mires that were investigated during 2022 were small sites within the Delamere Forest or in the Petty Pool area.

The previous reports (Grayson, 2019 & 2021) also included much supplementary information on invertebrates other than Tabanidae that were recorded as incidental findings during the 2018 and 2019 surveys. This information included species accounts for invertebrates that have national conservation statuses of some significance, and tables listing all invertebrates that were recorded, plus the localities whence they were found. Such species accounts and tables dealing with non-Tabanidae species from the 2022 survey are omitted from the current report, because they are required to be included in a forthcoming report to the Tanyptera Trust (Grayson, in prep.) focussing on *Orthonevra intermedia* (the 'Cheshire Hoverfly'); therefore, the inclusion of non-Tabanidae invertebrates within the text of the current report would be an unnecessary duplication of information; however, it should be noted that records of these supplementary invertebrates are included in the overall spreadsheet of data from the 2018 to 2022 surveys (Appendix 2 of this report).

Without requiring reference to other invertebrates, the current report is able to concentrate on Tabanidae that were found on, or near, basin mires in the Cheshire Plain area during the 2022 survey; and make some comparisons with the results that were obtained by the surveys of 2018 and 2019. As with previous reports (Grayson, 2019 & 2021), the localities (principally basin mires) are represented by photographs taken during the survey, together with notes including brief assessments of mires that were not previously investigated, these being principally small to medium-sized mires within the Delamere Forest.

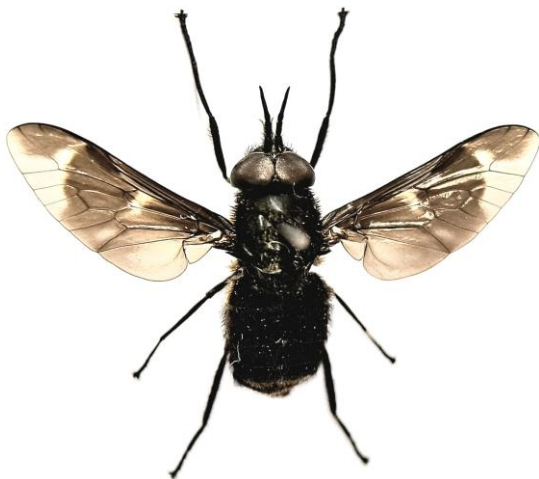
The current report also includes photographs of specimens to illustrate the typical appearance of the twelve Tabanidae species that were recorded during the 2018 to 2022 survey period. For completeness, the photographs illustrate both sexes of each species; however, it is fair to mention that the specimens illustrated, although all British, are not necessarily from the Cheshire Plain area. This should have been apparent regarding the males of six species that were not actually found during the 2018 to 2022 surveys. With the exception of the male *Hybomitra lurida* specimen, which was collected by Nigel Gilligan and photographed by Martin Harvey, the specimens are from the author's collection, and were photographed by Jessica Alvey.

## PHOTOGRAPHS TO ILLUSTRATE THE TABANIDAE FAUNA OF THE CHESHIRE PLAIN AREA

*Atylotus plebeius* (Fallén, 1817 – *Tabanus*) [Cheshire Horsefly]



*Chrysops caecutiens* (Linnaeus, 1758 – *Tabanus*) [Splayed Deerfly]



*Chrysops relictus* Meigen, 1820 [Twin-lobed Deerfly]



***Chrysops viduatus* (Fabricius, 1794 – *Tabanus*) [Square-spot Deerfly]**



***Haematopota crassicornis* Wahlberg, 1848 [Black-horned Cleg]**



***Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]**





***Hybomitra bimaculata*** (Macquart, 1826 – *Tabanus*) [Hairy-legged Horsefly]



***Hybomitra distinguenda*** (Verrall, 1909 – *Tabanus*) [Bright Horsefly]



***Hybomitra lurida*** (Fallén, 1817 – *Tabanus*) [Broad-headed Horsefly]



***Hybomitra montana* (Meigen, 1820 – *Tabanus*) [Slender-horned Horsefly]**



***Tabanus autumnalis* Linnaeus, 1761 [Large Marsh Horsefly]**



***Tabanus maculicornis* Zetterstedt, 1842 [Narrow-winged Horsefly]**



## FIELDWORK

### AIMS AND PRIORITY SPECIES

The survey aimed to satisfactorily complete fieldwork that could not be carried out successfully in 2019 due to frequent periods of inclement weather during the optimum period for Tabanidae activity (early June to mid July).

The 2022 fieldwork would principally involve the author collecting female horseflies on mires in the broad Cheshire Plain area. Horseflies would also be collected around the peripheries of mires; and in their vicinities, in situations where female tabanids are frequently encountered, such as along local roads, tracks and paths. Collecting horseflies in such situations would be essential in cases where mires were too hazardous to access on foot.

Regarding mire sites that were visited during the surveys of 2018 and 2019, but were not able to be visited during the optimum period (early June to mid July), or during periods of optimum weather conditions for horsefly activity (hot, sunny and still): attempts would be made to re-visit such sites during the optimum period and during optimum weather conditions.

Concentration of recording effort would be directed towards some of the more outlying mires of the broad Cheshire Plain area, and mire sites within the Delamere Forest that were not visited during the 2018 and 2019 surveys. 'Additional' Delamere Forest mire sites for investigation during 2022 would be selected from a spreadsheet of 'Delamere landscape sites' that was given to the author by Katie Piercy in 2018.

As it was not entirely possible to carry out investigations satisfactorily for the priority species *Atylotus plebeius* (Fallén, 1817) and *Hybomitra lurida* (Fallén, 1817) at all potentially-suitable basin mire sites during optimum periods and/or optimum weather conditions during 2018 and 2019, these species would be targeted at selected sites. Stubbs & Drake (2001 & 2014) gave *Atylotus plebeius* the vernacular name 'Cheshire Horsefly' and attributed 'Broad-headed Horsefly' to *Hybomitra lurida*: these common names seem to have gained general acceptance with non-specialists, and have been used alongside the scientific names in various parts of this report.

### A SURVEY FOR THE HOVERFLY *ORTHONEVRA INTERMEDIA*

The 2022 Cheshire Plain area horsefly study included plans for six days fieldwork; however, this recording period was effectively increased to fourteen days, as the period of fieldwork coincided with a separate study (Grayson, in prep.) on Cheshire Plain mires that focussed on the hoverfly *Orthonevra intermedia* (Lundbeck, 1916) (the 'Cheshire Hoverfly'). It was inevitable that Tabanidae would be encountered on at least some days where the focus of recording effort was on *Orthonevra intermedia*.

### PRIORITY SITES

A fieldwork schedule was carefully planned prior to the 2022 survey. As with planning for previous surveys, this covered which sites were to be visited, when visits would take place, and the expected duration of each visit. The full lists of localities that were visited during 2022 are included in the tables in Appendix 1 (pages 28 to 31). Photographs showing most of the localities that were visited during 2022 are on pages 10 to 21.

During previous surveys, it was not possible to spend much time looking for the possible occurrence of *Atylotus plebeius* at several potentially-suitable basin mires in the Delamere area during optimum hot and sunny conditions with little or no breeze. To correct this deficiency, it was planned to spend at least an hour on each of the following mires during optimum conditions: Gull Moss, Lily Pool and South Moss. Further investigations would also be made for the possible occurrence of *Atylotus plebeius* at Black Lake and Hogshead Moss.

Return visits (not necessarily of long duration) would be made to the localities where *Atylotus plebeius* was found in 2018 (Little Budworth Common, Shemmy Moss and Wybunbury Moss) in order to monitor its numbers and make behavioural observations. A planned visit to the Whixall area mire complex before late June was principally to investigate a central area of the English part of Bettisfield Moss for the possible occurrence of *Atylotus plebeius*. To increase the chance of re-discovering *Hybomitra lurida* in the Cheshire Plain area, visits to the Whixall Moss mire complex and Wybunbury Moss were especially desirable.

Several 'outlying' basin mires (i.e. outlying from the Delamere area) could not be investigated during optimum conditions in the mid June to mid July period in 2019 due to inclement weather. It was important to re-visit these sites during this time period and in optimum conditions during 2022, in order to discover which horseflies were present apart from *Haematopota pluvialis*, which was found at most 'outlying' localities during 2019. The target sites in this respect were: Brookhouse Moss, Highfield Moss, Holcroft Moss, Llay Bog and Vicarage Moss.

Several smaller basin mires in the Blakemere and Alvanley areas of Delamere Forest that were not visited during the surveys of 2018 and 2019 were priorities for investigation, as were some localities in the Petty Pool area, including Sherratt's Rough.

## WEATHER CONDITIONS AND SITE VISITS

### 14<sup>th</sup> June

This was mainly a day of sunshine alternating with periods of cloud, averaging 20°C; breezes being generally light, feeling slightly cool when cloudy, and much warmer when sunny. These conditions prevailed during visits to the following mires in the Blakemere area of Delamere Forest: **Basin Mire B12, Pierson's Moss, Basin Mire B09, Basin Mire B11, Basin Mire B01 and Hunger-hill Moss**. A boggy area between Basin Mire B09 and Pierson's Moss was also investigated. Elsewhere in Delamere Forest, **Hockenhill** was visited between 16.28 and 18.09, initially under hazy sunshine with a cool breeze, then later under hot and sunny conditions, which also prevailed during the final site visit of the day, which was to **Black Lake** until 19.10.

### 15<sup>th</sup> JUNE

With the forecast being for mainly optimum weather conditions, a trip was made to the Whixall area mosses complex, where surveying began on the eastern and central parts of **Whixall Moss** between 10.21 and 14.27 under initially optimum hot, sunny and still conditions, which gradually became high overcast, and then became decidedly gloomy when the English part of **Bettisfield Moss** was investigated up until 15.57. A visit was then made to Little Budworth Common, where the mires known as **Whitehall Moss, East Moss, Central Moss and North Moss** were investigated between 17.52 and 20.10 under generally sunny and sultry conditions. Average temperatures for the day were circa 23°C.

### 16<sup>th</sup> JUNE

The day provided rather consistent hot, sunny and still weather conditions that were conducive for surveying Tabanidae. Average temperatures were circa 25°C. Trips were made to the outlying Cheshire mires at **Brookhouse Moss** (09.20 to 11.41) and **Wybunbury Moss** (12.46 to 16.27). A reconnaissance trip was then made to investigate a shallow wet basin near the east end of the Farm Walk track at **Dunham Park** until 19.15.

### 22<sup>nd</sup> JUNE

The day was spent investigating basin mires in the Delamere area under optimum hot, sunny and still or light breeze weather conditions. Average temperatures were circa 25°C. Following a brief 33-minute visit to **Shemmy Moss**, visits were made to the Forest Camp Activity Centre mires known as **Lily Pool, Woodpile Bog and Boggy Pool**, followed by a visit to **Brackenhurst Bog** during sunny sultry conditions until 19.50.

### 23<sup>rd</sup> JUNE

Much of the day provided optimum hot, sunny and light breeze or still weather conditions, with average temperatures being circa 24°C. A trip was made to the outlying Cheshire Plain area basin mires near Wrexham known as **Llay Bog and Vicarage Moss**. **Llay Bog** was visited between 09.38 and 11.32. **Vicarage Moss** was investigated between 12.06 and 14.11. Weather conditions for the early evening changed dramatically to become overcast with rain. This coincided with a reconnaissance trip to **Sherratt's Rough and Church-hill Wood Valley**.

### 12<sup>th</sup> JULY

The first part of the day was subject to high overcast humid conditions with occasional drizzle. The latter part of the day became sunny and still. All but one temperature reading taken throughout the day was 24°C. The first site visit was to **Sherratt's Rough** in the Petty Pool area. The remaining mire sites visited until the cessation of surveying at 20.14 were all within the Delamere Forest. First to be investigated was **Blain's Moss** (from 14.15), followed by **Hatch Mere, Basin Mire N3**, a forestry road close to **Basin Mire N1** (Basin Mire N1 was not accessible due to excessive thorny vegetation), **Barnesbridge Basin** and **Barnes Bridge**.

### 13<sup>th</sup> JULY

This was quite a windy and fresh day, with breezes generally being light-moderate to moderate in strength. An initial mixture of cloudy and sunny periods was gradually replaced by full sunshine. Average temperatures were circa 20°C. Five Delamere area basin mires were investigated during the time periods given in parentheses, starting with the Petty Pool area basin mire beside **Sandiway Golf Course** (09.24 to 11.14), followed by **Shemmy Moss** (11.52 to 13.47), **South Moss** (13.56 to 14.39), **Lily Pool** (15.41 to 16.28) and **Hogshead Moss** (16.49 to 18.18).

### 14<sup>th</sup> JULY

After being initially cloudy and very gloomy with a light breeze (which made surveying for Tabanidae impractical), the day became progressively sunnier and hotter, with a warm moderate breeze, and then became sultry by early evening. Most temperature readings taken during the survey period were 20°C. Due to the initial conditions, surveying was delayed until 12.31



## WEATHER CONDITIONS AND SITE VISITS

when a visit was made to **Gull Moss**. This was followed by a very brief visit to the adjacent **Gull Pool**, and then a trip was made to Delamere Forest, where the following mires were investigated during the times given in parentheses: **Linnere Moss (north)** (15.02 to 15.21), **Blakemere Moss** (15.29 to 16.20), **Black Lake** (16.43 to 17.54) and **Hockenhull** (18.00 to 19.04).

**17<sup>th</sup> JULY**

Initial high overcast and humid conditions with a light-moderate warm breeze were soon replaced by hot and sunny conditions with a moderate warm breeze for most of the survey period. Early evening became hazy and sultry, then full sunshine returned before dusk. Temperature readings were 28°C at the commencement of surveying; rising to 32°C, before falling back to 28°C for the last hour of surveying. All sites visited were situated north of Warrington in the vice-county of South Lancashire (VC59). The sites and their environs were investigated during the time periods given within parentheses: **Risley Moss** (13.34 to 14.41), **Highfield Moss** (15.03 to 16.49), **Holcroft Moss** (17.13 to 17.51), **Little Woolden Moss** (18.33 to 19.35) and **Rindle Moss** (19.53 to 20.36).

**18<sup>th</sup> JULY**

This was an oppressively hot day during which the local temperature reached 36°C by 13.55. At commencement of surveying (10.21) the temperature was 26°C. Most other readings taken during the day were between 34°C and 35°C. Conditions were mainly very hot and sunny with a very light breeze or still, with the exception of a period of hazy sunshine during late afternoon and into early evening. Most of the survey period (from 10.21 to 18.26) was spent at Little Budworth Common, where the mire habitats were investigated in the following order: **Whitehall Moss**, **North Moss**, **Central Moss**, **East Moss** and the unnamed **north end pond and moss**. The day was concluded (up until 20.06) with a trip to **Sherratt's Rough** and **Church-hill Wood Valley**.

**19<sup>th</sup> JULY**

This was a very hot and sunny day with all temperature readings being 31°C or 32°C, including the initial reading at 09.57. Towards evening, sunshine became hazy, and was then replaced by high overcast conditions. Winds were initially, and generally, very light or still; apart from a moderate hot breeze in mid afternoon. The survey period (09.57 to 17.50) was spent in Delamere Forest, where the following basin mires were visited (some arrival times are given within parentheses): **Blain's Moss** (09.57), **Ham Pool** (11.55), **Ham (upper basin)**, **Barnesbridge Basin** (13.18), **Rush Pool** (14.05), **Barnesbridge Flushes**, **Basin Mire A07** (14.45), **Basin Mire A01b**, **Harrison's Moss** and **Basin Mire A12**.

**9<sup>th</sup> AUGUST**

This was a rather consistently hot, sunny and still day, under a mainly clear blue sky. All temperature readings (taken on five occasions between 14.01 and 18.47) were 24°C. The following Delamere Forest basin mires were visited: **Basin Mire A06**, **Basin Mire A12**, **Basin Mire A01b**, **Basin Mire A11**, **Basin Mire GM07**, **Doolittle Moss (upper basin)**, **Doolittle Moss (lower basin)**, **Basin Mire LM09** and **Basin Mire LM10**.

**10<sup>th</sup> AUGUST**

The day provided consistently hot and sunny conditions under a generally clear blue sky. Breezes were very light or still. Temperatures rose from 22°C at 10.32, to 29°C for the final three readings, including at cessation of surveying at 18.55. The following Delamere Forest area basin mires were investigated between 10.32 and 16.53: **Basin Mire B12**, **Pierson's Moss**, **Basin Mire B09**, **Basin Mire B11**, **Basin Mire B01**, **Basin Mire B03**, **Flaxmere Moss**, **Harthill (upper basin)**, **Finney's Moss** and **Harthill Moss**. A trip was then made to **Thieves Moss and Thieves Pool**; however, this basin mire was not accessible due to an entrance track being closed to public access. Surveying was concluded with an evening visit to **Snipe Island**.

**11<sup>th</sup> AUGUST**

The day was initially hot, sunny and still (22°C at 09.23 and 09.53), and remained so throughout the survey period, with increased temperatures (26°C at 10.48 and 12.10, and 31°C at 13.21 and 15.45). Firstly, it was planned to visit the isolated basin mire at **Oak Mere**; however, permission to visit the site would need to be obtained on the day, and this was not granted; therefore, investigations began with a walk through **Bowyer's Waste** (from 09.23 until 09.53). A trip was then made to **Brookhouse Moss** (surveyed between 10.48 and 12.10); and finally, **Wybunbury Moss** (investigated between 13.21 and 15.45).

## NOTES ON THE LOCALITIES VISITED DURING 2022

### NOTES ON SOME LOCALITIES THAT WERE ALSO INVESTIGATED DURING 2018 TO 2019

Most of the basin mires that were visited during 2022 had been investigated previously during the 2018 to 2019 surveys. The baseline report for 2018 (Grayson, 2019) and the report for 2019 (Grayson, 2021) included some rudimentary habitat-descriptions for the localities, together with other notes, where appropriate. In cases where basin mires remained almost unchanged between 2019 and 2022, it is not necessary for further comment here. Some sites (mentioned below) were subject to noticeable changes during this three-year period. Most changes involved greatly-increased vegetation at some basin mires, usually by regeneration of *Salix* (willow) or *Betula* (birch) scrub; and also, some basin mires were considerably wetter in 2022 than was the case during the 2018 to 2019 period. Some mires (especially Barnesbridge Basin, Basin Mire N1, Basin Mire N3 and Hockenhull) were far more difficult to access due to increased thorny scrub etc. in the surrounding landscape.

When surveying commenced in 2018, many basin mires in Delamere Forest had been cleared of invasive scrub fairly recently. By 2022, the following formerly open Delamere Forest mires had once again become overgrown by scrub: Blakemere Moss, Finney's Moss, Ham (lower basin) [which was viewed from an adjacent track but not visited in 2022], Harthill Moss and Linmere Moss (north). Elsewhere, extensive scrub invasion since 2018 was also very noticeable at Brookhouse Moss, Risley Moss (mini-moss) and Snipe Island. The formerly open water of Woodpile Bog was dominated by *Juncus effusus* (Soft Rush) and *Sphagnum* in 2022, and the *Sphagnum*-dominated margins of Gull Moss had become difficult to access due to increased swamp vegetation.

Recent scrub-clearance had been carried out at Ham Pool and Hogshead Moss; and some sites were wetter (and with more wet *Sphagnum*) than in the 2018 to 2019 period, especially Wybunbury Moss (which was entirely squelchy underfoot with some 'new' quaking areas), the surrounds of the ponds at the centre of Highfield Moss, and an 'eastern arm' of East Moss at Little Budworth Common. Increased areas of wet *Sphagnum* were also noticeable on Blain's Moss, Harthill (upper basin) and at Hockenhull. The surrounds of the bog woodland at Llay Bog were much drier due to improved drainage since the 2019 visit.

### NOTES ON LOCALITIES THAT WERE ONLY INVESTIGATED DURING 2022

In respect of the 2022 Tabanidae survey, and a simultaneous survey targeting the hoverfly *Orthonevra intermedia*, several previously-unvisited basin mires in the Blakemere and Alvanley areas of Delamere Forest were priorities for investigation. The next paragraph includes brief notes on the state of some basin mires in the Blakemere area of Delamere Forest in 2022.

**Basin Mire B12** was presumably quite badly affected by drainage during the mid 20<sup>th</sup> Century; but by 2022, it mainly consisted of open water with submerged vegetation and tussocks of grass or *Juncus effusus* (Soft Rush), with some peripheral areas of *Sphagnum*. **Pierson's Moss** was partly open water, and partly dense patches of *Juncus effusus* (Soft Rush). **Basin Mire B09** was mainly covered by *Juncus effusus* (Soft Rush), but did have some areas of wet *Sphagnum*. **Basin Mire B11** had its main drain blocked by plastic sheeting. Its surface consisted of open water and clumps of dense *Juncus effusus* (Soft Rush). **Basin Mire B01** was decidedly squelchy and water-logged underfoot, covered in clumps of *Juncus effusus* (Soft Rush) and grasses, with plantation trees and some areas of wet *Sphagnum*. **Basin Mire B03** was small and mainly dried-out, with a lot of sticks underfoot, yet with some entomological interest in its patches of *Sphagnum* with sparse emergent plants. **Hunger-hill Moss** was rather bleak, and in the early stages of recovery from former drainage and plantation woodland. It had some areas of *Sphagnum* starting to develop, but was mainly covered by dark peaty water.

In the Alvanley area of Delamere Forest, **Harrison's Moss** was found to be quite dry for the most part, and was covered by a variety of dense vegetation; **Basin Mire A12** was mainly covered by open peaty water and areas of wet *Sphagnum* with emergent *Juncus effusus* (Soft Rush); **Basin Mire A11** was difficult to access through dense *Pteridium aquilinum* (Bracken) and over rough terrain. Its surface mainly consisted of open water with dense patches of *Juncus effusus* (Soft Rush), plus some patches of *Sphagnum* and *Eriophorum angustifolium* (Common Cotton-grass).

In the Petty Pool area, the conjoined **Sherratt's Rough** and **Church-hill Wood Valley** had a few areas of dry *Sphagnum*, and were apparently of no special interest for Tabanidae. The basin mire within woodland beside **Sandiway Golf Course** had recently had much scrub removed from its surface, which was partly dry. Wetter areas of the basin mire included patches of *Eriophorum angustifolium* (Common Cotton-grass), *Sphagnum* and *Juncus effusus* (Soft Rush).

Damaged basin mires of limited current interest for Tabanidae included **Basin Mire GM07** in the Great Midgel area of Delamere Forest, and the South Lancashire (VC59) sites **Little Woolden Moss** and **Rindle Moss**. The surface of Rindle Moss was very uneven, with numerous small dry ditches, some having *Sphagnum* at their base. **Bowyer's Waste** also suffered quite badly from drainage. Its ground layer of *Sphagnum* was mainly dry and no more than slightly spongy underfoot at the time of the visit.

A previously-overlooked basin mire at Little Budworth Common (here called the 'north end pond and moss') consisted of a pond with an area of floating *Sphagnum* and an adjacent larger basin of wet *Sphagnum* and emergent *Juncus effusus* (Soft Rush). On 16<sup>th</sup> June, a reconnaissance trip was made to investigate a shallow wet basin near the east end of the Farm Walk track at **Dunham Park** – this proved to be marshland, and not basin mire habitat.



# PHOTOGRAPHS OF SOME LOCALITIES VISITED IN 2022

## ABBOTS MOSS COMPLEX MIRES

**Dates of visits:** Boggy Pool (SJ 5970 6910) – 22<sup>nd</sup> June; Gull Pool (SJ 6009 6883) – 14<sup>th</sup> July; Lily Pool (SJ 5956 6925) – 22<sup>nd</sup> June and 13<sup>th</sup> July; Woodpile Bog (SJ 5956 6934) – 22<sup>nd</sup> June; Gull Moss (SJ 6011 6871) – 14<sup>th</sup> July; Shemmy Moss (SJ 5949 6892) – 22<sup>nd</sup> June and 13<sup>th</sup> July



**Boggy Pool** (22<sup>nd</sup> June)



**Gull Pool** (14<sup>th</sup> July)



**Lily Pool** (13<sup>th</sup> July)



**Woodpile Bog** (22<sup>nd</sup> June)



**Gull Moss** (14<sup>th</sup> July)



**Shemmy Moss** (13<sup>th</sup> July)



## ABBOTS MOSS COMPLEX MIRES

**Dates of visits:** South Moss (SJ 5937 6863) – 13<sup>th</sup> July; Brackenhurst Bog (SJ 5956 6983) – 22<sup>nd</sup> June



**South Moss** (13<sup>th</sup> July)



**Brackenhurst Bog** (22<sup>nd</sup> June)

## DELAMERE FOREST MIRES

**Dates of visits:** Barnes Bridge (SJ 5411 7172) – 12<sup>th</sup> July; Barnesbridge Basin (SJ 5420 7190) – 12<sup>th</sup> July and 19<sup>th</sup> July; Barnesbridge Flushes (SJ 5398 7182) – 19<sup>th</sup> July; Basin Mire A01b (SJ 5357 7211) – 19<sup>th</sup> July and 9<sup>th</sup> August

This account has chosen to use the spelling 'Barnes' – there is much discrepancy online regarding the spelling of the sites below



**Barnes Bridge** (12<sup>th</sup> July)



**Barnesbridge Basin** (19<sup>th</sup> July)



**Barnesbridge Flushes** (19<sup>th</sup> July)



**Basin Mire A01b** (19<sup>th</sup> July)



## DELAMERE FOREST MIRES

**Dates of visits:** Basin Mire A06 (SJ 5386 7202) – 9<sup>th</sup> August; Basin Mire A07 (SJ 5375 7197) – 19<sup>th</sup> July; Basin Mire A11 (SJ 5341 7199) – 9<sup>th</sup> August; Basin Mire A12 (SJ 5344 7211) – 19<sup>th</sup> July and 9<sup>th</sup> August; Basin Mire B01 (SJ 5542 7149) – 14<sup>th</sup> June and 10<sup>th</sup> August; Basin Mire B03 (SJ 5520 7166) – 10<sup>th</sup> August



**Basin Mire A06** (9<sup>th</sup> August)



**Basin Mire A07** (19<sup>th</sup> July)



**Basin Mire A11** (9<sup>th</sup> August)



**Basin Mire A12** (19<sup>th</sup> July)



**Basin Mire B01** (14<sup>th</sup> June)



**Basin Mire B03** (10<sup>th</sup> August)



## DELAMERE FOREST MIRES

**Dates of visits:** Basin Mire B09 (SJ 5445 7149) – 14<sup>th</sup> June and 10<sup>th</sup> August; Basin Mire B11 (SJ 5509 7146) – 14<sup>th</sup> June and 10<sup>th</sup> August; Basin Mire B12 (SJ 5433 7121) – 14<sup>th</sup> June and 10<sup>th</sup> August; boggy area between Basin Mire B09 and Pierson's Moss (SJ 5451 7153) – 14<sup>th</sup> June and 10<sup>th</sup> August; Basin Mire GM07 (SJ 5371 7141) – 9<sup>th</sup> August; Basin Mire LM09 (SJ 5379 7109) – 9<sup>th</sup> August



**Basin Mire B09** (10<sup>th</sup> August)



**Basin Mire B11** (10<sup>th</sup> August)



**Basin Mire B12** (10<sup>th</sup> August)



**boggy area between Basin Mire B09 and Pierson's Moss** (10<sup>th</sup> August)



**Basin Mire GM07** (9<sup>th</sup> August)



**Basin Mire LM09** (9<sup>th</sup> August)



## DELAMERE FOREST MIRES

**Dates of visits:** Basin Mire LM10 (SJ 5387 7111) – 9<sup>th</sup> August; Basin Mire N3 (SJ 5492 7205) – 12<sup>th</sup> July; Black Lake (SJ 5373 7091) – 14<sup>th</sup> June and 14<sup>th</sup> July; Blain's Moss (SJ 5525 7177) – 12<sup>th</sup> July and 19<sup>th</sup> July; Blakemere Moss (SJ 5469 7120) – 14<sup>th</sup> July; Doolittle Moss (upper basin) (SJ 5424 7155) – 9<sup>th</sup> August



**Basin Mire LM10** (9<sup>th</sup> August)



**Basin Mire N3** (12<sup>th</sup> July)



**Black Lake** (14<sup>th</sup> July)



**Blain's Moss** (19<sup>th</sup> July)



**Blakemere Moss** (14<sup>th</sup> July)



**Doolittle Moss (upper basin)** (9<sup>th</sup> August)



## DELAMERE FOREST MIRES

**Dates of visits:** Doolittle Moss (lower basin) (SJ 5429 7142) – 9<sup>th</sup> August; Finney's Moss (SJ 5596 7155) – 10<sup>th</sup> August; Ham (upper basin) (SJ 5467 7193) – 19<sup>th</sup> July; Ham Pool (SJ 5459 7204) – 19<sup>th</sup> July; Harthill Moss (SJ 5633 7142) – 10<sup>th</sup> August; Harthill (upper basin) (SJ 5600 7108) – 10<sup>th</sup> August



**Doolittle Moss (lower basin)** (9<sup>th</sup> August)



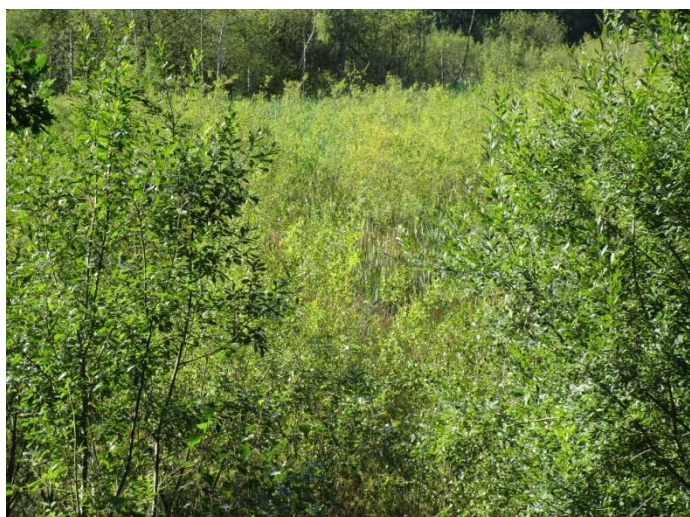
**Finney's Moss** (10<sup>th</sup> August)



**Ham (upper basin)** (19<sup>th</sup> July)



**Ham Pool** (19<sup>th</sup> July)



**Harthill Moss** (10<sup>th</sup> August)



**Harthill (upper basin)** (10<sup>th</sup> August)



## DELAMERE FOREST MIRES

**Dates of visits:** Harrison's Moss (SJ 5336 7222) – 19<sup>th</sup> July; Hatch Mere (SJ 5521 7206) – 12<sup>th</sup> July; Hockenhull (SJ 5421 7094) – 14<sup>th</sup> June and 14<sup>th</sup> July; Hunger-hill Moss (east end) (SJ 5503 7162) – 14<sup>th</sup> June; Linmere Moss (north) (SJ 5469 7070) – 14<sup>th</sup> July; Pierson's Moss (SJ 5462 7157) – 14<sup>th</sup> June and 10<sup>th</sup> August



**Harrison's Moss** (19<sup>th</sup> July)



**Hatch Mere** (12<sup>th</sup> July)



**Hockenhull** (14<sup>th</sup> June)



**Hunger-hill Moss (east end)** (14<sup>th</sup> June)



**Linmere Moss (north)** (14<sup>th</sup> July)



**Pierson's Moss** (10<sup>th</sup> August)



## LITTLE BUDWORTH COMMON MIRES

**Dates of visits:** Central Moss (SJ 5850 6574) – 15<sup>th</sup> June and 18<sup>th</sup> July; East Moss (main part) (SJ 5859 6570) – 15<sup>th</sup> June and 18<sup>th</sup> July; East Moss (eastern arm) (SJ 5865 6572) – 15<sup>th</sup> June and 18<sup>th</sup> July; North Moss (SJ 5842 6585) – 15<sup>th</sup> June and 18<sup>th</sup> July; Whitehall Moss (SJ 5878 6580) – 15<sup>th</sup> June and 18<sup>th</sup> July; north end pond and moss (SJ 5849 6608) – 18<sup>th</sup> July

The locations and extents of the five basin mires shown below are well drawn on a Cheshire West and Chester unitary authority plan of 'Little Budworth Common HORSE & CYCLE ROUTES' that was signposted on Little Budworth Common at the time of the survey. Four of these basin mires were listed and given names in a spreadsheet of 'Delamere landscape sites' that was given to the author by Katie Piercy in 2018. The other (fifth) mire is referred to in this report as 'north end pond and moss'.



**Central Moss** (18<sup>th</sup> July)



**East Moss (main part)** (15<sup>th</sup> June)



**East Moss (eastern arm)** (15<sup>th</sup> June)



**North Moss** (18<sup>th</sup> July)



**Whitehall Moss** (18<sup>th</sup> July)



**north end pond and moss** (18<sup>th</sup> July)



## PETTY POOL AREA WETLANDS

**Dates of visits:** Church-hill Wood Valley (SJ 6223 6931) – 23<sup>rd</sup> June and 18<sup>th</sup> July; Sandiway Golf Course (SJ 6132 7038) – 13<sup>th</sup> July; Sherratt's Rough [not pictured] (SJ 6182 6925) – 23<sup>rd</sup> June, 12<sup>th</sup> July and 18<sup>th</sup> July



**Church-hill Wood Valley** (18<sup>th</sup> July)



**the basin mire beside Sandiway Golf Course** (13<sup>th</sup> July)

## OTHER DELAMERE AREA MIRES

**Dates of visits:** Bowyer's Waste (SJ 5697 6877) – 11<sup>th</sup> August; Flaxmere Moss (SJ 5565 7229) – 10<sup>th</sup> August; Hogshead Moss (SJ 5842 6952) – 13<sup>th</sup> July; Snipe Island (SJ 6111 6932) – 10<sup>th</sup> August



**Bowyer's Waste** (11<sup>th</sup> August)



**Flaxmere Moss** (10<sup>th</sup> August)



**Hogshead Moss** (13<sup>th</sup> July)



**Snipe Island** (10<sup>th</sup> August)



## OUTLYING MIRES (LOCATED OUTSIDE THE DELAMERE AREA)

### OUTLYING MIRES IN CHESHIRE (VC58) [VC = Watsonian vice-county]

**Dates of visits:** Brookhouse Moss (SJ 8052 6191) – 16<sup>th</sup> June and 11<sup>th</sup> August; Wybunbury Moss (SJ 6965 5021) – 16<sup>th</sup> June and 11<sup>th</sup> August



**Brookhouse Moss** (11<sup>th</sup> August)



**Wybunbury Moss** (16<sup>th</sup> June)

### OUTLYING MIRES IN DENBIGHSHIRE (VC50)

**Dates of visits:** Llay Bog (basin mire and bog woodland) (SJ 3223 5539) – 23<sup>rd</sup> June; Vicarage Moss (north basin mire) (SJ 3601 5398) – 23<sup>rd</sup> June; Vicarage Moss (south basin mire) (SJ 3600 5384) – 23<sup>rd</sup> June



**Llay Bog (basin mire within the bog woodland)** (23<sup>rd</sup> June)



**pasture beside the bog woodland at Llay Bog** (23<sup>rd</sup> June)



**Vicarage Moss (north basin mire)** (23<sup>rd</sup> June)



**Vicarage Moss (south basin mire)** (23<sup>rd</sup> June)



## OUTLYING MIRES IN SOUTH LANCASHIRE (VC59)

**Dates of visits:** Highfield Moss (SJ 6135 9560) – 17<sup>th</sup> July; Holcroft Moss (SJ 6850 9326) – 17<sup>th</sup> July; Risley Moss (mini-moss) (SJ 6629 9198) and 'birch woodland' (SJ 6631 9167) – 17<sup>th</sup> July; Little Woollen Moss (SJ 6972 9517) – 17<sup>th</sup> July; Rindle Moss (SJ 7036 9654) – 17<sup>th</sup> July



**Highfield Moss** (17<sup>th</sup> July)



**Holcroft Moss** (17<sup>th</sup> July)



**Risley Moss (mini-moss)** (17<sup>th</sup> July)



**Risley Moss (pond within birch woodland)** (17<sup>th</sup> July)



**Little Woollen Moss** (17<sup>th</sup> July)



**Rindle Moss** (17<sup>th</sup> July)



## OUTLYING MIRES IN THE FENN'S, WHIXALL, BETTISFIELD, WEM AND CADNEY MOSSES COMPLEX SSSI (VC40)

**Dates of visits:** Bettisfield Moss (England) (SJ 4821 3518) – 15<sup>th</sup> June; Whixall Moss (eastern and central areas) (SJ 4939 3626) – 15<sup>th</sup> June



**Bettisfield Moss (England) (15<sup>th</sup> June)**



**Bettisfield Moss (England) (15<sup>th</sup> June)**



**Whixall Moss (eastern area) (15<sup>th</sup> June)**



**Whixall Moss (central area) (15<sup>th</sup> June)**

## RESULTS

### SUMMARY FOR 2022

The undoubted highlight of the 2022 survey was the re-discovery of *Hybomitra lurida* (Fallén) (the 'Broad-headed Horsefly') in the Cheshire Plain area. This finding was significant, as there was concern that it could possibly be extinct in the region (and England as a whole) due to factors mentioned in the report for 2018 (Grayson, 2019). Adding further significance, the finding of a female at Basin Mire B01 on 14<sup>th</sup> June 2022 was the first record of *Hybomitra lurida* from the Delamere Forest.

The other main priority species, *Atylotus plebeius* (Fallén) (the 'Cheshire Horsefly'), was not found at any additional sites to those where it was found during the surveys of 2018 and 2019. This in itself was significant, as it was possible in 2022 to spend more time on potentially-suitable mires during the flight-period of *Atylotus plebeius* and during optimum weather conditions, yet no additional *Atylotus plebeius* sites were found. As was the case in 2018 and 2019, *Atylotus plebeius* was present on three basin mires on Little Budworth Common, and it was also seen on Wybunbury Moss. It was not seen on Shemmy Moss; however, in mitigation, not much time was spent on Shemmy Moss during 2022. Observations of *Atylotus plebeius* made during the evening of 15<sup>th</sup> June 2022 backed-up two previous behavioural observations. Firstly, both sexes usually choose the following ways of escaping danger – either fly away rapidly, or quickly drop down into bog vegetation such as *Vaccinium oxycoccos* (Bog Cranberry). Secondly, as dusk approaches, both sexes tend to make short (average 5 metres) lazy flights between perching points, which are generally on the flower-heads of *Calluna vulgaris* (Heather), or on the stems of fine bog grasses. The final perch for passing the night is usually on one of the upper shoots of heather, but not at the top; or if on fine bog grasses, is usually three-quarters of the way up the stem – in both cases, the flies perch head-downwards and remain motionless.

## SUMMARY FOR 2022

Although the overall Cheshire Plain area Tabanidae study results from the years 2018, 2019 and 2022 are not entirely comparable, overall numbers of *Haematopota pluvialis* (Linnaeus) (the 'Notch-horned Cleg') (an average of 6.5 individuals per survey day in 2022) were much reduced from those of the baseline 2018 survey (when an average of over 19 individuals were recorded per survey day), and the 2019 survey (when nearly 11 individuals were recorded per survey day).

The overall numbers of Tabanidae individuals recorded per survey day also reduced between 2018 and 2022. The average number in 2022 was 16.71; in 2019 the average number was 20.50; and in 2018 the average number was 25.05. In all years, there were days of inclement weather when no horseflies were found, and also days that were outside the season for horseflies in the Cheshire Plain area; therefore, on days when horseflies were found, they often occurred in far greater abundance than the aforementioned average numbers.

In contrast to reduced numbers of *Haematopota pluvialis* compared with the 2018 survey, the numbers of *Chrysops viduatus* (Fabricius) (the 'Square-spot Deerfly') and *Hybomitra bimaculata* (Macquart) (the 'Hairy-legged Horsefly') increased. In 2018, 33 *Chrysops viduatus* individuals were recorded; this number increased to 44 in 2019 and to 48 in 2022. In 2018, 26 *Hybomitra bimaculata* individuals were recorded (from 21 survey days); this reduced to 17 in 2019 (from 12 survey days), but increased to 54 individuals in 2022 (from 14 survey days).

Three further Tabanidae species were found during the 2022 survey. *Chrysops caecutiens* (Linnaeus) (the 'Splayed Deerfly') was found in larger numbers (13) than in 2019 (7) and 2018 (4). As with the earlier surveys, *Chrysops relictus* Meigen (the 'Twin-lobed Deerfly') was rarely found (6 individuals in total), which is unsurprising, as this is mainly a marshland species, that was only found on the basin mires when marshland was also included onsite or occurred nearby. *Hybomitra distinguenda* (Verrall) (the 'Bright Horsefly') was recorded in similar numbers to the earlier surveys (12 in 2022, 14 in both 2018 and 2019).

The objectives of the 2022 survey were achieved satisfactorily; therefore, unavoidable deficiencies of the 2018 and 2019 surveys were addressed fully, and the Cheshire Plain area study of Tabanidae that commenced in 2018 was concluded successfully.

## QUANTITATIVE COMPARISONS OF TABANIDAE NUMBERS BETWEEN 2018 AND 2022

Quantitative comparisons can be made between the Tabanidae results that were achieved in the Cheshire Plain area by the surveys of 2018, 2019 and 2022. Although no horsefly-targeted surveying was carried out in the region by the author during 2020 and 2021 (due to the Covid-19 pandemic); for the sake of completeness, it seems reasonable to include a table of the author's Tabanidae results from saproxylic surveys during 2021 at Dunham Park and Tatton Park – these parklands are in Cheshire (VC58).

Although quantitative comparisons in the following tables and charts provide some interesting results, it should be recognised that disproportionate amounts of time were spent on basin mires in the Watsonian vice-county of Cheshire (VC58), and disproportionate amounts of time were spent looking for priority species and investigating priority sites. Horseflies that occur in wetlands other than mires (especially marshland species) were disproportionately under-recorded. Furthermore, the weather conditions of the survey years were very different; and more survey days (21) were used in 2018 than in the other years (12 in 2019, 14 in 2022). Manitoba traps (placed at four basin mires) were only used during the 2018 survey.

Numbers in the 'Average' (or 'Ave.') column are the total number of horseflies divided by the total number of survey days for the year(s). Vernacular names on page 23 were originally attributed to British horsefly species by Stubbs & Drake (2001).

### TABLE SHOWING DISSECTION OF COMBINED TABANIDAE NUMBERS FROM 2018 TO 2022

SCIENTIFIC NAME	VC39	VC40	VC50	VC58	VC59	2018	2019	2021	2022	TOTAL	AVE.
<i>Atylotus plebeius</i>	-	-	-	34	-	16	9	-	9	34	.64
<i>Chrysops caecutiens</i>	-	-	1	24	-	4	7	1	13	25	.47
<i>Chrysops relictus</i>	-	17	3	-	6	5	15	-	6	26	.49
<i>Chrysops viduatus</i>	-	24	3	102	-	33	44	4	48	129	2.43
<i>Haematopota crassicornis</i>	-	-	-	6	1	5	1	1	-	7	.13
<i>Haematopota pluvialis</i>	72	145	56	319	73	405	125	44	91	665	12.55
<i>Hybomitra bimaculata</i>	2	14	4	80	1	26	17	4	54	101	1.90
<i>Hybomitra distinguenda</i>	1	4	2	31	3	14	14	1	12	41	.77
<i>Hybomitra lurida</i>	-	-	-	1	-	-	-	-	1	1	.02
<i>Hybomitra montana</i>	-	3	3	13	-	7	12	-	-	19	.36
<i>Tabanus autumnalis</i>	-	-	-	7	1	5	2	1	-	8	.15
<i>Tabanus maculicornis</i>	1	3	1	1	-	6	-	-	-	6	.11
<b>TOTAL</b>	<b>76</b>	<b>210</b>	<b>73</b>	<b>618</b>	<b>85</b>	<b>526</b>	<b>246</b>	<b>56</b>	<b>234</b>	<b>1,062</b>	<b>20.04</b>



TABLE SHOWING DISSECTION OF TABANIDAE NUMBERS IN 2018

SCIENTIFIC NAME	VERNACULAR NAME	VC39	VC40	VC50	VC58	TOTAL	AVERAGE
<i>Atylotus plebeius</i> (Fallén)	Cheshire Horsefly	-	-	-	16	16	.76
<i>Chrysops caecutiens</i> (Linnaeus)	Splayed Deerfly	-	-	-	4	4	.19
<i>Chrysops relictus</i> Meigen	Twin-lobed Deerfly	-	5	-	-	5	.24
<i>Chrysops viduatus</i> (Fabricius)	Square-spot Deerfly	-	7	-	26	33	1.57
<i>Haematopota crassicornis</i> Wahlberg	Black-horned Cleg	-	-	-	5	5	.24
<i>Haematopota pluvialis</i> (Linnaeus)	Notch-horned Cleg	72	111	9	213	405	19.29
<i>Hybomitra bimaculata</i> (Macquart)	Hairy-legged Horsefly	2	5	-	19	26	1.24
<i>Hybomitra distinguenda</i> (Verrall)	Bright Horsefly	1	3	1	9	14	.67
<i>Hybomitra montana</i> (Meigen)	Slender-horned Horsefly	-	1	1	5	7	.34
<i>Tabanus autumnalis</i> Linnaeus	Large Marsh Horsefly	-	-	-	5	5	.24
<i>Tabanus maculicornis</i> Zetterstedt	Narrow-winged Horsefly	1	3	1	1	6	.29
<b>TOTAL</b>		<b>76</b>	<b>135</b>	<b>12</b>	<b>303</b>	<b>526</b>	<b>25.05</b>

TABLE SHOWING DISSECTION OF TABANIDAE NUMBERS IN 2019

SCIENTIFIC NAME	VERNACULAR NAME	VC40	VC50	VC58	VC59	TOTAL	AVERAGE
<i>Atylotus plebeius</i> (Fallén)	Cheshire Horsefly	-	-	9	-	9	.75
<i>Chrysops caecutiens</i> (Linnaeus)	Splayed Deerfly	-	-	7	-	7	.58
<i>Chrysops relictus</i> Meigen	Twin-lobed Deerfly	11	3	-	1	15	1.25
<i>Chrysops viduatus</i> (Fabricius)	Square-spot Deerfly	13	3	28	-	44	3.67
<i>Haematopota crassicornis</i> Wahlberg	Black-horned Cleg	-	-	-	1	1	.08
<i>Haematopota pluvialis</i> (Linnaeus)	Notch-horned Cleg	29	36	30	30	125	10.42
<i>Hybomitra bimaculata</i> (Macquart)	Hairy-legged Horsefly	-	-	16	1	17	1.42
<i>Hybomitra distinguenda</i> (Verrall)	Bright Horsefly	-	-	11	3	14	1.17
<i>Hybomitra montana</i> (Meigen)	Slender-horned Horsefly	2	2	8	-	12	1.00
<i>Tabanus autumnalis</i> Linnaeus	Large Marsh Horsefly	-	-	1	1	2	.17
<b>TOTAL</b>		<b>55</b>	<b>44</b>	<b>110</b>	<b>37</b>	<b>246</b>	<b>20.50</b>

TABLE SHOWING DISSECTION OF TABANIDAE NUMBERS IN 2021

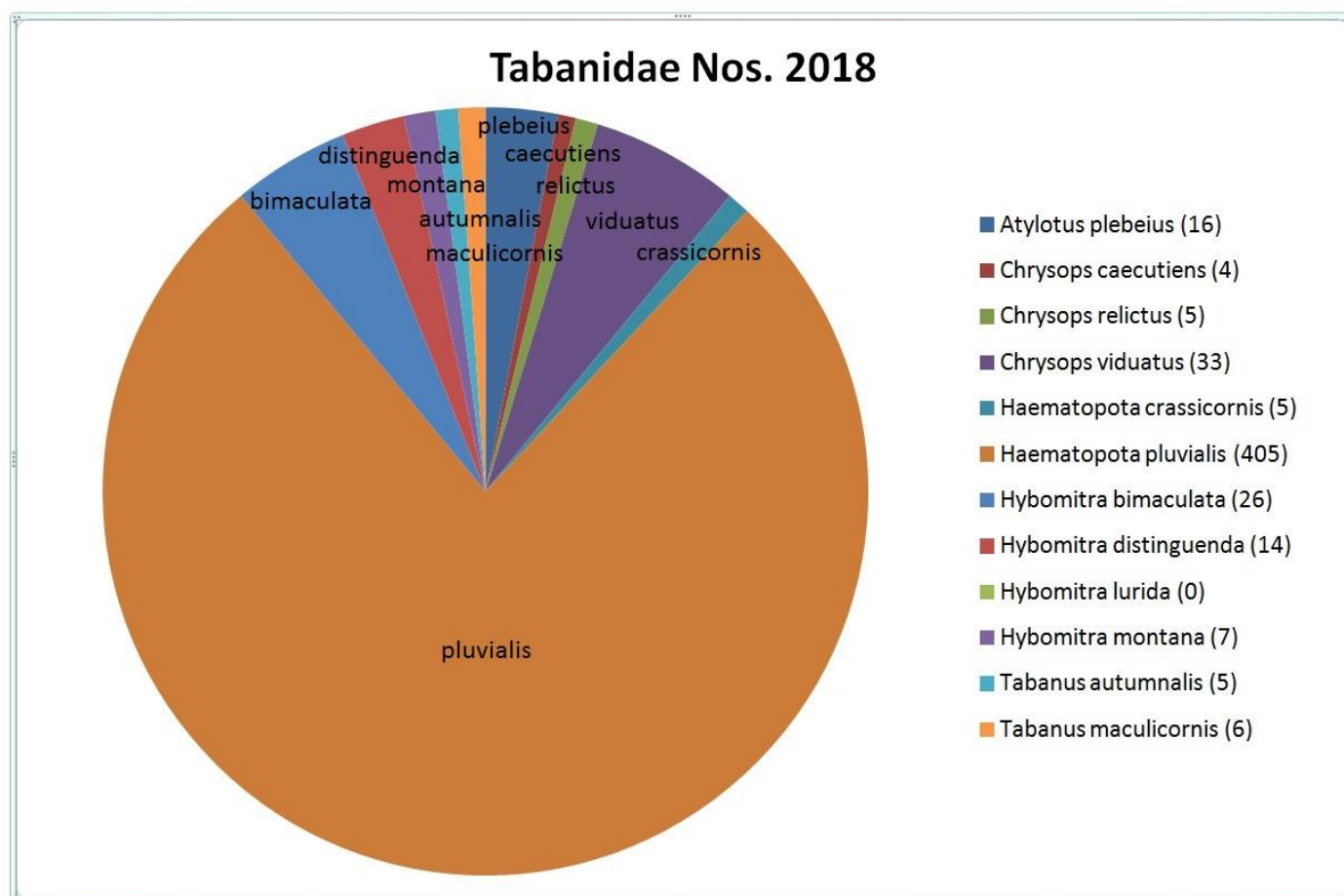
SCIENTIFIC NAME	VERNACULAR NAME	Dunham Park	Tatton Park	VC58	TOTAL
<i>Chrysops caecutiens</i> (Linnaeus)	Splayed Deerfly	-	1	1	1
<i>Chrysops viduatus</i> (Fabricius)	Square-spot Deerfly	1	3	4	4
<i>Haematopota crassicornis</i> Wahlberg	Black-horned Cleg	1	-	1	1
<i>Haematopota pluvialis</i> (Linnaeus)	Notch-horned Cleg	36	8	44	44
<i>Hybomitra bimaculata</i> (Macquart)	Hairy-legged Horsefly	3	1	4	4
<i>Hybomitra distinguenda</i> (Verrall)	Bright Horsefly	1	-	1	1
<i>Tabanus autumnalis</i> Linnaeus	Large Marsh Horsefly	1	-	1	1
<b>TOTAL</b>		<b>43</b>	<b>13</b>	<b>56</b>	<b>56</b>

TABLE SHOWING DISSECTION OF TABANIDAE NUMBERS IN 2022

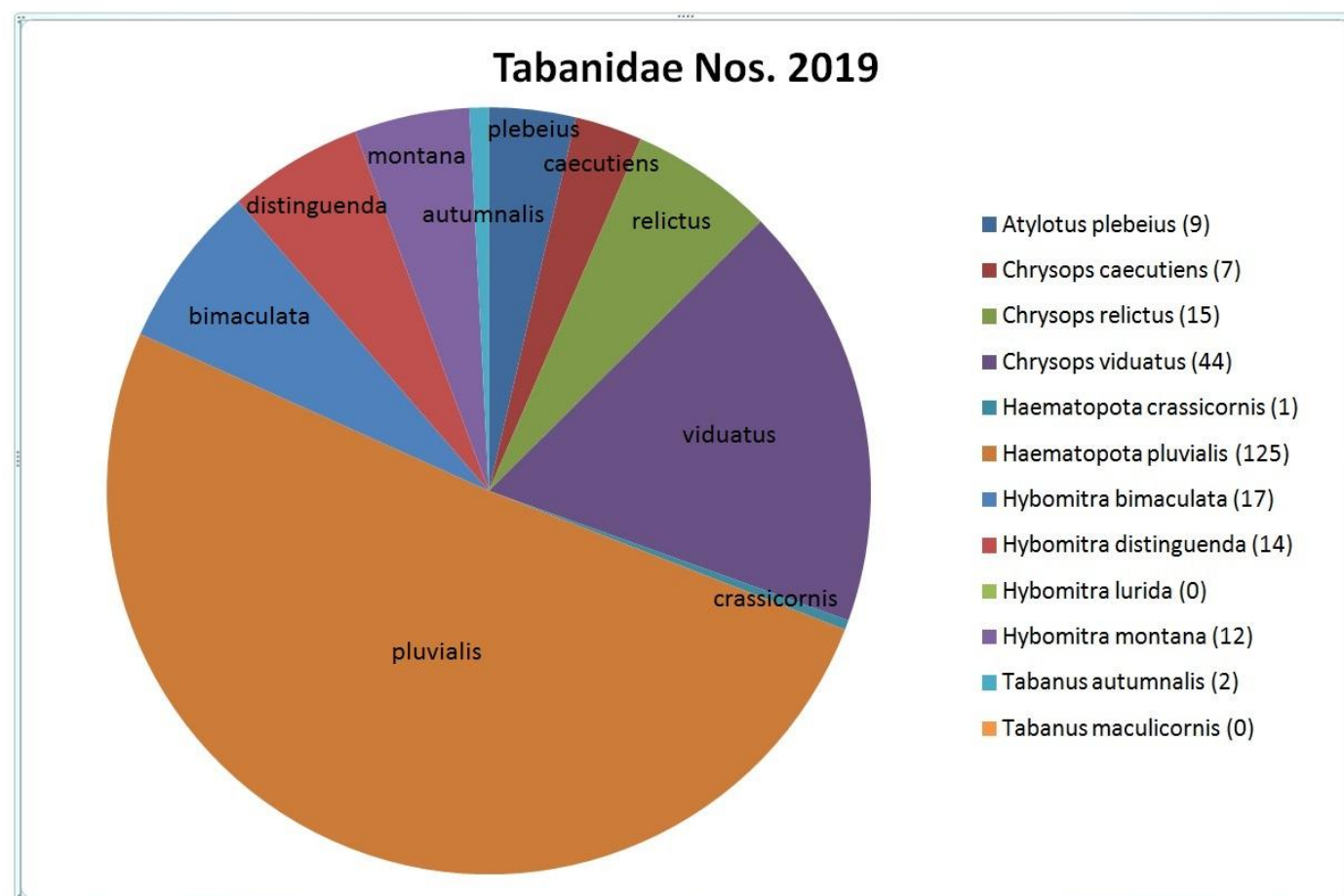
SCIENTIFIC NAME	VERNACULAR NAME	VC40	VC50	VC58	VC59	TOTAL	AVERAGE
<i>Atylotus plebeius</i> (Fallén)	Cheshire Horsefly	-	-	9	-	9	.64
<i>Chrysops caecutiens</i> (Linnaeus)	Splayed Deerfly	-	1	12	-	13	.93
<i>Chrysops relictus</i> Meigen	Twin-lobed Deerfly	1	-	-	5	6	.42
<i>Chrysops viduatus</i> (Fabricius)	Square-spot Deerfly	4	-	44	-	48	3.43
<i>Haematopota pluvialis</i> (Linnaeus)	Notch-horned Cleg	5	11	32	43	91	6.50
<i>Hybomitra bimaculata</i> (Macquart)	Hairy-legged Horsefly	9	4	41	-	54	3.86
<i>Hybomitra distinguenda</i> (Verrall)	Bright Horsefly	1	1	10	-	12	.86
<i>Hybomitra lurida</i> (Fallén)	Broad-headed Horsefly	-	-	1	-	1	.07
<b>TOTAL</b>		<b>20</b>	<b>17</b>	<b>148</b>	<b>48</b>	<b>234</b>	<b>16.71</b>



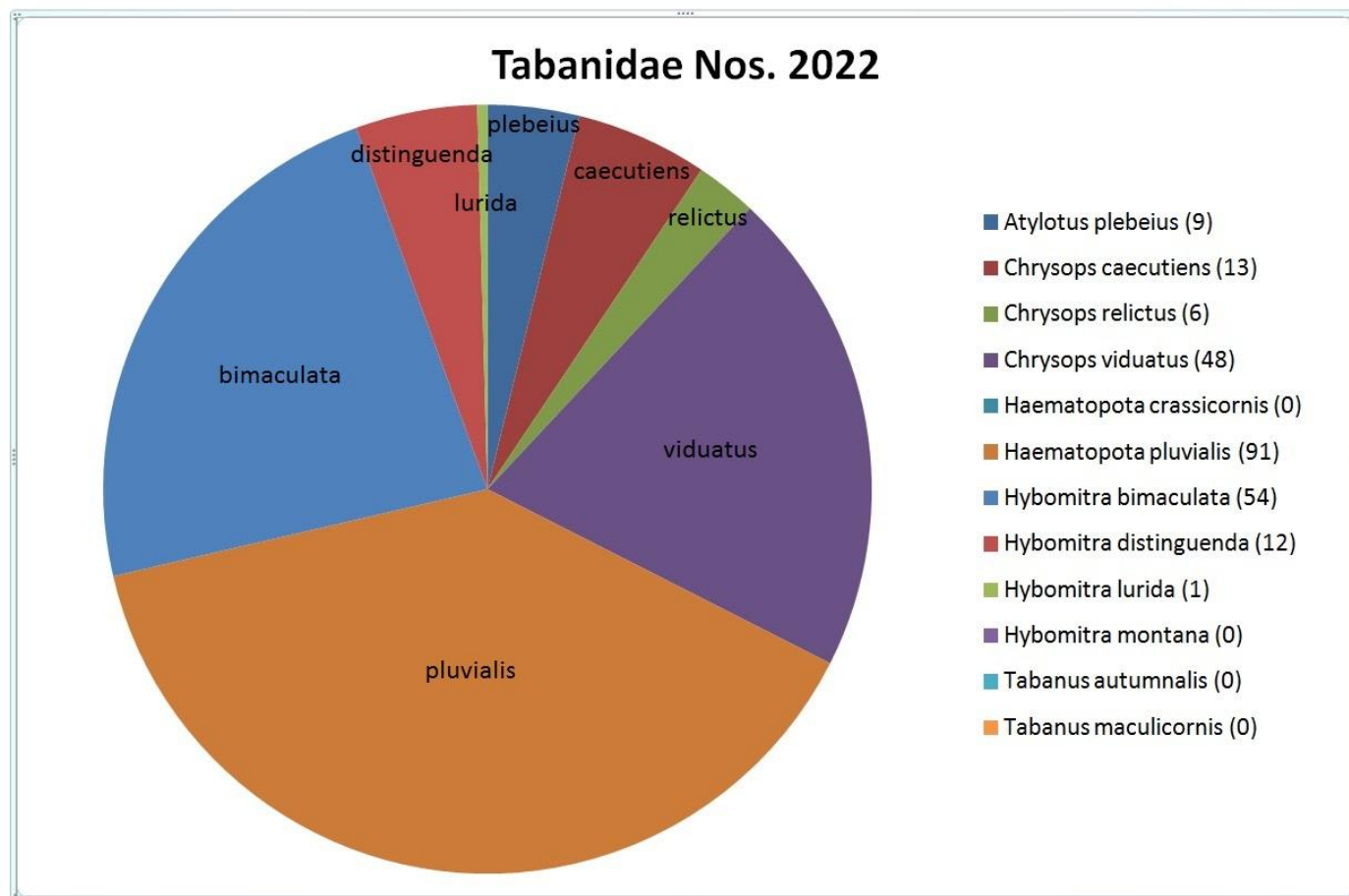
### PIE CHART OF TABANIDAE NUMBERS IN 2018



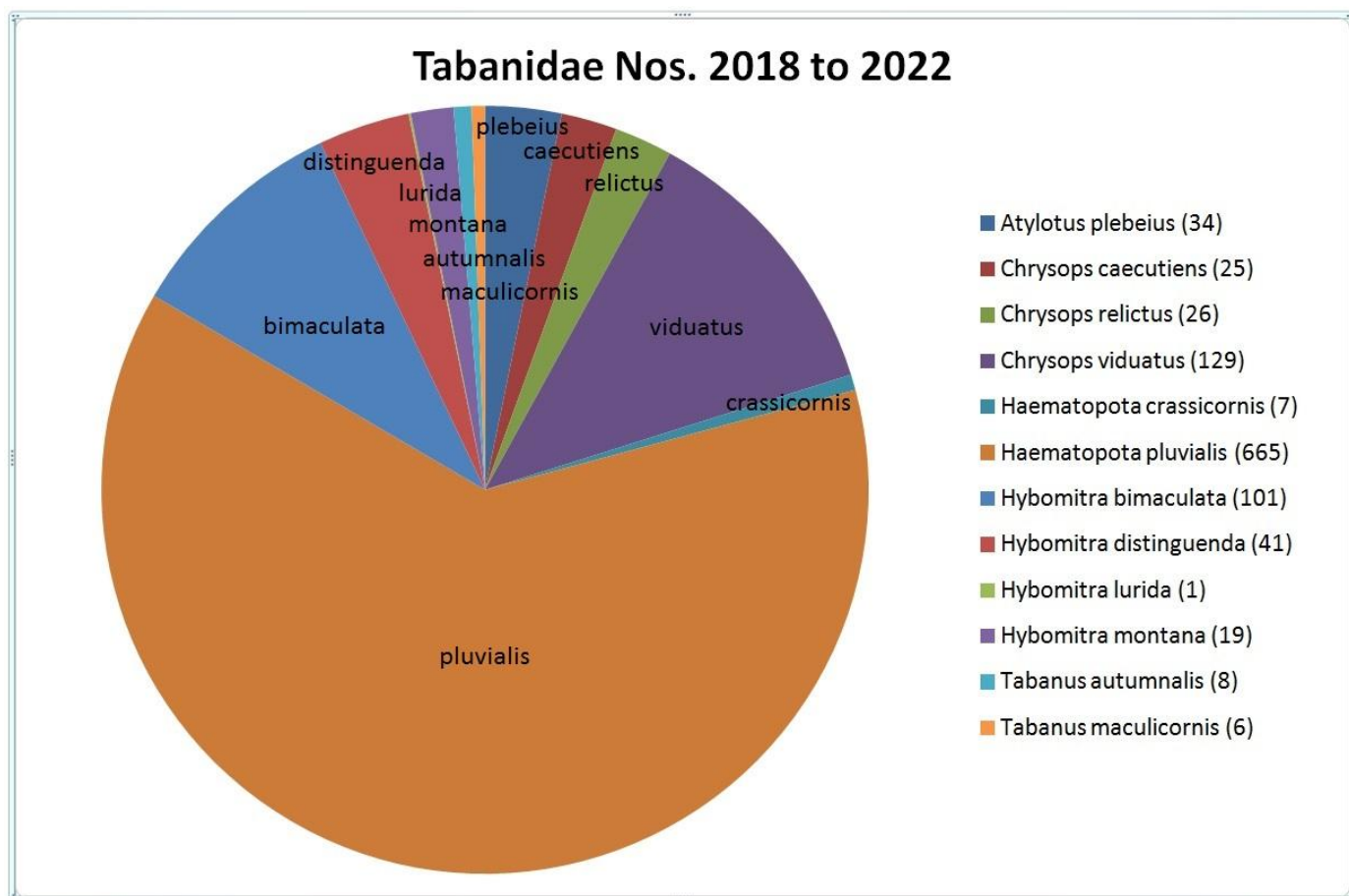
### PIE CHART OF TABANIDAE NUMBERS IN 2019



### PIE CHART OF TABANIDAE NUMBERS IN 2022



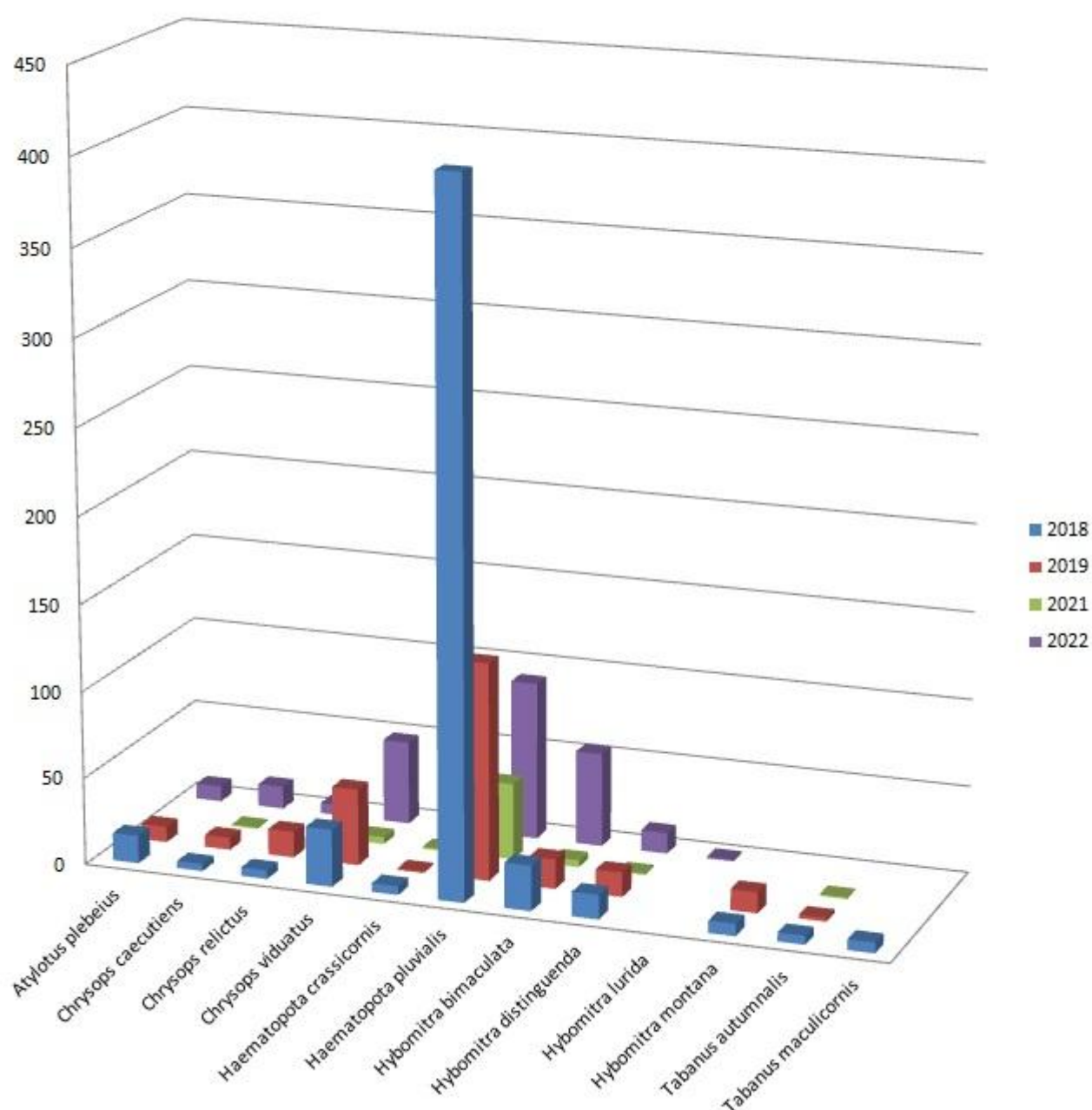
### PIE CHART OF OVERALL TABANIDAE NUMBERS 2018 TO 2022





## COLUMN CHART OF TABANIDAE NUMBERS 2018 TO 2022

**Tabanidae Nos. 2018 to 2022**



**N. B.** It should be noted that the number of survey days in 2018 (21) was considerably more than the number of survey days in 2019 (12) and 2022 (14); furthermore, optimum weather conditions for horsefly activity occurred less frequently during survey days in 2019 than those in 2018 and 2022.

Due to restrictions caused by the Covid-19 (Coronavirus Disease 2019) pandemic, no survey work was possible on Cheshire Plain area basin mires and their environs during 2020 and 2021; however, 56 horseflies, representing seven species, were recorded during saproxylic surveys carried out by the author at Dunham Park and Tatton Park in Cheshire (VC58) during 2021. These results from 2021 have been included in the table above.

53 of the survey days between 2018 and 2022 (including 7 days at Dunham Park and Tatton Park in 2021) were within the broad flight period for Tabanidae.

## ACKNOWLEDGEMENTS

The acknowledgements for this report are very similar to those that were necessary in respect of the 2019 survey that was reported on by Grayson (2021). Regarding the six days of fieldwork that were specifically aimed at Tabanidae studies, the author is very grateful to The Tanyptera Project Steering Group for providing a grant which contributed towards accommodation and travel costs. A special acknowledgement is of course given to Gary Hedges (Tanyptera Regional Entomology Project Officer).

The following acknowledgements in respect of the 2022 survey are also very similar to those of the 2019 survey. Chris Ecton (Forestry England) provided keys to unlock gates on the Delamere Forest roads. Farmer Geoff Jones and his wife gave the author permission on the day to visit the two basin mires at Vicarage Moss. Other permissions to collect and record invertebrates were usually obtained well in advance of site visits, except in the case of the basin mires on the land of the Forest Camp Activity Centre, where those in charge were kind enough to give permission on the days of the visits.

Regarding the photographs of set horseflies on pages 2 to 5, I am indebted to Jessica Alvey for her patience and care in achieving such fine results. Regarding the photograph of a male *Hybomitra lurida* on page 4, I am indebted to Nigel Gilligan and Martin Harvey. The fly was collected in the Lake District by Nigel – the photograph was taken by Martin.

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**Grayson, A.** (2021) *A survey of horseflies (Diptera: Tabanidae) on mires in the Cheshire Plain area during 2019: Including notes on other invertebrates of interest and a full species list.* [A report to the Tanyptera Trust]

**Grayson, A.** (in prep.) *A baseline survey of the Cheshire Hoverfly (Orthonevra intermedia) in Delamere Forest and the Abbots Moss Complex in 2022.* [This will be a report to the Tanyptera Trust]

**Stubbs, A. E. & Drake, [C.] M.** (2001) *British Soldierflies and their Allies. An illustrated guide to their identification and ecology: covering all flies (Diptera) in the the [sic] families Acroceridae, Asilidae, Athericidae, Bombyliidae, Rhagionidae, Scenopinidae, Stratiomyidae, Tabanidae, Therevidae, Xylomyidae and Xylophagidae.* Reading: British Entomological and Natural History Society.

**Stubbs, A. E. & Drake, [C.] M.** (2014) *British Soldierflies and their Allies. An illustrated guide to their identification and ecology: covering all flies (Diptera) in the the [sic] families Acroceridae, Asilidae, Athericidae, Bombyliidae, Rhagionidae, Scenopinidae, Stratiomyidae, Tabanidae, Therevidae, Xylomyidae and Xylophagidae.* Reading: British Entomological and Natural History Society.



# APPENDIX 1

## INTRODUCTION

This report does not include plans that show the locations of the sites (principally basin mires) that were investigated by the author during the 2018 to 2022 Cheshire Plain area Tabanidae studies. The locations of most of the sites are shown on plans (kindly produced by Gary Hedges) that are included in the appendices of the reports for 2018 and 2019 (Grayson, 2019 & 2021). Most of the additional localities visited during 2022 were basin mires in the Alvanley and Blakemere areas of Delamere Forest.

The term 'outlying', as used in the following tables, refers to basin mires that were situated well beyond the fringes of the main blocks of basin mires that occur in the Delamere area.

## TABLES OF LOCALITIES FOR 2022 ONLY

### LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED DURING 2022

Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	Tabanidae Species Recorded during 2022
	<b>Delamere Area Mires</b>				
	<b>Abbots Moss Complex Mires</b>				
	<b>on Forest Camp land</b>				
1	Boggy Pool	SJ 5970 6910	58	1	
3	Gull Pool	SJ 6009 6883	58	1	<i>H. pluvialis</i>
4	Lily Pool	SJ 5956 6925	58	2	<i>H. pluvialis</i>
5	Woodpile Bog	SJ 5956 6934	58	1	
	<b>on Forestry Commission land</b>				
7	Gull Moss	SJ 6011 6871	58	1	<i>H. distinguenda</i>
8	tracks between Gull Moss and Shemmy Moss	SJ 5977 6889	58	1	
9	Shemmy Moss	SJ 5949 6892	58	2	
11	South Moss	SJ 5937 6863	58	1	<i>H. pluvialis</i>
	<b>on Privately-owned land</b>				
12	Brackenhurst Bog	SJ 5956 6983	58	1	<i>H. pluvialis</i>
14	track to Brackenhurst Bog	SJ 5947 6987	58	1	
	<b>Delamere Forest Mires</b>				
17	Barnes Bridge	SJ 5411 7172	58	1	<i>H. pluvialis</i>
18	Barnesbridge Basin	SJ 5420 7190	58	2	<i>C. viduatus</i>
19	Barnesbridge Flushes	SJ 5398 7182	58	1	<i>C. viduatus</i> , <i>H. pluvialis</i>
20	Basin Mire A01b	SJ 5357 7211	58	2	<i>C. viduatus</i> , <i>H. pluvialis</i>
21	Basin Mire A06	SJ 5386 7202	58	1	
22	Basin Mire A07	SJ 5375 7197	58	1	
138	Basin Mire A11	SJ 5341 7199	58	1	
139	Basin Mire A12	SJ 5344 7211	58	2	<i>C. viduatus</i> , <i>H. distinguenda</i>
140	Basin Mire B01	SJ 5542 7149	58	2	<i>H. bimaculata</i> , <i>H. lurida</i>
141	Basin Mire B03	SJ 5520 7166	58	1	
142	Basin Mire B09	SJ 5445 7149	58	2	<i>H. bimaculata</i>
143	Basin Mire B11	SJ 5509 7146	58	2	<i>H. pluvialis</i> , <i>H. bimaculata</i>
144	Basin Mire B12	SJ 5433 7121	58	2	<i>H. pluvialis</i> , <i>H. bimaculata</i>
145	boggy area between Basin Mire B09 and Pierson's Moss	SJ 5451 7153	58	2	
146	Basin Mire GM07	SJ 5371 7141	58	1	
23	Basin Mire LM09	SJ 5379 7109	58	1	
24	Basin Mire LM10	SJ 5387 7111	58	1	
147	forestry road north of N1	SJ 5489 7220	58	1	<i>C. caecutiens</i>
27	Basin Mire N3	SJ 5492 7205	58	1	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	1	<i>H. pluvialis</i> , <i>H. bimaculata</i>
28	Black Lake	SJ 5373 7091	58	2	<i>C. viduatus</i> , <i>H. distinguenda</i>
31	Blain's Moss	SJ 5525 7177	58	2	<i>C. viduatus</i> , <i>H. pluvialis</i>
32	Blakemere Moss	SJ 5469 7120	58	1	<i>C. viduatus</i>
34	Doolittle Moss (upper basin)	SJ 5424 7155	58	1	
35	Doolittle Moss (lower basin)	SJ 5429 7142	58	1	
36	Finney's Moss	SJ 5596 7155	58	1	
39	Ham (upper basin)	SJ 5467 7193	58	1	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i>

## LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED DURING 2022

Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	Tabanidae Species Recorded during 2022
40	Ham Pool	SJ 5459 7204	58	1	
41	Harthill Moss	SJ 5633 7142	58	1	
42	Harthill (upper basin)	SJ 5600 7108	58	1	
148	Harrison's Moss	SJ 5336 7222	58	1	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i>
149	road verge between Harrison's Moss and Basin Mire A12	SJ 5341 7217	58	1	<i>C. viduatus</i> , <i>H. pluvialis</i>
43	Hatch Mere	SJ 5521 7206	58	1	<i>C. viduatus</i>
44	Hockenhull	SJ 5421 7094	58	2	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
150	Hunger-hill Moss (east end)	SJ 5503 7162	58	1	
45	Linmere Moss (north)	SJ 5469 7070	58	1	
151	Pierson's Moss	SJ 5462 7157	58	2	<i>H. bimaculata</i>
47	Rush Pool	SJ 5435 7195	58	1	
<b>Little Budworth Common Mires</b>					
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	2	<i>A. plebeius</i>
152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	58	2	<i>A. plebeius</i> , <i>H. pluvialis</i>
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	2	<i>A. plebeius</i> , <i>H. pluvialis</i>
153	Little Budworth Common (East Moss – eastern arm)	SJ 5865 6572	58	2	<i>A. plebeius</i>
50	Little Budworth Common (North Moss)	SJ 5842 6585	58	2	
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	2	<i>A. plebeius</i> , <i>H. pluvialis</i>
154	Little Budworth Common (north end pond and moss)	SJ 5849 6608	58	1	<i>H. bimaculata</i>
<b>Petty Pool Area Wetlands</b>					
155	Church-hill Wood Valley	SJ 6223 6931	58	2	
156	Sandiway Golf Course	SJ 6132 7038	58	1	<i>H. pluvialis</i>
157	Sherratt's Rough	SJ 6182 6925	58	3	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i>
<b>Other Delamere Area Mires</b>					
158	Bowyer's Waste	SJ 5697 6877	58	1	
58	Flaxmere Moss	SJ 5565 7229	58	1	
59	Hogshead Moss	SJ 5842 6952	58	1	<i>H. bimaculata</i>
61	Snipe Island	SJ 6111 6932	58	1	
159	track verge en route to Thieves Moss and Thieves Pool	SJ 5630 6928	58	1	
<b>Outlying Mires</b>					
<b>Cheshire</b>					
95	Brookhouse Moss	SJ 8052 6191	58	2	<i>H. pluvialis</i> , <i>H. bimaculata</i>
96	Brookhouse Lane	SJ 8082 6206	58	2	
63	Wybunbury Moss	SJ 6965 5021	58	2	<i>A. plebeius</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i>
<b>Denbighshire</b>					
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	1	<i>C. caecutiens</i> , <i>H. pluvialis</i>
98	Llay Bog area (fields and woodland)	SJ 3212 5527	50	1	<i>H. pluvialis</i>
99	Llay Bog area (Park Lane)	SJ 3182 5536	50	1	
100	Vicarage Moss (north basin mire)	SJ 3601 5398	50	1	<i>H. bimaculata</i>
101	Vicarage Moss (south basin mire)	SJ 3600 5384	50	1	<i>H. distinguenda</i>
103	track to Vicarage Moss	SJ 3632 5369	50	1	
160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	50	1	<i>H. pluvialis</i> , <i>H. bimaculata</i>
<b>South Lancashire</b>					
107	Highfield Moss	SJ 6135 9560	59	1	
108	Moss Lane (track to Highfield Moss)	SJ 6098 9606	59	1	<i>H. pluvialis</i>
109	Holcroft Moss	SJ 6850 9326	59	1	<i>C. relictus</i> , <i>H. pluvialis</i>
110	track to Holcroft Moss	SJ 6865 9355	59	1	
111	Holcroft Lane	SJ 6890 9345	59	1	<i>H. pluvialis</i>
113	Risley Moss (mini-moss)	SJ 6629 9198	59	1	
114	Risley Moss (birch woodland)	SJ 6631 9167	59	1	<i>C. relictus</i> , <i>H. pluvialis</i>
161	Little Woolden Moss	SJ 6972 9517	59	1	<i>C. relictus</i> , <i>H. pluvialis</i>
162	Rindle Moss	SJ 7036 9654	59	1	<i>H. pluvialis</i>
163	field on north side of Rindle Moss	SJ 7024 9676	59	1	<i>H. pluvialis</i>
<b>The Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses Complex SSSI Mires</b>					
71	Bettisfield Moss (England)	SJ 4821 3518	40	1	<i>C. viduatus</i>
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	1	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>



## LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED DURING 2022

Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	Tabanidae Species Recorded during 2022
	<b>Supplementary Localities</b>				
164	Dunham Park (basin near east end of Farm Walk track)	SJ 7420 8670	58	1	<i>H. pluvialis</i>
165	Dunham Park (north of Smithy Pool)	SJ 7384 8746	58	1	
166	Combermere Park [ex aerial trap sample: site not visited]	SJ 5913 4408	58	1?	<i>H. pluvialis</i>

## LIST OF LOCALITIES AND DATES OF SURVEY VISITS DURING 2022

Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	Dates of Survey Visits during 2022
	<b>Delamere Area Mires</b>				
	<b>Abbots Moss Complex Mires</b>				
	<b>on Forest Camp land</b>				
1	Boggy Pool	SJ 5970 6910	58	1	22 <sup>nd</sup> June
3	Gull Pool	SJ 6009 6883	58	1	14 <sup>th</sup> July
4	Lily Pool	SJ 5956 6925	58	2	22 <sup>nd</sup> June, 13 <sup>th</sup> July
5	Woodpile Bog	SJ 5956 6934	58	1	22 <sup>nd</sup> June
	<b>on Forestry Commission land</b>				
7	Gull Moss	SJ 6011 6871	58	1	14 <sup>th</sup> July
8	tracks between Gull Moss and Shemmy Moss	SJ 5977 6889	58	1	14 <sup>th</sup> July
9	Shemmy Moss	SJ 5949 6892	58	2	22 <sup>nd</sup> June, 13 <sup>th</sup> July
11	South Moss	SJ 5937 6863	58	1	13 <sup>th</sup> July
	<b>on Privately-owned land</b>				
12	Brackenhurst Bog	SJ 5956 6983	58	1	22 <sup>nd</sup> June
14	track to Brackenhurst Bog	SJ 5947 6987	58	1	22 <sup>nd</sup> June
	<b>Delamere Forest Mires</b>				
17	Barnes Bridge	SJ 5411 7172	58	1	12 <sup>th</sup> July
18	Barnesbridge Basin	SJ 5420 7190	58	2	12 <sup>th</sup> July, 19 <sup>th</sup> July
19	Barnesbridge Flushes	SJ 5398 7182	58	1	19 <sup>th</sup> July
20	Basin Mire A01b	SJ 5357 7211	58	2	19 <sup>th</sup> July, 9 <sup>th</sup> August
21	Basin Mire A06	SJ 5386 7202	58	1	9 <sup>th</sup> August
22	Basin Mire A07	SJ 5375 7197	58	1	19 <sup>th</sup> July
138	Basin Mire A11	SJ 5341 7199	58	1	9 <sup>th</sup> August
139	Basin Mire A12	SJ 5344 7211	58	2	19 <sup>th</sup> July, 9 <sup>th</sup> August
140	Basin Mire B01	SJ 5542 7149	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
141	Basin Mire B03	SJ 5520 7166	58	1	10 <sup>th</sup> August
142	Basin Mire B09	SJ 5445 7149	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
143	Basin Mire B11	SJ 5509 7146	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
144	Basin Mire B12	SJ 5433 7121	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
145	boggy area between Basin Mire B09 and Pierson's Moss	SJ 5451 7153	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
146	Basin Mire GM07	SJ 5371 7141	58	1	9 <sup>th</sup> August
23	Basin Mire LM09	SJ 5379 7109	58	1	9 <sup>th</sup> August
24	Basin Mire LM10	SJ 5387 7111	58	1	9 <sup>th</sup> August
147	forestry road north of N1	SJ 5489 7220	58	1	12 <sup>th</sup> July
27	Basin Mire N3	SJ 5492 7205	58	1	12 <sup>th</sup> July
93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	1	12 <sup>th</sup> July
28	Black Lake	SJ 5373 7091	58	2	14 <sup>th</sup> June, 14 <sup>th</sup> July
31	Blain's Moss	SJ 5525 7177	58	2	12 <sup>th</sup> July, 19 <sup>th</sup> July
32	Blakemere Moss	SJ 5469 7120	58	1	14 <sup>th</sup> July
34	Doolittle Moss (upper basin)	SJ 5424 7155	58	1	9 <sup>th</sup> August
35	Doolittle Moss (lower basin)	SJ 5429 7142	58	1	9 <sup>th</sup> August
36	Finney's Moss	SJ 5596 7155	58	1	10 <sup>th</sup> August
39	Ham (upper basin)	SJ 5467 7193	58	1	19 <sup>th</sup> July
40	Ham Pool	SJ 5459 7204	58	1	19 <sup>th</sup> July
41	Harthill Moss	SJ 5633 7142	58	1	10 <sup>th</sup> August
42	Harthill (upper basin)	SJ 5600 7108	58	1	10 <sup>th</sup> August
148	Harrison's Moss	SJ 5336 7222	58	1	19 <sup>th</sup> July
149	road verge between Harrison's Moss and Basin Mire A12	SJ 5341 7217	58	1	19 <sup>th</sup> July
43	Hatch Mere	SJ 5521 7206	58	1	12 <sup>th</sup> July
44	Hockenhull	SJ 5421 7094	58	2	14 <sup>th</sup> June, 14 <sup>th</sup> July

## LIST OF LOCALITIES AND DATES OF SURVEY VISITS DURING 2022

Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	Dates of Survey Visits during 2022
150	Hunger-hill Moss (east end)	SJ 5503 7162	58	1	14 <sup>th</sup> June
45	Linmere Moss (north)	SJ 5469 7070	58	1	14 <sup>th</sup> July
151	Pierson's Moss	SJ 5462 7157	58	2	14 <sup>th</sup> June, 10 <sup>th</sup> August
47	Rush Pool	SJ 5435 7195	58	1	19 <sup>th</sup> July
<b>Little Budworth Common Mires</b>					
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
153	Little Budworth Common (East Moss – eastern arm)	SJ 5865 6572	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
50	Little Budworth Common (North Moss)	SJ 5842 6585	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	2	15 <sup>th</sup> June, 18 <sup>th</sup> July
154	Little Budworth Common (north end pond and moss)	SJ 5849 6608	58	1	18 <sup>th</sup> July
<b>Petty Pool Area Wetlands</b>					
155	Church-hill Wood Valley	SJ 6223 6931	58	2	23 <sup>rd</sup> June, 18 <sup>th</sup> July
156	Sandway Golf Course	SJ 6132 7038	58	1	13 <sup>th</sup> July
157	Sherratt's Rough	SJ 6182 6925	58	3	23 <sup>rd</sup> June, 12 <sup>th</sup> July, 18 <sup>th</sup> July
<b>Other Delamere Area Mires</b>					
158	Bowyer's Waste	SJ 5697 6877	58	1	11 <sup>th</sup> August
58	Flaxmere Moss	SJ 5565 7229	58	1	10 <sup>th</sup> August
59	Hogshead Moss	SJ 5842 6952	58	1	13 <sup>th</sup> June
61	Snipe Island	SJ 6111 6932	58	1	10 <sup>th</sup> August
159	track verge en route to Thieves Moss and Thieves Pool	SJ 5630 6928	58	1	10 <sup>th</sup> August
<b>Outlying Mires</b>					
<b>Cheshire</b>					
95	Brookhouse Moss	SJ 8052 6191	58	2	16 <sup>th</sup> June, 11 <sup>th</sup> August
96	Brookhouse Lane	SJ 8082 6206	58	2	16 <sup>th</sup> June, 11 <sup>th</sup> August
63	Wybunbury Moss	SJ 6965 5021	58	2	16 <sup>th</sup> June, 11 <sup>th</sup> August
<b>Denbighshire</b>					
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	1	23 <sup>rd</sup> June
98	Llay Bog area (fields and woodland)	SJ 3212 5527	50	1	23 <sup>rd</sup> June
99	Llay Bog area (Park Lane)	SJ 3182 5536	50	1	23 <sup>rd</sup> June
100	Vicarage Moss (north basin mire)	SJ 3601 5398	50	1	23 <sup>rd</sup> June
101	Vicarage Moss (south basin mire)	SJ 3600 5384	50	1	23 <sup>rd</sup> June
103	track to Vicarage Moss	SJ 3632 5369	50	1	23 <sup>rd</sup> June
160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	50	1	23 <sup>rd</sup> June
<b>South Lancashire</b>					
107	Highfield Moss	SJ 6135 9560	59	1	17 <sup>th</sup> July
108	Moss Lane (track to Highfield Moss)	SJ 6098 9606	59	1	17 <sup>th</sup> July
109	Holcroft Moss	SJ 6850 9326	59	1	17 <sup>th</sup> July
110	track to Holcroft Moss	SJ 6865 9355	59	1	17 <sup>th</sup> July
111	Holcroft Lane	SJ 6890 9345	59	1	17 <sup>th</sup> July
113	Risley Moss (mini-moss)	SJ 6629 9198	59	1	17 <sup>th</sup> July
114	Risley Moss (birch woodland)	SJ 6631 9167	59	1	17 <sup>th</sup> July
161	Little Woolden Moss	SJ 6972 9517	59	1	17 <sup>th</sup> July
162	Rindle Moss	SJ 7036 9654	59	1	17 <sup>th</sup> July
163	field on north side of Rindle Moss	SJ 7024 9676	59	1	17 <sup>th</sup> July
<b>The Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses Complex SSSI Mires</b>					
71	Bettisfield Moss (England)	SJ 4821 3518	40	1	15 <sup>th</sup> June
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	1	15 <sup>th</sup> June
<b>Supplementary Localities</b>					
164	Dunham Park (basin near east end of Farm Walk track)	SJ 7420 8670	58	1	16 <sup>th</sup> June
165	Dunham Park (north of Smithy Pool)	SJ 7384 8746	58	1	16 <sup>th</sup> June
166	Combermere Park [ex aerial trap sample: site not visited]	SJ 5913 4408	58	1?	



## TABLES OF LOCALITIES FOR THE FULL DURATION OF THE STUDY (2018 TO 2022)

### FULL LIST OF LOCALITIES WITH NUMBERS OF VISITS AND TABANIDAE SPECIES FROM 2018 TO 2022

Survey Years	Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	No. of Tabanidae Species
		<b>Delamere Area Mires</b>				
		<b>Abbots Moss Complex Mires</b>				
		<b>on Forest Camp land</b>				
2018 & 2022	1	Boggy Pool	SJ 5970 6910	58	3	1
2018	2	Centre Bog	SJ 5968 6923	58	2	1
2018, 2019 & 2022	3	Gull Pool	SJ 6009 6883	58	5	1
2018, 2019 & 2022	4	Lily Pool	SJ 5956 6925	58	5	2
2018 & 2022	5	Woodpile Bog	SJ 5956 6934	58	3	1
2018	6	Wrekin Pool	SJ 5993 6918	58	2	1
		<b>on Forestry Commission land</b>				
2018, 2019 & 2022	7	Gull Moss	SJ 6011 6871	58	5	2
2018, 2019 & 2022	8	tracks between Gull Moss and Shemmy Moss	SJ 5977 6889	58	5	1
2018, 2019 & 2022	9	Shemmy Moss	SJ 5949 6892	58	18	5
2019	92	forestry road to Shemmy Moss	SJ 5904 6851	58	4	0
2018	10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	12	3
2018, 2019 & 2022	11	South Moss	SJ 5937 6863	58	11	2
		<b>on Privately-owned land</b>				
2018 & 2022	12	Brackenhurst Bog	SJ 5956 6983	58	13	2
2018	13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	12	2
2018 & 2022	14	track to Brackenhurst Bog	SJ 5947 6987	58	13	1
2018	15	stables near Brackenhurst Bog	SJ 5940 6987	58	1	1
2018 & 2019	16	Newchurch Common	SJ 6055 6894	58	2	2
		<b>Delamere Forest Mires</b>				
2018, 2019 & 2022	17	Barnes Bridge	SJ 5411 7172	58	6	3
2018, 2019 & 2022	18	Barnesbridge Basin	SJ 5420 7190	58	5	1
2018, 2019 & 2022	19	Barnesbridge Flushes	SJ 5398 7182	58	4	4
2018, 2019 & 2022	20	Basin Mire A01b	SJ 5357 7211	58	5	4
2018, 2019 & 2022	21	Basin Mire A06	SJ 5386 7202	58	4	1
2018, 2019 & 2022	22	Basin Mire A07	SJ 5375 7197	58	4	1
2022	138	Basin Mire A11	SJ 5341 7199	58	1	0
2022	139	Basin Mire A12	SJ 5344 7211	58	2	2
2022	140	Basin Mire B01	SJ 5542 7149	58	2	2
2022	141	Basin Mire B03	SJ 5520 7166	58	1	0
2022	142	Basin Mire B09	SJ 5445 7149	58	2	1
2022	143	Basin Mire B11	SJ 5509 7146	58	2	2
2022	144	Basin Mire B12	SJ 5433 7121	58	2	2
2022	145	boggy area between Basin Mire B09 and Pierson's Moss	SJ 5451 7153	58	2	0
2022	146	Basin Mire GM07	SJ 5371 7141	58	1	0
2018, 2019 & 2022	23	Basin Mire LM09	SJ 5379 7109	58	4	2
2018, 2019 & 2022	24	Basin Mire LM10	SJ 5387 7111	58	4	2
2018 & 2019	25	Basin Mire N1	SJ 5497 7212	58	3	0
2022	147	forestry road north of N1	SJ 5489 7220	58	1	1
2018 & 2019	26	Basin Mire N2	SJ 5502 7208	58	4	2
2018, 2019 & 2022	27	Basin Mire N3	SJ 5492 7205	58	4	4
2019 & 2022	93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	2	3
2018, 2019 & 2022	28	Black Lake	SJ 5373 7091	58	15	4
2018	29	Black Lake [Manitoba trap]	SJ 5377 7089	58	9	1
2018 & 2019	30	bridge near Black Lake	SJ 5381 7100	58	2	1
2018, 2019 & 2022	31	Blain's Moss	SJ 5525 7177	58	7	3
2018, 2019 & 2022	32	Blakemere Moss	SJ 5469 7120	58	12	3
2018	33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	9	4
2018 & 2022	34	Doolittle Moss (upper basin)	SJ 5424 7155	58	3	1
2018 & 2022	35	Doolittle Moss (lower basin)	SJ 5429 7142	58	3	2
2018, 2019 & 2022	36	Finney's Moss	SJ 5596 7155	58	4	3
2018	37	Great Middel	SJ 5406 7132	58	1	1
2018 & 2019	38	Ham (lower basin)	SJ 5467 7205	58	3	2
2018, 2019 & 2022	39	Ham (upper basin)	SJ 5467 7193	58	4	4

## FULL LIST OF LOCALITIES WITH NUMBERS OF VISITS AND TABANIDAE SPECIES FROM 2018 TO 2022

Survey Years	Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	No. of Tabanidae Species
2018, 2019 & 2022	40	Ham Pool	SJ 5459 7204	58	4	3
2018, 2019 & 2022	41	Harthill Moss	SJ 5633 7142	58	4	3
2018, 2019 & 2022	42	Harthill (upper basin)	SJ 5600 7108	58	4	4
2022	148	Harrison's Moss	SJ 5336 7222	58	1	3
2022	149	road verge between Harrison's Moss and Basin Mire A12	SJ 5341 7217	58	1	2
2018, 2019 & 2022	43	Hatch Mere	SJ 5521 7206	58	4	2
2018, 2019 & 2022	44	Hockenhull	SJ 5421 7094	58	8	4
2022	150	Hunger-hill Moss (east end)	SJ 5503 7162	58	1	0
2018, 2019 & 2022	45	Linmere Moss (north)	SJ 5469 7070	58	6	2
2018 & 2019	46	Linmere Moss (south)	SJ 5451 7054	58	3	1
2022	151	Pierson's Moss	SJ 5462 7157	58	2	1
2018, 2019 & 2022	47	Rush Pool	SJ 5435 7195	58	5	3
<b>Little Budworth Common Mires</b>						
2018, 2019 & 2022	48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	8	2
2022	152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	58	2	2
2018, 2019 & 2022	49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	8	2
2022	153	Little Budworth Common (East Moss – eastern arm)	SJ 5865 6572	58	2	1
2018, 2019 & 2022	50	Little Budworth Common (North Moss)	SJ 5842 6585	58	6	0
2018, 2019 & 2022	51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	8	3
2018	52	Little Budworth Common (north end)	SJ 5830 6597	58	1	0
2019	94	Little Budworth Common (open central area)	SJ 5849 6579	58	1	0
2022	154	Little Budworth Common (north end pond and moss)	SJ 5849 6608	58	1	1
<b>Petty Pool Area Wetlands</b>						
2018	53	New Pool	SJ 6262 6959	58	2	0
2018	54	Petty Pool	SJ 6174 6999	58	2	1
2018	55	Pettypool Brook	SJ 6215 6966	58	2	0
2018	56	lane between Petty Pool and Pettypool Brook	SJ 6204 6973	58	2	3
2022	155	Church-hill Wood Valley	SJ 6223 6931	58	2	0
2022	156	Sandway Golf Course	SJ 6132 7038	58	1	1
2022	157	Sherratt's Rough	SJ 6182 6925	58	3	3
<b>Other Delamere Area Mires</b>						
2022	158	Bowyer's Waste	SJ 5697 6877	58	1	0
2018	57	Fishpool Moss	SJ 5643 6716	58	1	2
2018, 2019 & 2022	58	Flaxmere Moss	SJ 5565 7229	58	3	1
2018, 2019 & 2022	59	Hogshead Moss	SJ 5842 6952	58	7	3
2018	60	Oak Mere	SJ 5765 6807	58	1	1
2018 & 2022	61	Snipe Island	SJ 6111 6932	58	2	2
2018 & 2019	62	Thieves Moss and Thieves Pool	SJ 5648 6906	58	3	1
2022	159	track verge en route to Thieves Moss and Thieves Pool	SJ 5630 6928	58	1	0
<b>Outlying Mires</b>						
<b>Cheshire</b>						
2019 & 2022	95	Brookhouse Moss	SJ 8052 6191	58	3	2
2019 & 2022	96	Brookhouse Lane	SJ 8082 6206	58	3	1
2018, 2019 & 2022	63	Wybunbury Moss	SJ 6965 5021	58	5	6
2018	64	Wybunbury (gate near Main Road)	SJ 6907 5019	58	1	1
<b>Staffordshire</b>						
2018	65	Chartley Moss	SK 0221 2825	39	1	2
2018	66	Chartley Moss area	SK 0230 2876	39	1	1
<b>Shropshire</b>						
2018	67	Brown Moss	SJ 5616 3949	40	2	2
2018	68	Clarepool Moss	SJ 4356 3411	40	1	2
2018	69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	40	1	4
2018	70	Cole Mere	SJ 4284 3343	40	1	1
<b>Denbighshire</b>						
2019 & 2022	97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	2	2
2019 & 2022	98	Llay Bog area (fields and woodland)	SJ 3212 5527	50	2	1
2019 & 2022	99	Llay Bog area (Park Lane)	SJ 3182 5536	50	2	1
2019 & 2022	100	Vicarage Moss (north basin mire)	SJ 3601 5398	50	2	2
2019 & 2022	101	Vicarage Moss (south basin mire)	SJ 3600 5384	50	2	2
2019	102	Vicarage Moss (small raised basin)	SJ 3613 5383	50	1	1



## FULL LIST OF LOCALITIES WITH NUMBERS OF VISITS AND TABANIDAE SPECIES FROM 2018 TO 2022

Survey Years	Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	No. of Tabanidae Species
2019 & 2022	103	track to Vicarage Moss	SJ 3632 5369	50	2	0
2019	104	pasture to north of Vicarage Moss	SJ 3609 5410	50	1	1
2019	105	Gatehouse Farm (Vicarage Lane)	SJ 3574 5430	50	1	1
2019	106	Springfield Farm (Vicarage Lane)	SJ 3616 5422	50	1	1
2022	160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	50	1	2
		<b>South Lancashire</b>				
2019 & 2022	107	Highfield Moss	SJ 6135 9560	59	4	1
2019 & 2022	108	Moss Lane (track to Highfield Moss)	SJ 6098 9606	59	4	1
2019 & 2022	109	Holcroft Moss	SJ 6850 9326	59	4	2
2019 & 2022	110	track to Holcroft Moss	SJ 6865 9355	59	4	0
2019 & 2022	111	Holcroft Lane	SJ 6890 9345	59	4	1
2019	112	Risley Moss (mossland)	SJ 6656 9173	59	3	2
2019 & 2022	113	Risley Moss (mini-moss)	SJ 6629 9198	59	4	3
2019 & 2022	114	Risley Moss (birch woodland)	SJ 6631 9167	59	4	3
2022	161	Little Woolden Moss	SJ 6972 9517	59	1	2
2022	162	Rindle Moss	SJ 7036 9654	59	1	1
2022	163	field on north side of Rindle Moss	SJ 7024 9676	59	1	1
		<b>The Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses Complex SSSI Mires</b>				
2018, 2019 & 2022	71	Bettisfield Moss (England)	SJ 4821 3518	40	3	4
2019	115	Bettisfield Moss (Wales)	SJ 4767 3533	50	1	4
2018 & 2019	72	Bettisfield Moss (World's End Car Park)	SJ 4803 3482	40	2	1
2018	73	Cadney Moss	SJ 4689 3477	50	1	2
2018	74	Fenn's Moss (central area)	SJ 4848 3628	50	1	3
2019	116	Fenn's Moss (western area)	SJ 4804 3621	50	1	4
2018	75	Wem Moss	SJ 4734 3431	40	2	2
2018	76	Whixall Moss	SJ 4926 3603	40	3	5
2019 & 2022	117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	2	5
2019	118	Whixall Moss (western and central areas)	SJ 4860 3559	40	1	4
2018 & 2019	77	Whixall Moss (Morris Bridge Car Park)	SJ 4933 3539	40	4	1
		<b>Supplementary Localities</b>				
2018	78	Cannock Chase (near Aspen Car Park)	SJ 9829 1593	39	1	0
2018	79	Cannock Chase (near Chase Road Corner Car Park)	SJ 9808 1760	39	1	0
2018	80	Cannock Chase (near Penkridge Bank Car Park)	SK 0008 1694	39	1	2
2018	81	Cannock Chase (near Penkridge Bank Road)	SK 0099 1687	39	1	2
2018	82	Cannock Chase (Sherbrook Valley)	SJ 9836 1884	39	1	0
2018	83	Cannock Chase (near Whitehouse Car Park)	SJ 9931 1621	39	1	1
2018	84	Hawksmoor Wood [not visited by A. Grayson]	SK 038 441	39	1?	1
2018	85	between Mosslee Hall Farm and Coltstone [not visited]	SK 00789 50701	39	1?	1
2018	86	Staffordshire University Nature Reserve	SJ 8825 4529	39	2	1
2018	87	Shavington Park [not visited by A. Grayson]	SJ 638 382	40	1?	1
2018	88	Chester Zoo Nature Reserve [not visited by A. Grayson]	SJ 40791 70697	58	1?	1
2018 & 2019	89	Delamere Office Car Park (Forestry Commission)	SJ 5504 7040	58	2	0
2018	90	Stoneyford Lane	SJ 5800 7085	58	1	1
2018	91	Vale Royal Abbey Golf Club	SJ 6384 6996	58	1	1
2019	119	Wall Hill Farm Guest House (Acton Bridge)	SJ 5970 7538	58	1	0
2019	120	Newton Road (Town of Lowton)	SJ 6085 9620	59	4	0
2021	121	Back Lane (Dunham Massey)	SJ 73014 88390	58	2	1
2021	122	Dunham Park (Visitor Centre)	SJ 733 874	58	6	1
2021	123	Dunham Park	SJ 733 876	58	4	1
2021	124	Dunham Park	SJ 735 865	58	1	1
2021	125	Dunham Park	SJ 736 869	58	2	5
2021	126	Dunham Park	SJ 736 870	58	1	1
2021	127	Dunham Park	SJ 737 866	58	1	1
2021	128	Dunham Park	SJ 737 867	58	2	1
2021	129	Dunham Park	SJ 738 873	58	2	1
2021	130	Dunham Park	SJ 739 874	58	3	2
2021	131	Tatton Park	SJ 738 817	58	1	1
2021	132	Tatton Park	SJ 739 818	58	2	1
2021	133	Tatton Park	SJ 745 817	58	5	2



## FULL LIST OF LOCALITIES WITH NUMBERS OF VISITS AND TABANIDAE SPECIES FROM 2018 TO 2022

Survey Years	Survey Code No.	Locality	Central National Grid Reference	Vice-County No.	No. of Survey Visits	No. of Tabanidae Species
2021	134	Tatton Park	SJ 749 807	58	2	1
2021	135	Tatton Park	SJ 750 804	58	1	2
2021	136	Tatton Park	SJ 751 803	58	1	1
2021	137	Tatton Park	SJ 751 808	58	1	2
2022	164	Dunham Park (basin near east end of Farm Walk track)	SJ 7420 8670	58	1	1
2022	165	Dunham Park (north of Smithy Pool)	SJ 7384 8746	58	1	0
2022	166	Combermere Park [not visited by A. Grayson]	SJ 5913 4408	58	1?	1

## FULL LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED BETWEEN 2018 AND 2022

Survey Code No.	Locality	Central National Grid Reference	Tabanidae Species Recorded between 2018 and 2022
	<b>Delamere Area Mires</b>		
	<b>Abbots Moss Complex Mires</b>		
	<b>on Forest Camp land</b>		
1	Boggy Pool	SJ 5970 6910	<i>H. pluvialis</i>
2	Centre Bog	SJ 5968 6923	<i>H. pluvialis</i>
3	Gull Pool	SJ 6009 6883	<i>H. pluvialis</i>
4	Lily Pool	SJ 5956 6925	<i>H. pluvialis</i> , <i>H. distinguenda</i>
5	Woodpile Bog	SJ 5956 6934	<i>H. pluvialis</i>
6	Wrekin Pool	SJ 5993 6918	<i>H. pluvialis</i>
	<b>on Forestry Commission land</b>		
7	Gull Moss	SJ 6011 6871	<i>H. pluvialis</i> , <i>H. distinguenda</i>
8	tracks between Gull Moss and Shemmy Moss	SJ 5977 6889	<i>H. pluvialis</i>
9	Shemmy Moss	SJ 5949 6892	<i>A. plebeius</i> , <i>H. crassicornis</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>T. autumnalis</i>
92	forestry road to Shemmy Moss	SJ 5904 6851	
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	<i>H. pluvialis</i> , <i>H. montana</i> , <i>T. autumnalis</i>
11	South Moss	SJ 5937 6863	<i>C. caecutiens</i> , <i>H. pluvialis</i>
	<b>on Privately-owned land</b>		
12	Brackenhurst Bog	SJ 5956 6983	<i>H. pluvialis</i> , <i>H. bimaculata</i>
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	<i>H. crassicornis</i> , <i>H. pluvialis</i>
14	track to Brackenhurst Bog	SJ 5947 6987	<i>H. pluvialis</i>
15	stables near Brackenhurst Bog	SJ 5940 6987	<i>T. autumnalis</i>
16	Newchurch Common	SJ 6055 6894	<i>H. pluvialis</i> , <i>H. distinguenda</i>
	<b>Delamere Forest Mires</b>		
17	Barnes Bridge	SJ 5411 7172	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i>
18	Barnesbridge Basin	SJ 5420 7190	<i>C. viduatus</i>
19	Barnesbridge Flushes	SJ 5398 7182	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
20	Basin Mire A01b	SJ 5357 7211	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
21	Basin Mire A06	SJ 5386 7202	<i>H. bimaculata</i>
22	Basin Mire A07	SJ 5375 7197	<i>C. viduatus</i>
138	Basin Mire A11	SJ 5341 7199	
139	Basin Mire A12	SJ 5344 7211	<i>C. viduatus</i> , <i>H. distinguenda</i>
140	Basin Mire B01	SJ 5542 7149	<i>H. bimaculata</i> , <i>H. lurida</i>
141	Basin Mire B03	SJ 5520 7166	
142	Basin Mire B09	SJ 5445 7149	<i>H. bimaculata</i>
143	Basin Mire B11	SJ 5509 7146	<i>H. pluvialis</i> , <i>H. bimaculata</i>
144	Basin Mire B12	SJ 5433 7121	<i>H. pluvialis</i> , <i>H. bimaculata</i>
145	boggy area between Basin Mire B09 and Pierson's Moss	SJ 5451 7153	
146	Basin Mire GM07	SJ 5371 7141	
23	Basin Mire LM09	SJ 5379 7109	<i>C. viduatus</i> , <i>H. pluvialis</i>
24	Basin Mire LM10	SJ 5387 7111	<i>C. viduatus</i> , <i>H. pluvialis</i>
25	Basin Mire N1	SJ 5497 7212	
147	forestry road north of N1	SJ 5489 7220	<i>C. caecutiens</i>
26	Basin Mire N2	SJ 5502 7208	<i>C. caecutiens</i> , <i>C. viduatus</i>
27	Basin Mire N3	SJ 5492 7205	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>



## FULL LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED BETWEEN 2018 AND 2022

Survey Code No.	Locality	Central National Grid Reference	Tabanidae Species Recorded between 2018 and 2022
93	forestry road west of N1, N2 and N3	SJ 5483 7202	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i>
28	Black Lake	SJ 5373 7091	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
29	Black Lake [Manitoba trap]	SJ 5377 7089	<i>H. pluvialis</i>
30	bridge near Black Lake	SJ 5381 7100	<i>H. distinguenda</i>
31	Blain's Moss	SJ 5525 7177	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i>
32	Blakemere Moss	SJ 5469 7120	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i>
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	<i>H. crassicornis</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>T. autumnalis</i>
34	Doolittle Moss (upper basin)	SJ 5424 7155	<i>H. bimaculata</i>
35	Doolittle Moss (lower basin)	SJ 5429 7142	<i>C. viduatus</i> , <i>H. pluvialis</i>
36	Finney's Moss	SJ 5596 7155	<i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
37	Great Middel	SJ 5406 7132	<i>C. viduatus</i>
38	Ham (lower basin)	SJ 5467 7205	<i>C. caecutiens</i> , <i>C. viduatus</i>
39	Ham (upper basin)	SJ 5467 7193	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i>
40	Ham Pool	SJ 5459 7204	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i>
41	Harthill Moss	SJ 5633 7142	<i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
42	Harthill (upper basin)	SJ 5600 7108	<i>C. caecutiens</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
148	Harrison's Moss	SJ 5336 7222	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. pluvialis</i>
149	road verge between Harrison's Moss and Basin Mire A12	SJ 5341 7217	<i>C. viduatus</i> , <i>H. pluvialis</i>
43	Hatch Mere	SJ 5521 7206	<i>C. viduatus</i> , <i>H. distinguenda</i>
44	Hockenhull	SJ 5421 7094	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
150	Hunger-hill Moss (east end)	SJ 5503 7162	
45	Linmere Moss (north)	SJ 5469 7070	<i>H. pluvialis</i> , <i>H. bimaculata</i>
46	Linmere Moss (south)	SJ 5451 7054	<i>H. pluvialis</i>
151	Pierson's Moss	SJ 5462 7157	<i>H. bimaculata</i>
47	Rush Pool	SJ 5435 7195	<i>C. caecutiens</i> , <i>C. viduatus</i> , <i>H. bimaculata</i>
<b>Little Budworth Common Mires</b>			
48	Little Budworth Common (Central Moss)	SJ 5850 6574	<i>A. plebeius</i> , <i>H. pluvialis</i>
152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	<i>A. plebeius</i> , <i>H. pluvialis</i>
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	<i>A. plebeius</i> , <i>H. pluvialis</i>
153	Little Budworth Common (East Moss – eastern arm)	SJ 5865 6572	<i>A. plebeius</i>
50	Little Budworth Common (North Moss)	SJ 5842 6585	
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	<i>A. plebeius</i> , <i>H. pluvialis</i> , <i>H. montana</i>
52	Little Budworth Common (north end)	SJ 5830 6597	
94	Little Budworth Common (open central area)	SJ 5849 6579	
154	Little Budworth Common (north end pond and moss)	SJ 5849 6608	<i>H. bimaculata</i>
<b>Petty Pool Area Wetlands</b>			
53	New Pool	SJ 6262 6959	
54	Petty Pool	SJ 6174 6999	<i>H. pluvialis</i>
55	Pettypool Brook	SJ 6215 6966	
56	lane between Petty Pool and Pettypool Brook	SJ 6204 6973	<i>C. caecutiens</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i>
155	Church-hill Wood Valley	SJ 6223 6931	
156	Sandway Golf Course	SJ 6132 7038	<i>H. pluvialis</i>
157	Sherratt's Rough	SJ 6182 6925	<i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i>
<b>Other Delamere Area Mires</b>			
158	Bowyer's Waste	SJ 5697 6877	
57	Fishpool Moss	SJ 5643 6716	<i>H. pluvialis</i> , <i>H. distinguenda</i>
58	Flaxmere Moss	SJ 5565 7229	<i>H. pluvialis</i>
59	Hogshead Moss	SJ 5842 6952	<i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
60	Oak Mere	SJ 5765 6807	<i>H. pluvialis</i>
61	Snipe Island	SJ 6111 6932	<i>H. pluvialis</i> , <i>H. distinguenda</i>
62	Thieves Moss and Thieves Pool	SJ 5648 6906	<i>H. pluvialis</i>
159	track verge en route to Thieves Moss and Thieves Pool	SJ 5630 6928	
<b>Outlying Mires</b>			
<b>Cheshire</b>			
95	Brookhouse Moss	SJ 8052 6191	<i>H. pluvialis</i> , <i>H. bimaculata</i>
96	Brookhouse Lane	SJ 8082 6206	<i>H. pluvialis</i>
63	Wybunbury Moss	SJ 6965 5021	<i>A. plebeius</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i> , <i>T. maculicornis</i>
64	Wybunbury (gate near Main Road)	SJ 6907 5019	<i>H. pluvialis</i>

## FULL LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED BETWEEN 2018 AND 2022

Survey Code No.	Locality	Central National Grid Reference	Tabanidae Species Recorded between 2018 and 2022
	<b>Staffordshire</b>		
65	Chartley Moss	SK 0221 2825	<i>H. pluvialis</i> , <i>T. maculicornis</i>
66	Chartley Moss area	SK 0230 2876	<i>H. pluvialis</i>
	<b>Shropshire</b>		
67	Brown Moss	SJ 5616 3949	<i>H. pluvialis</i> , <i>H. bimaculata</i>
68	Clarepool Moss	SJ 4356 3411	<i>H. bimaculata</i> , <i>T. maculicornis</i>
69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	<i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i> , <i>T. maculicornis</i>
70	Cole Mere	SJ 4284 3343	<i>H. pluvialis</i>
	<b>Denbighshire</b>		
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	<i>C. caecutiens</i> , <i>H. pluvialis</i>
98	Llay Bog area (fields and woodland)	SJ 3212 5527	<i>H. pluvialis</i>
99	Llay Bog area (Park Lane)	SJ 3182 5536	<i>H. pluvialis</i>
100	Vicarage Moss (north basin mire)	SJ 3601 5398	<i>H. pluvialis</i> , <i>H. bimaculata</i>
101	Vicarage Moss (south basin mire)	SJ 3600 5384	<i>H. pluvialis</i> , <i>H. distinguenda</i>
102	Vicarage Moss (small raised basin)	SJ 3613 5383	<i>H. pluvialis</i>
103	track to Vicarage Moss	SJ 3632 5369	
104	pasture to north of Vicarage Moss	SJ 3609 5410	<i>H. pluvialis</i>
105	Gatehouse Farm (Vicarage Lane)	SJ 3574 5430	<i>H. pluvialis</i>
106	Springfield Farm (Vicarage Lane)	SJ 3616 5422	<i>H. pluvialis</i>
160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	<i>H. pluvialis</i> , <i>H. bimaculata</i>
	<b>South Lancashire</b>		
107	Highfield Moss	SJ 6135 9560	<i>H. pluvialis</i>
108	Moss Lane (track to Highfield Moss)	SJ 6098 9606	<i>H. pluvialis</i>
109	Holcroft Moss	SJ 6850 9326	<i>C. relictus</i> , <i>H. pluvialis</i>
110	track to Holcroft Moss	SJ 6865 9355	
111	Holcroft Lane	SJ 6890 9345	<i>H. pluvialis</i>
112	Risley Moss (mossland)	SJ 6656 9173	<i>C. relictus</i> , <i>H. pluvialis</i>
113	Risley Moss (mini-moss)	SJ 6629 9198	<i>H. crassicornis</i> , <i>H. bimaculata</i> , <i>T. autumnalis</i>
114	Risley Moss (birch woodland)	SJ 6631 9167	<i>C. relictus</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i>
161	Little Woollen Moss	SJ 6972 9517	<i>C. relictus</i> , <i>H. pluvialis</i>
162	Rindle Moss	SJ 7036 9654	<i>H. pluvialis</i>
163	field on north side of Rindle Moss	SJ 7024 9676	<i>H. pluvialis</i>
	<b>The Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses Complex SSSI Mires</b>		
71	Bettisfield Moss (England)	SJ 4821 3518	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. montana</i>
115	Bettisfield Moss (Wales)	SJ 4767 3533	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. montana</i>
72	Bettisfield Moss (World's End Car Park)	SJ 4803 3482	<i>H. pluvialis</i>
73	Cadney Moss	SJ 4689 3477	<i>H. pluvialis</i> , <i>T. maculicornis</i>
74	Fenn's Moss (central area)	SJ 4848 3628	<i>H. pluvialis</i> , <i>H. distinguenda</i> , <i>H. montana</i>
116	Fenn's Moss (western area)	SJ 4804 3621	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. montana</i>
75	Wem Moss	SJ 4734 3431	<i>H. pluvialis</i> , <i>H. bimaculata</i>
76	Whixall Moss	SJ 4926 3603	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. distinguenda</i> , <i>H. montana</i>
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
118	Whixall Moss (western and central areas)	SJ 4860 3559	<i>C. relictus</i> , <i>C. viduatus</i> , <i>H. pluvialis</i> , <i>H. montana</i>
77	Whixall Moss (Morris Bridge Car Park)	SJ 4933 3539	<i>H. pluvialis</i>
	<b>Supplementary Localities</b>		
78	Cannock Chase (near Aspen Car Park)	SJ 9829 1593	
79	Cannock Chase (near Chase Road Corner Car Park)	SJ 9808 1760	
80	Cannock Chase (near Penkridge Bank Car Park)	SK 0008 1694	<i>H. pluvialis</i> , <i>H. distinguenda</i>
81	Cannock Chase (near Penkridge Bank Road)	SK 0099 1687	<i>H. pluvialis</i> , <i>H. bimaculata</i>
82	Cannock Chase (Sherbrook Valley)	SJ 9836 1884	
83	Cannock Chase (near Whitehouse Car Park)	SJ 9931 1621	<i>H. pluvialis</i>
84	Hawksmoor Wood	SK 038 441	<i>H. pluvialis</i>
85	between Mosslee Hall Farm and Coltstone	SK 00789 50701	<i>H. bimaculata</i>
86	Staffordshire University Nature Reserve	SJ 8825 4529	<i>H. pluvialis</i>
87	Shavington Park	SJ 638 382	<i>H. bimaculata</i>
88	Chester Zoo Nature Reserve	SJ 40791 70697	<i>T. autumnalis</i>
89	Delamere Office Car Park (Forestry Commission)	SJ 5504 7040	
90	Stoneyford Lane	SJ 5800 7085	<i>H. pluvialis</i>
91	Vale Royal Abbey Golf Club	SJ 6384 6996	<i>H. pluvialis</i>



## FULL LIST OF LOCALITIES AND TABANIDAE SPECIES RECORDED BETWEEN 2018 AND 2022

Survey Code No.	Locality	Central National Grid Reference	Tabanidae Species Recorded between 2018 and 2022
119	Wall Hill Farm Guest House (Acton Bridge)	SJ 5970 7538	
120	Newton Road (Town of Lowton)	SJ 6085 9620	
121	Back Lane (Dunham Massey)	SJ 73014 88390	<i>H. pluvialis</i>
122	Dunham Park (Visitor Centre)	SJ 733 874	<i>H. bimaculata</i>
123	Dunham Park	SJ 733 876	<i>H. pluvialis</i>
124	Dunham Park	SJ 735 865	<i>H. pluvialis</i>
125	Dunham Park	SJ 736 869	<i>C. viduatus</i> , <i>H. crassicornis</i> , <i>H. pluvialis</i> , <i>H. bimaculata</i> , <i>H. distinguenda</i>
126	Dunham Park	SJ 736 870	<i>H. pluvialis</i>
127	Dunham Park	SJ 737 866	<i>H. pluvialis</i>
128	Dunham Park	SJ 737 867	<i>H. pluvialis</i>
129	Dunham Park	SJ 738 873	<i>H. pluvialis</i>
130	Dunham Park	SJ 739 874	<i>H. pluvialis</i> , <i>T. autumnalis</i>
131	Tatton Park	SJ 738 817	<i>H. pluvialis</i>
132	Tatton Park	SJ 739 818	<i>H. pluvialis</i>
133	Tatton Park	SJ 745 817	<i>C. viduatus</i> , <i>H. pluvialis</i>
134	Tatton Park	SJ 749 807	<i>C. caecutiens</i>
135	Tatton Park	SJ 750 804	<i>H. pluvialis</i> , <i>H. bimaculata</i>
136	Tatton Park	SJ 751 803	<i>H. pluvialis</i>
137	Tatton Park	SJ 751 808	<i>C. viduatus</i> , <i>H. pluvialis</i>
164	Dunham Park (basin near east end of Farm Walk track)	SJ 7420 8670	<i>H. pluvialis</i>
165	Dunham Park (north of Smithy Pool)	SJ 7384 8746	
166	Combermere Park	SJ 5913 4408	<i>H. pluvialis</i>

## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Atylotus plebeius* (Fallén, 1817 – *Tabanus*) [Cheshire Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
9	Shemmy Moss	SJ 5949 6892	58	09/06/2018	A. Grayson	1	1
9	Shemmy Moss	SJ 5949 6892	58	10/06/2018	A. Grayson	1	
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	10/06/2018	A. Grayson	1	1
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	27/06/2018	A. Grayson		1
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	19/06/2019	A. Grayson	1	
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	24/07/2019	A. Grayson	1	4
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	15/06/2022	A. Grayson		1
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	10/06/2018	A. Grayson	1	
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	27/06/2018	A. Grayson		1
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	24/07/2019	A. Grayson		1
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	15/06/2022	A. Grayson		1
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	10/06/2018	A. Grayson	4	
51	Little Budworth Common (Whitehall Moss) [Note 1]	SJ 5878 6580	58	26/06/2018	J. Mousley	1	
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	27/06/2018	A. Grayson	1	
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	23/07/2019	A. Grayson		1
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	15/06/2022	A. Grayson	1	
51	Little Budworth Common (Whitehall Moss) [Note 2]	SJ 5878 6580	58	18/07/2022	A. Grayson	1?	
63	Wybunbury Moss [Note 3]	SJ 6965 5021	58	24/06/2018	A. Grayson		1
63	Wybunbury Moss [Note 4]	SJ 6965 5021	58	26/06/2018	R. Wolton		1
63	Wybunbury Moss	SJ 6965 5021	58	02/08/2019	A. Grayson		1
63	Wybunbury Moss	SJ 6965 5021	58	16/06/2022	A. Grayson		1
152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	58	15/06/2022	A. Grayson	1	2
153	Little Budworth Common (East Moss – eastern arm)	SJ 5865 6572	58	15/06/2022	A. Grayson		1

**Note 1.** An individual was captured by sweeping and photographed by John Mousley (Rob Wolton, pers. comm.): the photograph, of a male, was forwarded to Andrew Grayson by John Mousley on 30/06/2019

**Note 2.** One seen at rest on bog vegetation by Andrew Grayson: probably a male but not observed close enough to leave no doubt, and not able to be captured in order to determine its sex, as it flew off when approached

**Note 3.** Observed on a cow: details published in Grayson (2018): this was a female – placed in error in the 'No. of Males' column of the Grayson (2018) spreadsheet

**Note 4.** Female photographed at rest by Rob Wolton: photograph seen by Andrew Grayson

*Chrysops caecutiens* (Linnaeus, 1758 – *Tabanus*) [Splayed Deerfly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
11	South Moss	SJ 5937 6863	58	07/06/2018	A. Grayson		1
26	Basin Mire N2	SJ 5502 7208	58	23/07/2019	A. Grayson		1
27	Basin Mire N3	SJ 5492 7205	58	23/07/2019	A. Grayson		1
27	Basin Mire N3	SJ 5492 7205	58	12/07/2022	A. Grayson		9
31	Blain's Moss	SJ 5525 7177	58	05/07/2018	A. Grayson		1
38	Ham (lower basin)	SJ 5467 7205	58	23/07/2019	A. Grayson		2
39	Ham (upper basin)	SJ 5467 7193	58	19/07/2022	A. Grayson		1
40	Ham Pool	SJ 5459 7204	58	23/07/2019	A. Grayson		1
42	Harthill (upper basin)	SJ 5600 7108	58	26/07/2018	A. Grayson		1
42	Harthill (upper basin)	SJ 5600 7108	58	03/07/2019	A. Grayson		1
47	Rush Pool	SJ 5435 7195	58	23/07/2019	A. Grayson		1
56	lane between Petty Pool and Pettypool Brook	SJ 6204 6973	58	05/07/2018	A. Grayson		1
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	23/06/2022	A. Grayson		1
134	Tatton Park	SJ 749 807	58	21/07/2021	A. Grayson		1
147	forestry road north of N1	SJ 5489 7220	58	12/07/2022	A. Grayson		1
148	Harrison's Moss	SJ 5336 7222	58	19/07/2022	A. Grayson		1

*Chrysops relictus* Meigen, 1820 [Twin-lobed Deerfly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
71	Bettisfield Moss (England)	SJ 4821 3518	40	24/07/2019	A. Grayson		4
76	Whixall Moss	SJ 4926 3603	40	15/06/2018	A. Grayson		1
76	Whixall Moss	SJ 4926 3603	40	24/06/2018	A. Grayson		1
76	Whixall Moss	SJ 4926 3603	40	26/06/2018	A. Grayson		3
109	Holcroft Moss	SJ 6850 9326	59	17/07/2022	A. Grayson		1
112	Risley Moss (mossland)	SJ 6656 9173	59	22/07/2019	A. Grayson		1
114	Risley Moss (birch woodland)	SJ 6631 9167	59	17/07/2022	A. Grayson		1
115	Bettisfield Moss (Wales)	SJ 4767 3533	50	24/07/2019	A. Grayson		1
116	Fenn's Moss (western area)	SJ 4804 3621	50	24/07/2019	A. Grayson		2
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	24/07/2019	A. Grayson		6
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	15/06/2022	A. Grayson		1
118	Whixall Moss (western and central areas)	SJ 4860 3559	40	24/07/2019	A. Grayson		1
161	Little Woollen Moss	SJ 6972 9517	59	17/07/2022	A. Grayson		3

*Chrysops viduatus* (Fabricius, 1794 – *Tabanus*) [Square-spot Deerfly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
17	Barnes Bridge	SJ 5411 7172	58	05/07/2018	A. Grayson		1
18	Barnesbridge Basin	SJ 5420 7190	58	25/07/2018	A. Grayson		3
18	Barnesbridge Basin	SJ 5420 7190	58	12/07/2022	A. Grayson		7
18	Barnesbridge Basin	SJ 5420 7190	58	19/07/2022	A. Grayson		3
19	Barnesbridge Flushes	SJ 5398 7182	58	26/07/2018	A. Grayson		1
19	Barnesbridge Flushes	SJ 5398 7182	58	19/07/2022	A. Grayson		3
20	Basin Mire A01b	SJ 5357 7211	58	19/07/2022	A. Grayson		1
22	Basin Mire A07	SJ 5375 7197	58	25/07/2018	A. Grayson		1
23	Basin Mire LM09	SJ 5379 7109	58	30/06/2018	A. Grayson		2
24	Basin Mire LM10	SJ 5387 7111	58	25/07/2018	A. Grayson		2
24	Basin Mire LM10	SJ 5387 7111	58	03/08/2019	A. Grayson		1
26	Basin Mire N2	SJ 5502 7208	58	23/07/2019	A. Grayson		2
27	Basin Mire N3	SJ 5492 7205	58	12/07/2022	A. Grayson		13
28	Black Lake	SJ 5373 7091	58	23/06/2018	A. Grayson		2
28	Black Lake	SJ 5373 7091	58	30/06/2018	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	03/08/2019	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	14/07/2022	A. Grayson		2
31	Blain's Moss	SJ 5525 7177	58	23/06/2018	A. Grayson		1
31	Blain's Moss	SJ 5525 7177	58	23/07/2019	A. Grayson		2



## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Chrysops viduatus* (Fabricius, 1794 – *Tabanus*) [Square-spot Deerfly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
31	Blain's Moss	SJ 5525 7177	58	19/07/2022	A. Grayson		2
32	Blakemere Moss	SJ 5469 7120	58	14/07/2022	A. Grayson		1
35	Doolittle Moss (lower basin)	SJ 5429 7142	58	05/07/2018	A. Grayson		2
37	Great Middel	SJ 5406 7132	58	05/07/2018	A. Grayson		1
38	Ham (lower basin)	SJ 5467 7205	58	23/07/2019	A. Grayson		3
39	Ham (upper basin)	SJ 5467 7193	58	23/07/2019	A. Grayson		7
39	Ham (upper basin)	SJ 5467 7193	58	19/07/2022	A. Grayson		2
40	Ham Pool	SJ 5459 7204	58	23/07/2019	A. Grayson		2
43	Hatch Mere	SJ 5521 7206	58	23/07/2019	A. Grayson		1
43	Hatch Mere	SJ 5521 7206	58	12/07/2022	A. Grayson		1
44	Hockenhull	SJ 5421 7094	58	14/07/2022	A. Grayson		2
47	Rush Pool	SJ 5435 7195	58	23/07/2019	A. Grayson		4
63	Wybunbury Moss	SJ 6965 5021	58	24/06/2018	A. Grayson		6
63	Wybunbury Moss	SJ 6965 5021	58	25/06/2018	A. Grayson		3
63	Wybunbury Moss	SJ 6965 5021	58	02/08/2019	A. Grayson		4
71	Bettisfield Moss (England)	SJ 4821 3518	40	24/07/2019	A. Grayson		8
71	Bettisfield Moss (England)	SJ 4821 3518	40	15/06/2022	A. Grayson		1
76	Whixall Moss	SJ 4926 3603	40	15/06/2018	A. Grayson		2
76	Whixall Moss	SJ 4926 3603	40	24/06/2018	A. Grayson		2

*Haematopota crassicornis* Wahlberg, 1848 [Black-horned Cleg]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
9	Shemmy Moss	SJ 5949 6892	58	10/06/2018	A. Grayson	1	
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	04/07/2018 - 14/07/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	23/06/2018 - 30/06/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	30/06/2018 - 04/07/2018	A. Grayson		2
113	Risley Moss (mini-moss)	SJ 6629 9198	59	18/06/2019	A. Grayson	1	
125	Dunham Park	SJ 736 869	58	22/06/2021	A. Grayson		1

*Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
1	Boggy Pool	SJ 5970 6910	58	07/06/2018	A. Grayson		2
2	Centre Bog	SJ 5968 6923	58	07/06/2018	A. Grayson		2
3	Gull Pool	SJ 6009 6883	58	07/06/2018	A. Grayson		5
3	Gull Pool	SJ 6009 6883	58	05/07/2018	A. Grayson		1
3	Gull Pool	SJ 6009 6883	58	14/07/2022	A. Grayson		1
4	Lily Pool	SJ 5956 6925	58	07/06/2018	A. Grayson		4
4	Lily Pool	SJ 5956 6925	58	03/07/2019	A. Grayson		1
4	Lily Pool	SJ 5956 6925	58	23/07/2019	A. Grayson		5
4	Lily Pool	SJ 5956 6925	58	22/06/2022	A. Grayson		1
5	Woodpile Bog	SJ 5956 6934	58	07/06/2018	A. Grayson		1
6	Wrekin Pool	SJ 5993 6918	58	07/06/2018	A. Grayson		1
7	Gull Moss	SJ 6011 6871	58	07/06/2018	A. Grayson		1
7	Gull Moss	SJ 6011 6871	58	05/07/2018	A. Grayson		8
8	tracks between Gull Moss and Shemmy Moss	SJ 5977 6889	58	07/06/2018	A. Grayson		1
9	Shemmy Moss	SJ 5949 6892	58	07/06/2018	A. Grayson		1
9	Shemmy Moss	SJ 5949 6892	58	09/06/2018	A. Grayson		1
9	Shemmy Moss	SJ 5949 6892	58	10/06/2018	A. Grayson		2
9	Shemmy Moss	SJ 5949 6892	58	23/06/2018	A. Grayson		2
9	Shemmy Moss	SJ 5949 6892	58	30/06/2018	A. Grayson		1
9	Shemmy Moss	SJ 5949 6892	58	14/07/2018	A. Grayson		1
9	Shemmy Moss	SJ 5949 6892	58	03/07/2019	A. Grayson		1

## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
9	Shemmy Moss	SJ 5949 6892	58	03/08/2019	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	07/06/2018 - 09/06/2018	A. Grayson		3
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	09/06/2018 - 10/06/2018	A. Grayson		2
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	14/06/2018 - 23/06/2018	A. Grayson		2
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	23/06/2018 - 27/06/2018	A. Grayson		2
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	27/06/2018 - 30/06/2018	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	30/06/2018 - 05/07/2018	A. Grayson		2
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	05/07/2018 - 14/07/2018	A. Grayson		2
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	14/07/2018 - 25/07/2018	A. Grayson		5
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	25/07/2018 - 07/08/2018	A. Grayson		3
11	South Moss	SJ 5937 6863	58	14/06/2018	A. Grayson		1
11	South Moss	SJ 5937 6863	58	27/06/2018	A. Grayson		1
11	South Moss	SJ 5937 6863	58	30/06/2018	A. Grayson		1
11	South Moss	SJ 5937 6863	58	05/07/2018	A. Grayson		2
11	South Moss	SJ 5937 6863	58	25/07/2018	A. Grayson		1
11	South Moss	SJ 5937 6863	58	13/07/2022	A. Grayson		1
12	Brackenhurst Bog	SJ 5956 6983	58	09/06/2018	A. Grayson		2
12	Brackenhurst Bog	SJ 5956 6983	58	10/06/2018	A. Grayson		3
12	Brackenhurst Bog	SJ 5956 6983	58	14/06/2018	A. Grayson		2
12	Brackenhurst Bog	SJ 5956 6983	58	23/06/2018	A. Grayson		1
12	Brackenhurst Bog	SJ 5956 6983	58	27/06/2018	A. Grayson		1
12	Brackenhurst Bog	SJ 5956 6983	58	22/06/2022	A. Grayson		1
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	07/06/2018 - 09/06/2018	A. Grayson		2
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	09/06/2018 - 10/06/2018	A. Grayson		2
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	10/06/2018 - 14/06/2018	A. Grayson		1
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	14/06/2018 - 23/06/2018	A. Grayson		4
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	23/06/2018 - 27/06/2018	A. Grayson		6
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	04/07/2018 - 14/07/2018	A. Grayson		3
13	Brackenhurst Bog [Manitoba trap]	SJ 5956 6985	58	25/07/2018 - 07/08/2018	A. Grayson		3
14	track to Brackenhurst Bog	SJ 5947 6987	58	09/06/2018	A. Grayson		1
14	track to Brackenhurst Bog	SJ 5947 6987	58	10/06/2018	A. Grayson		2
14	track to Brackenhurst Bog	SJ 5947 6987	58	14/06/2018	A. Grayson		1
14	track to Brackenhurst Bog	SJ 5947 6987	58	27/06/2018	A. Grayson		1
16	Newchurch Common	SJ 6055 6894	58	03/07/2019	A. Grayson		3
17	Barnes Bridge	SJ 5411 7172	58	05/07/2018	A. Grayson		1
17	Barnes Bridge	SJ 5411 7172	58	25/07/2018	A. Grayson		1
17	Barnes Bridge	SJ 5411 7172	58	26/07/2018	A. Grayson		1
17	Barnes Bridge	SJ 5411 7172	58	19/07/2022	A. Grayson		1
19	Barnesbridge Flushes	SJ 5398 7182	58	03/07/2019	A. Grayson		1
19	Barnesbridge Flushes	SJ 5398 7182	58	19/07/2022	A. Grayson		1
20	Basin Mire A01b	SJ 5357 7211	58	19/07/2022	A. Grayson		1
23	Basin Mire LM09	SJ 5379 7109	58	30/06/2018	A. Grayson		2
24	Basin Mire LM10	SJ 5387 7111	58	30/06/2018	A. Grayson		2
28	Black Lake	SJ 5373 7091	58	07/06/2018	A. Grayson		3
28	Black Lake	SJ 5373 7091	58	10/06/2018	A. Grayson		3
28	Black Lake	SJ 5373 7091	58	23/06/2018	A. Grayson		2
28	Black Lake	SJ 5373 7091	58	30/06/2018	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	04/07/2018	A. Grayson		1
29	Black Lake [Manitoba trap]	SJ 5377 7089	58	14/06/2018 - 23/06/2018	A. Grayson		1
29	Black Lake [Manitoba trap]	SJ 5377 7089	58	30/06/2018 - 04/07/2018	A. Grayson		1
29	Black Lake [Manitoba trap]	SJ 5377 7089	58	04/07/2018 - 14/07/2018	A. Grayson		1
29	Black Lake [Manitoba trap]	SJ 5377 7089	58	25/07/2018 - 07/08/2018	A. Grayson		1
31	Blain's Moss	SJ 5525 7177	58	23/07/2019	A. Grayson		1
31	Blain's Moss	SJ 5525 7177	58	12/07/2022	A. Grayson		1
32	Blakemere Moss	SJ 5469 7120	58	07/06/2018	A. Grayson		1
32	Blakemere Moss	SJ 5469 7120	58	10/06/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	14/06/2018 - 23/06/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	30/06/2018 - 04/07/2018	A. Grayson		1



## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	04/07/2018 - 14/07/2018	A. Grayson		1
35	Doolittle Moss (lower basin)	SJ 5429 7142	58	05/07/2018	A. Grayson		1
36	Finney's Moss	SJ 5596 7155	58	26/07/2018	A. Grayson		1
36	Finney's Moss	SJ 5596 7155	58	03/07/2019	A. Grayson		1
39	Ham (upper basin)	SJ 5467 7193	58	19/07/2022	A. Grayson		1
40	Ham Pool	SJ 5459 7204	58	23/07/2019	A. Grayson		2
41	Harthill Moss	SJ 5633 7142	58	03/07/2019	A. Grayson		3
42	Harthill (upper basin)	SJ 5600 7108	58	03/07/2019	A. Grayson		1
44	Hockenhull	SJ 5421 7094	58	14/07/2022	A. Grayson		1
45	Linmere Moss (north)	SJ 5469 7070	58	10/06/2018	A. Grayson		7
45	Linmere Moss (north)	SJ 5469 7070	58	05/07/2018	A. Grayson		5
46	Linmere Moss (south)	SJ 5451 7054	58	26/07/2018	A. Grayson		1
48	Little Budworth Common (Central Moss)	SJ 5850 6574	58	27/06/2018	A. Grayson		1
49	Little Budworth Common (East Moss – main part)	SJ 5859 6570	58	18/07/2022	A. Grayson		1
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	10/06/2018	A. Grayson		1
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	27/06/2018	A. Grayson		6
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	23/07/2019	A. Grayson		3
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	18/07/2022	A. Grayson		1
54	Petty Pool	SJ 6174 6999	58	04/07/2018	A. Grayson		2
54	Petty Pool	SJ 6174 6999	58	05/07/2018	A. Grayson		5
56	lane between Petty Pool and Pettypool Brook	SJ 6204 6973	58	05/07/2018	A. Grayson		2
57	Fishpool Moss	SJ 5643 6716	58	30/06/2018	A. Grayson		6
58	Flaxmere Moss	SJ 5565 7229	58	14/06/2018	A. Grayson		1
58	Flaxmere Moss	SJ 5565 7229	58	03/08/2019	A. Grayson		1
59	Hogshead Moss	SJ 5842 6952	58	09/06/2018	A. Grayson		1
60	Oak Mere	SJ 5765 6807	58	30/06/2018	A. Grayson		2
61	Snipe Island	SJ 6111 6932	58	27/06/2018	A. Grayson		5
62	Thieves Moss and Thieves Pool [Note 5]	SJ 5648 6906	58	07/08/2018	A. Grayson		1
63	Wybunbury Moss	SJ 6965 5021	58	24/06/2018	A. Grayson		26
63	Wybunbury Moss	SJ 6965 5021	58	25/06/2018	A. Grayson		13
63	Wybunbury Moss	SJ 6965 5021	58	16/06/2022	A. Grayson		1
64	Wybunbury (gate near Main Road)	SJ 6907 5019	58	24/06/2018	A. Grayson		1
65	Chartley Moss	SK 0221 2825	39	28/06/2018	A. Grayson		7
66	Chartley Moss area	SK 0230 2876	39	28/06/2018	A. Grayson		52
67	Brown Moss	SJ 5616 3949	40	25/06/2018	A. Grayson	1	11
69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	40	26/06/2018	A. Grayson		17
70	Cole Mere	SJ 4284 3343	40	26/06/2018	A. Grayson		2
71	Bettisfield Moss (England)	SJ 4821 3518	40	24/06/2018	A. Grayson		10
71	Bettisfield Moss (England)	SJ 4821 3518	40	24/07/2019	A. Grayson		6
72	Bettisfield Moss (World's End Car Park)	SJ 4803 3482	40	24/07/2019	A. Grayson		4
73	Cadney Moss	SJ 4689 3477	50	24/06/2018	A. Grayson		6
74	Fenn's Moss (central area)	SJ 4848 3628	50	24/06/2018	A. Grayson	1	2
75	Wem Moss	SJ 4734 3431	40	15/06/2018	A. Grayson		13
75	Wem Moss	SJ 4734 3431	40	26/06/2018	A. Grayson		15
76	Whixall Moss	SJ 4926 3603	40	15/06/2018	A. Grayson		15
76	Whixall Moss	SJ 4926 3603	40	24/06/2018	A. Grayson		17
76	Whixall Moss	SJ 4926 3603	40	26/06/2018	A. Grayson		9
77	Whixall Moss (Morris Bridge Car Park)	SJ 4933 3539	40	15/06/2018	A. Grayson		1
80	Cannock Chase (near Penkridge Bank Car Park)	SK 0008 1694	39	29/06/2018	A. Grayson		2
81	Cannock Chase (near Penkridge Bank Road)	SK 0099 1687	39	29/06/2018	A. Grayson		1
83	Cannock Chase (near Whitehouse Car Park)	SJ 9931 1621	39	29/06/2018	A. Grayson		2
84	Hawksmoor Wood [Note 6]	SJ 038 441	39	23/06/2018	A. Grayson		1
86	Staffordshire University Nature Reserve	SJ 8825 4529	39	28/06/2018	A. Grayson		7
90	Stoneyford Lane	SJ 5800 7085	58	07/06/2018	A. Grayson		1
91	Vale Royal Abbey Golf Club	SJ 6384 6996	58	04/07/2018	A. Grayson		1

**Note 5.** This female was long-since dead and desiccated: it was found inside the windowsill of a caravan at the archery range near Thieves Moss and Thieves Pool

**Note 6.** Specimen collected by Andy J. Halstead: presented to, and identified by, Andrew Grayson

## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	12/07/2022	A. Grayson		1
95	Brookhouse Moss	SJ 8052 6191	58	02/08/2019	A. Grayson		5
95	Brookhouse Moss	SJ 8052 6191	58	16/06/2022	A. Grayson		5
96	Brookhouse Lane	SJ 8082 6206	58	02/08/2019	A. Grayson		1
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	25/07/2019	A. Grayson		6
97	Llay Bog (basin mire and bog woodland)	SJ 3223 5539	50	23/06/2022	A. Grayson		6
98	Llay Bog area (fields and woodland)	SJ 3212 5527	50	25/07/2019	A. Grayson		13
98	Llay Bog area (fields and woodland)	SJ 3212 5527	50	23/06/2022	A. Grayson		4
99	Llay Bog area (Park Lane)	SJ 3182 5536	50	25/07/2019	A. Grayson		4
100	Vicarage Moss (north basin mire)	SJ 3601 5398	50	25/07/2019	A. Grayson		1
101	Vicarage Moss (south basin mire)	SJ 3600 5384	50	25/07/2019	A. Grayson		4
102	Vicarage Moss (small raised basin)	SJ 3613 5383	50	25/07/2019	A. Grayson		1
104	pasture to north of Vicarage Moss	SJ 3609 5410	50	25/07/2019	A. Grayson		1
105	Gatehouse Farm (Vicarage Lane)	SJ 3574 5430	50	25/07/2019	A. Grayson		1
106	Springfield Farm (Vicarage Lane)	SJ 3616 5422	50	25/07/2019	A. Grayson		1
107	Highfield Moss	SJ 6135 9560	59	22/07/2019	A. Grayson		4
108	Moss Lane (track to Highfield Moss)	SJ 6098 9606	59	17/07/2022	A. Grayson		3
109	Holcroft Moss	SJ 6850 9326	59	18/06/2019	A. Grayson		3
109	Holcroft Moss	SJ 6850 9326	59	02/07/2019	A. Grayson	1	12
109	Holcroft Moss	SJ 6850 9326	59	22/07/2019	A. Grayson		3
109	Holcroft Moss	SJ 6850 9326	59	17/07/2022	A. Grayson		2
111	Holcroft Lane	SJ 6890 9345	59	22/07/2019	A. Grayson		1
111	Holcroft Lane	SJ 6890 9345	59	17/07/2022	A. Grayson		1
112	Risley Moss (mossland)	SJ 6656 9173	59	22/07/2019	A. Grayson		1
114	Risley Moss (birch woodland)	SJ 6631 9167	59	02/07/2019	A. Grayson		1
114	Risley Moss (birch woodland)	SJ 6631 9167	59	22/07/2019	A. Grayson		4
114	Risley Moss (birch woodland)	SJ 6631 9167	59	17/07/2022	A. Grayson		1
115	Bettisfield Moss (Wales)	SJ 4767 3533	50	24/07/2019	A. Grayson		2
116	Fenn's Moss (western area)	SJ 4804 3621	50	24/07/2019	A. Grayson		2
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	24/07/2019	A. Grayson		12
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	15/06/2022	A. Grayson		5
118	Whixall Moss (western and central areas)	SJ 4860 3559	40	24/07/2019	A. Grayson		7
121	Back Lane (Dunham Massey)	SJ 73014 88390	58	22/06/2021	A. Grayson		1
121	Back Lane (Dunham Massey)	SJ 73014 88390	58	07/09/2021	A. Grayson		1
123	Dunham Park	SJ 733 876	58	22/06/2021	A. Grayson		5
124	Dunham Park	SJ 735 865	58	15/07/2021	A. Grayson		2
125	Dunham Park	SJ 736 869	58	22/06/2021	A. Grayson		12
125	Dunham Park	SJ 736 869	58	15/07/2021	A. Grayson		2
126	Dunham Park	SJ 736 870	58	15/07/2021	A. Grayson		2
127	Dunham Park	SJ 737 866	58	15/07/2021	A. Grayson		3
128	Dunham Park	SJ 737 867	58	22/06/2021	A. Grayson		4
129	Dunham Park	SJ 738 873	58	22/06/2021	A. Grayson		1
130	Dunham Park	SJ 739 874	58	22/06/2021	A. Grayson		3
131	Tatton Park	SJ 738 817	58	21/07/2021	A. Grayson		1
132	Tatton Park	SJ 739 818	58	08/07/2021	A. Grayson		1
133	Tatton Park	SJ 745 817	58	25/08/2021	A. Grayson		1
135	Tatton Park	SJ 750 804	58	08/07/2021	A. Grayson		1
136	Tatton Park	SJ 751 803	58	08/07/2021	A. Grayson		3
137	Tatton Park	SJ 751 808	58	21/07/2021	A. Grayson		1
143	Basin Mire B11	SJ 5509 7146	58	14/06/2022	A. Grayson		1
144	Basin Mire B12	SJ 5433 7121	58	14/06/2022	A. Grayson		1
148	Harrison's Moss	SJ 5336 7222	58	19/07/2022	A. Grayson		2
149	road verge between Harrison's Moss and Basin Mire A12	SJ 5341 7217	58	19/07/2022	A. Grayson		3
152	Little Budworth Common (heathland surrounding mires)	SJ 5854 6571	58	18/07/2022	A. Grayson		1
156	Sandiway Golf Course	SJ 6132 7038	58	13/07/2022	A. Grayson		1
157	Sherratt's Rough	SJ 6182 6925	58	18/07/2022	A. Grayson		1
160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	50	23/06/2022	A. Grayson		1
161	Little Woollen Moss	SJ 6972 9517	59	17/07/2022	A. Grayson		16



## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

***Haematopota pluvialis* (Linnaeus, 1758 – *Tabanus*) [Notch-horned Cleg]**

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
162	Rindle Moss	SJ 7036 9654	59	17/07/2022	A. Grayson		6
163	field on north side of Rindle Moss	SJ 7024 9676	59	17/07/2022	A. Grayson	1	13
164	Dunham Park (basin near east end of Farm Walk track)	SJ 7420 8670	58	16/06/2022	A. Grayson		2
166	Combermere Park [Note 7]	SJ 5913 4408	58	01/07/2022 - 25/07/2022	A. Grayson	1	

**Note 7.** Ex vane trap no. 10, which was set at seven feet high on a *Quercus* (oak) tree, against the sunny part of the trunk, which was devoid of bark

***Hybomitra bimaculata* (Macquart, 1826 – *Tabanus*) [Hairy-legged Horsefly]**

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
9	Shemmy Moss	SJ 5949 6892	58	10/06/2018	A. Grayson		4
9	Shemmy Moss	SJ 5949 6892	58	03/07/2019	A. Grayson		1
12	Brackenhurst Bog	SJ 5956 6983	58	10/06/2018	A. Grayson		1
17	Barnes Bridge	SJ 5411 7172	58	03/07/2019	A. Grayson		1
19	Barnesbridge Flushes	SJ 5398 7182	58	03/07/2019	A. Grayson		1
20	Basin Mire A01b	SJ 5357 7211	58	03/07/2019	A. Grayson		1
21	Basin Mire A06	SJ 5386 7202	58	03/07/2019	A. Grayson		1
27	Basin Mire N3	SJ 5492 7205	58	12/07/2022	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	07/06/2018	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	10/06/2018	A. Grayson		1
28	Black Lake	SJ 5373 7091	58	30/06/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	10/06/2018 - 14/06/2018	A. Grayson		3
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	14/06/2018 - 23/06/2018	A. Grayson		1
34	Doolittle Moss (upper basin)	SJ 5424 7155	58	05/07/2018	A. Grayson		1
36	Finney's Moss	SJ 5596 7155	58	03/07/2019	A. Grayson		5
39	Ham (upper basin)	SJ 5467 7193	58	19/07/2022	A. Grayson		1
41	Harthill Moss	SJ 5633 7142	58	03/07/2019	A. Grayson		2
42	Harthill (upper basin)	SJ 5600 7108	58	03/07/2019	A. Grayson		1
44	Hockenhull	SJ 5421 7094	58	19/06/2019	A. Grayson		1
44	Hockenhull	SJ 5421 7094	58	14/06/2022	A. Grayson		15
45	Linnere Moss (north)	SJ 5469 7070	58	10/06/2018	A. Grayson		3
47	Rush Pool	SJ 5435 7195	58	03/07/2019	A. Grayson		1
59	Hogshead Moss	SJ 5842 6952	58	13/07/2022	A. Grayson		1
63	Wybunbury Moss	SJ 6965 5021	58	24/06/2018	A. Grayson		3
63	Wybunbury Moss	SJ 6965 5021	58	16/06/2022	A. Grayson		1
67	Brown Moss	SJ 5616 3949	40	25/06/2018	A. Grayson		1
68	Clarepool Moss	SJ 4356 3411	40	26/06/2018	A. Grayson		1
69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	40	26/06/2018	A. Grayson		1
75	Wem Moss	SJ 4734 3431	40	15/06/2018	A. Grayson		1
81	Cannock Chase (near Penkridge Bank Road)	SK 0099 1687	39	29/06/2018	A. Grayson		1
85	between Mosslee Hall Farm and Coltstone [Note 8]	SK 00789 50701	39	24/06/2018	A. Grayson		1
87	Shavington Park [Note 9]	SJ 638 382	40	25/06/2018	A. Grayson		1
93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	23/07/2019	A. Grayson		1
93	forestry road west of N1, N2 and N3	SJ 5483 7202	58	12/07/2022	A. Grayson		1
95	Brookhouse Moss	SJ 8052 6191	58	16/06/2022	A. Grayson		13
100	Vicarage Moss (north basin mire)	SJ 3601 5398	50	23/06/2022	A. Grayson		2
113	Risley Moss (mini-moss)	SJ 6629 9198	59	18/06/2019	A. Grayson		1
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	15/06/2022	A. Grayson		9
122	Dunham Park (Visitor Centre)	SJ 733 874	58	15/07/2021	A. Grayson		1
125	Dunham Park	SJ 736 869	58	22/06/2021	A. Grayson		2
135	Tatton Park	SJ 750 804	58	08/07/2021	A. Grayson		1
140	Basin Mire B01	SJ 5542 7149	58	14/06/2022	A. Grayson		2
142	Basin Mire B09	SJ 5445 7149	58	14/06/2022	A. Grayson		1

**Note 8.** Identified by Andrew Grayson from a photograph taken by Darwyn P. Sumner

**Note 9.** Collected by Chris Spilling; identified by Andrew Grayson

## FULL LIST OF TABANIDAE RECORDS FROM THE 2018 TO 2022 SURVEYS

*Hybomitra bimaculata* (Macquart, 1826 – *Tabanus*) [Hairy-legged Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
143	Basin Mire B11	SJ 5509 7146	58	14/06/2022	A. Grayson		1
144	Basin Mire B12	SJ 5433 7121	58	14/06/2022	A. Grayson		1
151	Pierson's Moss	SJ 5462 7157	58	14/06/2022	A. Grayson		2
154	Little Budworth Common (north end pond and moss)	SJ 5849 6608	58	18/07/2022	A. Grayson		1
160	pasture between the basin mires of Vicarage Moss	SJ 3603 5387	50	23/06/2022	A. Grayson		2

*Hybomitra distinguenda* (Verrall, 1909 – *Tabanus*) [Bright Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
4	Lily Pool	SJ 5956 6925	58	03/07/2019	A. Grayson		2
7	Gull Moss	SJ 6011 6871	58	14/07/2022	A. Grayson		1
16	Newchurch Common	SJ 6055 6894	58	03/07/2019	A. Grayson		2
19	Barnesbridge Flushes	SJ 5398 7182	58	03/07/2019	A. Grayson		1
20	Basin Mire A01b	SJ 5357 7211	58	03/07/2019	A. Grayson		1
27	Basin Mire N3	SJ 5492 7205	58	12/07/2022	A. Grayson		2
28	Black Lake	SJ 5373 7091	58	14/07/2022	A. Grayson		1
30	bridge near Black Lake	SJ 5381 7100	58	14/06/2018	A. Grayson	1	
32	Blakemere Moss	SJ 5469 7120	58	10/06/2018	A. Grayson		1
36	Finney's Moss	SJ 5596 7155	58	26/07/2018	A. Grayson		1
36	Finney's Moss	SJ 5596 7155	58	03/07/2019	A. Grayson		1
41	Harthill Moss	SJ 5633 7142	58	03/07/2019	A. Grayson		2
42	Harthill (upper basin)	SJ 5600 7108	58	03/07/2019	A. Grayson		1
43	Hatch Mere	SJ 5521 7206	58	23/07/2019	A. Grayson		1
44	Hockenhull	SJ 5421 7094	58	14/06/2022	A. Grayson		4
56	lane between Petty Pool and Pettypool Brook	SJ 6204 6973	58	05/07/2018	A. Grayson		1
57	Fishpool Moss	SJ 5643 6716	58	30/06/2018	A. Grayson		1
59	Hogshead Moss	SJ 5842 6952	58	09/06/2018	A. Grayson		1
59	Hogshead Moss	SJ 5842 6952	58	10/06/2018	A. Grayson		1
61	Snipe Island	SJ 6111 6932	58	27/06/2018	A. Grayson		1
63	Wybunbury Moss	SJ 6965 5021	58	25/06/2018	A. Grayson		3
69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	40	26/06/2018	A. Grayson		1
74	Fenn's Moss (central area)	SJ 4848 3628	50	24/06/2018	A. Grayson		1
76	Whixall Moss	SJ 4926 3603	40	24/06/2018	A. Grayson		2
80	Cannock Chase (near Penkridge Bank Car Park)	SK 0008 1694	39	29/06/2018	A. Grayson		1
101	Vicarage Moss (south basin mire)	SJ 3600 5384	50	23/06/2022	A. Grayson		1
114	Risley Moss (birch woodland)	SJ 6631 9167	59	02/07/2019	A. Grayson		2
114	Risley Moss (birch woodland)	SJ 6631 9167	59	22/07/2019	A. Grayson		1
117	Whixall Moss (eastern and central areas)	SJ 4939 3626	40	15/06/2022	A. Grayson		1
125	Dunham Park	SJ 736 869	58	22/06/2021	A. Grayson		1
139	Basin Mire A12	SJ 5344 7211	58	19/07/2022	A. Grayson		1
157	Sherratt's Rough	SJ 6182 6925	58	18/07/2022	A. Grayson		1

*Hybomitra lurida* (Fallén, 1817 – *Tabanus*) [Broad-headed Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
140	Basin Mire B01	SJ 5542 7149	58	14/06/2022	A. Grayson		1



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*Hybomitra montana* (Meigen, 1820 – *Tabanus*) [Slender-horned Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	07/06/2018 - 09/06/2018	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	14/06/2018 - 23/06/2018	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	05/07/2018 - 14/07/2018	A. Grayson		3
51	Little Budworth Common (Whitehall Moss)	SJ 5878 6580	58	19/06/2019	A. Grayson	6	2
71	Bettisfield Moss (England)	SJ 4821 3518	40	24/07/2019	A. Grayson		1
74	Fenn's Moss (central area)	SJ 4848 3628	50	24/06/2018	A. Grayson		1
76	Whixall Moss	SJ 4926 3603	40	24/06/2018	A. Grayson		1
115	Bettisfield Moss (Wales)	SJ 4767 3533	50	24/07/2019	A. Grayson		1
116	Fenn's Moss (western area)	SJ 4804 3621	50	24/07/2019	A. Grayson		1
118	Whixall Moss (western and central areas)	SJ 4860 3559	40	24/07/2019	A. Grayson		1

*Tabanus autumnalis* Linnaeus, 1761 [Large Marsh Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
9	Shemmy Moss	SJ 5949 6892	58	03/07/2019	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	14/06/2018 - 23/06/2018	A. Grayson		1
10	Shemmy Moss [Manitoba trap]	SJ 5944 6884	58	14/07/2018 - 25/07/2018	A. Grayson		1
15	stables near Brackenhurst Bog	SJ 5940 6987	58	09/06/2018	A. Grayson		1
33	Blakemere Moss [Manitoba trap]	SJ 5468 7119	58	23/06/2018 - 30/06/2018	A. Grayson		1
88	Chester Zoo Nature Reserve [Note 10]	SJ 40791 70697	58	29/06/2018	A. Jennings-Giles	1	
113	Risley Moss (mini-moss)	SJ 6629 9198	59	02/07/2019	A. Grayson	1	
130	Dunham Park	SJ 739 874	58	22/06/2021	A. Grayson		1

**Note 10.** Record verified by Nigel P. Jones: data forwarded to Andrew Grayson by Gary M. Hedges

*Tabanus maculicornis* Zetterstedt, 1842 [Narrow-winged Horsefly]

Code No.	Locality	Central 10m <sup>2</sup> National Grid Reference	Vice-County No.	Date of Record	Determiner	No. of Males	No. of Females
63	Wybunbury Moss	SJ 6965 5021	58	25/06/2018	A. Grayson		1
65	Chartley Moss	SK 0221 2825	39	28/06/2018	A. Grayson		1
68	Clarepool Moss	SJ 4356 3411	40	26/06/2018	A. Grayson		1
69	lane between Clarepool Moss and Cole Mere	SJ 4296 3401	40	26/06/2018	A. Grayson		2
73	Cadney Moss	SJ 4689 3477	50	24/06/2018	A. Grayson		1