Nocturnal ichneumon wasps Ichneumonidae: Ophioninae plus Netelia (Tryphoninae) and Opheltes (Ctenophelmatinae) in Worcestershire, including new records from Carpenters Farm, Berrow.

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Anyone who has run light traps for moths will be familiar with the orange-coloured nocturnal ichneumon wasps that are attracted to light like the moths whose larvae most of them parasitise (01). Until recently they were almost impossible for the non-specialist to identify, but a new on-line publication from the Natural History Museum, Beginner's Guide to identifying British ichneumonids (Preyn & Raper), opened the way for the reliable identification of some distinctive species from photographs. Detailed keys have also been posted on-line by Dr Gavin Broad (Broad) for those prepared to examine specimens microscopically. Accordingly, since June 2020, I started to retain these ichneumons from light trappings here where I live at Carpenters Farm, Berrow, as I used to do before I gave up preserving them in 2015 owing to frustration over the inability to identify them.

01. *Ophion obscuratus* light-trapped at Carpenters Farm on 20 October 2020. Martin Skirrow.

The light trap used was a Robinson trap fitted with a standard 125 Watt mercury vapour lamp. The trap was run from dusk to near dawn, usually from a site that was adjacent to a garden and a rough grass area with a few fruit trees (SO77763389). This site was also within 20 metres of a wooded stream running the length of the farm. My procedure was to look for insects settled on objects outside the trap before retiring between 11 pm and midnight, and then again soon after light the next morning before reading the contents of the trap.

A total of 18 recent and old preserved specimens were identified. All identifications were confirmed or made by Gavin Broad of the Natural History Museum. Surprisingly, 11 species were represented among the 18 specimens, which emphasises the great diversity within this group of insects. Of these 11 species, five are first verified records for VC37.

These records are all listed in Table 1, which is made up of other verified Worcestershire (VC37) records generously provided by Gavin Broad, and records from the WBRC database where determinations had been made by other experts. In compiling the table, I have restricted the listing to the subfamily Ophioninae and the genera *Netelia* (Tryphoninae) and Opheltes (Ctenophelmatinae) within the family Ichneumonidae (about 2400 British species!). I exclude the genera Tryphon and Eridolius (Tryphoninae) as they are smaller mainly black species similar to members of other groups not particularly attracted to light. Thus, the list is restricted to nearly all the fairly large nocturnal orange-coloured species found in light traps. Interestingly, these orange nocturnal species are seldom found anywhere other than in light traps.

The total number of verified species of these nocturnal ichneumons recorded for VC37 now stands at 26 (Table 1). Apart from Carpenters Farm in the far southwest of the county, the recorded sites are strongly skewed in favour of specialised ones such as mature woodland, especially in the north of the county where experienced recorders are particularly active (Table 2). Records from much of VC37 are deficient. This lack of general coverage is shared nationally, and distribution data for these ichneumons are woefully deficient. This is reflected by NBN records which are commonly in single figures for widespread species and non-existent for others.

Species	Site	Date(s)	Recorder	Comments
Ophioninae				
Enicospilus cerebrator	Wells Cottage	1 Aug 2019	Michael Southall*	Mainly SE England. Recently new to Britain
Enicospilus combustus	Carpenters Farm, Berrow	20 Oct 2020	Martin Skirrow	Mainly S England (see text below)
Enicospilus inflexus	Wells Cottage	13 July 2019	Michael Southall/ Jaswinder Boparai*	Widespread England & Wales. Parasite of *Lasiocampus* (Eggar) moths
Enicospilus ramidulus	Carpenters Farm, Berrow Lower Wyche Road Wells Cottage	22 Sept 2020 21 Aug 2016 3 Aug 2019	Martin Skirrow Richard Comont* Michael Southall*	Widespread and common
Enicospilus repentinus	Carpenters Farm, Berrow	25 June 2020	Martin Skirrow	Few British records (see text below)
Ophion confusus	Carpenters Farm, Berrow	11 June 2006	Martin Skirrow	New species split from *O. mocsaryi* in 2019. Probably widespread and common
Ophion longigena	Wells Cottage	25 June 2019	Michael Southall	Widespread but apparently scarce
Ophion luteus agg. (pre Johansson 2019)	Carpenters Farm, Berrow	5 Oct 2010; 18 Oct 2014 11 Oct 2020	Martin Skirrow	Widespread, but often wrongly identified
Ophion minutus	Gannow Wood Kingsford Country Park Lower Wyche Road Monkwood Shrawley Wood	15 May 2004 4 May 2018 5 & 17 May 2017 21 May 2018 14 May 2004	J. Rush Oliver Wadsworth Richard Comont* Oliver Wadsworth J. Rush	Small size marks this sp. (forewing 8-10 mm) Common in woodland Parasite of larvae of winter geometrid moths (*Agriopis*)
Ophion mocsari	Shrawley Wood	14 May 2004	J. Rush	Widespread
Ophion obscuratus agg	Besford Court Estate Bowcastle Farm Carpenters Farm, Berrow	1 Mar 2019 16-23 Oct 2004 5 Oct 2010; 20 Oct 2020	Jean Young M. E. Blythe/ Peter Skidmore* Martin Skirrow	Characteristic pale stripes on the thorax Common, sometimes abundant Can be found throughout the winter Taxon probably two species (see text below)

Ophion obscuratus agg Continued.	Gannow Wood Gilbert's End, Hanley Swan Lower Wyche Road Malvern Hills SO772443 Malvern Hills SO773445 Norchard Shrawley Wood Stoke Prior, Bromsgrove Willow Bank Worcester	15 May 2004 23 Feb 2017 20 Feb & 27Apr 2017; Jan & Feb 2018; 20 Feb 2019 12 Jan 2017 17 Feb 2017 20 Feb 2018 14 May 2004 18 Feb 2012 3 March 2002 21 Feb 2017	J. Rush Martin Skirrow Richard Comont Richard Comont* Richard Comont* Michael Southall J. Rush P. Swift Rosemary Winnall/ Mike Bloxham* Josh Kalms*	
Ophion ocellaris	Gannow Wood Shrawley Wood	15 May 2004 14 May 2004	J. Rush J. Rush	Widespread but scarce
Ophion scutellaris	Carpenters Farm, Berrow Defford Kingsford Country Park Lower Wyche Road Wells Cottage Willow Bank	21 March 2011 3 March 2006 4 May 2018 18 April 2019 2 March 2019 20 March 2001	Martin Skirrow Roger Claxton* Oliver Wadsworth Richard Comont* Michael Southall Rosemary Winnall Mike Bloxham*	Widespread mainly in England Early flight period
Ophion slaviceki	Stourbridge	18 Aug 2018	Lukas Large	Difficult to distinguish from *O. luteus.* Probably under recorded
Ophion ventricosus	Big Wood Chaddesley Wood NNR Gannow Wood Mathon, Old Country Hous Monkwood Shrawley Wood	6 June 1982 1982 15 May 2004 June 2008 21 May 2018 24 May 2004	Fred Fincher* Fred Fincher* J. Rush John Meiklejohn* Oliver Wadsworth J. Rush	Local; favours ancient deciduous woodland Parasite of Pale Brindled Beauty *Apocheima pilosaria*
Tryphoninae *Netelia bistoni* sp. nov.	 Carpenters Farm, Berrow	 19 June 2006	 Martin Skirrow	 New taxon (see text below)
Netelia cristata	Rodborough Willow Bank	7 June 1941 4 Aug 2003	No name given Rosemary Winnall	Widespread but data deficient
Netelia fuscicornis	Bowcastle Farm, far orchar Carpenters Farm, Berrow Norchard	8-15 May 2004 23 May 2012 11 Oct 2018	R. Winnall/M. E. Blythe Martin Skirrow Michael Southall	Scattered records in England
Netelia inedita	Wells Cottage Willow Bank	26 July 2019 26 June, 3 & 9 July 200	Michael Southall Rosemary Winnall	Widely scattered records Britain & Ireland
Netelia infractor	Carpenters Farm, Berrow Wells Cottage	4 Sept 2010 (x2) 1 June 2019	Martin Skirrow Michael Southall	Widespread
Netelia latungula	Shrawley Wood	14 May 2004	J. Rush	Widespread but scarce, possibly declining
Netelia melanura	Lower Wyche Road	5 Nov 2018	Richard Comont*	Widespread. Parasitoid of noctuid larvae
Netelia millieratae	Wells Cottage	23 Mar & 29 July 2019	Michael Southall	Recently has become widespread in S England
Netelia tarsata	Willow Bank	4 Sept 2003	Rosemary Winnall	Widespread. Parasite of Pug moths (*Epithecia*)
Netelia virgata	Burnt Wood, Rock Coppice Carpenters Farm, Berrow Norchard, Worcs Wells Cottage Willow Bank Wissets Wood, Bayton	6 June 2003 4 Sept 2013 3 Oct 2018 5 Aug 2019 15 Sept 2003 19 Sept 2003	Rosemary Winnall Martin Skirrow Michael Southall Michael Southall Rosemary Winnall Rosemary Winnall	Characteristic black marks on thorax Widespread. Parasite of Geometrid moths
Ctenophelmatinae *Opheltes glaucopterus*	 Bransford Upton Warren	 20 July 2015 2009	 A. Simpson J. Sirrett	 Found in association with Birch and other trees Parasite of Cimbicid sawfly larvae

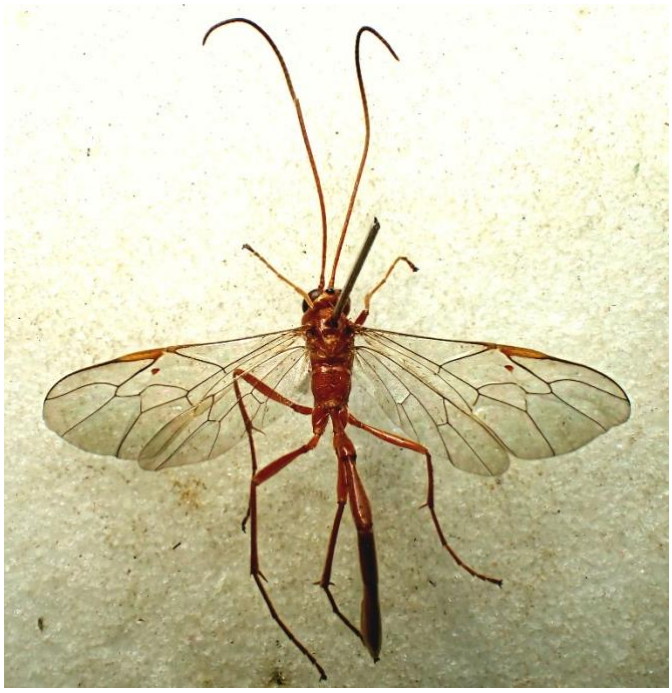
Table 1. Nocturnal ichneumons (Ophioninae plus Netelia and Opheltes) recorded in Worcestershire (VC37).
All records were determined or verified by Gavin Broad except for those where the recorder's (or associate's) names are marked with an asterix (*); in these cases the recorder (or associate) was the determiner.

Big Wood	SO920723	Kingsford Country Park	SO826582	Upton Warren	SO9367
Bowcastle Farm	SO766753	Lower Wyche Road	SO773443	Wells Cottage	SO847685
Bransford	SO792527	Monkwood	SO803605	Willow Bank	SO745733
Burnt Wood, Rock Coppice	SO764735	Norchard	SO847685	Wissets Wood	SO676727
Carpenters Farm, Berrow	SO777339	Rodborough	SO8405		
Chaddesley Wood NNR	SO915736	Shrawley Wood	SO806663		
Gannow Wood	SP002593	Stourbridge	SO892842		

Table 2. National Grid References for sites listed in Table 1.

Notes on particular species

Two *Enicospilus* species are of special interest. *Enicospilus repentinus* found at Carpenters Farm in June 2020 is a scarce species relatively new to Britain (02). It was first recorded in 1984, but most records date from after 2000. There are few British records, mostly from the eastern Chilterns, but a few records are now beginning to appear further west, as in the case of our Worcestershire record. *E. combustus* is more widespread but with a limited number of records mainly in southern England. It is a parasite of the Dot moth *Melanchra persicariae*, which has been recorded in small numbers at Carpenters Farm where *E. combustus* was found. Species of *Enicospilus* are relatively easy to identify, as all but two have distinctively arranged sclerites in the forewing (03) (Broad & Shaw 2016).

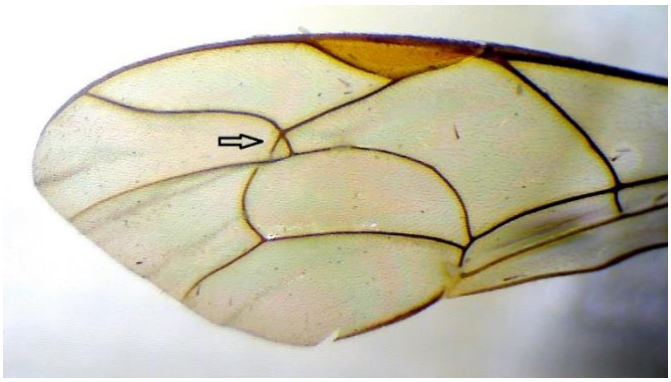


02. *Enicospilus repentinus* light-trapped at Carpenters Farm on 25 June 2020. Martin Skirrow.

03. Sclerites in the forewing of *Enicospilus ramidulus* (arrowed). Martin Skirrow.

Ophion species are more difficult, but *O. obscuratus* can be identified by pale stripes on the thorax (01). It is a large and common ichneumon which, unusually for the group, has a flight period that extends throughout the winter. There is a taxonomic complication here in that *O. obscuratus* is now thought to consist of two species that have yet to be defined, so the recommendation is that it should be referred to as *O. obscuratus* agg. until there is clarity. *O. confusus*, found at Carpenters Farm in 2006, is another example of taxonomic splitting, recently separated from *O. mocsari* by Johansson & Cederberg (2019). *O. luteus* is also a large and common species, but as it is not possible to separate it from other species without detailed microscopy it is thought that there are many errors of identification. For this reason I decided to omit 10 earlier unverified records from the list, including two of my own that were subsequently proved to be incorrect.

Netelia belong to the subfamily Tryphoninae and are the most problematic to identify (20 British species). A feature that distinguishes most of them from the Ophioninae is a small areolet in the forewing venation that forms the end of the discosubmarginal cell (04). There is one species, *N. virgata*, that can be easily recognised by distinctive black marks on the thorax (05). The others all require detailed microscopy for identification. The most notable species in the present list is a new and apparently rare species: *N. bistoni* sp nov which belongs to the subgenus Prosthodocis. The species is currently in the process of being formally described by Gavin Broad and Mark Shaw. Our specimen was caught in June 2006 at Carpenters Farm and it has been deposited in the Natural History Museum as a paratype of the species. It is known to parasitise the larvae of the Peppered Moth *Biston betularia* (hence the choice of its specific name). The Peppered Moth has been recorded annually at Carpenters Farm. It is worth noting that *N. bistoni* sp nov looks superficially like *N. tarsata*, indeed I had provisionally identified my specimen as *N. tarsata* before consulting Gavin Broad, but it has no occipital carina and the parameres of the male genitalia are very different. *N. tarsata* is illustrated and described in the Preyn and Raper 'Beginner's Guide', so I suggest that anyone who thinks they have that species should consider retaining the specimen for detailed study in case it is *N. bistoni* sp nov.



04. Areolet in the forewing of *Netelia virgata* at the distal end of the discosubmarginal cell (arrowed). Martin Skirrow.

05. *Netelia virgata* light-trapped at Carpenters Farm on 4 September 2013. Martin Skirrow.

Conclusions

With the recent on-line availability of the publications listed below, it is now possible to identify at least some species of nocturnal ichneumon without recourse to detailed microscopy. So we now have the opportunity to increase our recording and understanding of these fascinating insects and begin to remedy the lack of records nationally. The light trapping of moths is a popular pastime, but insects other than moths are largely neglected through lack of interest or because they are difficult to identify. I would urge light

trappers to examine and photograph their nocturnal ichneumons and if necessary retain them for detailed examination. I would be happy to examine specimens for assessment and possible referral if required.

Acknowledgements
Special thanks are due to Dr Gavin Broad for the identification or confirmation of species, for supplying his list of records of nocturnal ichneumons from Worcestershire and for general advice and information. I also wish to thank Simon Wood for searching the WBRC database and to Jean Young for drawing my attention to the Preyn & Raper 'Beginner's Guide' which was what prompted this work in the first place.

References
Preyn, N. & Raper, C. *Beginner's guide to identifying British ichneumonids*. Natural History Museum. Available on-line via the Naturespot web site. Available at: https://www.naturespot.org.uk/sites/default/files/downloads/british-ichneumonid-wasps-id-guide.pdf. [Accessed 07.11.21]
Broad, G. R. *Keys for the identification of British and Irish nocturnal Ichneumonidae*.1-38. Available at: https://nocturnalichs.myspecies.info/sites/nocturnalichs.myspecies.info/files/keys%20for%20nocturnal%20workshop_April_2018%20%281%29_0.pdf. [Accessed 07.11.21]
Broad, G. R. & Shaw, M.R. 2016. The British species of Enicospilus (Hymenoptera: Ichneumonidae: Ophioninae). *European Journal of Taxonomy* 187:1-31. [can be accessed from the Preyn & Roper online article above]
Johansson, N. & Cederberg, B. 2019. Review of the Swedish species of Ophion (Hymenoptera: Ichneumonidae: Ophioninae), with the description of 18 new species and an illustrated key to Swedish species. *European Journal of Taxonomy* 550:1-136.

Images
01. *Ophion obscuratus* light-trapped at Carpenters Farm on 20 October 2020. Martin Skirrow.
02. *Enicospilus repentinus* light-trapped at Carpenters Farm on 25 June 2020. Martin Skirrow.
03. Sclerites in the forewing of *Enicospilus ramidulus* (arrowed). Martin Skirrow.
04. Areolet in the forewing of *Netelia virgata* at the distal end of the discosubmarginal cell (arrowed). Martin Skirrow.
05. *Netelia virgata* light-trapped at Carpenters Farm on 4 September 2013. Martin Skirrow.