NATURAL HISTORY MUSEUM

Beginner's guide to identifying British ichneumonids

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Acknowledgements

Further reading

Ichneumonids are notoriously difficult to identify. The traditional advice has been that they are a group that only specialists can attempt. This is because so many of them share virtually identical body shapes and markings and can only be distinguished if minute features are visible. There are also lots of them: about 2,500 species in Britain. The usual procedure is to take specimens and using a microscope and complex identification keys, work through an identification from subfamily through to species that is, if keys exist for that group. Few people specialise at this level and as a consequence there are few recording schemes and little is known about ichneumonid distributions in the UK.

With the advent of digital photography and social media, however, it is possible for experts to skip the keying and identify a few species from good-quality photos. With this in mind, we have been working with Dr Gavin Broad, lead curator of ichneumonid wasps at the Natural History Museum, London (NHM). We have distilled his expert knowledge into a guide that novices can use to identify a few of the readily identifiable species.

This guide combines photographs taken in the wild of living ichneumonids with photographs of pinned specimens from the NHM collections. The pinned material enables us to point out small features that show readers the kinds of things that must be visible in their photos to make an identification.

Subfamily	Species
Alomyinae	*Alomya debellator*
Anomaloninae	*Heteropelma amictum*
Banchinae	*Banchus volutatorius*
	Lissonota lineolaris
	Lissonota setosa
Ctenopelmatinae	*Opheltes glaucopterus*
Ichneumoninae	*Amblyjoppa fuscipennis*
	Amblyjoppa proteus
	Achaius oratorius
	Amblyteles armatorius
	Ctenichneumon panzeri
	Ichneumon sarcitorius
	Ichneumon suspiciosus
	Ichneumon xanthorius
	Ichneumon stramentor
	Callajoppa cirrogaster
	Callajoppa exaltatoria
Ophioninae	*Enicospilus ramidulus*
	Eremotylus marginatus
	Ophion luteus
	Ophion minutus
	Ophion obscuratus
	Ophion ventricosus
	Stauropoctonus bombycivorus
Orthopelmatinae	*Orthopelma mediator*
Pimplinae	*Ephialtes manifestator*
	Tromatobia lineatoria
	Perithous scurra
	Apechthis compunctor
	Pimpla rufipes

Subfamily	Species
Rhyssinae	*Rhyssa persuasoria*
Stilbopinae	*Stilbops ruficornis*
	Stilbops vetula
Tryphoninae	*Netelia melanura*
	Netelia tarsata
	Netelia virgata
Xoridinae	*Odontocolon dentipes*
	Xorides praecatorius

Ichneumonids are wasps (order Hymenoptera, superfamily Ichneumonoidea) with a very narrow wasp waist between the middle (mesosoma, roughly equivalent to the thorax on other insects) and hind (metasoma, roughly equivalent to the abdomen on other insects) body parts. They have powerful chewing mandibles, two pairs of usually transparent membranous wings with complex venation and long antennae with 18 or more segments. They are invertebrates, so don't have a backbone.

The vast majority of ichneumonids are parasitoids of other invertebrates – meaning their eggs are laid in or on a single host which the larvae feed on and eventually kill. This distinguishes them from parasites, which live off a host but don't usually kill them, and predators, which attack and consume many individuals of the same or different species. A few ichneumonids also act as predators, consuming eggs of spiders and occasionally other arachnids and insects.

In the UK we have approximately 2,500 species of ichneumonid. Making up almost 10% of all British insects, Ichneumonidae are an important insect group and one of the most diverse. Many of the species are poorly understood and are known from very few specimens – even large museums like the Natural History Museum will have gaps in their reference collections.

Body parts

The standard terms for an inchneumonid's three main body parts are: head, thorax and abdomen. Experts tend to use the words head, mesosoma (middle segment) and metasoma (hind segment) because wasps have odd bodies where the waist falls between the first and second segments of the abdomen. You might expect the narrow bit to be the first part of the abdomen but it's actually the second – the first segment is called the propodeum and is attached to the back of the thorax.

The pattern of wing veins is fairly predictable within a species and can be very useful in identification. Ichneumonids have a distinctly different wing venation to solitary wasps or sawflies.

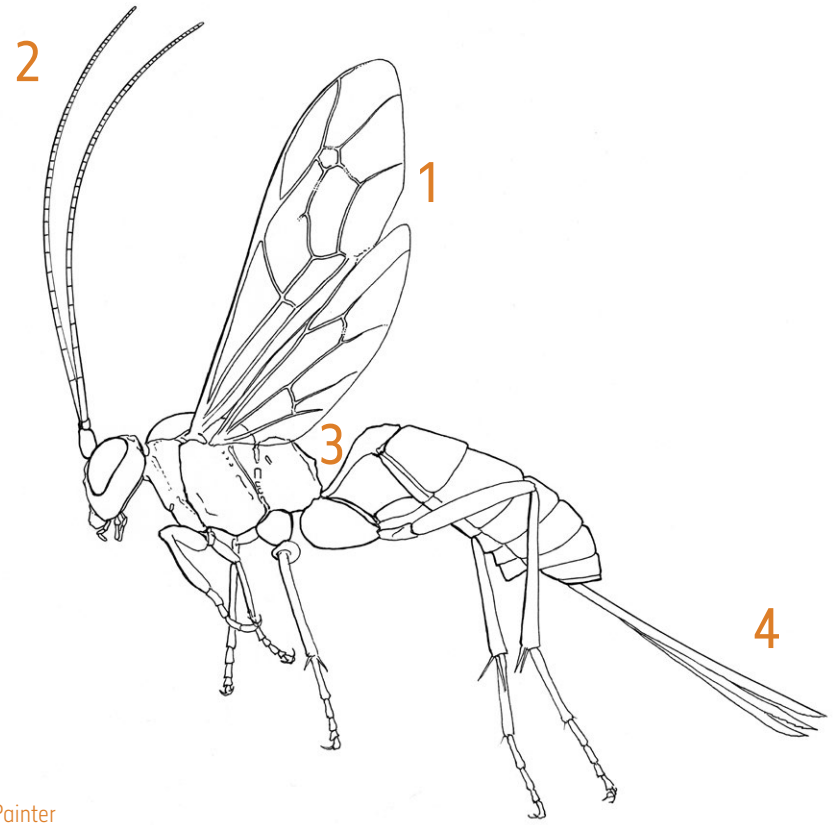
- Get as close as you can first
- Make sure there is enough light
- Take several photos from different angles
- If the insect is moving a lot it's easier to photograph from many angles. But if it's basking in the sun take a few dorsally, from above, and then tilt yourself over to get a few shots from the side
- Close-ups of the head are particularly useful
- Various angles of the head and body are useful to show colour and shape

If you can get close-up, well-illuminated images taken from different angles, then it will usually help identify what you have seen. If the insect is moving around then it may be easier to get various shots from different angles. However, even with good quality photographs, most ichneumonids are difficult, if not impossible, to identify when a critical feature is not visible.

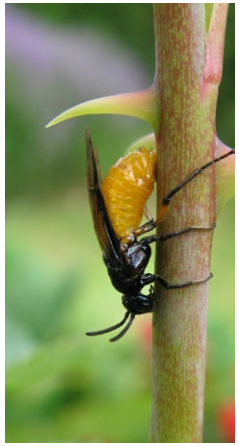
Do I have an ichneumonid?

To know if you have an ichneumonid, there are a few questions to ask yourself.

1. Does it have two pairs of mainly transparent wings with many veins criss-crossing them? The hind wings are usually much smaller than the forewings and are hooked onto the forewing in flight so they can be partially obscured.
2. Does it have long antennae with more than 18 segments? Often you don't have to count every segment but if the antennae are much longer than the head and thorax then they probably qualify as long.
3. Does it have a narrow wasp waist between the middle and hind body segments? Often this can be slightly obscured by the wings but look carefully or try to get a side/lateral view.
4. Does it have an ovipositor on the tip of the abdomen? If so you may have a female ichneumonid. However, many insects also have ovipositors.



If you answered yes to these questions you probably have an ichneumonid. However, also compare to the photos below which are not ichneumonids but could be confused with them.



Rose sawfly - sawflies and wood wasps lack a narrow, wasp waist, have short antennae, complex wing venation and do not sting

A typical social wasp (*Vespula germanica*) - heavily built with short antennae with classic black and yellow colour

A solitary cuckoo bee (*Nomada sp.*) - short antennae and a compact body shape

A spider-hunting wasp (Pompilidae) - long bristly legs and often have curling, relatively short antennae

Gasteruption sp. - long "neck", abdomen is attached high on the thorax well above the base of the legs. short antennae, hold their shortish wings down and close to the body

Which type of ichneumonid do I have?

When looking to identify your specimen, comparing your photos to others on the internet can be misleading as many images online are misidentified. There are 33 subfamilies of ichneumonids represented in Britain. Identifying many of them can be complicated. Here we group similar looking species on general appearance.

Large and colourful species

Small and colourful species

Mainly black-bodied species with orange legs – often with long ovipositors

Nocturnal, orange-bodied species

The following species all have a narrow petiole (the first segment of the abdomen) and the females have a very short ovipositor which is not usually visible in the field.

Amblyjoppa fuscipennis

Amblyjoppa proteus

Achaius oratorius

Amblyteles armatorius

Ichneumon sarcitorius

Ichneumon xanthorius

Ichneumon stramentor

Callajoppa cirrogaster and *Callajoppa exaltatoria*

Alomya debellator

Heteropelma amictum

Ctenichneumon panzeri

Comparisons of yellow and black males

Possible confusions
Ichneumon suspiciosus

A large (16–25mm) and beautiful species with a black head. It has a black thorax with a small cream spot and a bright orange abdomen – quite broad and no other colours on it. Can be confused with *Protichneumon pisorius*, but where *P. pisorius* has black tips on the hind tibia and tarsus, these features on *A. fuscipennis* are entirely orange.

Habitat: gardens and woodland

Hosts: the adult emerges from the pupa of the small elephant hawk-moth, eggs are laid in the caterpillar

Male with entirely black antennae

Female with black antennae with a white band in the middle

Female ©Gail Hampshire

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A large (20–25mm), mainly jet-black species with a small yellow/cream spot on the back of the thorax. This species has dusky borders to the tips of the wings. Can be confused with many other, usually smaller, black species.

Hosts: eggs are laid in the caterpillar of the elephant hawk-moth and adults emerge from the pupa

Male with white bands on hind legs and entirely black antennae

Female with entirely black hind legs and a white band on the antennae

Flight period:

Jan	Feb	Mar	Apr	May	**Jun**	Jul	Aug	Sep	Oct	Nov	Dec

This is a medium-sized species (11–15mm) and has a black body with white spots. The precise pattern of white around the inner margin of the eyes, the white bands on each pair of legs together with the white band on the first abdominal segment are distinctive. The second, larger pale band on the abdomen is sometimes absent. Can be confused with other black Ichneumoninae with white spots.

Habitat: hedgerows and copses

Hosts: butterfly and moth larvae and the adult emerges from the pupa

White around the upper orbit of the eyes

Black-and-white bands on first metasomal segment and legs

©David Anderson

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

One of the many medium to large (15mm) black-and-yellow banded species. The spine on the top of the thorax together with a precise colour pattern on the abdomen in both sexes distinguishes them from the many other very similar species. Watch out for other species with extra spots of yellow or white on the abdomen.

Males are distinctive in having wide yellow stripes on the abdomen with a black stripe between, together with a yellow tip to the abdomen and broadly black hind femur. Females are similarly distinctive but the yellow bands on the abdomen are narrower and curved, rather ring shaped.

Habitat: Roadside, hedgerows, gardens and clearings. Adults are often seen feeding on umbellifers.

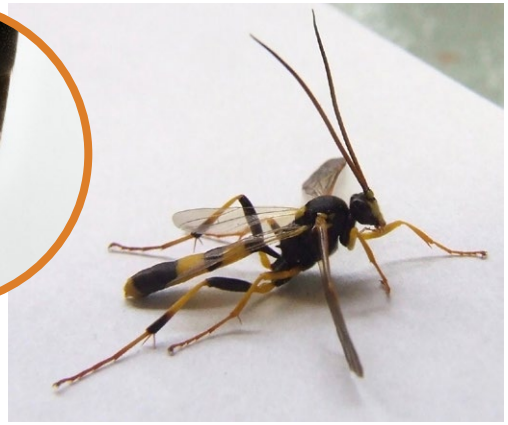
Hosts: Moth pupae. Often reared from the large yellow underwing.

Spine on the thorax on both males and females

Female ©Mick Massie

Female

Male - yellow tip on the abdomen



Male ©Nicola Prehn

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Another of the medium to large (female=10mm, male=14mm) black-and-yellow or black-and-red species. The size, shape and precise colour patterns are distinctive to this species. The female abdomen has a wide red band followed by a narrower black band, a second narrower red band and then black until the white stripe just before the tip. The males are longer with broad white bands across the abdomen at the hind edges of the segments, with conspicuous indentations on the bands of the second and third segments. The bands on the first and fourth segments are usually broken. Both sexes have hind femora tipped with black.

Habitat: usually seen nectaring on umbellifers or flying through foliage hunting

Hosts: moth pupae

Male with yellow-and-black banding on the abdomen

Female with orange-and-black banding and a white tip to the abdomen

Female ©Simon Robson

Male ©Gail Hampshire

Flight period:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

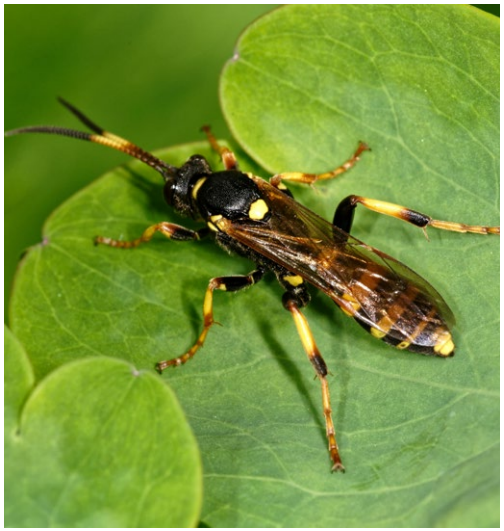
Another of the medium to large (15mm) black-and-yellow species. The precise colour pattern on the abdomen and hind leg in both sexes is distinctive in this species. The female has a yellow patch on the base of the leg and several yellow stripes across the abdomen with broad black stripes in between. The male is similar to many other species of *Ichneumon* with an extensively yellow abdomen, but the first segment is yellow to the posterior as is the base of the hind leg (the coxa).

Habitat: usually seen feeding on umbellifers or flying through foliage hunting

Hosts: butterfly and moth pupae

Female with yellow stripes on the abdomen

Male with a yellow first segment on the abdomen



Female ©Ron James

Flight period:

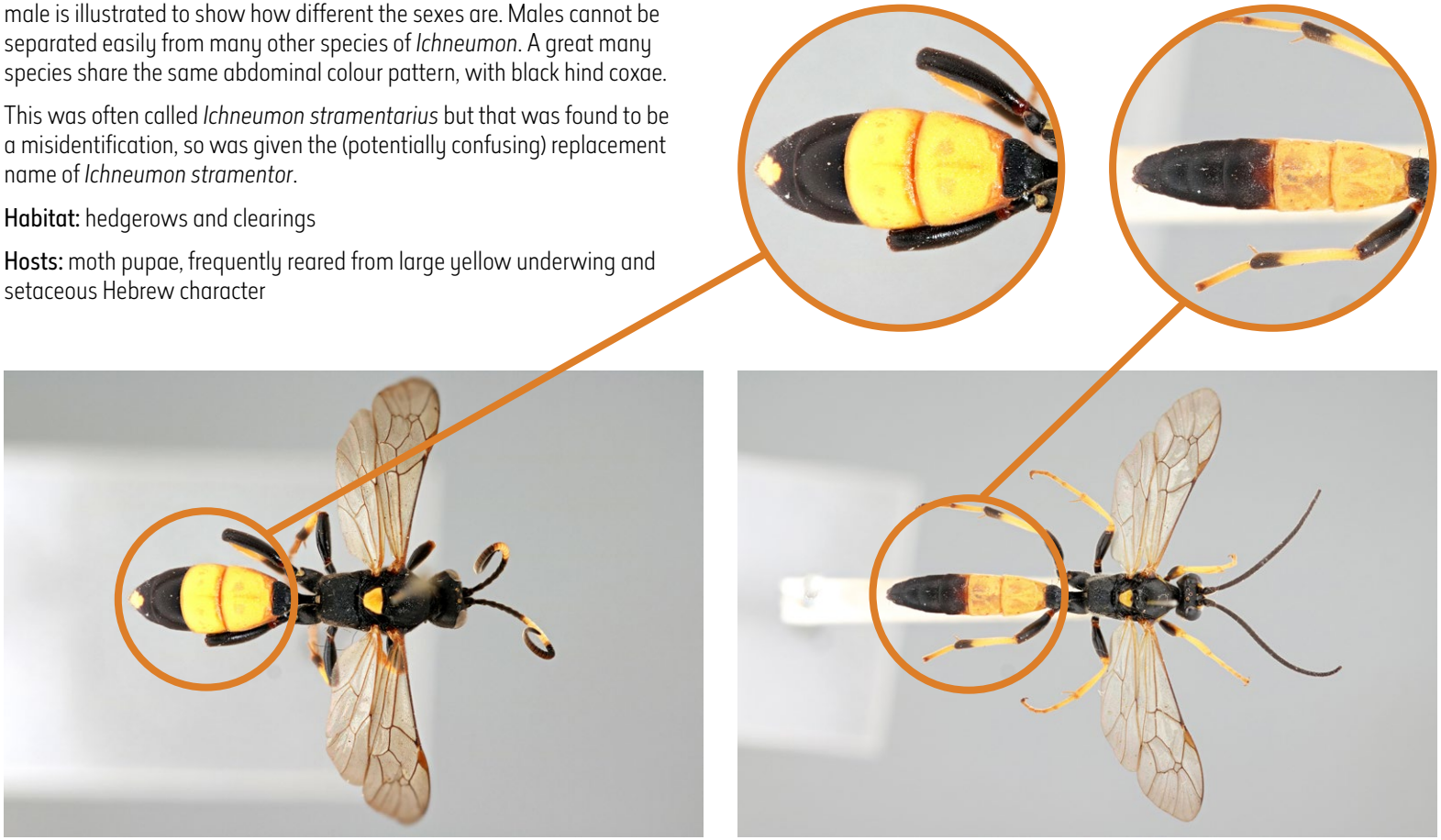
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Another of the medium to large (13–18 mm) black-and-yellow species. The precise pattern on the female abdomen is distinctive in this species. The female has entirely yellow second and third segments on the abdomen with a yellow spot at the tip, and a clear yellow stripe on the hind tibia. Other species have different combinations of white, yellow and red. The male is illustrated to show how different the sexes are. Males cannot be separated easily from many other species of *Ichneumon*. A great many species share the same abdominal colour pattern, with black hind coxae.

This was often called *Ichneumon stramentarius* but that was found to be a misidentification, so was given the (potentially confusing) replacement name of *Ichneumon stramentor*.

Habitat: hedgerows and clearings

Hosts: moth pupae, frequently reared from large yellow underwing and setaceous Hebrew character



Female with a long tapered abdomen ending with a yellow spot and black antennae with a white band

Male without a yellow tip to the abdomen and entirely black antennae

Female ©Henk Wallays

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Large and colourful species – *Callajoppa cirrogaster* and *Callajoppa exaltatoria*

Both these species of *Callajoppa* are parasitoids of hawk-moths. They are two of the largest Ichneumonidae in Britain but can be hard to tell apart. Both are similar in coloration and have pale markings at the base of the antennae as well as yellow colouration around the eyes and at the base of the abdomen. The wings of both species are distinctly yellow, which gradually darkens to brown at the edges.

When comparing the two, the paler markings of *cirrogaster* are more extensive – the metasoma usually has a pale fourth segment as pale as the second and third segments and the wings are weakly darkened at the edges. In *exaltatoria*, the metasoma is black from the fourth segment and the wings have a strongly defined black margin.

Habitat: mainly in woodland and parks where large hawk-moths are found

Hosts: Hawk-moth caterpillars, emerging from the host pupa. Frequently reared from pupae of large species such as pine hawk-moth.

Callajoppa cirrogaster female

Callajoppa exaltatoria female

Callajoppa cirrogaster male

Callajoppa exaltatoria male

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Medium-sized (10–18mm) black wasp with broad orange bands on the abdomen and orange on the lower leg joints. In females the antenna is pale at the base and the hind tarsus is a dark reddish brown. Males have a darkly tipped third tibia and the abdomen is frequently black. Often confused with Ichneumoninae (*Alomya* is classified in a separate subfamily, Alomyinae) but the relatively stout legs and antennae are distinctive, along with the wide, hairy clypeus at the base of the face.

Similar to *Alomya semiflava*, however, this species only flies in August and September and the hind wing nervellus is intercepted higher. In comparison, both the base of the antenna and the hind tarsus of the female *A. semiflava* are dark. In the male, the hind tibia is entirely testaceous and is rarely all black.

Habitat: Often found feeding on aphid honeydew and umbellifers in hedgerows. Females often found on the ground hunting for swift moth larvae.

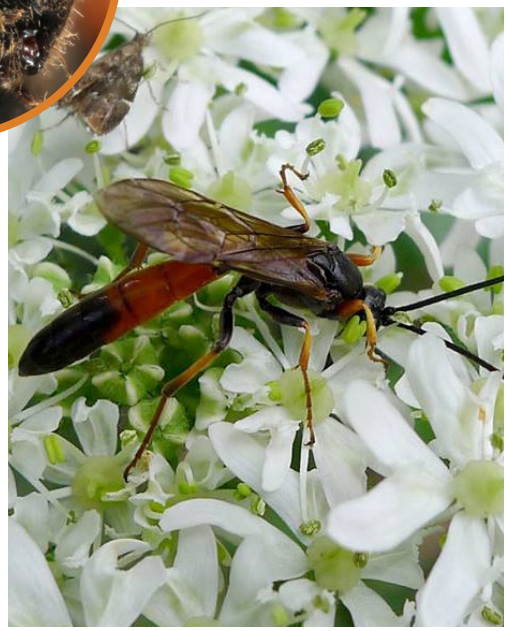
Hosts: Probably swift moth (genus *Hepialus*) but has not been reared. The similar *Alomya semiflava* parasitises caterpillars of the common swift, which it mummifies.

A spiracle is located in the middle of the first tergite, unlike any Ichneumoninae

The wide, hairy clypeus is a feature of both the male and female

Female showing pale antennae and orange lower leg joints

Male showing black antennae and dark tip to the hind tibia



Male ©Gail Hampshire

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

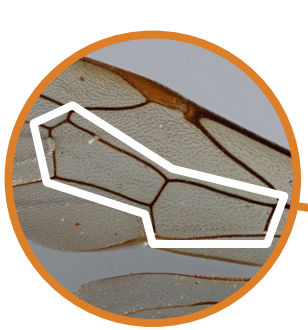
Large (20-30mm) wasp with an extremely narrow waist, elongated body and long hind legs, which is typical of the subfamily Anomaloninae. Many anomalonines have bright yellow hind tarsi which are uniquely expanded in the males of *Heteropelma*.

Anomalonines can be tricky to identify, with many sharing the same basic colour pattern. Details of the wing venation are important as the fore wing has the first subdiscal cell widened apically and this cell is about as long as the second discal cell. If seen well, the expanded hind tarsi of male *Heteropelma amictum* together with the shape of the clypeus (with pointed corners) are distinctive. *Heteropelma megarthrum* is a less frequently seen species, probably restricted to coniferous woodland.

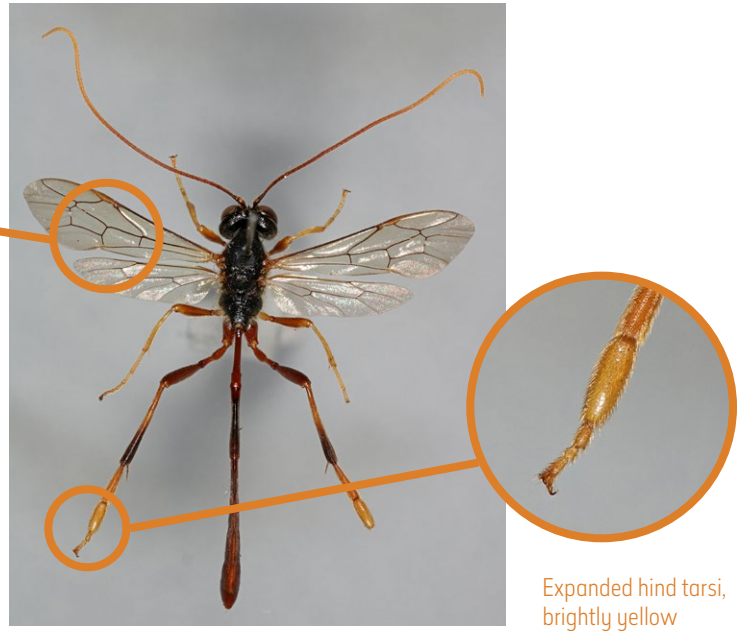
Habitat: moorland, heath and hedgerows

Hosts: moth pupae ovipositing into the larva

Male showing narrow waist with long hind legs



The first subdiscal cell is about as long as the second discal cell



Male

Expanded hind tarsi, brightly yellow

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A striking medium sized (10-15mm) wasp with narrow pale bands at the posterior edge of the third and subsequent tergites on the abdomen. There is a clear colour distinction between the sexes with the second and third tergites black in the female and red in the male. The male is often confused with the female *Diphyus amatorius* however, in that species the third tergite is black with a pale band and the antennae are white-ringed.

Habitat: Umbellifers

Hosts: Noctuidae moth caterpillars

Female

Male

Female *Diphyus amatorius* for comparison with white banding on the antennae and a black third tergite

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

One of the commonest types of ichneumonid encountered in the countryside is black bodied with a solid, broad yellow stripe across the 1st and 2nd segment. Sadly, this isn't one species but may be one of many males of several closely related species. Many can only be distinguished when you have a specimen and can examine them under a microscope. We have featured some photos of a few of these species for quick comparison and to illustrate how similar they are.

Amblyteles armatorius

Ichneumon sarcitorius

Ichneumon xanthorius

Diphyus amatorius

Ichneumon stramentor

Ichneumon suspiciosus

Ctenichneumon panzer

Diphyus palliatorius

Many photos of *Ichneumon* are labelled as *Ichneumon suspiciosus*. However, these are often misidentified without realising that this is just one of many ichneumonids with a very similar colour pattern.

Below are true images of *Ichneumon suspiciosus*, but it is not usually possible to identify similar individuals from photographs due to the visual similarity across species (a large genus with 50 British species).

Female

Male

The following species are all 10mm or shorter in length and have a broad petiole (the first segment of the abdomen). The females have a very short ovipositor which can be easily missed in the field.

Tromatobia lineatoria (females only)

Banchus volutatorius

Orthopelma mediator

Stilbop ruficornis

Stilbops vetula

A small (5-10mm) and rather beautiful ichneumonid with the abdomen varying from black to orange. The thorax is striped orange and yellow and the head is black with bold yellow markings. This, combined with a relatively short ovipositor, should distinguish this species.

Habitat: often indoors or in out-buildings where spiders have laid eggs

Hosts: spider egg sacs

Female top of the head showing cream stripes on the inner orbits

Short ovipositor

Female ©Stephen Plant

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A medium sized (10mm) wasp with the sexes strikingly different. The male is yellow and black-striped with a yellow face. The female is all black with a very short ovipositor. Although distinctly different in colouring, both sexes have a spine on the scutellum. Other species of *Banchus*, while less common (or very rare), can easily be confused with *B. volutatorius*.

Habitat: grassland and umbellifers

Hosts: moth caterpillars, especially Noctuidae and Geometridae

Female

Male

Male - yellow and black striped face

Spine on the thorax of both males and females

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

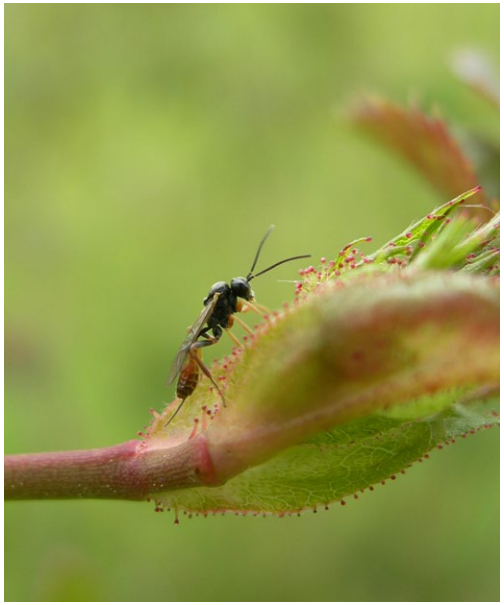
A very small wasp (4mm), nearly always found in close association with (ie sitting on or around) Robin's pin cushion galls on rose bushes. It attacks the gall causers (the gall wasp *Diplolepis rosae*) within the galls. It has a combination of features: thin ovipositor, shape of labrum, distinctive tubular shape of first metasomal segment.

Habitat: Hedges & downland where wild rose bushes can be found

Hosts: *Diplolepis rosae* (possibly other rose gall wasps)

Male

Female



Female ©Chris Raper

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			■	■	■						

A small (5mm) ichneumon with an orange abdomen. The female has a longer ovipositor than other *Stilbops* species. Females are usually found probing field scabious (*Knautia arvensis*) flowerheads to lay eggs inside those of the brassy long-horn moth (*Nemophora metallica*).

Habitat: anywhere where field scabious grows in association with brassy long-horn moths

Hosts: lays eggs in those of brassy long-horn moths (*Nemophora metallica*), adult emerges from the host cocoon

Female

Male

Female ©Chris Raper

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A small (5mm) and attractive ichneumon. The female has a distinctive abdomen, black anteriorly and changing to red posteriorly, with a fairly short, sharply pointed ovipositor. The male is much more difficult to recognise but has very dense, silvery setae all over the face and a long malar space ('jowls'). More common than *S.ruficornis* and can be found earlier in the year

Habitat: woodland

Hosts: lays eggs in the eggs of green long-horn moths (*Adela reaumurella*), adult emerges from the host cocoon

Female with black abdomen with a red tip

Dense, silvery hairs on the face

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mainly black-bodied species with orange legs

The following species can be large and impressive, particularly the females which are often seen with a noticeably long ovipositor.

Lissonota lineolaris

Ephialtes manifestator

Perithous scurra (females only)

Apechthis compunctor (females only)

Pimpla rufipes (black slip wasp. females only)

Rhyssa persuasoria (sabre wasp)

Odontocolon dentipes

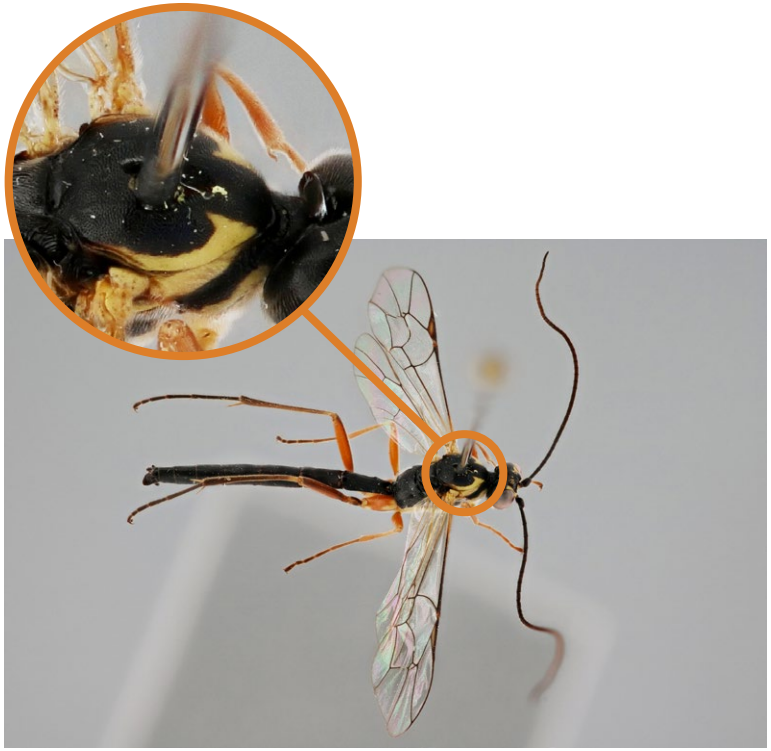
Xorides praecatorius

Possible confusions - *Lissonota setosa*

This species has a distinct yellow stripe running along the edge of the thorax plus a deep groove on the back of the head. Can be confused with many other black ichneumonids with long ovipositors and can be difficult to identify if you can't see the necessary features on the thorax and head.

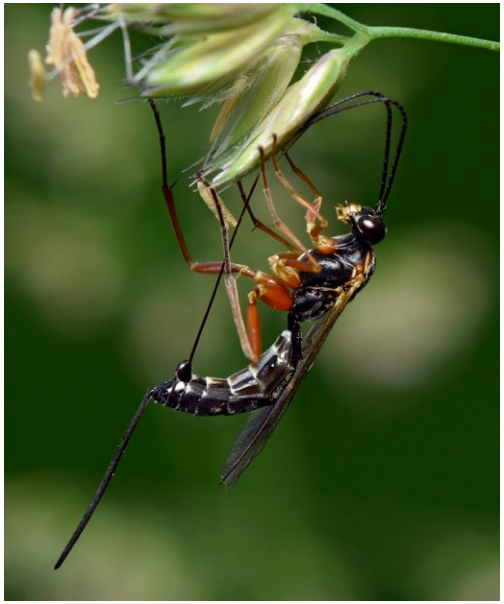
Habitat: Meadows. Females can often be seen probing in grass seed heads with their ovipositor.

Hosts: moth larvae of the genus *Apamea*, which feed initially in grass seed heads



Male with a broad yellow stripe on upper edge of thorax

Deep groove on the back of the head



Female ©Andy Sands

Flight period:

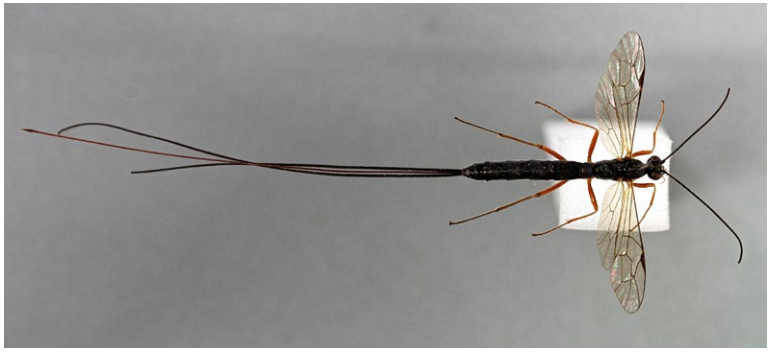
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Mainly black-bodied species with orange legs – *Ephialtes manifestator*

An entirely black species with orange legs. The female has an extremely long ovipositor (up to 6cm) for probing the nests of solitary bees and wasps, together with the wide, pale brown clypeus on the lower face. Males are not as conspicuous, but can be recognised among many similar, mostly black ichneumonids by a fringe of long, curved hairs along the leading edge of the forewing, together with a wide, pale brown clypeus. Can be confused with species of *Dolichomitus* and various other Pimplinae.

Habitat: : hedgerows and woodland areas

Hosts: Pupae of solitary bees and wasps. Often reared from bee hotels.



Female showing the long ovipositor that can be twice the length of the body

Male showing fringe of hairs on the leading edge of the forewing

Frontal wide and pale brown clypeus

Female ©Dave Skingsley

Flight period:

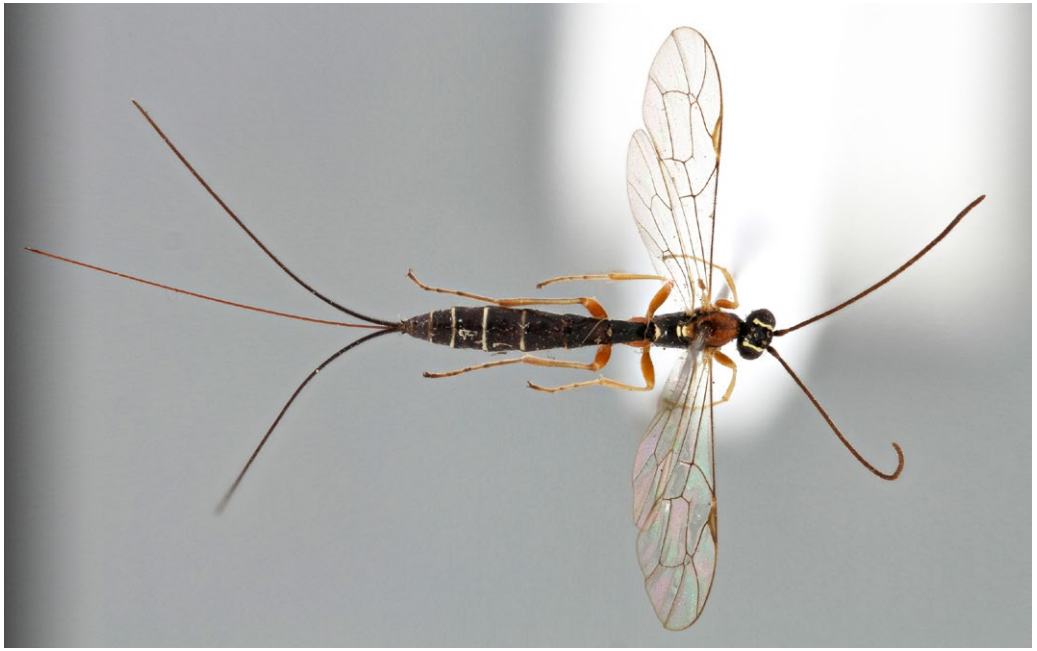
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
				■	■	■	■	■			

A fairly small (6–14mm) species with brightly coloured, red-and-yellow-striped thorax. This species can be distinguished from *Tromatobia lineatoria* by the longer ovipositor in females.

Other British *Perithous* have a relatively shorter ovipositor, or have a red propodeum (with white spots) plus a sinuous ('wavy') ovipositor tip; or are predominantly black on the thorax.

Habitat: hedgerows

Hosts: solitary wood and stem-nesting aculeate Hymenoptera



Female – long ovipositor relative to the length of the forewing

Female ©Laurence Counter

Flight period:

Jan	Feb	Mar	Apr	May	**Jun**	**Jul**	**Aug**	**Sep**	Oct	Nov	Dec

A small to medium species (7–15mm) that is black with orange legs without cream banding on the hind tibia. Very similar looking to *Pimpla rufipes* but the ovipositor on the female has a downward curve on the tip. Unfortunately, males generally are indistinguishable from some other species in the field or from photos, although *Apechthis* males can be distinguished from *Pimpla* males as they have yellow faces (black in *Pimpla*). Other species of *Apechthis* have white banding on the hind tibiae.

Habitat: hedgerows

Hosts: Lepidoptera pupae. Often reared from butterflies.

Female with a downwardly curving ovipositor

Female ©Dave Caulfield

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

This black species with orange legs can easily be mistaken for *Apechthis compunctor* being similar in shape and size (10 –15mm), although some *Pimpla rufipes* are very large. The key difference between the two is in the female ovipositor which in *P. rufipes* is straight and lacks the downward curved tip. For this reason, the males, which don't have an ovipositor, are often indistinguishable from photographs. Other species of *Pimpla* and the related genus *Itoplectis* have white-banded hind tibiae and are usually smaller.

Habitat: hedgerows feeding on flowers

Hosts: butterfly and moth pupae

Female showing a short, straight ovipositor

Female ©Ken Gartside

Flight period:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

An easy species to identify due to the striking pattern of small white spots along the entire length of the thin, black body (not just the abdomen), red legs, long ovipositor and large size (10–40 mm). If you look closely you should also see it has transverse ridges on the top of the thorax, at the front, which it uses to brace itself as it emerges from the tunnels in the wood it has pupated in.

Large females are the largest ichneumonids in Britain, though some can be considerably smaller, and males are particularly variable in size. The ovipositor is longer than the length of the body.

Habitat: Particularly common in pine forests where large horntail wasps burrow into dead timber. Very frequently seen around log piles.

Hosts: wood wasps

Female – showing white spots along the side of both the abdomen and thorax with a long ovipositor

Female ©Jaswinder Boparai

Flight period:

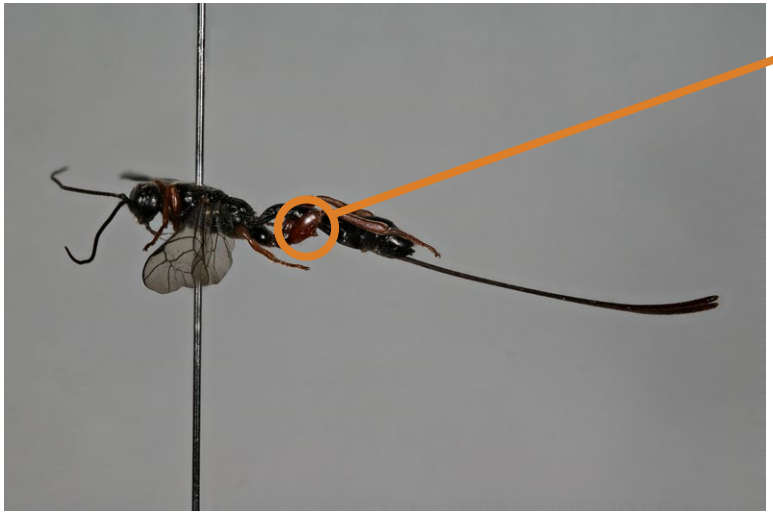
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Meduim sized (10-15mm) wasp with a distinctive tooth on the hind femur. Common and widespread. The rarer *Odontocolon quercinum* is very similar but the female can be separated as the mid tibia lacks the conspicuous groove that *O. dentipes* has. Males can be separated by the scattered long setae on the hind tibia of *O. quercinum* that are lacking in *O. dentipes*.

Habitat: common on log piles

Hosts: longhorn beetle larvae and pupae (Cerambycidae)

Female



Female

Distinctive tooth on the hind femur

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Medium-sized (10-15mm) wasp with white markings on the inner orbits of the eyes and narrow white bands on the posterior edges of the black abdominal segments. The females, as with some other species of *Xorides*, have bends to the tip of their antennae. Common and widespread.

Habitat: common on log piles

Hosts: wood-boring beetle larvae (Cerambycidae and Buprestidae)

Female with a bend at the tip of the antenna

Male

White markings on the inner orbits of the eyes

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			■	■	■	■	■				

This is just one of many black ichneumonids with orange legs that cannot be identified from photos and are easily confused with other species. *Lissonota setosa* is illustrated in some field guides as a typical ichneumonid. It is a large, black species with red legs and a long ovipositor, and as a specialised parasitoid of goat moth (*Cossus cossus*) larvae, very rare in this country. It is easily confused with various other large ichneumonids.

The following species are nocturnal and often found in light traps. They are typically large and slender wasps and many look similar, so the ten listed here are the most easily identified.

Wing comparison

Enicospilus ramidulus

Ophion obscuratus

Opheltes glaucopterus

Eremotylus marginatus

Ophion minutus

Ophion ventricosus

Stauropoctonus bombycivorus

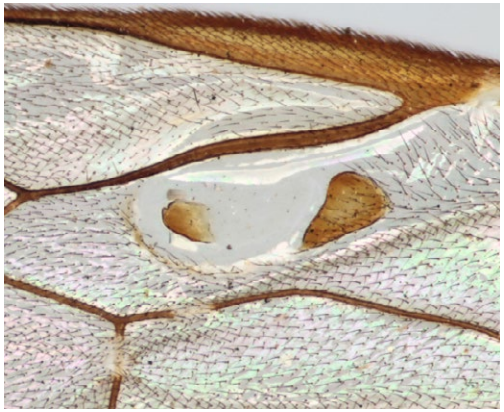
Netelia tarsata

Netelia melanura

Netelia virgata

Possible confusions - *Ophion luteus*

Close inspection of the wing venation will help to distinguish between similar nocturnal genera.



1. *Eniscospilus ramidulus* – showing chitin (sclerites) in the discosubmarginal cell

2. *Ophion obscuratus* – showing an elongated fore wing discosubmarginal cell, characteristic of Ophioninae, which lack an areolet

3. *Ophion minutus* - The fore wing vein Rs+M is thickened before joining the pterostigma

4. *Ophion ventricosus* - The fore wing lacks the sharply angled vein Rs+M that characterises the rather similar *Eremotylus marginatus*

5. *Eremotylus marginatus* - The fore wing vein Rs+M is distinctively angled below the pterostigma

6. *Opheltes glaucopterus* – showing a small areolet

7. *Netelia tarsata* – showing a small areolet within a clear wing

8. *Netelia melanura* - showing a small triangular areolet

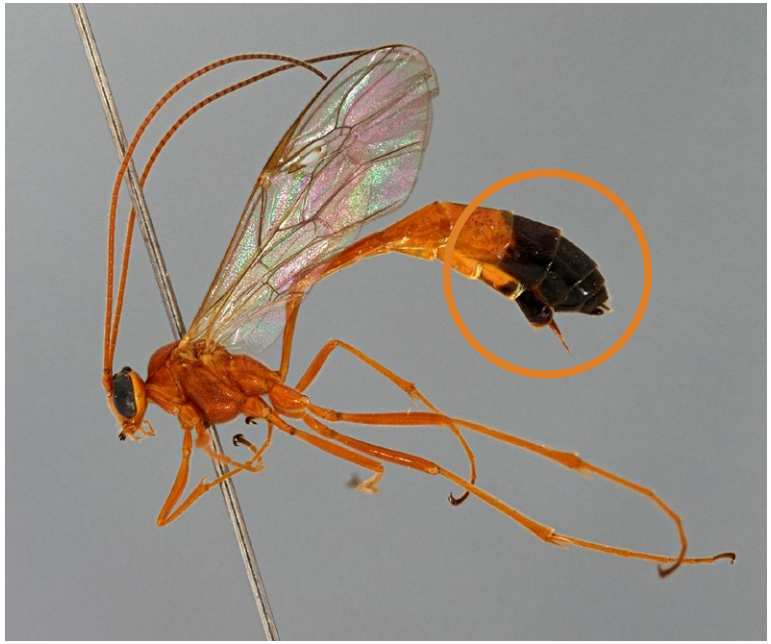
9. *Netelia virgata* - showing a small triangular areolet

All *Enicospilus* species are predominantly orange-bodied and most have pieces of orange chitin, called sclerites, in the middle of the fore wing membrane (see wing comparisons), which make them distinctive.
E. ramidulus is a common species regularly found in light traps and easily identified by the distinctive black tip to its abdomen in combination with an otherwise entirely orange body.

The other species in the genus *Enicospilus* can be identified using the keys in: Broad and Shaw (2016) The British Species of *Enicospilus* (Hymenoptera: Ichneumonidae: Ophioninae).

Habitat: nocturnal, though the males can be found flying by day

Hosts: moth caterpillars (Noctuidae, especially Hadeninae)



Showing distinctive black tip to the abdomen

Flight period:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Nocturnal, orange-bodied species – *Ophion obscuratus*

A large slim orange-bodied wasp (15–22 mm) easily identified by the distinctive cream stripes on the body and the wing venation (see wing comparisons). The wing lacks an areolet and the discosubmarginal cell is elongated, looking a bit like a horse head – a feature of the subfamily Ophioninae (including *Enicospilus*, *Eremotylus*, *Ophion* and *Stauropoctonus*). Can be confused with many other sickle wasps but these mostly lack the distinctive pale stripes on the body. *Ophion forticornis* is similar but seems to occur only on sand dunes, flying in May. These nocturnal wasps are attracted to light and *Ophion obscuratus* flies through winter, unlike other *Ophion* species.

Habitat: Nocturnal. Occurs almost everywhere.

Hosts: moth caterpillars (Noctuidae, escpecially *Mythimna*)

Showing distinctive cream stripes on the body

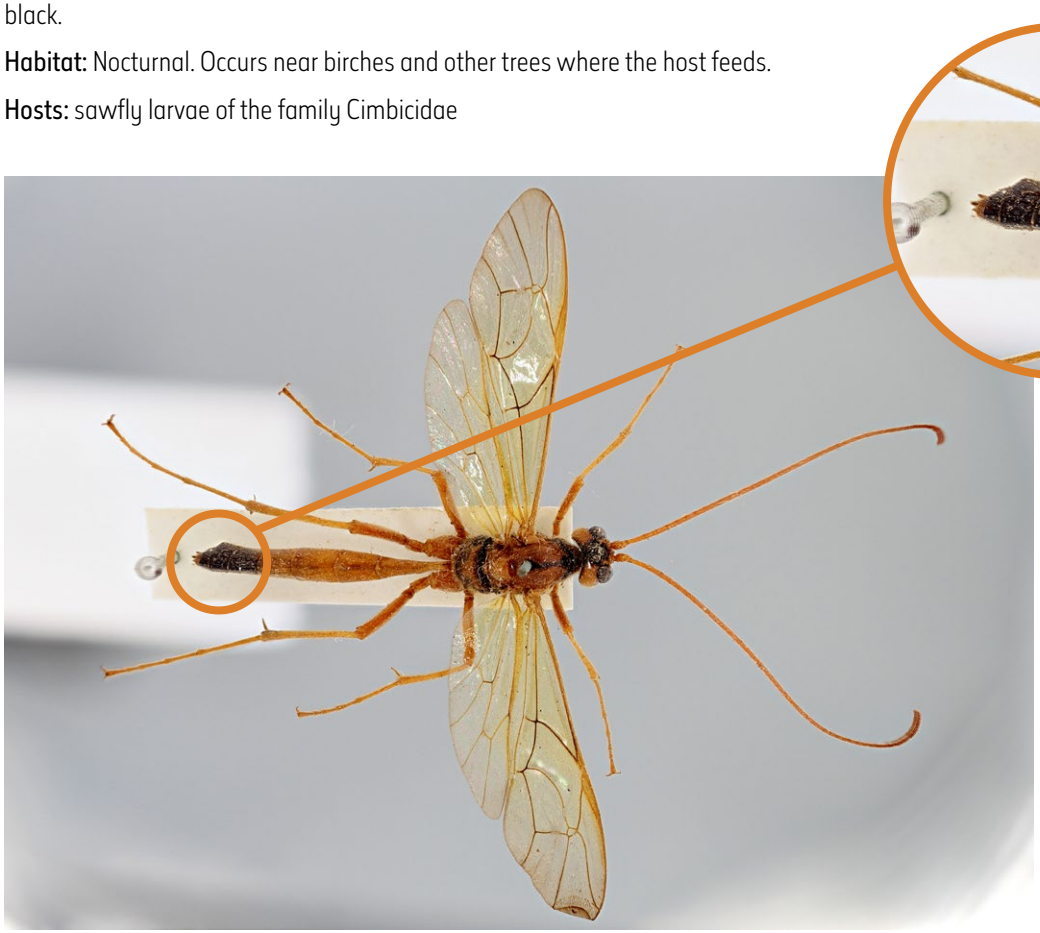
Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
■	■	■	■	■			■	■	■	■	■

A large orange species easily confused with Ophioninae. Unlike Ophioninae, the forewing has a small areolet (see wing comparisons) and the first metasomal segment is not petiolate (skinny) but rather broader and with deep lateral pits (glymmae). The tip of the abdomen and the sides of the thorax are black.

Habitat: Nocturnal. Occurs near birches and other trees where the host feeds.

Hosts: sawfly larvae of the family Cimbicidae



Showing black on the tip of the abdomen and along the thorax

©Gavin Broad

Flight period:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A large (20mm), distinctive but rare species. The fore wing vein Rs+M is distinctively angled below the pterostigma (see wing comparison). The colour pattern (black markings on an orange background and pale antennae) is similar to *Ophion ventricosus*, which lacks the angled vein Rs+M

Habitat: nocturnal though males can often be found flying by day

Hosts: unknown

Pale antennae with black markings on an orange body

Strongly darkened tip to the abdomen

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

A small (10mm) nocturnal wasp often found in woodland. Smaller than other Ophioninae (fore wing length 8-11 mm), with some creamy markings (particularly marked in males) on the thorax. The fore wing vein Rs+M is thickened before joining the pterostigma (see wing comparisons).

Habitat: nocturnal in deciduous woodland

Hosts: caterpillars of winter-flying geometrid moths (*Agriopis* spp)

Small wasp with creamy markings on the thorax

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Medium-sized (15mm) with a yellow wing membrane and striking yellow antennae. The black pattern on the head and thorax is distinctive though can be easily confused with *Eremotylus marginatus*. However, the fore wing lacks the sharply angled vein Rs+M that characterises *E. marginatus* (see wing comparisons).

Habitat: Nocturnal

Hosts: pale brindled beauty (*Phigalia pilosaria)*

Showing yellow wing membrane with yellow antennae

Black markings on the thorax and abdomen

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Large (25-30mm) conspicuous wasp occasionally found in moth traps in the south east of England. It is easily distinguished from other ophions due to the large size and the pattern of black markings on a pale body.

Habitat: Nocturnal

Hosts: lobster moth (*Stauropus fagi*)

Distinctive black markings on a pale body

Venation

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

The genus *Netelia* is commonly confused with Ophioninae but can be distinguished by the presence of an areolet in the forewing (see wing comparisons), a broader structure to the first metasomal segment (rather similar to *Opheltes* above) and narrow, twisted mandibles. There are many similar species of *Netelia* but *N. tarsata* is relatively distinctive as the forewing has a short vein (cu-a) nearly aligned with the long vein (Rs+M). The thorax has a short black stripe in the middle and the ovipositor obviously protrudes.

Habitat: Nocturnal. Occurs almost everywhere.

Hosts: pug moth larvae *(Eupithecia)*.

A broader first metasomal segment

Flight period:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Like all species of *Netelia*, this species is orange in body colour with a triangular areolet. However, this species is distinguished by having a sharply marked black tip to the abdomen.

Habitat: nocturnal

Hosts: noctuid caterpillars feeding in low vegetation

Female

Sharp black tip to the abdomen

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

This species is an Orangey-brown Ichneumon with pale legs and antennae. In common with other *Netelia* the wings contain a triangular areolet. In addition, this species has three broad, brown stripes on the thorax (like the cranefly genus *Nephrotoma*).

Habitat: nocturnal

Hosts: medium-sized geometrid caterpillars

Male

Three broad brown stripes on the thorax

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			■	■	■	■	■	■	■		

A large wasp (20mm) with a red or orange body, antennae and legs. The wings are clear with black veins and a very short *ramellus* (see wing comparisons) and the body often has an arched appearance. These nocturnal wasps are common in Britain and are often attracted to light traps in August and September.

This is very similar to several other large orange wasps of the genus *Ophion*, and very frequently misidentified. Identification requires particularly close inspection of legs and mandibles (pictured below). The combination of a long trochantellus on the hind leg, a strongly sinuous fore wing vein Rs and the teeth of the mandible with a simple internal face (with internal angles in other *Ophion*), together with the late summer/autumn flight time, are distinctive. The mandibles often show considerable wear. This is not a species that can usually be identified from photos.

Habitat: nocturnal woodland and farmland, often found in light traps

Hosts: heart and dart moth caterpillars (*Agrotis exclamationis*)

Long trochantellus on the hind legs

Simple internal faces of the mandible teeth

Flight period:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Acknowledgements

The authors would like to thank Dr Gavin Broad for selecting species, loaning the pinned specimens and for his invaluable advice and support throughout the process.

This guide was produced at the Angela Marmont Centre for UK Biodiversity (AMC), a Natural History Museum department that supports and encourages the study of UK biodiversity and geodiversity in all forms. The AMC provides free access to workshop facilities and study areas with microscopes, photo-stacking cameras and access to a UK reference collection of most insect groups.

The specimen photos in this guide were produced using a process called photo-stacking, where multiple photos are taken through different focal planes. The focused parts are then combined into a single deep-focus image. This process is semi-automated and is fairly easy to learn but it does take a while to perfect the lighting and to work out the best configuration for your specimen. The AMC has two photo stacking cameras which can be booked by anyone, free of charge.

To book a visit to the AMC, email AMC-enquiry@nhm.ac.uk and let us know what you would like to see and do.

The AMC also hosts the Museum's Identification and Advisory Service (IAS) which can help you identify UK wildlife, fossils and minerals. The Commercial Identification Service is also available to provide identifications and advice to businesses and individuals from around the world. The IAS is open for drop-in visitors from 10.00 to 1200 and from 14.00 to 16.00, Monday to Friday (excluding bank holidays), and the first Saturday of the month (or the second Saturday after bank holiday weekends).

Further reading

If you have found this guide interesting and feel like taking your study further, the following books and articles might be of interest:

- Key to Species of Netelia in Britain and Ireland Gavin Broad
- Keys for the Identification of British and Irish Nocturnal Ichneumonidae by Gavin Broad (an excellent new key to identify species that you might find in moth traps)
- Key to the subfamilies of British Ichneumonidae by Gavin Broad (an excellent new key to identifying ichneumons down to subfamily)
- The Royal Entomological Society produce a series called "Handbooks for the Identification of British Insects", which also cover some ichneumonid families. Most of these keys have not been updated for a long time however, and they can be difficult for non-experts to use because they use a lot of unusual terminology. Here are the ones that relate to ichneumonoids:
  - Vol 7 Part 1. Hymenoptera – Ichneumonoidea (Pimplinae). M G Fitton, M R Shaw and I D Gauld (1988, this is one of the most up to date and accessible keys)
  - Vol 7 Part 2a i. Hymenoptera – Ichneumonoidea. J F Perkins (1959 - key to subfamilies and the start of Ichneumonini - quite difficult to use and very out of date)
  - Vol 7 Part 2a ii. Hymenoptera – Ichneumonoidea. J F Perkins (1960 - key to other Ichneumoninae - quite difficult to use and very out of date)
  - Vol 7 Part 2b. Ichneumonidae – Orthopelmatinae & Anomaloninae. I D Gauld and P A Mitchell (1977 - a useful key to 2 small subfamilies - can be hard work to use though)
  - Vol 7 Part 11. Classification and biology of braconid wasps (Hymenoptera: Braconidae). M R Shaw and T Huddleston (1991 - a useful overview of braconid wasps but not a comprehensive key to identifying all species)