Asian Hornet:
Cases of Mistaken Identity

Introduction

With the threat of the invasive Asian hornet, *Vespa velutina*, arriving in the UK from continental Europe, the National Bee Unit (NBU) has been working with colleagues to raise awareness of this potentially damaging predator of honey bees and other pollinating insects. Sightings and alert emails are picked up by Dr Helen Roy, principal scientist at the Centre for Ecology and Hydrology (CEH), and, if necessary, referred to the NBU for confirmatory diagnosis. There have been eighty suspect reports; to date all of these have proved to be other types of insect, but each report is taken seriously. This article shows some of the species reported since 2011, which were cases of mistaken identity.

The European hornet, *Vespa crabro*

This is the number one case of mistaken identity. There are probably two reasons for this: firstly, it is the only native hornet species and, superficially, bears some resemblance to *V. velutina*; secondly, given the fearsome reputation of the Asian hornet, there may be a perception that it must be a large hornet and the queens of *V. crabro* are indeed impressive. However, in spite of the impact of Asian hornets on other insects and the very painful stings they may inflict on people, they are smaller and less physically impressive than our native hornet. Key differences between the European hornet and Asian hornet are that the latter is smaller, has characteristic yellow legs, a dark velvety thorax and a dark abdomen with a distinctive yellow band on the fourth segment. Asian hornets are never active at night whereas European hornets may be. Their lifecycle is similar to that of the Asian hornet and other social wasps: mated queens emerge in early spring and form embryo nests. Large nests are rapidly established and worker hornets attend to the needs of the growing colony. Workers are extremely active and predate a variety of insects to obtain the protein-rich diet that the developing hornet brood requires. Mature hornet nests are hard to spot, but are most likely to be seen from early summer. Sexual stages emerge later and result in the production of mated queens. As the colony dies in late autumn, these foundresses, which use high energy sugar-rich food sources such fruits and nectar, seek out suitable sites in which to overwinter. Foundresses emerge the following spring to begin the cycle again.

European hornet, *V. crabro*

Notable differences:

- Larger than the Asian hornet (AH);
- Abdomen has more yellow stripes than AH;
- Legs darker than AH.

Photo courtesy of Richard Ball.

The Hoverfly, *Volucella zonaria*

Volucella zonaria is known as the 'hornet mimic hoverfly', so it is not surprising that it accounts for a number of cases of mistaken identity. Seventy years ago it was considered to be very rare in the UK, with only a couple of specimens recorded before the 1940s (first report 1901). However, its range has since spread and sightings in southern England are not uncommon. It has been suggested that *V. zonaria*, rather than being permanently established in the UK, only becomes resident when particular weather conditions result in 'substantial influxes' from continental Europe. This would explain the markedly fluctuating numbers found in the UK from year to year and the periodic, large accumulations sometimes found in coastal areas in Holland. The immature stages of *V. zonaria* develop inside colonies of European social wasp species, *Vespula vulgaris* and *V. germanica*, where they are thought to feed on nest debris. The striking and large adults (wingspan can be as much as 45mm) are typically reported between June and October. Harmless to humans, they can be seen in a variety of habitats including parks, gardens, scrubland, heaths and woods, where adults visit flowers.

Woodwasps

'Woodwasps' or 'horntails' are the names commonly used to collectively identify the non-social xylophagous i.e. wood boring or feeding sawflies. A typical adult wood wasp is brown, blue, or black with yellow parts, and may often reach up to 4cm in length. Being so large in size, they are certainly impressive. They are related to 'true' wasps but are harmless to humans. The female's long ovipositor at the rear is used for laying eggs into timber/tree trunks etc., in which the immature stages of the wood wasp complete their development. They typically migrate to just under the bark before pupation. Depending on the species this can take as long as five years and sometimes results in the adult emerging from timber that has been used in construction, or even to build furniture!

Adult hornet mimic, hoverfly, *Volucella zonaria*

Notable differences:

- Species of fly;
- One pair of wings (AH and other hornets and wasps have two pairs);
- Associated with wasps nests but does not form paper nests of its own;
- Larger than the Asian hornet (AH);
- Abdomen has more yellow stripes than AH;
- Legs darker than AH.

Female giant woodwasp, *Uroceros gigas*

Notable differences:

- Horn-like protrusion on final abdominal segment;
- Females have long, conspicuous ovipositor;
- Lay eggs into wood/timber;
- Larger than the Asian hornet (AH);
- Abdomen has more yellow stripes than AH.

Photo courtesy of Lloyd Harper.

Sirex species with exit hole from timber

Notable differences:

- Horn-like protrusion on final abdominal segment;
- Females have long, conspicuous ovipositor;
- Lay eggs into wood/timber;
- Larger than the Asian hornet (AH);
- Abdomen has more yellow stripes than AH.

Photo courtesy of Fera, Crown Copyright.

The species most frequently reported as a suspected Asian hornet is *Urocerus gigas*, also known as the Giant Woodwasp, Banded Horntail or Greater Horntail. This relatively common species is usually seen on the wing between May and October in or near coniferous forests. There have also been sightings of *Sirex* (most probable species *noctilio*) which is native to Europe, northern Africa and Asia. Adults vary in length from 9mm to 36mm, the females being especially long. These exclusively use pine trees as their hosts.

Ichneumon wasps

Apart from the woodwasps, another type of related insect is the parasitic wasp. This very diverse insect group, comprising several thousand species in the UK, includes some quite large and conspicuous insects, in particular members of the family Ichneumonidae. Some species of ichneumon wasp lay their eggs in the ground, but the majority are parasitic. They lay one or more eggs depending on the species, into or onto the body of their host, which is typically a larva or a pupa. In the UK, large examples include the genera *Megarhyssa*, which parasitises larvae of the wood-boring horntails, and *Pimpla*, which lays eggs into the pupae of butterflies and moths. The body of a female *Megarhyssa*, including her ovipositor, can be 40mm long. Female *Pimpla* are shorter (20mm to 30mm in length), but certain species have brightly coloured legs or abdomens which, to an untrained eye, may give them an exotic appearance.

Adult female *Pimpla hypochondriaca*

Notable differences:

- Parasitic on other insect species;
- Females have long, conspicuous ovipositor;
- Body all black;
- Legs characteristically bright orange/red.

Photo courtesy of Fera, Crown Copyright.

Common wasps

Found in much of Europe, the familiar common wasp', *Vespula vulgaris*, builds paper nests from chewed wood fibres mixed with its own saliva. A single nest may contain 5,000–10,000 individuals. Nests are usually located above ground, up trees or closer to human activities, for examples in loft spaces or wall crevices. They will also nest below ground in abandoned mammal burrows. Adult workers measure about 12–17 mm from head to abdomen but queens can be larger (about 20mm) and more substantial. Predominantly yellow and black in colour, their abdomen has distinctive stripes. As with hornets and other social wasps, colonies usually last only one year, with all but the queen dying at the onset of winter, and common wasp workers likewise prey on insects such as caterpillars to feed the larval stages while adults feed on nectar and sweet fruit. Common wasps are notorious for making a nuisance of themselves in late summer.

The Common wasp *Vespula vulgaris*

Notable differences:

- Yellow markings on thorax;
- Abdomen has more yellow stripes than AH.

Photo courtesy of Richard Ball.

The Median wasp, *Dolichovespula media*

Notable differences:

- Yellow markings on thorax;
- Abdomen has more yellow stripes than AH.

Photo courtesy of Nigel Jones.

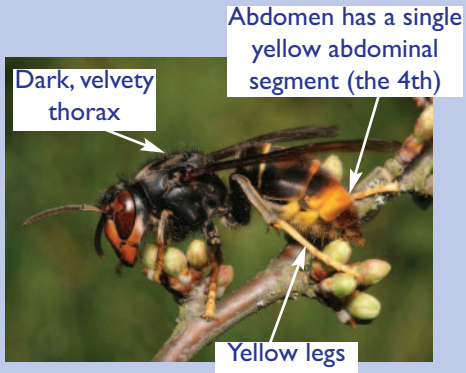
The Median wasp

The Median wasp is similar to other native wasps and is a non-native species that, unlike the Asian hornet, has established in the UK. Present in England since 1980s, it was first recorded in the coastal area of East Sussex, implying that it flew across the Channel from mainland Europe. Its basic biology is similar to that of *V. vulgaris*. Median wasp queens are smaller than hornets and unlike the Asian hornet, have yellow markings on the thorax.

Reporting suspect sightings

To report any suspect sightings of concern, please either email alert_nonnative@ceh.ac.uk or you can complete the on-line recording form http://www.brc.ac.uk/irecord/enter-non-native-records. Remember, when reporting suspect sightings as much detail as possible is required about the suspect insect and photos always help.

One final reminder: the Asian hornet, *V. velutina*



Asian hornet queen. Courtesy of Jean Haxaire.

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