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Asian hornet awareness and identification

NPAP CIEH, National Bee Unit, Non-Native Species Secretariat,
Animal and Plant Health Agency, Defra

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Introduction

The Asian hornet *Vespa velutina* is native to eastern Asia. It was accidentally introduced into Europe, probably in a consignment of pottery from China. It was confirmed in south west France in 2004 and quickly established and spread across France and is now found in Spain, Portugal, Italy, Switzerland, Germany, Belgium and the Netherlands as well as the Channel Islands. The Asian hornet preys predominantly on honey bees *Apis mellifera* but also eats a wide range of insect prey and is believed to impact negatively on biodiversity. Additionally, it poses a health risk to those who have allergies to hornet or wasp stings.

The Asian hornet was discovered in the UK for the first time in 2016 hawking in front of beehives by a vigilant beekeeper in Tetbury, Gloucestershire. The government contingency plan was activated and the nest found and destroyed.

In 2017, in Woolacombe (North Devon) another vigilant beekeeper reported seeing Asian hornets hawking and hunting in his apiary. Upon confirmation, the contingency plan was again activated and a nest discovered and destroyed. In 2018 four nests were found (from 3 queens) – two in Hampshire and two in Cornwall and all were rapidly destroyed by Animal and Plant Health Agency staff. It is anticipated that more nests will be found in the UK especially as the species continues to spread in Europe.

In July 2019, a single hornet was confirmed in New Milton, Hampshire. In September 2019, a nest was reported in Tamworth, Staffordshire.

The purpose of this document is to raise awareness and provide guidance, regarding Asian hornets, to those involved in public health pest management.

For up to date outbreak information go to:

<https://www.gov.uk/government/news/asian-hornet-uk-sightings-in-2018>



Asian hornet primary nest

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Asian hornet secondary nest

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Species Description

Scientific name: *Vespa velutina*
AKA: Yellow-legged Hornet
Native to: Asia

Habitat: Nests usually high in trees and man-made structures, sometimes closer to the ground; hunts honey bees, other insects and also feeds on fruit and flowers.

Not easily confused with any other species. Dark brown or black velvety body. Characteristically dark abdomen and yellow tipped legs. Smaller than the native European Hornet. Introduced to France in 2004 where it has spread rapidly. A number of sightings have been recorded in the UK since 2016. High possibility of introduction through, for example, soil associated with imported plants, cut flowers, fruit, garden items (furniture, plant pots), freight containers, in vehicles, or in/on untreated timber. The possibility that it could fly across the Channel has not been ruled out. A highly aggressive predator of native insects. Poses a significant threat to honey bees and other pollinators.

Do not disturb an active nest. Members of the public who suspect they have found an Asian Hornet should report it with a photo using the details provided in the red box at the top of this ID sheet.

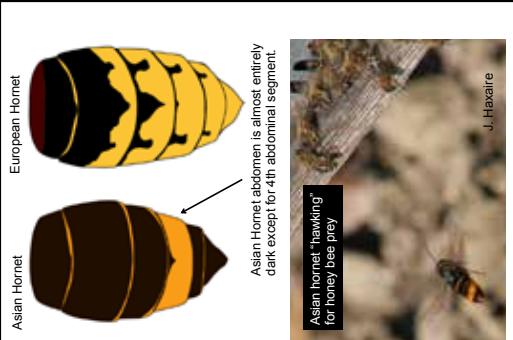


David Walker

Key ID Features



David Walker



J. Hazare

1.0 Identification

<p>Asian hornet (<i>Vespa velutina</i>) for comparison</p> <ul style="list-style-type: none"> ☒ Queen up to 30mm long, worker up to 25mm long ☒ Legs yellow at the ends ☒ Dark brown / black abdomen with a yellow / orange band on 4th segment ☒ Head dark from above, orange from front ☒ Dark coloured antennae ☒ Entirely black velvety thorax ☒ Never active at night <p style="text-align: right;">Q. Rome</p>	<p>Similar Species</p> <p>European hornet (<i>Vespa crabro</i>)</p> <ul style="list-style-type: none"> ☒ Queen up to 35mm long, worker up to 30mm long ☒ Legs brown at the ends ☒ Yellow abdomen marked with brown on the upper part, not banded ☒ Head yellow from above, yellow from front ☒ Yellow antennae ☒ Thorax black with extensive brown markings ☒ May be active at night <p style="text-align: right;">Roger Burgess</p>	<p>Giant woodwasp (<i>Urocerus gigas</i>)</p> <ul style="list-style-type: none"> ☒ Larger than Asian hornet, female up to 45mm long ☒ Legs yellow ☒ Distinctive yellow and black banded abdomen ☒ Long cylindrical body unlike Asian hornet which has an obvious waist ☒ Long yellow antennae ☒ Female has an obvious long sting-like appendage (ovipositor) which it uses to lay eggs in trees <p style="text-align: right;">Q. Rome</p>	<p>Hornet mimic hoverfly (<i>Volucella zonaria</i>)</p> <ul style="list-style-type: none"> ☒ Abdomen has more yellow stripes than Asian hornet ☒ Legs darker than Asian hornets ☒ Only one pair of wings (hornets and wasps have two pairs) ☒ Large, globular eyes <p style="text-align: right;">Dieder Descouens</p>	<p>Median wasp (<i>Dolichovespula media</i>)</p> <ul style="list-style-type: none"> ☒ More extensive yellow and orange colouration on abdominal segments than Asian hornet ☒ Yellow markings on thorax unlike Asian hornet <p style="text-align: right;">Q. Rome</p>	<p>Field Signs</p> <p>Active April-November (peak August/September). Mated queens over winter singly or in groups, in various natural and man-made harboursages – underneath tree bark in cavities left by beetle larvae; in soil, on ceramic plant pots – potentially any small, well-insulated refuge. Makes very large nests in tall trees in urban and rural areas, but avoids pure stands of conifers. Will use man made structures (garages, sheds etc.) as nesting sites.</p> <p style="text-align: right;">© John De Conteret, Jersey</p>
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2.0 Life cycle

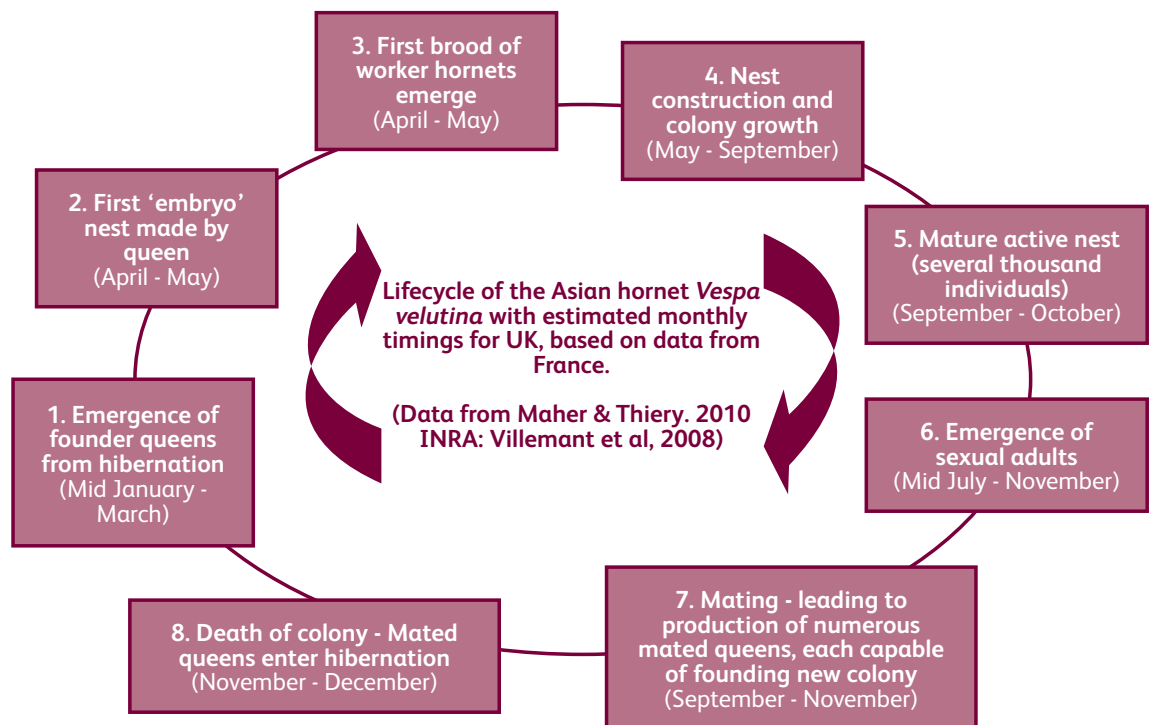


Image courtesy of the National Bee Unit

2.1 Spring

After hibernation in spring, the queen, usually measuring up to 3 cm long, will emerge and seek out an appropriate sugary food source in order to build up energy to commence building a small primary nest. During construction of the nest, she is alone and vulnerable but she will rapidly begin laying eggs to produce the future workforce. As the colony and nest size increases, a larger nest is either established around the primary nest or they relocate and build a secondary nest close by.

2.2 Summer

During the summer, a single colony, on average, produces 6,000 individuals in one season. From July onwards, Asian hornet predation on honey bee colonies will begin and increase until the end of November and hornets can be seen hovering outside a hive entrance, waiting for returning foragers. This is the characteristic 'hawking' behaviour. When Asian hornets catch a returning honey bee, they fly to a nearby perch and disassemble the bee, taking only the protein rich thorax back to the nest where it is fed to the hornet larvae.

2.3 Autumn

During autumn, the nest's priorities shift from foraging and nest expansion to producing gynes (queens) and males (drones). Shortly after mating the new queens will leave the nest and find somewhere suitable to over-winter, while the old queen will die, leaving the nest to dwindle and die off. The following spring, the founding queen will start building her new colony and the process begins again. Each Asian hornet colony produces on average 350 gynes (queens), however only a small number will successfully mate and make it through winter to establish a nest the following year.



Asian hornet pupae to adult

© Jean Haxaire



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3.0 Public health and bee health significance

Public health significance

- 3.1** A recent survey of Asian hornet nests in France shows that almost 50 % are found in urban or semi-urban environments i.e. in relatively close proximity to human activity. This contrasts to the native European hornet, *Vespa crabro*, which will use manmade nesting sites (e.g. bird-nest boxes) but usually favour natural sites such as hollow trees.

A minority of Asian hornet nests (3 %) are located less than 2m off the ground, in bushes, hedges or (very rarely) in the soil. The Asian hornet will also use man-made buildings as nesting sites, however, the majority (75 %) are located at least 10m up in the canopies of large trees.

Of the six nests found in the UK up to the end of 2018, three have been found 12 -15m high in trees (Cypress, Alder and London plane), and three have been found in bushes or brambles less than 2m off the ground.

As a group, hornets possess poisonous venoms that they use to overcome their prey. These venoms are rich in toxins, enzymes and biologically active peptides. However, while some hornet species have been known to inflict fatal stings on humans, this is unusual; death occurs only rarely, when victims receive multiple stings, or as a result of anaphylactic shock. Generally, although very painful, the effects of hornet stings are local and short-

lived. Although *V. velutina* envenomation can cause severe adverse reactions, this has only been recorded after victims suffered multiple stings.

UK Government advice to the public, available at <https://www.gov.uk/government/news/asian-hornet-uk-sightings-in-2018>, is that Asian hornets can become aggressive when their nests are disturbed and, if a nest is found, people should not try to remove it themselves – it can be dangerous and should only be done by experts.

Bee health significance

- 3.2** Repeated and sometimes severe attacks from *V. velutina* on French honey bee colonies have been reported, in particular in the summer and autumn, by beekeepers from the southwest regions of France. Additionally, Asian hornets have indirect effects on honey bee health as chronic hornet activity around a colony causes honey bees to mount a constant defence of the hive entrance, thus greatly limiting their time spent foraging. This can lead to the weakening of the colony, and potential colony loss. Even low levels of hornet numbers (< 5 hornets/hive) can result in significant disruption. In France, *A. mellifera* colonies predated by *V. velutina* are typically left very weak, low in foragers or queenless, and vulnerable to disease, infestation and robbing.



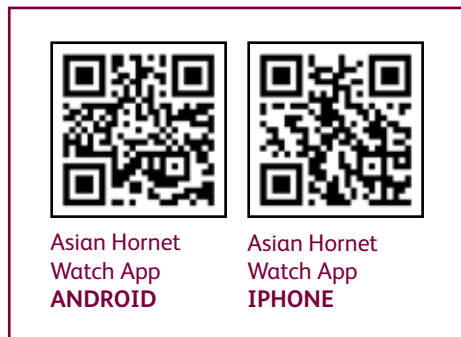
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4.0 Reporting Asian hornet sightings

4.1 If you think you have seen an Asian hornet, please notify the Great British Non Native Species Secretariat (NNS) immediately. In the first instance sightings should be reported through the free Asian Hornet Watch App, available for Android and Iphone. Search for 'Asian hornet watch' in itunes app store or google play

You can report sightings online (see inset online recording form) or by emailing: alertnonnative@ceh.ac.uk. Where possible, a photo, the location of the sighting and a description of the insect seen should be included

If you would like to know more about the Asian hornet or any other Invasive Species, the NNS website provides a great deal of information about the wide ranging work that is being done to tackle invasive species and tools to assist those working in this area.



5.0 Monitoring

5.1 Guidance on how to monitor for Asian hornets can be found on BeeBase (see references) and advice and assistance can be sought from your local beekeeping association's Asian Hornet

Action Team (AHAT). Details of how to find your local AHAT can be found at www.bbka.org.uk/asian-hornet-action-team-map

6.0 References

Non-Native Species Secretariat
<http://www.nonnativespecies.org/alerts/index.cfm>
National Bee Unit
<http://www.nationalbeeunit.com/index.cfm?sectionId=117>
Defra
<https://www.gov.uk/government/news/asian-hornet-uk-sightings-in-2018>

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