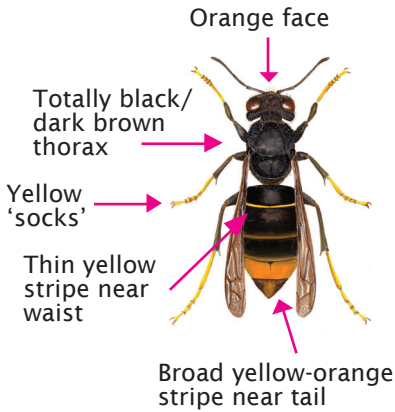


# How to track yellow-legged Asian hornets (*Vespa velutina*)



**Asian hornet**

## IDENTIFICATION

The yellow-legged Asian hornet (left) is smaller than our native European hornet (*Vespa crabro*, right). The Asian hornet is up to 25 mm for a worker, and up to 30 mm for a queen.

The best way to report an Asian hornet is by using the app: '**Asian Hornet Watch**', or you can send photos and location details to: [alertnonnative@ceh.ac.uk](mailto:alertnonnative@ceh.ac.uk)



**Native hornet**  
(*Vespa crabro*)

Illustrations by Sarah Bunker

## TRACKING

A method of tracking Asian hornets has evolved in Jersey, which has been successful in enabling volunteers to track them to their nests effectively. When nests are found, they can be destroyed, which will help prevent the establishment of this hornet in the UK. A version of this method is used by the NBU to find and destroy Asian hornet nests.

Under the Invasive Alien Species Order 2019 it is an offence to release Asian hornets without a licence, but it is possible to mark them without capturing them first, thus avoiding release.

Always obtain permission from the landowner. Follow the country code, and park considerately.

The steps of the method are:

1. Set up a bait station.
2. Watch direction of flight and record on map.
3. Time return flights of hornets, to work out how far away the nest is.
4. Set up more bait stations based on recorded information, in order to close in on the nest.
5. Look for the nest.



## KIT

You will need a pleated-wick bait station, Trappit wasp attractant, a large-scale map of the area, (download from Google Earth) notebook and pen, uniPOSCA PC-3M marker pens (light colours work best - cultpens.com sell lots of colours), stopwatch (or use your phone), binoculars and compass (if you are confident using one). Also extremely useful are walkie-talkies, and possibly a range-finder. Note the up-turned yellow builder's bucket, ideal for keeping the bait high and accessible, and easy to spot for both humans and hornets. Also handy for carrying everything.

*Photo: Judith Norman*

## SET UP A BAIT STATION



Another pleated-wick bait station: the more folds you have, the more chance you have of approaching a hornet in the best position.

*Photo: Colin Lodge*

Make yourself a pleated-wick bait station. You will need a jam jar, a J-cloth and some Trappit wasp attractant. Make a hole in the lid of the jam jar for the folded J-cloth to fit through tightly. Some people make a hole in the lid for a short length of hosepipe, push the cloth through it and use silicone sealant to stop leakages. Half-fill the jar with Trappit and let it wick into the J-cloth, or turn the pot upside-down if you can without it pouring out! An upturned yellow bucket is an ideal place to put the bait station. Hornets may take some hours to find the bait station, so it is not necessary to monitor the new station until later in the day.

If you have to leave a bait station, best practice is to leave a laminated card explaining what is going on, with a phone number to reach you.

Stand well back from the bait while waiting for the hornets to return, to give them a clear view as they get closer.

**WATCH THE DIRECTION** of flight away from the bait. Once a hornet is visiting the bait regularly, watch carefully as it leaves to see the direction it is flying. Ideally, use a compass, otherwise note carefully the landmark that best shows where you watched it disappear. A distant landmark will give you a more reliable direction to record than a closer landmark.

If the bait is low down or amongst trees or buildings, it may be difficult to see where the hornet goes as it leaves. You will be able to watch it fly farther with a bait station in an open area, preferably slightly elevated, and that will speed up your approach to the target nest.

## RECORD ON A MAP

Use a very large-scale map of your area showing individual buildings, hedges and clumps of trees. These can be printed from Google Earth. Mark on your map the precise position of your bait station and carefully draw a line to show the direction of flight. Ideally, take a bearing with a compass (beware of causes of compass deviation such as a mobile phone or the bonnet of your car under your map!).

Otherwise, note distant landmarks carefully as the hornet disappears and use those to mark the direction on your map. Be sure to observe several hornet flights to confirm the direction before making your decision about the next step. Remember as you mark the direction on the map that you have succeeded in tracking hornets only as far as you can see them. You cannot assume that the hornet will fly in a straight line to its nest - it rarely does.



## TIME RETURN FLIGHTS

Once hornets are returning regularly to the bait station, it's time to mark a hornet to determine the distance to the nest. Get a marker pen ready, and when a hornet has been calmly feeding for a while (say, a minute) with its head pushed into the folds of the cloth, slowly approach with the pen and then quickly mark the thorax. It will be startled and will probably fly, but should settle down to feed again shortly.

Surprisingly, no gloves or bee suit are needed when marking, because hornets are not defensive when away from the nest. Record the mark on the hornet in your notebook and start the stopwatch when the hornet flies off.

When the hornet arrives back, stop the stopwatch and record the flight time.

As a rough guide, expect the nest to be 100 metres away for every minute of absence from the bait.

Timing needs considerable patience because hornets won't necessarily fly straight to and from the nest when first released after marking - they may take a while to develop a regular pattern of visits.

In addition to direct flight, the return time may also include resting and cleaning in nearby vegetation, a flight path that follows landmarks and goes around obstacles rather than up and over them, orientation after visiting the bait station, and time spent at the nest unloading. Flight times may become longer again very close to the nest if the nest is high up in a tree because the hornet is working with unfamiliar landmarks; usually it flies out from the canopy and has not surveyed the landmarks close to the tree at a lower level. Time the same individual several times, then use the quickest time you record, not the average, as your most reliable flight time.

You must co-operate with the NBU. If they are working in the same area, reach agreement on where to set up the initial bait station, and what marking colours to use to avoid confusion. Pass on bait station locations and flight directions to them.



Above, the pen moves in to mark a hornet that is busy feeding.

*These three photos were taken by Sharon Bassey.*



Above, the marked hornet can be clearly seen. It flies around for a few seconds, then settles back to feed again (below).



*If a member of your team has a licence to release Asian hornets, you can mark them more easily using a plunger-type queen catcher. You can also use a simple shallow dish with a paper towel in the bottom soaked in Trappit with a couple of stones on top. In addition, you can also consider attaching a streamer to the hornet, on the top of the thorax, between its wings. This allows you to follow the hornet much farther by eye, making the tracking progress much faster.*



Photo: Judy Collins

## FURTHER BAIT STATIONS

Once you have consistent measurements, move your bait station 50-100 m in the direction of the flights. Keep moving the bait station 50-100 meters each time you have 2-4 reliable, consistent flight times. With flight times down to a couple of minutes, depending on the team available, and the terrain, put out another one or, even better, two more bait stations beyond the estimated distance of the nest, to get hornets flying back towards the nest from another direction. Having three stations enables you to use triangulation. Your three recorded flight directions plotted on the map will (hopefully) cross at a point which could well indicate where the nest is. Ideally, the three stations should be in an equilateral triangle, but placing each station with a clear line of sight along the flight path is the most important consideration to give the most accurate result, minimising the risk that hornets have changed direction after you have lost sight of them.

## LOOKING FOR THE NEST

Many hours can be wasted by starting to look for the nest too soon. It is usually better not to start actively looking for the nest until you are getting return times well below 2 minutes, or at least a convincing estimate of nest position from three crossing bearings. Nests are notoriously difficult to spot from directly under a tree. It may be better to look for “traffic” in the form of rapid insect flight at canopy level, to and from a nest in the top of a tree. Only then spend time looking up at the tree top for the nest itself. A nest in a tree that is completely invisible from under the tree may well be more readily visible from a little way off by viewing the tree from the side with binoculars, especially if you can find a high vantage point.

Most Asian hornets nests are high up in tall trees, but some have been found at much lower levels, in hedges and brambles, for example. Even underground. **NEVER VENTURE INTO BRAMBLES OR BRACKEN TO LOOK FOR A NEST, OR INVESTIGATE HEDGES**, there is too much risk of accidentally disturbing a nest, possibly even treading on it.

**NEVER APPROACH A NEST.** If you get too close to a nest (10 m or less) you are vulnerable to attack from multiple hornets defending the nest. **THIS IS EXTREMELY DANGEROUS.** People have been badly stung and there have even been some fatalities.

If the nest is low enough to be a risk to the public, you should take whatever steps are needed to keep people away with a clear notice or someone stationed nearby to warn people. If you find the nest, be sure to mark the site in some way so that you can communicate accurately to the NBU exactly where it is. They won't want to waste time hunting around for it, and a nest can be very difficult to spot even when you know exactly where it has been seen. what3words is a free app. that names each square metre and is very useful for recording where bait stations or nests are. If the nest is in a tree, note the species.



Use this QR code to visit the BBKA's Asian hornet website



### The Asian Hornet Handbook



Sarah Bunker

Want to know more about Asian hornets? Check out *The Asian Hornet Handbook* by Sarah Bunker