A Beekeepers Guide to Asian Hornets

by Gillian Turner, a member of Wokingham & District Beekeepers

Just one queen Asian hornet queen arrived in France in 2004, an accidental import from China, she made herself at home and her descendants are having a devastating effect on the ecology, invading most of Western Europe. As beekeepers we are concerned about the effect on our bees, but the problems that they create are much greater. Our native insects will be consumed in huge quantities (in France research has shown that an average Asian hornet nest can consume over 11kg of insects in one year), which has a knock on effect on all pollination, everything that relies on insects for food and there are consequences that we haven't even considered yet.

They are getting into the UK by flying across the channel and hitch hiking on ferries, vehicles and goods, you might remember the news story of the Asian hornet in a cauliflower. The National Bee Unit (NBU) has been following up all Asian hornet reports and destroying their nests, but the number of Asian Hornets reaching the UK is increasing and there is a real risk that a nest will be missed, enabling the hornets to gain a foothold. If you see an Asian hornet nest, do not approach it, report it on the Asian Hornet Watch App, and the NBU will take it from there. The problem is getting worse and so we need to up our game.

These notes are based my interpretations from books, articles, seminars (often on YouTube), bee meets, correspondence and conversations with other beekeepers. There has been a considerable amount research on Asian hornets, but there are still many unknowns. All comments and corrections are welcome, please send them to GillianAsianHornet@gmail.com

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Some Basics

- Healthy bees have a better chance of surviving Asian hornet interest in their colony.
- Bees with a high varroa load are not fit to fight, keeping varroa loads low is going to help.
- Avoid varroa vaping treatments during predation, it raises the scent level which will in turn attracts more hornets.
- Weak colonies will be the the first to fail. Keep strong colonies, unite weak ones.
- Keep 5+ colonies together if possible, it spreads the load and the bees stand a better chance.
- The **only** ways to solve the problem are to trap and kill Asian hornet queens and to find and destroy Asian hornet nests, preferably before they reproduce.

Monitors

The simplest way to monitor for the presence of Asian hornets is a dish with some folded kitchen roll, a stone to stop it blowing away, and just enough attractant to cover the paper. A jar with a wick through the lid and some attractant is another easy one, the attractant will last longer as the wind won't be evaporating it. Put your monitor outside in full sun so that the attractant warms and gives off it's aroma. Put it somewhere where you can look at it frequently, maybe while you are waiting for the kettle to boil or near a favourite sitting or smoking place. If you are working outside, take a monitor with you, if there are Asian hornets in the area it may only take them half an hour to sniff out a tasty bait. Plastic jars are less likely than glass to break if knocked over.

Twice in the past week I have heard "You only find Asian hornets where you look." We need to look everywhere. We need monitoring in towns and cities, ports, along transport corridors, along water ways and in rural areas. We need to look everywhere. I heard recently that in Jersey the is monitor to every half of a square kilometre, they are looking pretty much everywhere.

Live Traps

There are a wide range of live traps that you can use, the aim is to catch Asian hornets and nothing else. Traps need to be monitored daily (even the selective ones that claim there is no by-catch - because there will be by-catch) to see what they are catching. A trapped insect is easier to photograph than one that's flying around. Wasps, bees, European hornets, flies, butterflies (among many other insects) are an important part of our ecology, we don't want to kill them. No trap is perfect, all will catch non-target insects, so all need to be monitored and by-catch released. The importance of by-catch

release cannot be stressed enough, we don't want to decimate our native insects while trying to put a stop to Asian hornets, the consequences could be devastating to our environment.

Don't put monitors close to your apiary, they will attract hornets. Traps only go into the apiary if the hives are being predated.

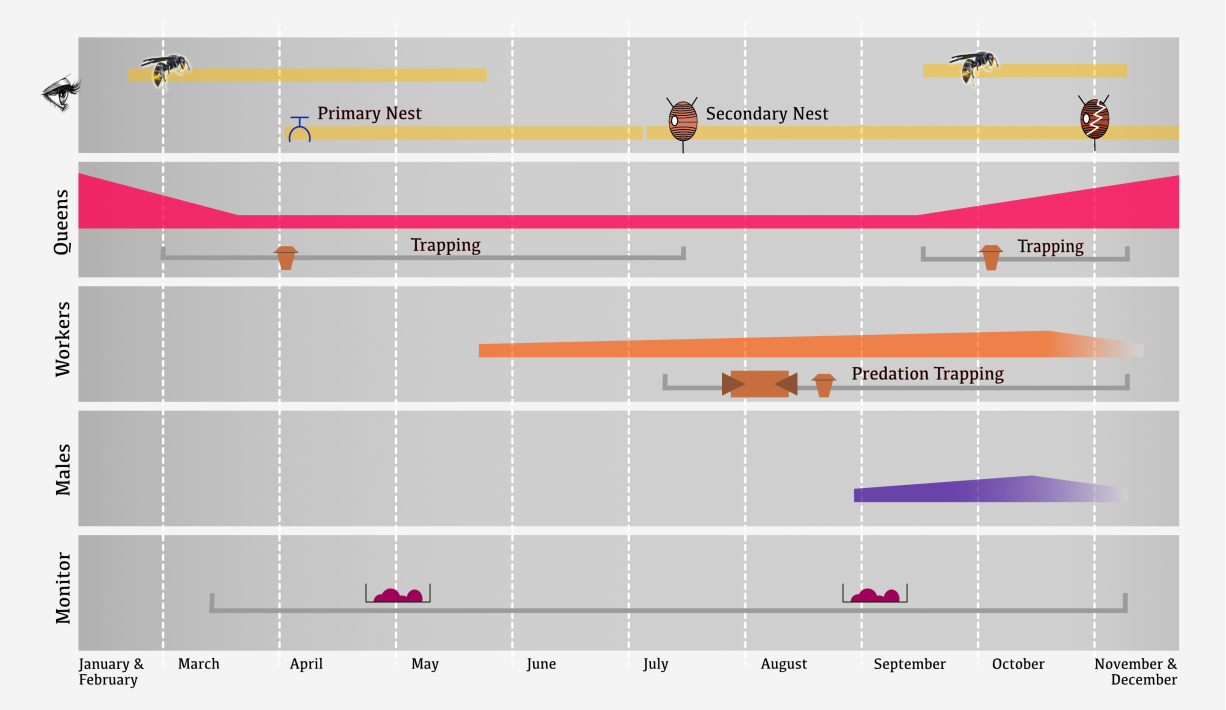
Asian hornets are not aggressive when they are out and about, they seem to be less aggressive than wasps and don't go looking for trouble, it's possible to watch them on a monitoring station without risk. I am not suggesting you get up close and personal in case one is having a bad day, I just don't want you to be frightened if you see one. If you get within 10m of their nest they are very aggressive, and it seems that everyone in the nest comes out to drive you off. If you disturb a nest by accident the best thing you can do is run, apparently they start to back off when you are 30m away. Asian hornets have a large stinger, up to 6mm long, and they can use it multiple times, you don't want to be on the receiving end. The PPE worn in Jersey involves 5mm thick suits, plus an under layer of the same material, without the under garment, people were being stung. Wrap around eye protection is also used as hornets regularly defecate when in attack mode and the speed at which they fly toward a target is sufficient for the fluid to continue horizontally through a veil and land on the face. If a droplet lands on another hornet which is clinging to the veil the wings this can also 'atomize' the fluid into a fine mist, the resulting eye irritation can cause serious eye irritation that lasts for several hours. Stay safe.

Queen trapping is about stopping nests from being built or developing, worker trapping is about reducing predation on hives. But the **only** solution to the problem is nest destruction.

Bait

What baits are there? Lots. Sweet baits include commercial Trappit wasp bait (formerly called Suterra), pressed apple juice (might be worth adding sugar), a mix of beer, white wine and fruit syrup in equal measures, fermented honey and wax, there will be more suggestions. Bees will be drawn to honey, but not fermented honey. A word of warning, Nigel Semmence has commented that if honey and comb are used in attractant, there is a potential foul brood risk. Bees will be drawn to mixtures with sugar, but not if there is alcohol in the mix. When trapping in the apiary because of predation, live hornets are a good bait, they attract more hornets. Protein baits can be used when the hornets have larvae to feed, they will enjoy fish, shrimp or meat, it needs to be changed every few days because of decay. Hornets will take sweet or protein baits, but not both at the same time.

Month by Month - “What to Do” Guide



January

Nothing to do or see on the Asian hornet front. There are some excellent discussions and presentations to entertain and educate on YouTube, Andrew Durham and Nigel Semmence are worth checking out, Asian Hornet Conferences and I’m sure the seminars from the Honey Show will be interesting and available on-line too.

January/February is when I do most of my bee reading (as the stack of magazines and books will confirm), I guess lots of beekeepers do most of their reading during the quiet months. The Asian Hornet Handbook by Sarah Bunker is an interesting and easy read.

Lots of beeks like to fiddle in the workshop, so maybe build some DIY traps or hive muzzles during the quiet season.

February/March

From the hornets perspective

When the weather gets to three consecutive days at 13C, the foundress queens will start to emerge. Lots will not have survived hibernation, which is good news. They won’t all emerge at the same time, it will be staggered and influenced by the weather.

The queens will spend time foraging initially, they particularly like camellias, so if you have camellias close by, that might be a good place to put a monitor or trap.

Some of us don’t care for wasps, flies, etc very much, but they have a job to do (pollination, clean-up crew and food sources for other beasties), if we kill them there

could be unpleasant consequences further down the line. It's essential to release by-catch.

The queen will make an Embryo nest (when it has workers in it, it's called a Primary nest) nest, it will be roughly 4 - 5cm in diameter. Favourite locations are man made structures, sheds, garages, porches, unused bee kit, bird boxes, meter cupboards, etc. Primary nests are usually found at a height of less than 10m. The queen needs to build the nest, lay eggs, feed the larvae, keep them warm and feed herself, she's going to be out and about - which makes her vulnerable to trapping. When she begins laying, it will be just one egg a day, that will gradually increase to 3 eggs a day, it's a slow build up. Time from egg to worker emergence is around 50 days at this point and the new workers are small - summer emerged workers will be considerably larger and may weigh twice as much. Research indicates that the queen will continue to forage for a couple of weeks after the first workers emerge, which brings us, very roughly, to 1st May. However, with hands on experience, John De Carteret in Jersey tells me that they are catching queens in traps almost every day up until the 13th July, so it's worth continuing spring queen trapping until mid July.

What can we do?

- The Primary nest looks like pretty much any other wasp nest at this point, and since we don't want to destroy our native wasp population, it's important to make sure it's an Asian hornet before doing anything. The simplest advice is to watch for a few minutes to see the occupant, she will be making lots of foraging trips, it should be easy to determine if it's a wasp or Asian hornet queen.
- The advise I have found is that if a Primary Asian hornet nest is spotted, the easiest way to deal with it is to contact your local AHT. Or, observe the nest, waiting to confirm that the queen is inside, by watching for her return from foraging. Looking into the nest may disturb her, causing her to abandon the nest and fly off, to either start again or take over the nest of another hornet. Once the presence of the queen is confirmed, slip a suitable clear container over the whole nest, then carefully slide a piece of hard plastic or metal through to break the very strong connection between the nest and the structure it is attached to. This is not always easy and there is a risk that the queen will escape.
- Put the lid on the jar, very quickly, don't let her out. Putting the jar in the freezer for at least 24 hours to bump her off is considered humane destruction. Report your finding, there may be more in the area. Keep the queen for the NBU they may want to analyse her. I must admit to concerns over this. First concern is protection of native wasps, second concern is personal safety. I don't know how aggressive an Asian hornet queen is, and I'm not sure how close I want to get to one without suitable protection. The only advantage I can think of is that in the dark I could use a head torch with red light, so I could see her and she couldn't see me. Still, the Asian hornet sting may be 6mm long, a normal bee suit will give zero protection.
- If a Primary nest is destroyed (and not the queen), the queen may not start a new one, she might go looking for one that another queen has started. There will be a tussle and the dead queen can often be found on the floor close to the nest. So if you find a dead Asian hornet on your shed floor, check the ceiling. If the nest has workers, report the nest on the Asian Hornet App and let the NBU deal with it.
- Spring trapping of queens. Use selective traps that allow escape of smaller insects, and ideally prevent access by larger insects. Release any by-catch, preferably multiple times a day.

April/May

From the hornets perspective

Nest building, the number of eggs and larvae are increasing. If you spot an Asian hornet now the odds are it's still a queen, workers start to emerge in May, they will be a lot smaller than the queens, who will be approximately 3cm long.

What can we do?

- Monitor. The best place to put a monitor is where you can look at it frequently. Take one with you if you are working outside.
- Take a photograph and use the Asian Hornet App to report it. Clear photographs will receive the fastest response, some reports may be passed to the BBKA Asian Hornet teams for further investigation.
- Set a trap (see traps below), check for and release by-catch throughout the day, the aim is spring trapping of queens, and they can only be caught until the middle of July.
- In the UK it is illegal to release an Asian hornet once it has been caught. If you catch one, report it on the Asian Hornet App. It may be a queen or a worker, size will distinguish the difference. If you catch a queen, keep the trap going, if you catch workers, switch to a monitor and make tracking observations.
- The best thing to do with workers at this point is to track them. Watch which direction the hornets leave the monitoring station, making a note of any easily identifiable land marks, this will help with identifying the nest location. If you can arrange monitoring at other sites in the area, you will give the trackers a head start on triangulating the nest. Nest destruction is the only solution, so the more clues available, the faster it will be found and destroyed.

June

From the hornets perspective

Nest building, the number of eggs and larvae are increasing, workers are emerging, numbers will steadily increase. The queen may still be flying, or she may just stay in the nest. What can we do?

- Just keep monitoring and report any sightings. The best place to put a monitor is where you can look at it frequently. Take one with you if you are working outside.
- If you find an nest with workers report the nest on the Asian Hornet App and let the NBU deal with it, they will be feisty and defend the nest, caution must be exercised and the nest only approached with the correct level of PPE. Do not attempt to deal with it yourself.

July & August

From the hornets perspective

The Primary nest has now served its purpose and, with the rapid increase in worker numbers, a larger structure is required. The workers will start to build a new nest close by, usually within 100m, this is called the Secondary nest. Workers will continue to tend the Primary nest until all of the larvae emerge, the Primary nest will then be abandoned. Occasionally the Secondary nest is built around the Primary nest. At some point the queen will leave the Primary nest and move to the Secondary nest.

The Secondary nest can be literally anywhere, underground, in a rabbit hole, on the ground in thick brambles, on a bare cliff face, in walls, buildings, roofs, any type of shrub or hedging, to the tops of the tallest trees. Wherever they are, they are often extremely difficult to see, sometimes the nest is inside a structure, and the only visible clue to its presence is the constant flow of hornets coming and going.

Time from egg to adult emergence reduces with warmer temperatures and may now be a little as 30 days. This is when predation at the hives commonly starts. The bee hives are a bit like a buffet, why wander around looking for food when there is so much in one place?

No hornets seen & Hornets in the area but not predating your hives

- Keep monitoring and report sightings on the Asian Hornet App, see notes for May.
- Hornets are drawn in by scent. Don't draw attention to your hives by leaving them open, leaving out frames, extracting or rendering down wax near your hives - keep the scent profile as low as possible.
- If you need to feed, do it at dusk.

If your apiary is being predated by Asian Hornets

De-stress the bees:

- Hornets like to hang around under the hive and low down in front of it, their presence will stress the bees, a solid floor (or insert tray on a mesh floor) and a skirt from the hive entrance down to the ground at a slight angle will prevent the hornets from hovering there and then popping up to pick off a returning bee, are all measures that will help to reduce the stress.
- Let the grass grow long in front of the hive, it interferes with the hornets hawking.
- Hive muzzles don't reduce predation, but they will enable your bees to carry on foraging. If they stop foraging you will need to feed them (syrup and pollen or pollen substitute), but only feed in the evening when the hornets have gone to bed.
- Hives in groups of 5+ stand a better chance than single hives.

Reduce predation:

- It might be worth putting on entrance reducers that take the entrance down to 5.5mm (advise on size of hole may change). These are sold as entrances to keep Asian hornets out, or can be diy, correx is easy to cut and drill hole of the right size - but drones won't be able to enter or exit the hive, so there are limitations to this.

- This is when kill traps go out in the apiary. Odds are you will catch Asian hornets and nothing else - why would other insects want to be hanging around your apiary with so many predators there. More on traps below.
- There are some impressive videos on-line of jabeprode traps heaving with 100s, possibly 1000s, of Asian hornets. And if you are using a jabeprode that's heaving with Asian hornets, no one expects you to check for by-catch.
- Bottle, Veto-Pharma Vespa Catch, Andermatt traps, etc can be placed on top, to the sides and behind your hives.
- Trapping in the apiary is about mopping up Asian hornet workers and reducing predation, it might slow the growth of the nest.
- I thought it might be worth moving the hives, but after speaking to a beekeeper who lost more than a dozen colonies this year, it won't be long before the hornets find the new location.
- The **only solution** is to locate and destroy the hornet nest.

September - Peak predation Period

From the hornets perspective

The ratio of brood to workers has reached a threshold, and the colony is getting ready for reproduction. The male and reproductive females are referred to as the Sexuals, the males are called males (not drones) and the females are Gynes. The production of Sexuals will continue as long as food provision and temperature allow.

The hornet nest is at its peak size, unless we get a really warm autumn which gives the opportunity for more growth.

The queen starts laying eggs for the males, 10 - 14 days later she starts laying eggs for the Gynes. Egg to emergence is 30 - 50 days, temperature dependent. They will keep producing Sexuals for as long as food provision and the weather allows. The males will need 10 days to sexually mature after they emerge, the Gynes will stay in the nest for a while feeding, getting bigger and stronger.

In males, the tip of the abdomen is blunt, there is no sting, and underneath there are two small yellowish spots near the tip of the abdomen, antenna is slightly longer (by 1 segment) and curved. Gynes are bigger and have with straight antenna. Size is variable, typically 25mm to 30mm, which is slightly smaller than the native European hornet.

No hornets seen & Hornets in the area, but not predating your hive

- Just keep monitoring and report any sightings, see notes for May.

If Your Apiary Is Being Predated by Asian Hornets

- See notes for July.
- If your hives are in an orchard, clear away fallen fruit, it may attract hornets.
- Traps in the apiaries will catch Asian hornet workers, Sexuals won't be hanging out there. Catching workers reduces predation and may slow the growth of the nest.

- Consider use of electric harps, I'm not sure how well they will work in the UK.
- What the Gynes do after emergence isn't clear. Do they forage or do they hibernate, and what are the triggers (temperature may be a factor)? If they forage, it might be possible to catch Gynes by placing your traps near the ivy, or some other nectar rich source. Don't use kill traps, ivy is a really important resource for native insects at this time of year, it's important we protect them. Use selective traps, check them at least twice a day and release any by-catch.

October - Reproduction

From the hornets perspective

This month is all about reproduction, as long as there is food and the weather is mild/ warm they will be producing more Sexuals.

The Gynes leave the nest permanently to find males for mating, but they don't mate on the wing. Gynes produce an attractive scent to draw in males and mating happens on the ground.

This is Asian hornet queen mating, the queen is at the bottom, she's about 3cm long, the male is considerably smaller. Unlike apis mellifera mating, this male Asian hornet will survive the encounter. This is a still taken from a video taken by John De Carteret.

Mated females hibernate within a few 100m of nest, up to a 1km. They migrate in spring, up to 40km, substantially more if they can hitch a ride - either when the thing they are hibernating in is moved, or they land on something that is moving, like cars, lorries and ferries. Gynes will hibernate alone or in groups. Hibernation favourites include sheds, log piles, under bark, in mouse holes, holes in banks, compost bins, anywhere they can tuck in protected from the elements. Many will not survive hibernation.

No hornets seen & Hornets in the area, but not predating your hive

- Just keep monitoring and report any sightings, any tracking information you can provide will be very helpful, see notes for May.

If your apiary is being heavily predated by Asian Hornets

- See notes for July and September.
- I'm not clear what the triggers are, or how common this is, but hornets sometimes enter the hive. If this happens the bees don't stand a chance, especially if they are clustering. The only thing that might help is to close the hive up completely. Muzzles will not stop hornets from entering the hive.

All situations

The leaves are falling, when you are out and about pay attention to the trees, nests will be easier to spot now. The nest might have been missed this year, but it's an alert that there may be undetected hornets in the area. Report it to the NBU. Gynes may have departed the nest, but they are likely to be close by, so increased monitoring in the area needs to take place in the spring.

November - Reproduction

From the Asian hornets perspective

This month is still about reproduction, as long as there is forage and the weather is mild/warm they will be producing more Sexuals, see October. As the weather cools the workers and males will start to die off. Developing larvae and the old queen will die off. Mated queens will be hibernating or looking for places to hibernate.

No hornets seen & Hornets in the area, but not predating your hive

- Just keep monitoring and report any sightings, see notes for May.

If your apiary is being heavily predated by Asian hornets

- See notes for July and September.

All situations

Keep checking the tree line for nests.

December

This nest is likely to be dead, if not it soon will be. The old queen, workers and males will be dead or dying. The new queens, now called foundress queens are hibernating. The wind will be battering the nests and destroying them, but it's still worth looking for them.

Reflect on lessons learned and figure out a better plan for next year. Something we all do every year - but usually we're thinking about splits, kit, swarming, queen rearing, varroa and honey production, so just something else to add to the list.

Traps and Aids

When we do hive inspections, most of the time have a fair idea of what we expect to find and what we are going to do about it, ok sometimes the bees surprise us, it keeps us on our toes. But basically there is a plan. The same needs to be said about putting out traps, the only difference is the questions:

- What am I aiming to catch? The only answers are Asian hornet workers or queens.
- What's the best trap for this situation?
- If the trap needs monitoring and by-catch released, who is going to do it and when?
- If you are catching workers, where is the nest?

The **only** times traps need to be used are:

- For queen trapping in the spring and autumn, in which case they need to be selective traps, frequently checked and by-catch released. Use a sweet bait.
- During hive predation when the trap is used in the apiary to mop up predating Asian hornet workers. Sweet and protein baits will work, but not in the same trap. Protein bait will need changing every few days. This is short term protection for your bees, the solution is nest location and destruction.

The rest of the time it's all about monitoring. Setting up a trap in the apiary and leaving it out "just in case" isn't a smart move - it may attract hornets and it will kill non-target insects, and we don't want either. Wasps, European hornets, butterflies and flies (among many other insects) are an important part of our ecology (pollination, clean up crew and source of food for other beasties are the first that spring to mind), we don't want to kill them.

If a trap is to be left unattended, even for a short time, in a public place it should have a label identifying who is responsible for the trap (name and contact number), trap number (for recording of findings), appropriate warnings and the name of the organisation conducting the trapping.

Spring trapping in one region, I think in France, was banned after it was found that the Asian hornet catch rate in the traps was 1 - 2%. For every Asian hornet caught 98 or 99 other insects were killed, the environment cannot cope with that level of destruction.

A note from John De Carteret: "Our Jersey Spring Queen Trapping campaign is mostly members of the general public, about 200, along with our JAHG volunteers about 30-40, so it's estimated that we had about 350 traps spread island wide. This year we reported on 476 spring queens, many were flying around in houses, as well as those in traps, some traps caught nothing, whilst others caught 4/5 Queens day, indeed one volunteer couple caught 20% of all the queens due to their location on our north east coast. There's still a generally held misconception (in the UK) that bee keepers and apiaries are key to this effort, but our figures show that very few of the 476 queen were caught at apiaries by beekeepers, that's exactly why a much wider pubic involvement is necessary, it is the public who report the vast number of sightings with relatively very

few from beekeepers, until late summer when they experience hawking at their apiaries."

There is a growing number of traps available. Some claim to be by-catch friendly, but even the best will have some by-catch. When trapping in an apiary that is being predated, in some respects "by-catch friendly" a bit of a distraction. One beekeeper in France commented something along the lines of 'the only insects in my apiary are Asian hornets'.

By-catch release holes

I've noticed that there are some differences of opinion on what size the by-catch release holes should be, anything from 5.5mm to 7mm, all I can suggest at this point is that you experiment, maybe make several traps with different size by-catch escape holes and see what happens. Also worth noting that early season Asian hornet workers are a lot smaller (possibly half the weight) of summer workers, so this might have a bearing on what works in your situation.

Or take the advise of John De Carteret, from the Jersey Asian Hornet Group: "Jersey has already had seven years, dealing with Asian hornets and has gained much experience in this area. In this and previous years we made (drilled or an improved method is to melt the hole through) a ring of 6mm holes around our Veto-Pharma spring traps. We were already considering going to 6.5mm for next year. However our researcher Chris has suggested 7mm. This would allow even more of any bycatch to escape. Having now accumulated some knowledge after studying Queens, workers and drones in captivity Chris has most recently suggested that we adopt 7mm. He feels that this would still stop Queens getting out, but allow the workers (which in spring are much smaller than a Queen) to escape, and would allow us to use those for tracking."

Please note that Jersey is not part of the UK (or EU) and is self governing, therefore it has different but similar legislation as regards the release of NNIS (Non Native Invasive Species) however the volunteers from the Jersey Asian Hornet Group are registered and their "catch, mark, release & track" methods have been extremely successful with 322 nests (29th Oct.) reported, of which as much as 70% will have been tracked and found by volunteers. Jersey use almost exclusively the Veto-Pharma, Vespa Catch traps baited with Trappit wasp bait.

Bottle Traps

Take a 2 litre plastic bottle, chop the top off and turn it upside down, a basic trap that's been used by beekeepers for years when there has been a problem with wasps in the apiary, frowned upon by many. Possible adaptations include putting the bait in a wick jar to stop drowning, 7mm escape holes around the entrance hole to enable by-catch escape, making two cut outs on each part of the bottle for entrances at the top and taping a flat piece of plastic over the upside down part of the bottle, creates a darker opening and lid that stops the trap filling with rain; it also give you a way to close the trap (twist the top) if you catch Asian hornets and need more comfort that they can't escape while you take them to the freezer.

If you are using your trap as a monitor make your trap so that you can easily lift the top part off and release all insects caught if you need to.

Slush Puppy Trap

Tony Warren, of Asian Hornet Alert, spotted a good idea when he saw a Slush Puppy cup being used as a wasp trap outside an ice cream parlour. He shared the idea with Allyn Thomas of Dover & Districts Beekeepers, who improved the design by moving to a bigger (16oz) cup and adding 25mm of electrical conduit under the hole to keep the hornet trapped, fixing is by hot glue melt gun. The latest improvement added a correx roof to keep the rain out. The NBU suggested spraying the lid of the trap with bait, which has been found to increase the effectiveness of the trap. The trap has been used extensively and found to be effective. The design is under on-going review for improvement, by-catch release holes are being trialed at the moment. This is the current model.

Veto-Pharma Vespa Catch

A simple, elegant design that's been around for a while. Originally used as a kill trap, can be used as a monitoring trap by using a jar wick bait and not putting the lid on. In Jersey last year this trap was modified to enable by-catch escape by "making a series of 6.5mm`* holes around the trap about 2/3 up, and then by putting the liquid attractant into a wick pot, a container small enough to drop down into the pot".

* In 2024 the hole size will be increased to 7mm, see By-catch release holes above.

Last price I saw was £6, which to me is a lot of money for a plastic cup. I heard a rumour that the design is being modified to enable by-catch escape, don't know if that's true.

Andermatt

A new one to market. Development has been rapid, with product modifications being made every 2/3 weeks based on field testing. Available as a complete trap or just the cones which can be fitted to any box.

Jabeprobe

Developed by a French beekeeper, this is an excellent trap for mopping up huge numbers of worker hornets in an apiary that's being predated. I have read one report that the entrances are too small for the big spring queens. There have been several revisions to this trap, so perhaps there will be even more improvements. The trap is two boxes, the bottom one holds the bait, which can be topped up without opening the top box. The top box has a screen floor to the bait tray and two selective cones, mounted in a frame with queen excluder size holes. The cones allow insects up to a certain size to enter (too small for European hornets), there are escape holes for anything smaller than an Asian hornet. The ends of the cones have a cap that discourages hornets from leaving through the entrance. The cones can be purchased separately and can be used on other boxes. There is a UK retailer selling the cones, but I don't know if the cone end caps are included.

Gard Apis

Another selective trap, this time barrel shaped. The sides are half of a queen excluder, so by-catch can exit through the sides. The ends have entrance cones that restrict the size of the insects entering the trap more selective, one 7mm (for workers) and one 8mm (for queens). I don't know how the bait is managed.

Muzzle

The muzzle creates a safe space for take off and landing and stops forage paralysis. Asian hornets don't enter the muzzled area, even though the holes are large enough for them to get through. The hole sizes are anything from 13mm square to 25mm square. There are UK retailers selling at least two muzzle designs, plans are also available on-line for DIY versions.

The muzzle creates a safe zone for take off and landing the bees will continue to forage, their stress levels go down, they aren't burning through their stores and will need feeding less. Colonies in forage paralysis will need feeing with syrup and pollen, or pollen substitute.

Muzzles don't stop predation, they do de-stress the bees and the bees are confident enough to forage. In areas where Asian hornets are active, colonies in hives with muzzles are more likely to survive than those without.

3D Printing

There are a growing number of 3D printable Asian hornet selective cones becoming available. It's possible to 3D print a complete Asian hornet trap. I'm looking forward to seeing how well they work and to new designs as that will no doubt appear.

References:

The Asian Hornet Handbook, Sarah Bunker

Andrew Durham: Asian Hornet - A Special Briefing for Beekeepers YouTube presentation, Parts 1 and 2

Nigel Semmence, Contingency Planning and Science Officer, Yellow-legged hornet aka Asian hornet, Vespa velutina BBKA Asian Hornet week September 2023 YouTube presentation

Lynne Ingram NDB, Somerset Teams Co-ordinator, BBKA Asian Hornet week September 2023 YouTube presentation

BBKA Asian Hornet Conference February 2023 YouTube presentations by Andrew Durham, Nigel Semmence, Xulio Maside Rodriguez University Santiago de Compostela, Maria Shantal Rodriguez Flores & Ana Dieguez Anton, University Vigo (Ourense), Peter Kennedy University Exeter,Ana Isabel Garcia University Santiago de Compostela, and Alastair Christie, States of Jersey

Wokingham & District Beekeepers

John De Carteret, Jersey Asian Hornet Group

Chris Isaacs, Jersey Asian Hornet Group

Tony Warren, www.asianhornetalert.org.uk

Allyn Thomas, Dover & District beekeepers allyndgthomas@aol.com

Dover & Districts Beekeepers

Anne Rowberry, BBKA President, presentation to Reading Beekeepers

And all the beekeepers I have had discussions and disagreements with on various platforms