



Asian Hornet

The Beekeepers' Guide –

(Integrated Control in the Area Around the Apiary)

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Photograph © Gilles San Martin via Flickr (CC BY-SA 2.0)

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This extract is from the briefing “Asian Hornet – The Beekeepers Guide”. In this part we looked at integrated control in the wider area around the apiary.

An important control is the location and destruction of the Asian hornet nests and it is an effective measure in reducing nest numbers and thus predation in apiaries. It is especially important that this is done before the nests release their sexuals in the autumn. However, main nest destruction is beyond the scope of the briefing and should not be attempted by beekeepers that do not have specialist equipment and training.

Nonetheless, there is another very effective method of reducing predation in the apiary and that is by trapping foundress queens in the spring after they emerge from hibernation. The foundress queens spend the first couple of weeks replenishing their hibernation losses and are to be found near early flowering plants and trees that excrete a sweet nectar. The queens then build a first nest into which they lay the first batch of workers. During this period the queen is on her own and is doing all the hunting for protein for her larvae. If you can catch the foundress queens that have hibernated in the area around the apiary you can achieve a significant reduction in predation.

Spring trapping is carried out from when the minimum temperature rises above freezing and reaches around 12 degrees centigrade (mid to late February) for 4-5 successive days. This is when the first Asian hornet foundress queens emerge from hibernation. Spring trapping should cease and traps be removed after May. There are two reasons for this:

Firstly – After May the foundress queens will have produced their first batch of

worker hornets and will be confined to their nests so the window of opportunity is limited.

Secondly – Although we can make traps to be selective there is no 100% selective trap and we wish to avoid capturing native species that emerge later than the Asian hornet, such as the European hornet (*Vespa Crabro*). A good rule of thumb is to stop spring trapping when the first European hornets appear.

Asian Hornet – The Beekeepers' Guide

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Don't forget that you can Zoom in to see the detail in the photographs.

Integrated Control in the Area around the Apiary



Inventaire
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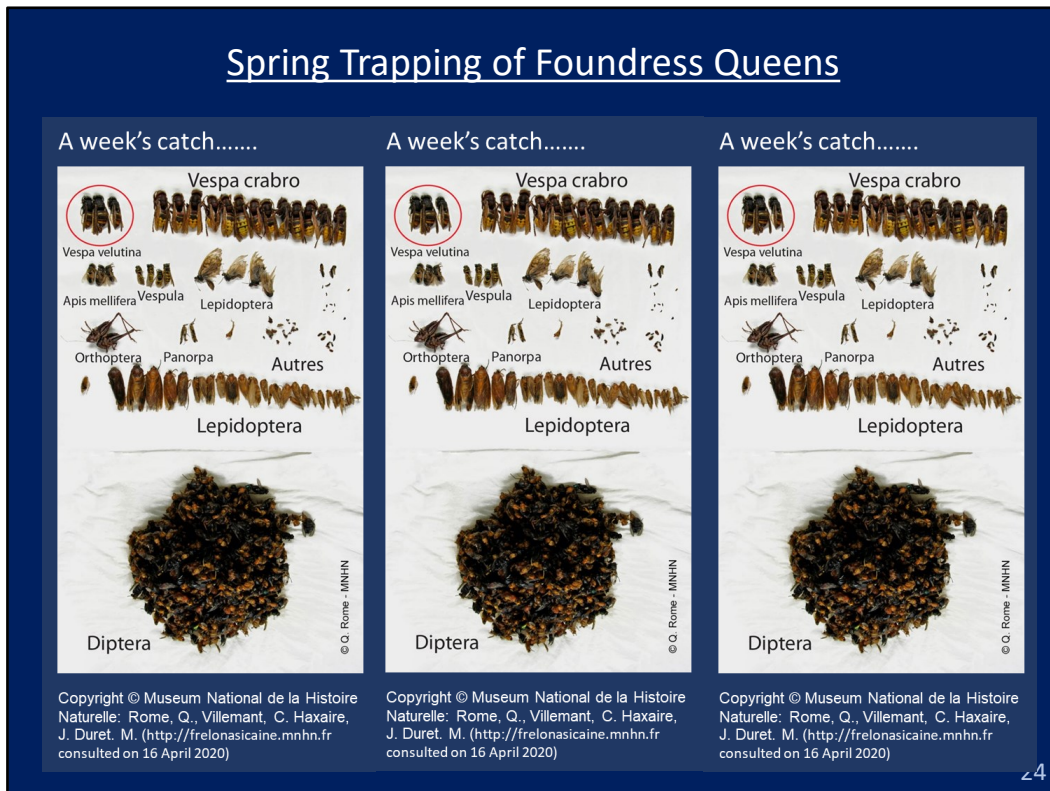
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If the French govt thought their initial assurances to the public would work and that the hornet was “just a problem for beekeepers”, the general population thought otherwise they really didn’t like having these nests of stinging insects hanging off their houses or hiding in hedges waiting to ambush them.

As the hornet spread through the French departments the public put out traps. The vast majority of the traps used were indiscriminate killing traps that caught large numbers of other non-target species. Scientists and entomologists became very concerned that such non-selective trapping was inefficient, ineffective and damaging to the general biodiversity.

Spring Trapping of Foundress Queens



In arguing the case against non-selective Spring trapping the MNHN used this photograph and still does.

In 2009 **one** trap was analysed after **one** week's use.

For just three Asian hornets caught, the trap had also caught over 1000 other insects, the vast majority / >94% / being flies.

Assuming that the scientists are right and that only 1 in 9 foundress queens actually go through to found a main nest. At that rate, to stop one main nest would cost >3000 other insects in collateral damage.

UNAF, the French beekeepers union, responded to this by saying that spring trapping does work in reducing predation / and they pointed out that the scientists didn't know what damage was caused by the Asian Hornet to the ecological balance, which was true and still is true.

Spring Trapping of Foundress Queens

A week's catch.....



A week's catch.....



A week's catch.....



Calculation from "Not just honeybees: predatory habits of *Vespa velutina* (Hymenoptera: Vespidae) in France"

Quentin Rome, Adrien Perrard, Franck Muller, Colin Fontaine - 8 December 2020 *Annales de la Societe Entomologique de France*

DOI 10.1080/00379271.2020.1867005 – based on research carried out between 2008 – 2010

100,000 insects over life of one nest.....



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But the damage done by a single Asian hornet nest was investigated

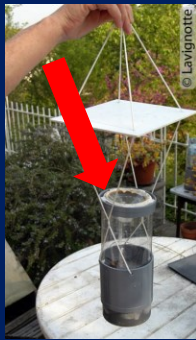
An average Asian hornet nest was found to have caught 100,000 insects over the life of the nest. This conclusion came from data collected by the MNHN at the time of the photograph but only recently published

Do the math – as the Americans would say

Furthermore what the debate concentrated on was indiscriminate non-selective trapping and there is no need for non-selective trapping

Selective Trapping

1. From late February (>12 deg C) to end of May/early June only
(largely avoids European Hornets)
2. Insects kept from drowning
(much less attractive to flies, > 94% of by-catch)
3. 5.5mm escape slots located inside the funnel & near the top
(slots allow *Lepidoptera* out)



By-catch after six weeks

Selective trapping is not just about the trap, it has other elements to it,

Firstly - only trapping for a limited period removes from the equation a lot of native species that emerge later than VV. The depts. that do organised spring trapping only do it to the end of May/ early June.

The appearance of *Vespa Crabro*, the European hornet, is the clue that *V Velutina* queens will by then be confined in their nests and the first A H workers are now looking after her. And that is why I am very suspicious of that 2009 photograph because the number of *V Crabro* caught compared to VV suggests that trap was out far too late for VV foundress queens – no wonder they caught so few and in fact one of those three you could see appears to be a worker.

Secondly - take away the drowning element by separating the bait from the capture chamber and the trap becomes much less attractive to flies, which comprised >94% of the by-catch

Thirdly you should provide escape slots for insects smaller than the Asian hornet to escape – and they do need to be slots or lepidopterans cannot get out.

Furthermore, the escape slots need to be positioned correctly and this is where many, including the scientists, get this wrong

The slots have to be at the top..... because insects go up. Between the trap outer and the inner funnel is ideal but difficult to make..... But inside the inner funnel near the top also works Don't have the escape slots on the outside, as you can see the hornet is attracted to those slots and doesn't go to the entrance funnel..... and this is the difference

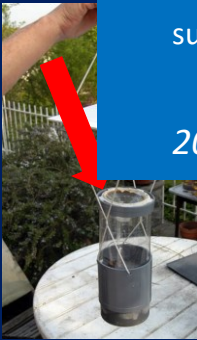
Selective Trapping

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3. 5.5m

Well-organized trapping of foundresses in the spring and careful observation of suitable locations for the establishment of primary nests considerably reduce subsequent observation of secondary nests.

(FDGDON Conclusion at end of 5 year campaign)

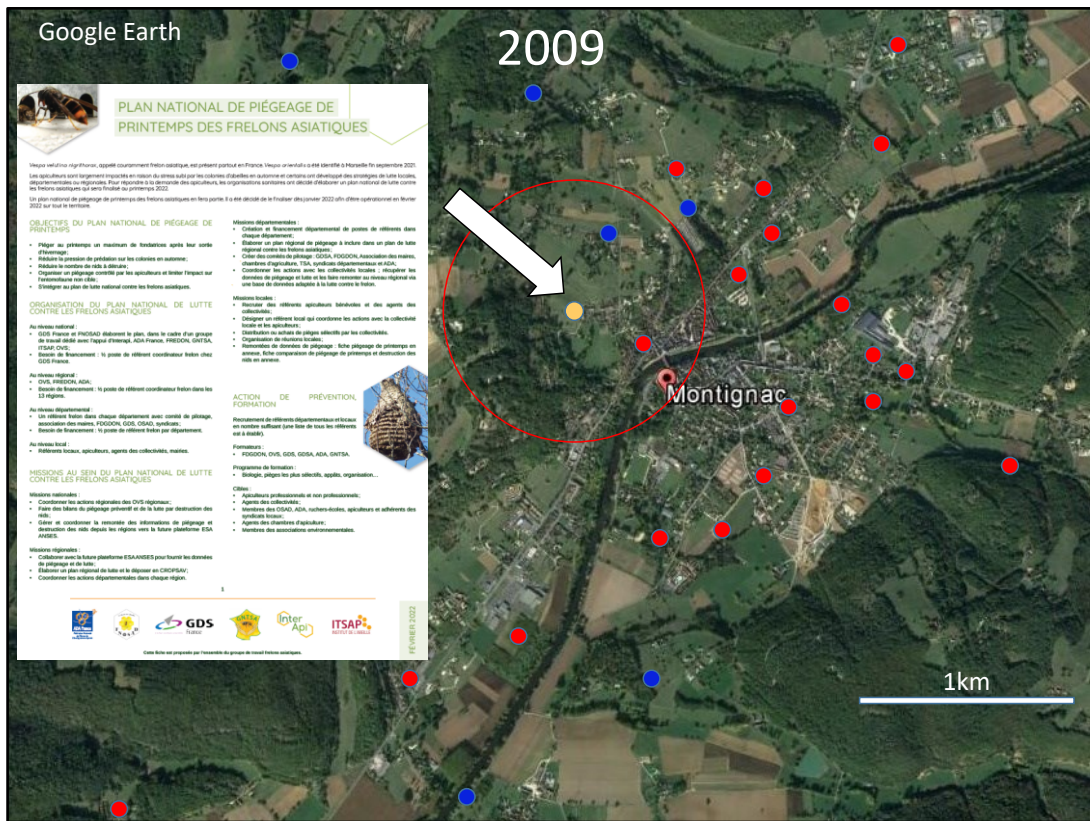
2021 – Confirmed by ITSAP & MNHN*



By-catch after six weeks

At the end of a 5 year study this was the conclusion and that study's conclusion has subsequently been confirmed by the ITSAP and the MNHN who were in on the study

The debate is over, spring trapping of foundress queens for a limited period, in the vicinity of apiaries – is now officially approved, even if reluctantly by those who were initially most vehemently against it.

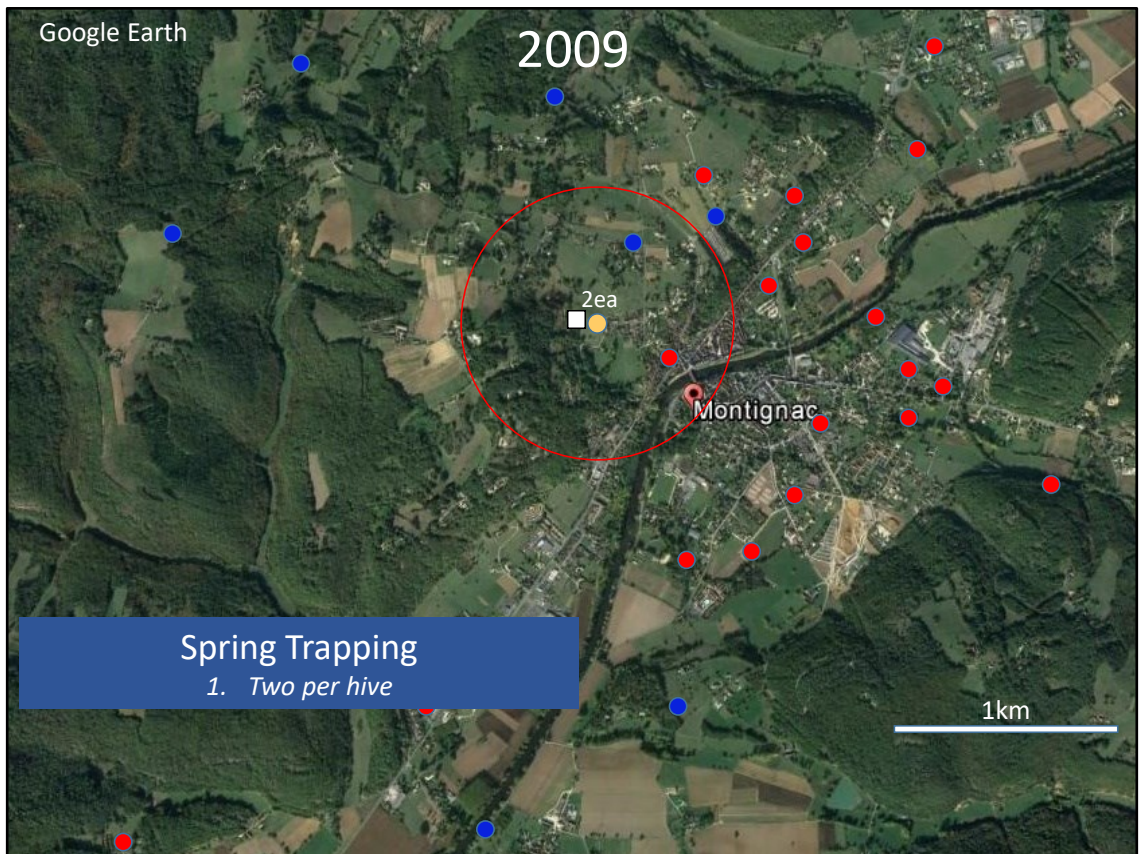


I am using a slide that shows the hornet nest locations around the town of Montignac (population circa 3,000) in 2009. The red dots were nests found and destroyed but the blue dots were nests that were not found before the leaves dropped and were not destroyed. The red circle is a 600m radius from the apiary.

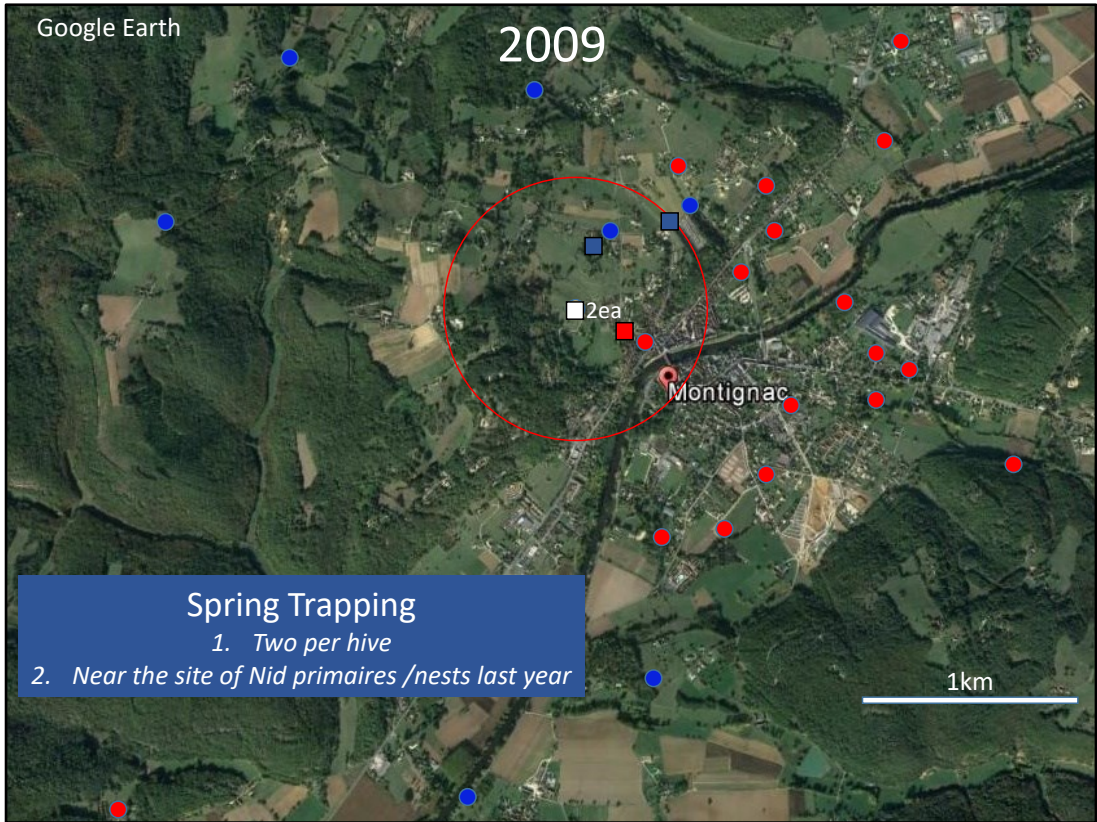
Although worker hornets will forage much further from their nests, within 600m is the more practical figure to use.

There is now an official “Spring trapping” protocol that has been nationally adopted from 2022.

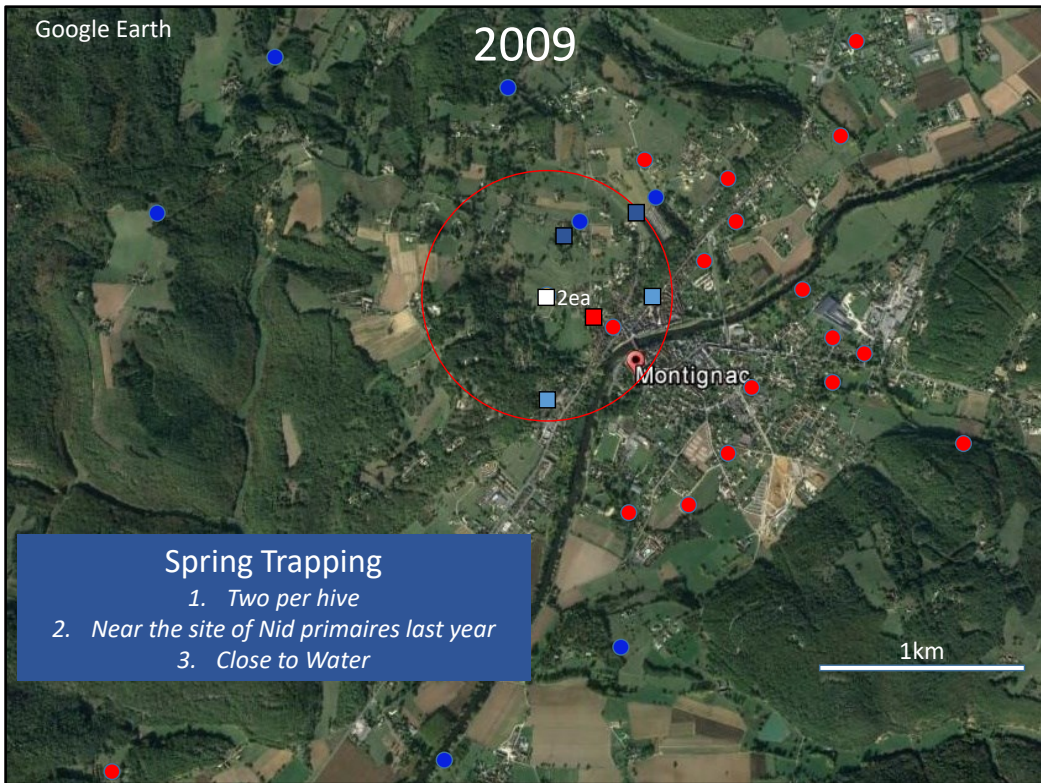
Let’s go through it, the apiary is the orange dot and we are going to place a pattern of traps around the apiary (SHOWN AS COLOURED BOXES)



First get a minimum of two traps out per hive in the apiary.

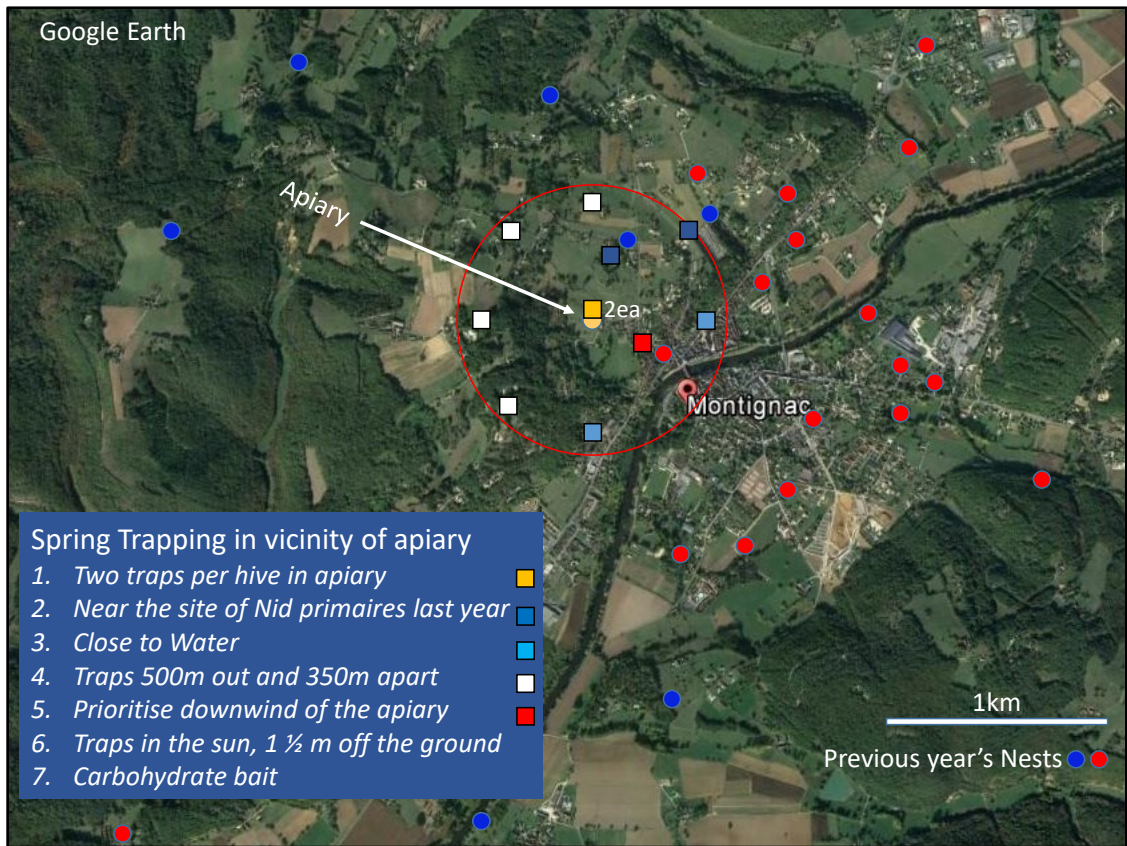


Second - Traps (BLUE BOX and RED BOX) should be put near the site of any nid primaires / nests last year (hornets are just like wasps in that respect)



Thirdly – Asian hornets like to be near water – so if you have a pond or river put traps near that – on the upwind side (light blue boxes)

Remember the hornets follow olfactory clues.



Fourth and Fifth - Traps should be put no more than 350m apart around the apiary and as hornets follow olfactory clues to find the apiary, you are primarily interested in trapping queens that are downwind of your apiary.

Now you can see that you have a pattern of traps around the apiary. Remember to check them regularly to release any non-target species.

Sixth - Get the traps off the ground and in the sun so the bait warms up and gives off its odour.

Seventh - Carbohydrate bait because at this stage you want to catch the queen who needs carbohydrate food – we'll look at that more in the last part (Integrated Control in the Apiary)