An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

Information for beekeepers participating in the Department of Agriculture, Food and the Marine's (DAFM's) Sentinel Apiary Programme

Thank you for volunteering to take part in the DAFM Sentinel Apiary Programme.

The aim of the programme is to ensure the early detection of three exotic pests, Small Hive beetle (SHB), Tropilaelaps spp. and the Asian Hornet. To date, none of these pests have been reported in Ireland, but their potential arrival remains a serious threat. Therefore, it is important that volunteers in this programme actively participate.
The Small Hive Beetle (*Aethina tumida)* is an invasive species originating from Africa. It is well established in the USA and Australia where it has proven to be a serious pest of honey bee colonies. In September 2014, the SHB was confirmed in Europe in southwest Italy and the risk of spread into other European countries is now considerably higher. *Tropilaelaps spp*. though not reported in Europe to date, remains an economically important pest throughout Asia and has the potential to spread into temperate regions. Under Irish and EU legislation these two pests are listed as notifiable diseases.

More information may be found on DAFM's website at the below link:
https://www.gov.ie/en/publication/9e1ff-beekeeping-honey/#bee-health . The SHB page of the Pests and Diseases section of BeeBase and the NBU website at www.nationalbeeunit.com provides further information. Detailed information about SHB and *Tropilaelaps spp*. is also available in the NBU advisory leaflets on BeeBase: 'The Small Hive Beetle – A serious new threat to European Apiculture' and '*Tropilaelaps*: parasitic mites of honey bees'. Fact sheets on these pests have also been included in the Sentinel Apiary programme pack sent to participating beekeepers.

The Asian Hornet though not listed as a notifiable pest, is regarded as a serious pest not only for honey bee colonies but also for all wild bee populations. It was reported in Europe in 2004 and arrived in Great Britain in 2016. DAFM has been continuously monitoring for this pest as part of a broader surveillance programme since 2016 and to date no sightings have been reported in Ireland.

The arrival of SHB, *Tropilaelaps spp*. or Asian hornet into Ireland remains a serious threat, hence as beekeepers it is important to remain vigilant. Early detection is critical as it allows control action to be targeted promptly, reducing the risks of the pests becoming widespread. This is why your help is so important.

Areas considered to present an increased risk of the introduction of exotic pests have been identified and beekeepers within these areas have been asked if they would like to take part in the Sentinel Apiary Programme.

Sentinel programme overview:

Two colonies in the same apiary is an essential requirement for participation in the programme. The colonies should be labelled 1 and 2 at the beginning of the programme and these two colonies if possible should be used throughout the season. If a colony dies out during the season, it may be replaced by another colony in the same apiary, but this should be noted in the log book. Different traps and monitoring methods are recommended to maximise the probability of early detection of each of these pests. The monitoring methods/traps recommended for this programme are outlined below in table 1.

Pest	**Monitoring method/ Trap**	**Video Link**
Small Hive Beetle	Floor trap Frame trap Hive debris General colony inspection	
Tropilaelaps spp.	Drone Brood Uncapping Hive debris General Colony Inspection	
Asian Hornet	Vespa Catch Trap	https://www.youtube.com/watch?v=E1FOC3KQaPQ

Table 1. Monitoring methods/ traps

Instructions on how to insert the traps and carry out other monitoring methods are located further in this document.

Sampling and regular monitoring of the traps and other methods is essential for the success of this sentinel programme. In the present programme, to minimise the work load, yet ensure that that monitoring programme is effective, DAFM are proposing six monitoring dates, two of which will be official sampling dates, while the remaining 4 dates will be observation dates. On the official sampling dates , participants will be required to send in samples from each of the test colonies from the floor trap, frame trap, hive debris, Asian hornet trap and complete the a log book on the general inspection of the test colonies. To allow natural mite fall in the test colonies to be estimated accurately, Varroa inserts must be clean before both official sampling dates (see details in Varroa inserts section in this document). On remaining dates, which are referred to as observation dates, participants are

just required to monitor the traps, send in samples if suspicious specimens are found and complete the logbook.

Sampling dates:
Please note on each sampling date a 4 day sampling window is allowed, thus allowing the participant to more easily integrate routine colony management with the sentinel programme.

Month	Date	Type of sampling	What needs to be done
May	27-30th	Observation	Check SHB floor trap and frame trap Carry out a general inspection Complete log book
June	17-20th	Observation	Check SHB floor trap and frame trap Carry out a general inspection Complete log book
July	15-18th	Observation	Check SHB floor trap and frame trap Set up Asian Hornet trap Carry out a general inspection Complete log book
August	5-8th 12-15th	**Official sampling** **Official sampling**	Put in a clean Varroa insert Label all tubes & bags with hive number and date Put contents of SHB floor trap in plastic bag Put contents of SHB frame trap in plastic sampling bottle (**not the oil)** Put contents Asian hornet trap in sampling bottle (**not the syrup**) Put the floor debris from the Varroa insert into a plastic bag Carry out general inspection Complete log book
September	16-19th	Observation	Check SHB floor trap and frame trap Carry out a general inspection Complete log book
October	8-11th 15-17th	**Official sampling** **Official sampling**	Put in a clean Varroa insert Label all tubes and bags with hive number and date Put contents of SHB floor trap in plastic bag Put contents of SHB frame trap in plastic sampling bottle (**not the oil)** Put contents Asian hornet trap in sampling bottle (**not the syrup**) Put the floor debris from the Varroa insert into a plastic bag Carry out general inspection Complete log book

The completed log should be submitted to Beekeeping@agriculture.gov.ie by 31st October by email or using the brown pre-addressed envelope provided.

If you have any queries about the programme please contact:

Redmond McEvoy
Assistant Agricultural Inspector,
DAFM,
Backweston,
Celbridge,
Co. Kildare.

Email: beekeeping@agriculture.gov.ie

Phone: 015058754/ 0873805053

Sample Submission Address:

Dr Mary Coffey, Sentinel Apiary Programme, DAFM, Plant Health Laboratories, Backweston Laboratory Campus, Ballymadeer, Celbridge, Co Kildare, W23 X3PH.

Sample and Programme Reports:

For each sample submitted each beekeeper will receive a laboratory report from DAFM Bee Health laboratory for their samples. To aid participating beekeepers for 2021 this will include Varroa results.

At the end of the year an overall Sentinel Apiary Programme report will be published by DAFM indicating the overall results of the programme.

Programme Timeframe:

The Sentinel Apiary Programme is a rolling one year programme. At the end of each year volunteers will be invited to participate in the next years programme. A call for new volunteers where required will issue each spring.

Acknowledgements:

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Overview of the locations of participating beekeepers

Region where Volunteer's Hives are Located	**Number of Volunteers Sought**	**Comments** In addition to considering geographical spread within Counties geographical apiary spread between adjoining counties should also be considered.
North Dublin – City or County	5	If possible including some close to Dublin Port / Airport / Swords area
Co. Wexford	3	If possible one close to Rosslare, one in North Wexford and the other geographically dispersed from these
Co. Waterford	3	If possible including some close to Waterford Airport and Belview Port
South Kilkenny	1	
Co. Tipperary	2	If possible geographically dispersed
Cork – City and County	4	If possible including some close to Cork Airport / Ports , south side of Cork City with the balance geographically dispersed throughout the county.
Co. Kerry	1	If possible close to Tralee
Co. Limerick / Co. Clare	1	If possible close to Foynes / Shannon Airport
Co. Galway / Co. Mayo	1	
Co. Sligo	1	If possible close to Sligo
Co. Roscommon / Co. Longford / Co. Westmeath / Co. Offaly / Co. Laois / Co. Kildare	1	
Co. Meath	1	If possible close to Slane / Kells
Co. Louth	1	If possible close to Greenore

Equipment required and detailed instructions on each of the trapping/monitoring methods

The kit enclosed contains the material required for full participation in this programme using the two selected colonies. A number of pre-addressed "freepost" envelopes have been included to facilitate submissions to DAFM. There is no need to use a stamp or pay any postage when submitting these envelopes.

List of Contents in the kit
Please check all is present on arrival and confirm to DAFM by 27/05/2021

SHB floor traps (2)
SHB frame trap (2)
Asian Hornet Trap with 5 refills
Sugar 1kg
Vegetable Oil (1 Litre)
Cider Vinegar (500ml)
Syringe 30ml (1)
Uncapping fork
Large clear Plastic bags (2)
Sealable Plastic Bags (2)
Sample tubes (5)
Brown self-sealing window envelopes (3)
Sample labels (6)
Padded envelopes with DAFM freepost address (3)
Sentinel Apiary Programme Information Document
Sentinel Apiary Annual Record Log
Brown envelope with freepost DAFM address

1. Use of the Small Hive Beetle Floor Trap

SHB floor traps should be checked at least every four weeks, more regularly if possible. Checks can be carried out on one or more colonies in the apiary

- The beetle prefers dark small places and will hide in the flutes of the 4mm Correx plastic insert.
- Place the insert on the floor to one side of the entrance; it will work just as well on a solid or open mesh floor. Leave just enough of the insert protruding at the hive entrance to facilitate removal. Ensure that the insert does not block the entrance to the hive (especially when using an entrance block).
- If the insert is too long, it may be cut to fit the floor as necessary.
- Leave in position until the next colony inspection (min. 2-3 days) then withdraw the trap.
- To check – quickly remove the insert and place into the large clear plastic bag provided.
- Examine thoroughly by holding the trap up to the light (or using a torch) to check for any insects in the flutes of the Correx.
- Tap the trap firmly to dislodge any insects into the plastic bag – anything firmly lodged can be removed with a piece of garden wire or a long thin nail.
- If anything suspicious is found, transfer into a small sample tube labelled with the apiary details etc. **place in a freezer for 12 hours** and then post to the DAFM laboratory.
- Remember to notify DAFM **immediately**.

Picture: Floor trap in plastic bag for examination purposes. Ensure that monitoring inserts are quickly removed from the floor into a secure plastic bag for examination, which will allow the contents to be viewed, looking closely at the corrugations.

2. Monitoring using the Small Hive Beetle Frame Trap

Please check the frame trap during each routine colony inspection.

- Many beekeepers in the USA use frame traps to help control SHB infestations in their colonies. The 'Better Beetle BlasterTM' trap supplied is a relatively cheap and simple design available from some beekeeping equipment suppliers in the UK and Ireland. It is essentially 'disposable' – when used as a control measure the trap is discarded and replaced when it contains a number of dead beetles but when used as a monitoring trap it should last a season if treated with care.
- The trap should be placed between the end two frames of the brood chamber (upper one if using multiple brood chambers). If using frames with wide 'N5' top bars then the gap between the frames may be too narrow to accommodate the trap

which may be placed between the end frame and a dummy board or between the end two frames in the first super instead.

- The clear plastic trough of the trap is filled to a maximum of half the depth with approximately 25ml of food grade vegetable oil. A little cider vinegar may be added as an attractant.
- Spillage of the oil in the hive should be avoided - the hive should be reasonably level and any oil remaining on top of the trap should be wiped away. A plastic syringe may aid filling the trap.
- The trap may be left in place throughout the season; SHB if present will tend to take refuge from the bees, passing through the 6x3mm apertures and drown in the oil.
- When removing the trap during colony inspections the frames should first be separated using the hive tool to prevent damage to the trap.
- If the trap apertures become blocked with propolis or wax they should be carefully cleared with a small screwdriver or suitable tool.
- If the trap is found to contain anything suspicious then remove it, seal in a plastic bag and **place in a freezer for 12 hours**. Label the bag with the apiary details etc. and post to the DAFM laboratory using one of the pre-addressed padded envelopes provided (put the trap in on a diagonal to allow it fit). Ensure the trap is well sealed before sending it in the post, if possible remove the oil by draining using a pin to make a hole in the each aperture of the trap.
- Remember to notify DAFM **immediately**.

Picture: Better Beetle BlasterTM trap

Picture: Trap placed between end two frames

3. Inspecting a colony for Small Hive Beetle and *Tropilaelaps spp.*

Please carry out a more thorough examination of the colony at least twice during the active season. All beekeepers are encouraged to examine their colonies for exotic pests – particularly SHB. Pictures of the SHB, varroa and Tropilaelaps mite are provided overleaf.

- Use the minimum amount of smoke necessary to carry out the examination.
- Try to avoid excessive vibration to the hive.
- Start with the weakest colony in the apiary as indicated by flight activity.
- Remove the hive roof and place upside–down on the ground next to the hive. Remove the crown board or quilt and examine carefully for the presence of Beetles, either on or under it. Pay particular attention to the corners where crown board frames are jointed.
- Remove the upper-most super and place it in the roof.

- Remove the two frames from the outer edges of this super box first – DO NOT SHAKE THEM TO REMOVE BEES. Check the walls and corners of the super box for beetles as you remove the frames.
- Examine the frames carefully for signs of beetles and then stand them alongside the removed super.
- Wait 2 minutes and then gently lift the super from the lid and look for beetles running away from the light.
- If none are seen remove the remainder of the supers carrying out the same checks on each super as detailed above.
- Remove the 2 outside frames from the brood box and check walls and corners of the brood box for beetles as you remove them, using a torch if necessary.
- Examine the 2 removed frames carefully for signs of beetles, larvae or damage consistent with their presence. DO NOT SHAKE THE BEES FROM THE COMBS.
- If the floorboard is loose – remove the brood box.
- Check the rear corners of the floor for beetles.
- If the floorboard is fixed then remove sufficient frames to allow vision of the rear corners of the floorboard.
- In apiaries where tree cover is dense and floors are fixed, it may be necessary to use a torch to aid vision of the floorboard. Remember that in colder weather beetles are more likely to stay within the combs.
- Replace the brood box on the floor and check the remaining combs for signs of beetles. Replace the 2 removed combs.
- If appropriate, use the uncapping fork provided to remove some drone brood and examine for the presence of *Tropilaelaps* mites.
- Frames can be gently tapped sideways on a stable object to dislodge any beetles which may be hiding within cells, or exposed horizontally to sunlight – beetles, if present, will 'surf' the comb looking for places to hide from the light.
- Reassemble the hive in the normal manner.

If any suspect beetles or unusual mites are found, place them in a small sample tube labelled with the apiary details etc. **place in a freezer for 12 hours** and then post to the DAFM Laboratory using one of the pre-addressed padded envelopes provided. You must also contact DAFM **immediately**.

Picture: Varroa (left) and *Tropilaelaps spp.* (right) (approx. 30x)

Small Hive Beetle (*Aethina tumida)*

Adult (approx. 10x)

Larvae (approx. 10x)

4. Sampling of floor debris using Varroa Insert

Floor debris should be submitted twice during the active season, August and October.

- To ensure that the hive debris can be analysed accurately and mite load estimated using natural mite fall, a clean insert needs to be placed on the colony approximately 1 week before the official sampling date. Please refer to sampling dates above.
- Place the insert into the floor of the hive 7 days before the sampling. By indicating the date the insert was placed in the colony and the date it was removed, Varroa mite load in the colony may be estimated based on natural mite fall.

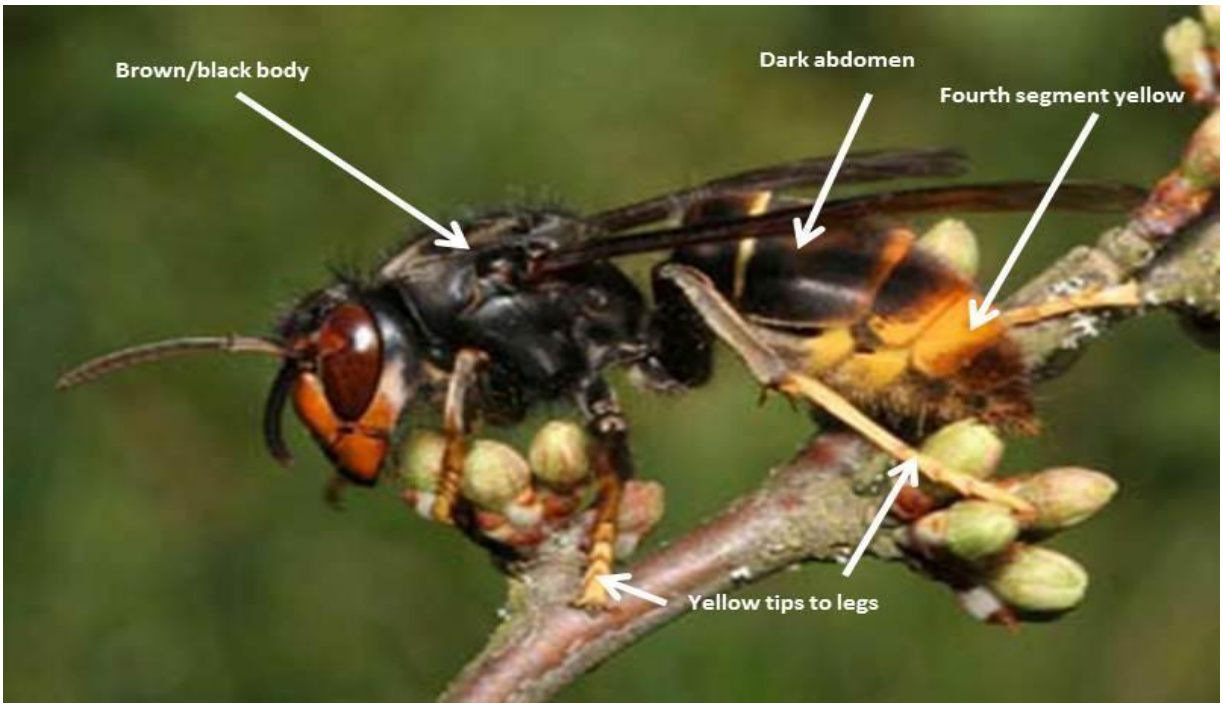
- On the sampling date place the hive debris on the insert in a labelled plastic bag and post to DAFM laboratories for examination using one of the pre-addressed padded envelopes provided.

5. Use of Vespa Catch for Asian Hornet

Please use Vespa Catch from the beginning of July to the end of October
Pictures of Vespa Catch and Asian Hornet is provided overleaf

- The yellow bowl colour cup is known to attract Asian hornets.
- The trap lid provides two entrances, both covered with a tunnel that focuses and directs odours, shields ambient light and prevents hornets from escaping.
- Vespa catch utilises a special attractant (lures) as a base.
- Thoroughly mix the following ingredients in the trap bowl:
    - 10ml of attractant (lures provided)
    - 50g of sugar
    - 200ml of water.
- Place cap securely over trap bowl once solution is mixed.
- Place trap bowl through hanger. Ensure the hanger holes are placed on the outside as this allows the Asian Hornet to enter.
- There is a hook included in the pack that allows you to hang trap from a height. Vespa catch does not need to be hung and can be placed on a level surface either.
- It is recommended to renew the solution every 4 weeks – for better efficiency, do not clean the trap during the renewal of the solution.
- If a sighting of the Asian hornet is suspected/ trapped, please contact DAFM at beekeeping@agriculture.gov.ie and if possible include a photograph. All suspect specimens should be submitted to DAFM, Plant Health Laboratories for confirmation.

Asian Hornet Trap



Asian Hornet