



Department
for Environment
Food & Rural Affairs



Llywodraeth Cymru
Welsh Government

Pest-Specific Contingency Plan

Yellow-Legged Asian Hornet

(*Vespa velutina nigrithorax*)

January 2023



Vespa velutina Foraging on Ivy © David Walker



© Crown copyright 2023

This information is licensed under the Open Government Licence v3.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/

This publication is available at www.gov.uk/government/publications

PB ref. 14770

Information about this publication is available from:

England

Animal and Plant Health and Welfare
Defra
Horizon House
Deanery Road
Bristol
BS1 5AH

Tel: 03459 335577

Email: BeeHealth.Info@defra.gov.uk

Wales

Marine and Fisheries Division
Climate Change and Rural Affairs Group
Welsh Government
Rhodfa Padarn, Llanbadarn Fawr
Aberystwyth
Ceredigion
SY23 3UR

Tel: 0300 062 2290

Email: HoneyBeeHealth@gov.wales or GwenynMellach@llyw.cymru

Contents

Introduction	4
Response	7
Command and control	7
Official action on suspicion	8
Official action on confirmation	10
Review	20
Recovery	21
Evaluation and review of plans	22
Annex 1: Roles and responsibilities	23
Annex 2: Summary of actions following a credible sighting	24
Annex 3: How to spot an Asian hornet	25
Annex 4: Glossary	27
Annex 5: Preparation: anticipation, assessment & education	29
Anticipate and assess	29
Assess – surveillance	30
Annex 6: Factsheet	32

Introduction

1. This plan sets out the role of the Department for Environment, Food and Rural Affairs (Defra) and the Welsh Government (WG) as Lead Government Departments (LGD). It also sets out actions to be taken in response to a suspected or confirmed outbreak of the yellow-legged Asian hornet within England or Wales. For ease, the pest will be referred to as the Asian hornet in this document.
2. The plan provides details of the organisations that will be involved in the response, alongside governance, roles, and responsibilities. It also describes how these teams and organisations will work together, and actions to be taken as part of the phased approach to any response. It is for the use of staff from Defra, WG, and the Animal and Plant Health Agency (APHA) in the event of an outbreak.
3. Serious or significant pests require strategic-level plans developed at a national level. Plans should describe the overall aim and high-level objectives to be achieved and the response strategy to either eradicate or contain an outbreak, to minimise the impact on beekeeping and bee farming, as well as wild pollinators.
4. The purpose of a Pest-Specific Contingency Plan is to ensure a rapid and effective response to an outbreak of the pest described.
5. This plan fits into the Government's wider role on preparing for emergencies. Further information is available on the [GOV.UK website](#). Our plan follows the principles laid down for the government response to emergency situations and joins up with Defra's own overarching emergency response procedures.
6. Contingency planning and outbreak management starts with the anticipation and assessment of potential threats, includes preparation and response, and finishes with withdrawal of specific response procedures.

Prepare: Anticipate

- Collating and appraising sources of information and intelligence about the pest.

Prepare: Assess

- Identifying concerns and the preparation of plans.
- Setting outbreak objectives.

Prepare: Education and awareness

- Ensuring staff and stakeholders are familiar with the pest.

Response

- Working to either contain or eradicate, including work to determine success.

Response: Review

- Assessing the outbreak response to ensure that the plan remains the best option and on track to deliver the agreed objectives.

Recovery to new normal

- Establishing business as usual, either when the response strategy has been effective or when the response is not considered feasible, cost-effective or beneficial.

Scope

7. This Contingency Plan describes how Defra, WG, APHA, the GB Non-Native Species Secretariat (NNSS) and Fera will respond if the Asian hornet is discovered in England or Wales. Bee health policy is a devolved area and therefore an outbreak in Scotland or Northern Ireland would be the responsibility of the Scottish Government and the Department of Agriculture, Environment and Rural Affairs, Northern Ireland, respectively. Similar plans to this one are available in Scotland and Northern Ireland. Defra, WG and the Scottish Government are committed to working together to tackle animal and plant health diseases and to share information during an outbreak openly and co-operatively. Similarly, we would keep the Bee Health Team in Northern Ireland informed of developments.

Objectives

8. The aims and objectives of the plan are to protect insects and particularly pollinators such as the honey bee from the Asian hornet by:
 - Detecting its presence as soon as possible;
 - Intercepting and preventing establishment;
 - Eradicating any outbreak if considered practicable;
 - Containing and controlling an outbreak, if field evidence suggests that it is well established in a defined but limited geographical area;
 - Establishing long-term management where eradication and control is no longer possible due to the number and extent of outbreaks; and
 - Aiding the beekeeping industry, pest controllers and local authorities in the form of training on pest and disease control.

Prepare: anticipate, assess and educate

9. Details of the work undertaken to anticipate, assess and prepare for Asian hornet are given in [Annex 5](#).
10. The National Bee Unit (NBU) and NNESS carried out a [pest risk analysis](#) in 2011 on this pest based on the evidence available, particularly from the outbreak in France.
11. NNESS has a [species alert page on Asian hornet](#) on its website. This includes an identification sheet as well as instructions for reporting sightings via a phone app (Asian Hornet Watch), an online form or by e-mail. The NBU also has details on the [Asian hornet pages](#) of its website BeeBase about its biology, nest and genetic analysis, as well as details of sightings and nest destructions. Additionally, the NBU presents bee health advice at training courses for beekeepers, including advice on how to spot bee pests such as the Asian hornet. Information on the distribution and lifecycle of Asian hornet is given in [Annex 6](#).
12. The Asian hornet is not a notifiable pest of bees, so it is not covered by the Bees Act 1980 nor the Bee Diseases and Pests Control (England) Order 2006 / Bee Diseases and Pests Control (Wales) Order 2006. It is a non-native species and is subject to the powers and controls in the Wildlife and Countryside Act 1981. It is considered a “species of special concern” and is subject to prohibitions and controls under the requirements within retained EU legislation on invasive alien species and the Invasive Alien Species (Enforcement and

Permitting) Order 2019. Further details can be found on the [GB NNS](#) website on the [legislation](#) tab.

Response

This section sets out how the response to an outbreak will be managed, initial actions following a suspect sighting and actions on confirmation. It then describes how we review the ongoing response and how we recover to the new business as usual (either after eradication or on the introduction of a management plan).

Command and control

13. The response to an Asian hornet incursion will be controlled using a Strategic, Tactical and Operational Command Structure.

- **Strategic Command** – Lead Government Department (LGD)
The LGD is responsible for overall policy of command and control.
- **Tactical Command** – National Disease Control Centre (NDCC)
The NDCC is responsible for planning and coordination of actions determined at a strategic level.
- **Operational Command** – Local Disease Control Centre (LDCC) or Forward Operating Base (FOB)

The FOB or LDCC is responsible for implementing inspections in the field and Operational Guidance: the difference between the two is purely one of scale. The FOB is small-scale and can be run from any office location. The LDCC is for larger-scale outbreaks and is usually run from an existing APHA office. The LDCC could cover multiple outbreaks in several counties with multiple FOBs.

14. Flexibility and proportionality in the delivery of the response is important. For a small outbreak it may not be necessary to establish all the structures required for a major outbreak. Most of the activities and functions described in the response structures will still need to be delivered, but there may be variations in the way this is achieved.

Official action on suspicion

Identification information

15. Information on how to identify and report an Asian hornet is available in [Annex 3](#) of this document and on the [GB Non-Native Species Secretariat website](#).
16. Sightings should be reported to NNSS, preferably using the Asian Hornet Watch app. Alternatively, by using the [online reporting form](#) or by e-mail to alertnonnative@ceh.ac.uk. All reports should include as much detail as possible and preferably include a photograph of the insect and a location.

Triggers/alerts

17. Suspected sighting / alerts might be generated from several different sources including from industry or the public and might be received through several routes, including:
 - Members of the public should report suspected sightings of Asian hornet using the Asian Hornet Watch app. Alternatively, sightings can be reported using an [online reporting form](#) available on the GB Non-Native Species Secretariat website, or by e-mailing alertnonnative@ceh.ac.uk, attaching a photo of the hornet, if available. The subject box of the e-mail should include the text 'Asian hornet sighting'. The UK Centre for Ecology and Hydrology (UKCEH) monitor this mailbox and assess each suspect sighting. Credible sightings are triaged to the NBU and NNSS within 1 working day. Sightings are considered credible if there is a clear photograph of Asian hornet included or strong supporting evidence, e.g. information on characteristics and behaviour of the insect.
 - Potential sightings may also be reported directly to the [National Bee Unit](#) (including through appointed bee inspectors, by telephone or email). All sightings passed to the NBU that cannot be discounted as a native species are recorded on a spreadsheet held by the NBU and triaged. Those sightings that do not contain enough information receive a reply with advice on how to obtain samples or seek support. This can include the use of the British Beekeepers' Association (BBKA) and Welsh Beekeepers' Association (WBKA) volunteer Asian Hornet Team (AHT) members.
 - If sightings are reported to other contacts (Press Office, Defra/WG helpline, policy mailboxes), the details should be passed to

alertnonnative@ceh.ac.uk as soon as possible and no later than one working day after the notification.

Initial investigation/reporting

18. In the event of a credible suspected finding, UKCEH will email the NBU mailbox. These are triaged as described above and details of credible sightings will be held by the NBU along with subsequent reports and analysis. The NBU will take the following immediate investigative actions:

- a. Bee Inspectors closest to the site of the reported finding will travel to the location and follow up the report.
 - i. Background information is gathered from the person who made the sighting. This is crucial and may contain information such as the hornet being found in luggage, or coming out of packaging, or from a container or vehicle that has come from outside of the UK.
 - ii. If a sample of an adult insect is present or can be collected, this will be used to confirm or rule out the identification of Asian hornet. Identification involves both the Inspectors on site and the diagnostic team at Fera when samples are submitted by courier for same-day or overnight delivery. If a partial nest, larvae and/or dead insects are found, these will be sent to the Fera laboratory by courier for next-day delivery.
 - iii. If no insects or nests are present at the time of arrival on site, the inspector will conduct a survey of the immediate vicinity of the sighting (radius 500m) to seek out suspect insects on the wing and/or nest(s).
 - iv. If Asian hornets are seen on the wing the inspector should gather a sample and send it to Fera as mentioned in ii above.
- b. To consider circumstantial evidence that the suspect sighting is likely to be genuine, the NBU will use the BeeBase database to establish proximity of the suspect sighting to beekeeping activities and proximity to entry risk points (e.g. freight depots, airports, seaports). However, given the number of pathways and the experience from outbreaks so far, reports cannot be discounted solely on the absence of an entry risk point.

19. The Head of the NBU will also put elements of National Disease Control Centre (NDCC) on standby. As a minimum, this will be:
- National Bee Inspector (NBI)
 - Contingency Planning and Science Officer (CP&SO)
 - BeeBase and Advice Manager
 - Fera laboratory
20. The NBU will report all investigations to the head of bee health policy in the relevant government and the head of NNSS within 1 day.
21. The head of policy in Defra and/or WG, depending on the location of the suspect sighting, will alert members of the Lead Government Department (LGD) Meeting. The head of policy will also alert policy team members involved in the strategic response. Ministers will be informed, and press lines prepared.
22. A checklist of actions following a credible sighting is available to the team.

Official action on confirmation

23. On confirmation of an Asian hornet finding, the actions described below will be undertaken and the following command structures and procedures will be put in place.

Strategic

Confirmation of finding in England

24. Defra's Bee Health Policy team (following advice from the NBU) will set up an LGD Meeting.
25. The LGD meeting will be chaired by the Senior Responsible Officer (SRO) – usually the Defra Deputy Director for Plant Health, Bees and Seeds. The Strategic Incident Commander (SIC) will be responsible for preparations for the meeting and acting upon recommendations arising from it. The SRO for the incident will appoint the SIC, who will normally be the Defra Policy Lead for Bee Health, and communicate the appointment to all persons and agencies involved in the outbreak. The SIC will take responsibility for managing all the strategic activities related to the outbreak. The SRO for the outbreak will attend CONOPs (Defra's operational meeting) and COBR (the Cabinet Office meeting) on the outbreak if these are required.

26. The LGD meeting will also include the Defra Press Office, head of the NBU, CP&SO, head of policy for Invasive Non-Native Species, head of NNSS, finance and others as appropriate. Specific activities for the LGD meeting will include:

- Establishing a battle rhythm for the outbreak;
- Developing recommendations as necessary for Ministers on strategic direction of response and control policies based on scientific advice from the NBU and Defra's Chief Scientific Adviser and Plant & Bee Health Evidence Team;
- Considering impacts of the outbreak;
- Agreeing communication and stakeholder engagement plans;
- Agreeing variances to the Fera LTSA or enacting the Fera emergency response;
- Recommending additional expert advice if there is insufficient understanding of the outbreak and/or its spread; and
- Providing an escalation route should issues not be able to be resolved at Tactical or Operational levels.

Whilst the LGD does provide a route for escalation, it should not be a discussion forum or seek to resolve issues within the meeting. Rather, the LGD should identify the problem and nominate someone to resolve the issues outside the meeting and present findings to a subsequent meeting.

27. A Strategic Incident Team will be established (the Defra Bee Health Policy Team and, where necessary, additional policy volunteers). The Bee Health Policy Team will form the foundation of the Strategic Incident Team and will be led by the Strategic Incident Commander.

28. The roles of the Strategic Incident Team include:

- Maintain outbreak records/documents (e.g. action list, core brief, event brief, lessons identified);
- Provide updates to the Press Office (Defra and WG) and APHA Media Officer and agree media handling plans;
- Set up and provide the secretariat for LGD meetings, circulating agendas, taking a note of the meeting, circulating and commissioning actions, etc;
- Liaison with the NDCC;
- With the NDCC, seek approval from the Chemicals Regulation Directorate (CRD) for novel or emergency treatments;
- Work with Legal if required;
- Provide briefing to relevant Defra teams as required;

- Apply for any necessary and additional funding required for the duration of the emergency, upon APHA senior management request; and
- Monitor impacts.

Immediate actions:

- Once established the Strategic Incident Team will liaise with the NDCC, NNSS, and with the Defra Government's Legal and Communications Directorates regarding legislative requirements, commissioning expert advice and the dissemination of information to the public, beekeeping associations and other stakeholders. A LGD meeting will be convened by the Strategic Incident Commander within 24 hours to agree strategic approach and identify issues. A core brief will be created to record developments and inform the response plan for the outbreak.

Confirmation of finding in Wales

29. Welsh Government's Bee Health Lead (following advice from the NBU) will set up a LGD Meeting.
30. The LGD meeting will be chaired by the SRO, usually the Deputy Director, Marine and Fisheries Division, WG. The Strategic Incident Commander will be responsible for preparations for the meeting and acting upon recommendations arising from it. The SRO for the incident will appoint the SIC, usually the Welsh Government policy lead for bee health, and communicate the appointment to all persons and agencies involved in the outbreak. The SIC will take responsibility for managing all the strategic activities related to the outbreak.
31. The LGD meeting will also include the Welsh Government Press Office, head of the NBU, CP&SO, head of policy for Non-native Species, head of NNSS, finance, and others as appropriate. Specific activities for the LGD meeting will include:
 - Establishing a battle rhythm for the outbreak;
 - Developing recommendations as necessary for Ministers on strategic direction of response and control policies based on scientific advice from the NBU;
 - Considering impacts of the outbreak;
 - Providing an escalation route should issues not be able to be resolved at Tactical or Operational levels;
 - Agreeing communication and stakeholder engagement plans; and
 - Recommending additional expert advice if there is insufficient understanding of the outbreak and/or its spread.

32. A Strategic Incident Team will be established. The WG Policy Team, and where necessary additional policy volunteers, will form the foundation of the Strategic Incident Team and it will be led by the Strategic Incident Commander.

33. The roles of the Strategic Incident Team include:

- Maintain outbreak records/documents (e.g. core brief, event brief, lessons identified);
- Provide updates to the WG Press Office and APHA Media Officer and agree media handling plans;
- Setup and provide the secretariat for LGD meetings, circulating agendas, taking a note of the meeting, circulating and commissioning actions, etc;
- Seek approval from CRD and the Veterinary Medicines Directorate (VMD) for novel or emergency treatments;
- Liaise with the NDCC;
- Work with Legal Department if required;
- Provide briefing to relevant teams as required;
- Apply for any necessary and additional funding required for the duration of the emergency; and
- Monitor impacts.

Immediate actions:

- Once established, the Strategic Incident Team will liaise with the NDCC, NNSS and with the Welsh Government's Legal and Communications Directorates regarding legislative requirements, commissioning expert advice and the dissemination of information to the public, beekeeping associations and other stakeholders. A LGD meeting will be convened by the Strategic Incident Commander within 24 hours to agree strategic approach and identify issues. The LGD meeting will be chaired by the Senior Responsible Officer (SRO) for the incident.

Tactical

34. The Head of the NBU will fully activate the NDCC and initiate actions to rapidly establish whether the outbreak is isolated or widespread. The Head of NBU will also notify the NBI and RBIs to enable deployment of NBU staff and NBU Bee Inspectors to the FOB or LDCC at the outbreak area(s). In line with the flexible and proportionate aim of this contingency plan, and due to improvements from lessons identified during earlier outbreaks and advances in technology, the NBU's response to single incursions or nests of Asian hornet can be delivered

within the capacity of each region without the setting up of a physical FOB or LDCC. A summary of the initial actions to be taken during an outbreak is illustrated in [Annex 2](#).

35. Specific activities for the NDCC will include:

- Providing daily information reports and technical advice to the LGD as the outbreak develops;
- Securing and deploying appropriate staff resources, equipment and facilities in the LDCC and field service;
- Liaising with Fera laboratory manager to ensure diagnostic capability available;
- Co-ordinating information about the outbreak and dissemination of technical and advisory material to stakeholders/ beekeeping associations and other interested parties;
- Liaising with stakeholders, national beekeeping associations on operational matters and local associations who may be able to contact keepers to facilitate inspection arrangements;
- Implementing beekeeper training programmes through the NBU inspectorate and other staff and using appropriate trainers in local associations;
- Managing finances and recording of resource (through APHA finance); and
- Only staff that are media trained should give interviews to the press if required.

36. The Head of the NBU will also activate the outbreak readiness planning conference by contacting the local resilience & technical advisor (R&TA) who will invite the following:

- APHA's Head of Plant & Bee Health or deputy (**Chair**)
- Head of NBU or deputy (**Deputy Chair**)
- Head of Resilience and Continuity Planning or deputy
- National Bee Unit CP&SO
- Head of Customer Service Delivery (or deputy)
- Safety, Health and Wellbeing (SHaW) representative for the area involved
- Head of APHA Contract Management Team
- R&TA for the relevant area
- APHA Head of Corporate Estates
- APHA Team - Defra Group Communications
- Others as requested

37. Example agenda points for the planning meeting are listed below. However, these may be changed, added to or reduced, depending on the size and scale of the outbreak. Additional attendees may be required at subsequent meetings as appropriate.

- Location and Situation
- Field Delivery Planning
- Field Operations (local)
- Forward Operations Base (FOB) Setup (if required)
- SHaW
- Resilience and Continuity Planning (CPD)
- Contract Management Team
- Estates
- Out-of-hours contacts
- Any Other Business (AOB) - including any policy/political implications

The R&TA for the area will be responsible for short bullet point notes which are taken at the meeting and issued immediately afterwards.

Operational

38. In the initial stages (1st week) of a response to Asian hornet the response will be managed virtually through Teams meetings and telephone calls.

39. If required the NBI (or RBI as appropriate) will establish a FOB near the site(s) of the outbreak and, where necessary because of logistics and scale, a LDCC.

40. The virtual FOB/LDCC's primary role will be to:

- Direct and co-ordinate response measures, including determining areas and apiaries on which to concentrate surveillance, allocation of apiary searches and use of appropriate pest controls in line with NDCC decision making;
- Provide regular local contact and support for personnel working in the field;
- Maintain contact with and provide incident progress information to the NDCC;
- Provide information to local beekeeping associations;
- Liaison with National Wildlife Management Centre (NWMC) wildlife officers responsible for nest destruction;
- Provide reports on outcome of searches to the NDCC.

Action plans

41. The Tactical Commander will draw up an incident action plan in conjunction with the Strategic Commander setting out specific actions for the outbreak. This will consider where the hornet was found (urban, rural, wooded area), responsibilities for taking forward the action and local battle rhythm (considering the battle rhythm set by the LGD). The incident action plan will be agreed by the LGD.
42. On receipt of the report(s) from the LDCC, the NDCC will make an assessment on whether it is an isolated outbreak which may be contained. It will then make a recommendation and draw up an action plan for the SRO and LGD meeting who will then confirm if eradication should be attempted. "Isolated" means that Asian hornets have only been found in a very limited number of sites in a restricted geographical area (and data from the searches shows a high probability of success in eradication).

Surveillance and inspection

43. The NDCC will define the size of the search areas and priorities.
44. NBU Bee Inspectors will be deployed to the area and in the first week rapidly establish the extent of the outbreak and, if possible, its source. They will be coordinated virtually by the incident commander. If the nest hasn't been detected, or more nests are suspected, then a FOB/LDCC will be set up and the response will escalate.
45. In many cases, the triangulation method for locating nests will not be appropriate due to the speed of flight, behaviour of the hornet and viable sightlines. The initial response is therefore likely to concentrate on visiting food sources to gauge the extent of the outbreak and narrow the search area for the nest(s). Any difficulties in access to the site (heavily wooded or urban areas will particularly present difficulties) should be included in the situation report. Where no hornets are seen at apiaries or forage sites, traps may be left to check that Asian hornets are not visiting the site.
46. Bait station and trap placement will be recorded on the ArcGIS track and trace app. If this fails, a written record should be handed to the FOB at the end of the day.
47. Each nest identified and destroyed should be notified to the NDCC who will update the LGD.

48. When a nest is detected NWMC Wildlife officers will be deployed to the outbreak area(s) and will be based at, and their work coordinated by, the FOB/LDCC.

49. Follow-up inspections will be completed based on any information gathered by this process. Risk analysis and modelling will be an integral component of the emergency searches to predict potential spread from the point of entry and assist with targeted inspections.

Establishment of demarcated areas (surveillance area)

50. Based on current knowledge of the dispersal of Asian hornet, the surveillance area will initially cover a minimum 20km radius and may be altered and enlarged as circumstances change. Inspections will initially be prioritised within a radius of 2km. The surveillance area will remain in place until a decision is taken on the extent of the outbreak and whether eradication has been successful and should continue. If necessary, depending on if/where further nests are found, the area will be extended.

Movement restrictions

51. As Asian hornet is not notifiable under Bee Health legislation in GB, no restrictions will be placed on apiaries or beehive movements. The retained EU Invasive Alien Species Regulation restricts certain activities in relation to Asian hornet. The NBU hold relevant licences/permits from Natural Resources Wales (NRW) in Wales and Natural England (NE) in England to allow restricted activities, such as release of marked Asian hornets for track and trace activities, to take place.

Trace forward/backwards

52. Asian hornet is not going to spread within the UK from movements of honey bees during the beekeeping season. The policy on tracings will be decided as part of the overall incident action plan agreed at the LGD meeting.

Pest management procedures

53. To aid detection of further nests all known beekeepers with apiaries within 20km will be notified through a BeeBase alert. Additionally, local associations and Asian Hornet Team (AHT) coordinators will be made aware and encouraged to monitor for Asian hornet. Registered beekeepers within the 5km

area (as identified through the NBU's BeeBase database) will be supplied with suitable traps to deploy in their apiaries, along with guidance on trap use and instructions on how to report Asian hornet sightings.

Decontamination/disposal

54. On discovery of an Asian hornet nest, the nest will be destroyed and removed. NBU Inspectors will be responsible for overseeing this process. APHA Wildlife Officers (trained in Asian hornet nest destruction and equipped with necessary specialist equipment, including long poles to access nests at height and thermal imaging devices to reveal active nests in concealed locations) will be responsible for the chemical destruction of each nest and its subsequent removal.
55. Schedule 9A of the Wildlife and Countryside Act 1981 provides a statutory regime of species control agreements and orders which includes provisions on powers of entry for Asian hornet nest destruction. Separate Codes of Practice for Species Control for Wales and England set out how these should be applied, and certain tests need to be met which include reasons of overriding public interest, to make a species control order under the emergency provisions.

Laboratory Diagnosis

56. All nests and Asian hornets collected in the vicinity of the nests are sent to Fera for analysis by entomologists and molecular biologists. These studies analyse: the size of the nest; sex and caste composition of adult hornets; what life stages are present in the nest; the likely relatedness of individual adult hornets collected in the vicinity of the nest.

Internal Communications

57. When an outbreak has been confirmed, Ministers are notified of the outbreak. Further submissions will be provided if the situation significantly changes and/or the level or type of response needs to be reconsidered.
58. As a routine update, a note of the LGD meeting will be sent to:
 - Defra and WG policy colleagues, including Director and Deputy Director
 - [For England outbreaks, the Ministerial Biosecurity Meeting secretariat]
 - APHA senior management
 - Press Offices

External Communications and Correspondence

59. The official spokesperson for interviews with the media will be agreed at the first LGD meeting. Any request for a press interview will be sent to the Press Office to deal with. Only officers who have received media training should provide statements or interviews to journalists, including trade press. Statements/information issued by social media should be cleared by the Press Office prior to release.

Notification

60. Asian hornet is not a notifiable bee pest under international animal health rules. Within GB, however, there is a requirement on the government in whose territory an incursion of Asian hornet occurs to notify the other GB governments, in writing and without delay, of its presence.

Stakeholders

61. When Asian hornet is confirmed, Defra or WG will release a news story on the first sighting of the season only. Once this is published, stakeholders and beekeepers can be informed. The [GOV.UK Asian hornet: UK sightings page](#) will be updated with details of all confirmed sightings during the season.

62. The Bee Health Advisory Forum (BHAF) and Bees, Wasps and Ants Recording Society (BWARS) will be informed and consulted for advice as required by the LGD meeting. Other stakeholders will be kept informed of developments. Academic institutions, specialist pest control experts or government departments overseas with specific expertise in Asian hornet will also be consulted if necessary.

63. Advice will also be provided for the wider stakeholder community (e.g. the Plant Health and Seeds Inspectorate (PHSI), APHA animal health field officers, allotment associations, garden centres, pest control companies, local authorities/councils, ports authorities etc.) to raise awareness.

Devolved Governments

64. The Scottish Government will be provided with regular updates on the situation. For cross-border outbreaks, all relevant devolved administrations will be included in the LGD meeting. Similarly, regular updates will be provided to the Northern Ireland Executive.

Communications with beekeepers

65. In the event of a confirmed Asian hornet incursion, the NBU will inform all registered beekeepers and beekeeping associations within 20km via an email alert. A news item will be added to the front page of BeeBase – this is accessible to the public, as well as all who sign up to the RSS - News feed.
66. During the response the local beekeeping association and volunteer AHTs will be contacted by the Incident Commander and kept informed.

General public

67. Information on the outbreak will be made available on the [GOV.UK Asian hornet: UK sightings](#) page and on [BeeBase home page](#) in the news items.

Immediate area of outbreak

68. LDCC will provide information to people within the immediate area of the outbreak if required. Information to be cleared by NDCC and Press Office before distribution.

Media

69. External communications will be coordinated through the Defra or WG Press Office. In all cases the Press Office must be kept informed of the status of the outbreak and any action taken. Media updates will be based on a common operating position – the procedure will be established at the first LGD meeting.

Correspondence

70. For outbreaks in England, CCU will handle correspondence based on standard lines provided by the Strategic Incident Team.

Review

71. As the situation develops, the NDCC will update the advice regarding the viability of eradication to the LGD meeting. The SRO and LGD meeting will consider revised advice and decide if a change in focus is required from eradication to containment or management of the pest.

Recovery

72. Response procedures laid down in this plan will continue until Asian hornet is eradicated or the decision is taken that the hornet cannot be eradicated and a management plan which aims to contain the hornet is introduced.

Post-eradication: surveillance

73. The NBU will revisit the affected areas, and place neighbouring apiaries and other sites where Asian hornets may be seen under close surveillance (with monitoring traps) until the end of season. The length of time under which affected areas will remain under increased surveillance and the level of surveillance will be highly dependent on the time of year that the initial incursion was detected:

- if a nest is found and destroyed early in the year (e.g. May), when Asian hornet nests are extremely unlikely to have released queens, then the likelihood that eradication will have been successful is high – therefore the timescale for surveillance could be reduced;
- if a nest is found and destroyed later in the year (e.g. October), when Asian hornet queens are likely to have been released into the environment, then the likelihood that undiscovered nests and overwintering queens will exist is high. It is therefore vital to continue monitoring for new nests throughout autumn, winter and into the spring, summer and autumn of the following year to support the eradication objective.

74. The duration of continued surveillance must be long enough to confirm continued freedom from Asian hornet. The period of surveillance will be determined by the NDCC and agreed with the SRO and/or the LGD meeting.

Moving from eradication to containment

75. If an outbreak proves to be established and widespread the LGD meeting, taking the advice of the NDCC, may advise Ministers that eradication as a control method no longer remains practicable. If Ministers agree, a policy of containment will be implemented. Depending on the extent of the outbreak, the shift from eradication to containment may be very swift. The lifting of surveillance area(s) will be considered by the LGD meeting in light of the extent and spread of the outbreak(s). This decision will be coordinated with the Devolved Governments. The NBU will then concentrate its efforts on providing technical advice and training services for beekeepers, pest controllers and local

authorities to recognise Asian hornet and put in place pest management methods to reduce its impact on colonies. Longer-term management options for dealing with the pest will be considered by the LGD meeting. A communication strategy will be developed to ensure that internal colleagues and external stakeholders are informed of any changes to the response approach.

Evaluation and review of plans

76. Field exercises test bee health contingency plans for exotic threats every second year (Asian hornet, Tropilaelaps mite or Small hive beetle). In addition, strategic elements of the plans will be tested every two years. Lessons identified in both exercises will be fed into an annual review of plans undertaken jointly between APHA, Defra and the Welsh Government. This review will also include lessons identified from other outbreaks.
77. New policy team members will cover the responsibilities of the Strategic Incident Team during their induction training and bee inspectors will be trained during the NBU technical conference or within 3 months by their line manager if joining later in the season.

Annex 1: Roles and Responsibilities of Beekeeping Associations and Beekeepers

Bee Health Advisory Forum (BHAF)

The views of the BHAF (the England/Wales government-stakeholder forum for bee health) and other selected stakeholders (such as pest controllers) may be sought in developing and reviewing this plan and during an outbreak if required by the LGD meeting.

Advice may be sought from relevant academics and other specialists to address evidence needs/issues which arise during the response.

Beekeeping Associations

Beekeeping associations will disseminate information to their members and encourage them to work closely with the NBU. They will ask their members to check their apiaries for the presence of the pest and to send any suspect samples or photos to the NBU. Beekeeping Associations will be asked if they are able to supply the NBU with a list of their members in the outbreak area.

Beekeepers

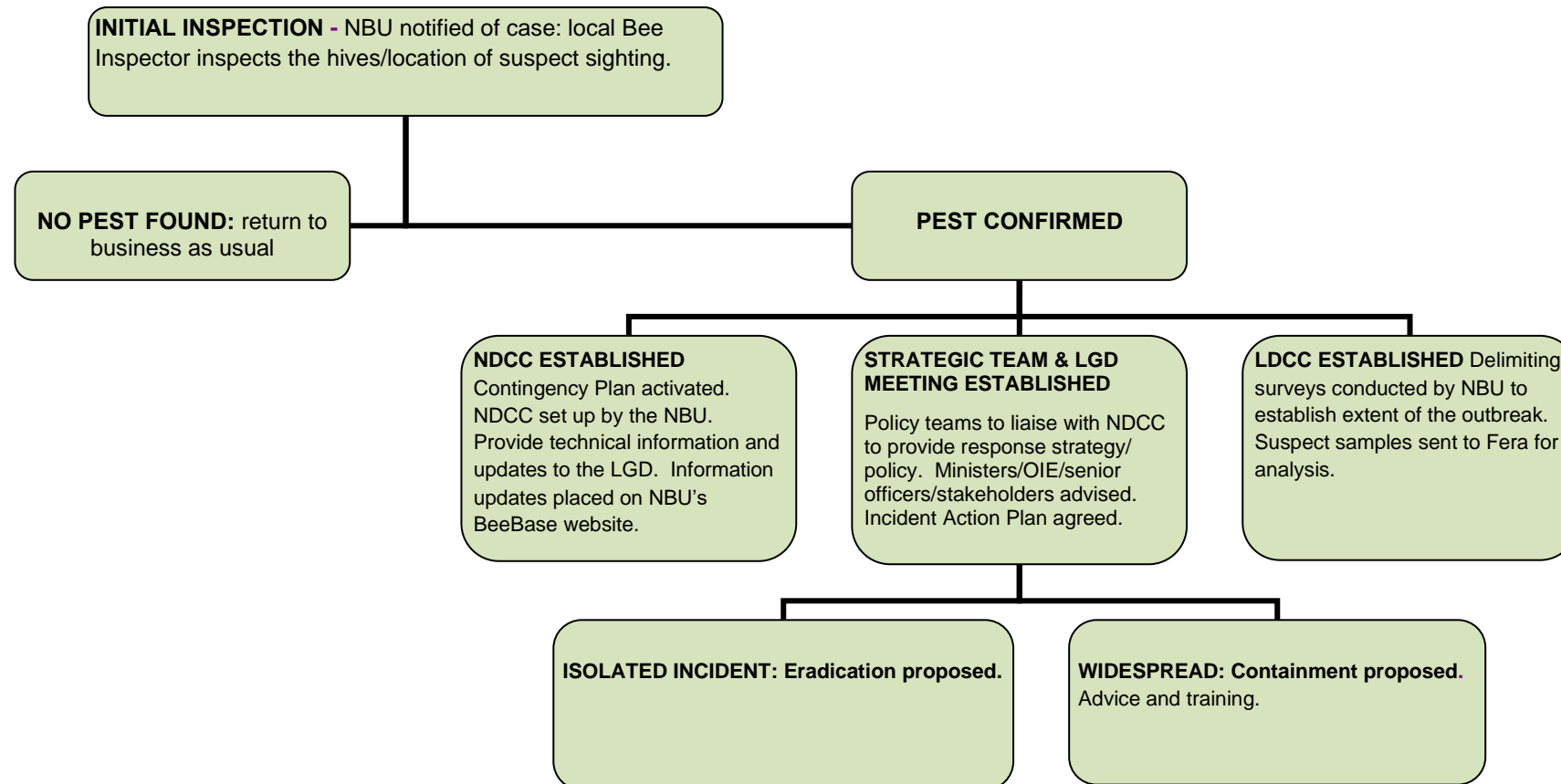
All beekeepers are encouraged to work in partnership and closely with Defra, APHA and WG to:

- Register their apiaries on BeeBase;
- Monitor their colonies for bee pests and diseases and notify the National Bee Unit or Non-native Species Secretariat if they suspect the presence of Asian hornet.

Local Beekeepers

- In the event of an outbreak, the NBU will ask local associations and AHTs to assist Bee Inspectors by providing advice to local beekeepers and local knowledge to the LDCC.
- It is envisaged that during the outbreak they will assist local beekeepers in the recognition of the pest and provide advice on managing their apiaries.
- They will liaise with beekeepers and the NBU, and in particular act as a point of contact for any local beekeeper to approach if advice is needed. They will always seek assistance from an authorised NBU Bee Inspector if there is any doubt.

Annex 2: summary of actions following a credible sighting



Annex 3: How to spot an Asian hornet



www.nonnativespecies.org

Version 5.0. Produced by Lucy Cornwell, Olaf Booy (NNSS), Gay Marris, Mike Brown (National Bee Unit) with assistance from Colette O'Flynn (National Biodiversity Data Centre Ireland) Stuart Roberts (BWARS)

Asian Hornet **Alert!**

Report sightings of this species:

- with the iPhone and Android recording app: **Asian Hornet Watch**
- online at: www.nonnativespecies.org/alerts/asianhornet
- by email: alertnonnative@ceh.ac.uk

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.

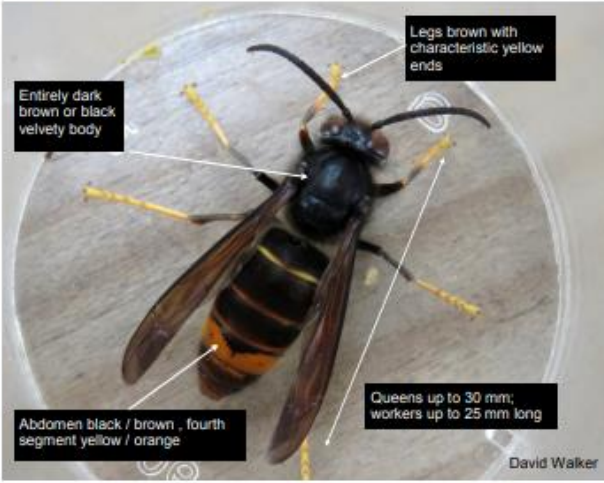
A highly aggressive predator of native insects. Poses a significant threat to honey bees and other pollinators.

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



Entirely dark brown or black velvety body

Legs brown with characteristic yellow ends

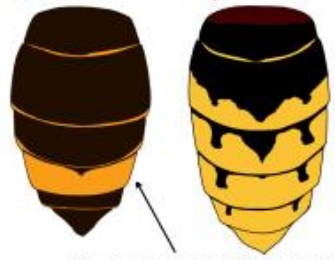
Abdomen black / brown, fourth segment yellow / orange

Queens up to 30 mm; workers up to 25 mm long


David Walker

Asian Hornet

European Hornet



Asian Hornet abdomen is almost entirely dark except for 4th abdominal segment.



Asian hornet "hawking" for honey bee prey

J. Haxaire

Asian hornet (*Vespa velutina*) for comparison

- 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

Actual size




Q. Rome

Similar Species

European hornet (*Vespa crabro*)

- 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

Actual size




Roger Burgess Mia Tonge, National Bee Unit

Giant woodwasp (*Urocerus gigas*)

- 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

Actual size




Q. Rome

Hornet mimic hoverfly (*Volucella zonaria*)

- 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

Actual size




Didier Descouens Alves Gaspar

Median wasp (*Dolichovespula media*)

- More extensive yellow and orange colouration on abdominal segments than Asian hornet
- Yellow markings on thorax unlike Asian hornet


Actual size (queen pictured)



Rasbak Rasbak

Field Signs

Active April-November (peak August/September). Mated queens over winter singly or in groups, in various natural and man-made harbourages – 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.



For more information visit:

www.nonnativespecies.org
www.nationalbeeunit.com

Report sightings of this species:

Alert!

- with the iPhone and Android recording app: **Asian Hornet Watch**
- online at: www.nonnativespecies.org/alerts/asianhornet
- by email: alertnonnative@ceh.ac.uk

Annex 4: Glossary

AHT	Asian Hornet Team
APHA	Animal and Plant Health Agency
BBKA	British Beekeepers' Association
BeeBase	NBU beekeeper and apiary database and website
BHAF	Bee Health Advisory Forum
BHP	Bee Health Policy
BWARS	Bees Wasps and Ants Recording Society
CCU	Defra's Customer Contact Unit
CEO	Chief Executive Officer
COBR	Cabinet Office Emergency Briefing
CP&SO	Contingency Planning and Science Officer
CRD	HSE Chemicals Regulation Directorate
CVO	Chief Veterinary Officer
DD	Deputy Director
DG	Devolved Governments (Scottish Government and Northern Ireland Executive)
Defra	Department for Environment, Food and Rural Affairs
EPS	Exotic Pest Survey
EU	European Union
ExCo	Defra Executive Committee
Fera	Fera Science Ltd
FOB	Forward Operating Base
FSA	Food Standards Agency
GB	Great Britain
GB-NNSIP	GB Non-Native Species Information Portal
GIS	Geographic Information System
HBP	Healthy Bees Plan
HSE	Health and Safety Executive
IAS	Invasive Alien Species
LGD	Lead Government Department
LDCC	Local Disease Control Centre
NBI	National Bee Inspector
NBU	National Bee Unit

NDCC	National Disease Control Centre
NGO	Non-governmental Organisation
NFU	National Farmers Union
NNSS	Non-Native Species Secretariat
NRW	Natural Resources Wales
NWMC	National Wildlife Management Centre
OCVO	Welsh Government, Office of the Chief Veterinary Officer
OGD	Other Government Department
OIE	Office International des Épizooties (World Organisation for Animal Health)
PHSI	Plant Health and Seeds Inspectorate
PPE	Personal Protective Equipment
PQs	Parliamentary Questions
RBI	Regional Bee Inspector
RSS	Really Simple Syndication
SA	Sentinel Apiary
SBI	Seasonal Bee Inspector
SHaW	Safety Health and Wellbeing
SOP	Standard Operating Procedure
SoS	Secretary of State
SRO	Senior Responsible Officer
UK	United Kingdom
UKCEH	UK Centre for Ecology and Hydrology
VMD	Veterinary Medicines Directorate
WBKA	Welsh Beekeepers' Association
WG	Welsh Government

Annex 5: Preparation: anticipation, assessment & education

Anticipate and assess

1. The yellow-legged or Asian hornet (*Vespa velutina nigrithorax*) is an exotic predator of honey bees (and other beneficial insect species).
2. Globalisation and international trade in diverse commodities around the world have increased the risks of importing exotic honey bee pest threats into the UK. An updated [Pest Risk Assessment](#) (PRA) for Asian hornet was completed in July 2011, and the evidence basis for this PRA was updated in April 2014. The main risk pathways were identified as:
 1. Natural spread of the pest itself by flight
 2. Movement of wood, wood products and bark (which provide suitable harbourages for hibernating inseminated Asian hornet queens)
 3. Movement of man-made goods that provide suitable harbourages for hibernating inseminated Asian hornet queens (e.g. ceramic pottery associated with garden trade and tourist camping equipment)
 4. Movement of soil associated with plant trade (harbourage for hibernating inseminated Asian hornet queens; potentially nesting stages in soil)
 5. Fruit imports (e.g. grapes) (could transport adult Asian hornets using fruit as food source)
 6. Movement on freight containers and transport vehicles themselves (harbourages for hibernating inseminated Asian hornet queens; could also carry worker hornets)
3. The Asian hornet is native to Northern India, China, the Indo-Chinese peninsula, and Indonesian archipelago. The climatic conditions of continental Asia where they are found are like those of Southern Europe.
4. Asian hornet was first officially recognised in France in 2004, having been found in Lot-et-Garonne Department, southwest France. It is believed to have been accidentally imported with Chinese merchandise from Yunnan.
5. By the end of 2006, Asian hornet was present throughout Aquitaine in the departments of Lot-et-Garonne, Gironde, and Dordogne. By 2015 it was well established in France, covering at least 430,000 square kilometres (almost 80% of the country), most predominantly in the west and south-west; outbreaks have also been reported in Spain, Portugal, Italy, Germany and Belgium. Several

studies have indicated that England and Wales would have a suitable climate for the Asian hornet to establish.

6. Confirmed Asian hornet nest locations in the UK, 2016-21.

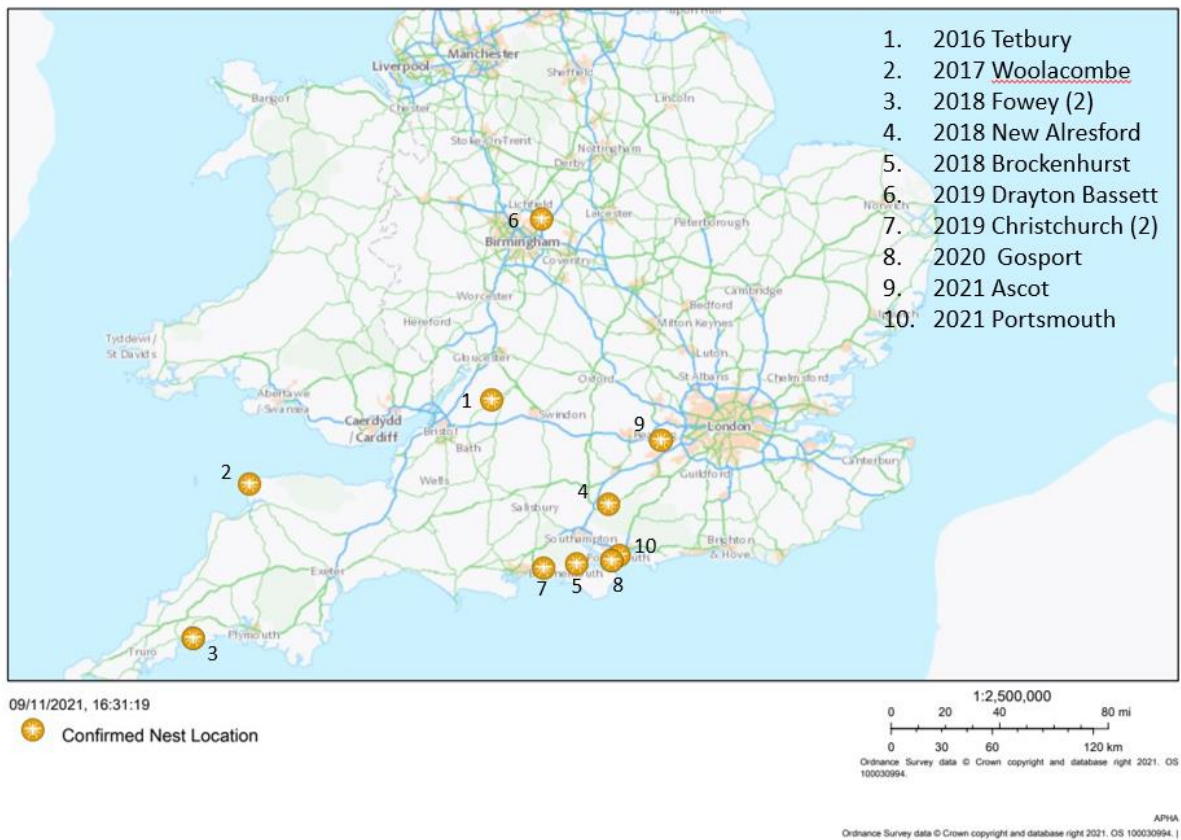


Fig 1. Asian hornet nest locations in the UK. Those nests with a (2) indicate where both the primary and secondary nest were discovered at the same location.

7. For any outbreak in England or Wales the first objective will be eradication; however, this will only be possible in isolated incidences where there are a limited number of incursions in a limited geographical area. In other circumstances, where eradication is impractical because of the number of incursions, the aim would be to slow the spread to other areas and impact through nest destruction and apiary management.

Assess – surveillance

Sentinel apiaries

1. A group of beekeepers in England and Wales specifically monitor their honey bee colonies for exotic pest species on behalf of the NBU. These ‘Sentinel Apiary’ (SA) holders represent a valuable additional front-line defence against exotic pest incursion. There are about fifteen SAs in each of the eight

beekeeping regions (i.e. 120 SAs in total across England and Wales). Beekeepers are selected from the NBU's BeeBase database based on proximity to risk areas, plus a few beekeepers in areas not associated with particular risk points, to give a more complete regional coverage. Distribution of SAs in both risk points and random sites maximises the likelihood of early pest detection. SA holders are provided with a monitoring and sampling kit and regularly examine their colonies according to standard protocols. A commercially available wasp and hornet trap is now being deployed across the sentinel apiaries in England and Wales which has been modified to:

- (i) maximise the probability of catching an Asian hornet in a way that ensures reliable identification and
- (ii) minimise the impact on any other insects.

The coastal regions of South and South East England are probably at most risk of incursion by Asian hornet and beekeepers in these areas have been particularly encouraged to become part of the SA network.

Educate: identification information

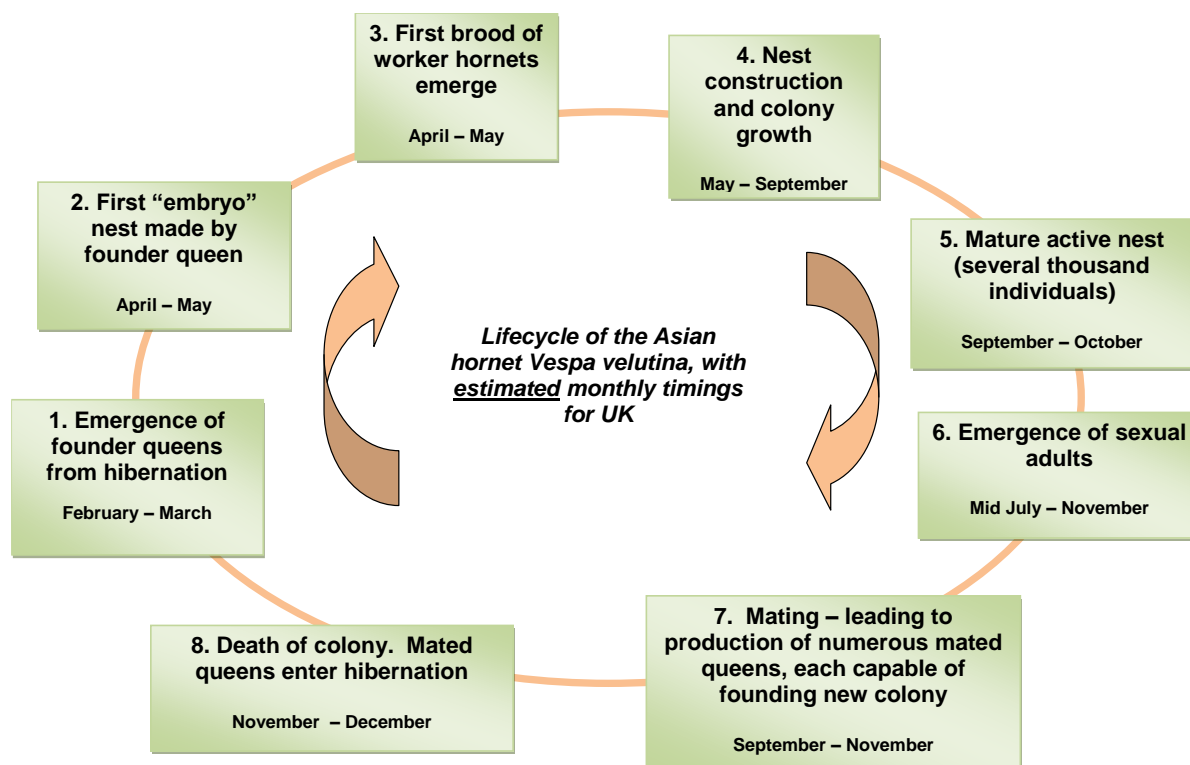
2. Information on how to identify an Asian hornet is available in [Annex 3](#) and at [Species alerts » NNSS \(nonnativespecies.org\)](#)

Sightings should be reported to the Non-Native Species Secretariat using the Asian Hornet Watch app, which is available for most smart phones. Alternatively, a brief online reporting form on the GB Non-Native Species Secretariat website can be completed, or an email sent to alertnonnative@ceh.ac.uk, providing as much detail of the sighting as possible, including a photograph if possible.

3. Submitting photos
 - If possible, take a range of pictures
 - Provide details of your location
 - Show the pest in context, as well as close-up shots
 - Smart phones have the benefit of being handy and now often produce great images and the Asian Hornet Watch app can add a GPS co-ordinate
 - But in the end – please send the picture; something is better than nothing at all
4. NBU provide training and advice on exotic bee pests (including Asian hornet) through individual inspections, training courses and seminars. Information is also provided through the BeeBase website on identification of pests and who to contact if they believe that a pest has been sighted.

Annex 6: Factsheet

Lifecycle of Asian hornet



Presentations on Asian hornet created by Fera Science Ltd are available: [Presentation on Asian Hornet Biology](#) and [Asian Hornet Genetics](#)

Key Facts

- Although there are many species of hornet in Asia, *Vespa velutina nigrithorax* has become known as the Asian hornet or Yellow-legged Asian hornet. It is an invasive non-native species from Asia. It was first recorded in France in 2004, thought to have arrived in a container of pottery from China through the port of Bordeaux. It is now present across most of Europe and is well established in France, Spain, Portugal, Belgium, and Germany.
- Based on observations of invasive populations in both France and South Korea, *Vespa velutina* shows a preference for peri-urban/urban locations, although it has established in both urban and rural environments.
- The Asian hornet is not considered to be established in the UK.

- Subsequent genetic analyses on Asian hornets captured around each nest have not indicated the presence of any other nests (Jones et al., 2020)
- There is concern that Asian hornet could fly across the Channel from northern France, or arrive via trade in commodities such as wood and wood products, goods (e.g. ceramic pottery), soil for the plant trade and fruit. Freight containers and transport vehicles could also harbour the hornet.
- It is the view of several authors who have completed climate-matching studies that GB is climatically highly suitable for the establishment of *V.v. nigrithorax* (Rome et al., 2009; Villemant et al., 2011; Barbet-Massin et al., 2020). If an incursion is left undetected, the hornet is likely to spread rapidly, with likely impact being higher in the south of the country.
- It is known that hornets can fly dozens of kilometres in one flight, with certain weather conditions (wind direction) assisting natural spread. The invasion in France spread at approximately 100km per year (Monceau et al., 2014). The Asian hornet only flies during the day time, unlike the European hornet, which can fly at night.
- The Asian hornet is a proven predator of social wasps and bees, including honey bees. This hornet also predate a wide variety of other beneficial insect species, including unmanaged pollinators (e.g. other Hymenoptera, hoverflies). For references see Rome et al., 2011; Villemant et al., 2011; Rome et al., 2021.
- Hornets predate on honey bees by hawking in front of beehives, catching single bees 'on the wing'. They then fly to a suitable place, e.g. nearby tree branch, remove the bee's head, wings and legs, and then take the thorax and abdomen back to their nests to feed the developing brood. The predation places the honey bees under huge stress, reducing their ability to forage, with impacts on the colony performance and honey yields. If a honey bee colony becomes sufficiently deprived of workers, hornets can enter the hive, feed on the honey and remove the brood.
- The Asian hornet is smaller than our own native hornet (Asian hornet queens are up to 30 mm in length; workers up to 25 mm).
- Asian hornet should not be confused with the Asian giant hornet, *Vespa mandarinia*, which is not known to be present in Europe.
- Asian hornet poses no greater health risk to humans than our native bees, wasps or hornets.

- The life-stage of the Asian hornet that poses the greatest risk of entry is a newly mated queen; one such inseminated female can found an entire colony comprised of several thousand offspring. Nests are very large, and can comprise six thousand individuals (Villemant *et al.*, 2011). In autumn, the nest will focus on the production of potential queens (on average 350) and male drones, which will mate with the queens. The mated queens will overwinter and leave the workers and males to die before winter. The following spring, the fertilized founder queens will begin the production of a new colony.

Key references

Arca, M., Mougel, F., Guillemaud, T., Dupas, S., Rome, Q., Perrard, A., Muller, F., Fossoud, A., Capdevielle-Dulac, C., Torres-Leguizamon, M. and Chen, X.X., 2015. Reconstructing the invasion and the demographic history of the yellow-legged hornet, *Vespa velutina*, in Europe. *Biological Invasions*, 17(8), pp.2357-2371.

Budge, G.E., Hodgetts, J., Jones, E.P., Ostojá-Starzewski, J.C., Hall, J., Tomkies, V., Semmence, N., Brown, M., Wakefield, M. and Stainton, K., 2017. The invasion, provenance and diversity of *Vespa velutina* Lepeletier (Hymenoptera: Vespidae) in Great Britain. *PLoS One*, 12(9), p.e0185172.

Barbet-Massin, M., Salles, J.M. and Courchamp, F., 2020. The economic cost of control of the invasive yellow-legged Asian hornet. *NeoBiota*, 55, pp.11-25.

Bonnefond, L., Paute, S. and Andalo, C., 2021. Testing muzzle and ploy devices to reduce predation of bees by Asian hornets. *Journal of Applied Entomology*, 145(1-2), pp.145-157.

Choi, M.B., Martin, S.J. and Lee, J.W., 2012. Distribution, spread, and impact of the invasive hornet *Vespa velutina* in South Korea. *Journal of Asia-Pacific Entomology*, 15(3), pp.473-477.

Ibáñez-Justicia, A. and Loomans, A.J., 2011. Mapping the potential occurrence of an invasive species by using CLIMEX: case of the Asian hornet (*Vespa velutina nigrithorax*) in The Netherlands. In *Proceedings of the Netherlands Entomological Society Meeting* (Vol. 22, pp. 39-46).

Jones, E.P., Conyers, C., Tomkies, V., Semmence, N., Fouracre, D., Wakefield, M. and Stainton, K., 2020. Managing incursions of *Vespa velutina nigrithorax* in the UK: An emerging threat to apiculture. *Scientific Reports*, 10(1), pp.1-8.

- Keeling, M.J., Franklin, D.N., Datta, S., Brown, M.A. and Budge, G.E., 2017. Predicting the spread of the Asian hornet (*Vespa velutina*) following its incursion into Great Britain. *Scientific reports*, 7(1), pp.1-7.
- Kennedy, P.J., Ford, S.M., Poidatz, J., Thiéry, D. and Osborne, J.L., 2018. Searching for nests of the invasive Asian hornet (*Vespa velutina*) using radio-telemetry. *Communications biology*, 1(1), pp.1-8.
- Laurino, D., Lioy, S., Carisio, L., Manino, A. and Porporato, M., 2019. *Vespa velutina*: An alien driver of honey bee colony losses. *Diversity*, 12(1), p.5.
- Monceau, K., Bonnard, O. and Thiéry, D., 2014. *Vespa velutina*: a new invasive predator of honeybees in Europe. *Journal of pest science*, 87(1), pp.1-16.
- Monceau, K. and Thiéry, D., 2017. *Vespa velutina* nest distribution at a local scale: An 8-year survey of the invasive honeybee predator. *Insect science*, 24(4), pp.663-674.
- Perrard, A., Haxaire, J., Rortais, A. and Villemant, C., 2009, January. Observations on the colony activity of the Asian hornet *Vespa velutina* Lepelletier 1836 (Hymenoptera: Vespidae: Vespinae) in France. In *Annales de la Société entomologique de France* (Vol. 45, No. 1, pp. 119-127). Taylor & Francis Group.
- Requier, F., Rome, Q., Chiron, G., Decante, D., Marion, S., Menard, M., Muller, F., Villemant, C. and Henry, M., 2019. Predation of the invasive Asian hornet affects foraging activity and survival probability of honey bees in Western Europe. *Journal of pest science*, 92(2), pp.567-578.
- Requier, F., Rome, Q., Villemant, C. and Henry, M., 2020. A biodiversity-friendly method to mitigate the invasive Asian hornet's impact on European honey bees. *Journal of Pest Science*, 93(1), pp.1-9.
- Robinet, C., Suppo, C. and Darrouzet, E., 2017. Rapid spread of the invasive yellow-legged hornet in France: the role of human-mediated dispersal and the effects of control measures. *Journal of Applied Ecology*, 54(1), pp.205-215.
- Rojas-Nossa, S.V., Novoa, N., Serrano, A. and Calviño-Cancela, M., 2018. Performance of baited traps used as control tools for the invasive hornet *Vespa velutina* and their impact on non-target insects. *Apidologie*, 49(6), pp.872-885.
- Rome, Q., Perrard, A., Muller, F. and Villemant, C., 2011. Monitoring and control modalities of a honeybee predator, the yellow-legged hornet *Vespa velutina nigrithorax* (Hymenoptera: Vespidae). *Aliens*, 31(31), pp.7-15.

Rome, Q., Perrard, A., Muller, F., Fontaine, C., Quilès, A., Zuccon, D. and Villemant, C., 2021, January. Not just honeybees: predatory habits of *Vespa velutina* (Hymenoptera: Vespidae) in France. In *Annales de la Société entomologique de France (NS)* (Vol. 57, No. 1, pp. 1-11). Taylor & Francis.

Verdasca, M.J., Rebelo, H. and Carvalheiro, L., 2021. Invasive hornets on the road: motorway-driven dispersal must be considered in management plans of *Vespa velutina*. *NeoBiota*, 69, pp.177-198.

Vidal, C., 2021. The Asian wasp *Vespa velutina nigrithorax*: Entomological and allergological characteristics. *Clinical & Experimental Allergy*.

Villemant, C., Perrard, A., Rome, Q., Gargominy, O., Haxaire, J., Darrouzet, E. and Rortais, A., 2008, August. A new enemy of honeybees in Europe: the invasive Asian hornet *Vespa velutina*. In *20th International Congress of Zoology–Paris* (pp. 26-29).

Villemant, C., Barbet-Massin, M., Perrard, A., Muller, F., Gargominy, O., Jiguet, F. and Rome, Q., 2011. Predicting the invasion risk by the alien bee-hawking Yellow-legged hornet *Vespa velutina nigrithorax* across Europe and other continents with niche models. *Biological Conservation*, 144(9), pp.2142-2150.