



Asian hornet

NESTS





3. Recognizing and reporting nests of the Asian hornet

Information for the teacher

The Asian hornet is an exotic species of wasp that has been present in Belgium since 2017. Its population has grown rapidly in recent years due to a combination of factors. First, they have few natural predators in Belgium, which allows their nests to develop undisturbed. In addition, the hornets find abundant food sources near human activities, such as beehives and fruit trees, enabling them to reproduce rapidly. Their adaptability also allows them to settle in various environments, from garden sheds to large trees, and even sewer manholes.

Several factors have contributed to the rapid spread of this species. It arrived in France from Asia via maritime traffic and then quickly spread northward through Flanders. It was subsequently able to expand locally thanks to favorable climatic conditions and a wide range of potential nesting sites. The combination of efficient reproduction, a judicious choice of nesting sites, and the absence of natural predators has led to the current sharp increase in its population.

Nests can be submitted via the [Vespa-Watch](#) platform, where experts assess whether it is a genuine hornet's nest and, if necessary, call in a pest control operator. Furthermore, monitoring helps researchers to map out distribution patterns, so that preventive measures can be implemented in a targeted and effective manner. Pupils can investigate this trend themselves using real data from Vespa-Watch, the nest reporting platform.

HOW TO RECOGNIZE A NEST?

An Asian hornet nest is constructed from wood pulp. They build two types of nests. In the spring, queens build a small starter nest (primary nest), often under a roof or in a bush. In the summer, the workers build a large main nest (secondary nest), usually high up in trees.

1. Primary nest (startnest)

- **Period:** Spring (april–june) = Best time to stop the expansion early
- **Location:** sheds, birdhouses, gutters, stables, under small shelters; sheltered and dry spots close to the ground
- **Characteristics:** small (the size of a tennisball), spherical, often a few centimeters in size; a single queen builds the nest
- **Why it is important:** still small and relatively easy for exterminators to remove

2. Secondary nest (main nest)

- **Period:** Summer to Autumn (july–october)
- **Location:** high in trees, sometimes attached to building; less often under the ground or in bushes
- **Characteristics:** large (about the size of a football), spherical or pear-shaped, with a side entrance; home to thousands of hornets; dangerous to approach directly
- **Why it is important:** The colony is fully grown and strategically located; reports ensure a professional response

It can be difficult to tell the difference between a wasp nest and a hornet nest when the nest is just starting to form. You can often recognize a wasp nest because it is smaller and hidden in the ground, a wall, or under a roof, whereas a hornet nest is usually much larger, hangs high in a tree, and always has a clearly visible side entrance.



Figure 1: Left: a young primary nest attached to the ceiling.
Source: Vespawatch



Right: Secondary nest with clear sideways flight opening.



LEARNING OBJECTIVES

- World orientation – Observation and research
- Digital skills – Using an online reporting platform Online
- Citizenship – Take action in a safe and responsible way
- Expression and technology – Handicraft and creativity
- Language and presenting – Communicative skills

Activity 1 – Recognizing nests



20-30 MIN

In short

A classroom activity in which students examine photos of primary and secondary hornet nests and compare their characteristics, such as shape, location, color, material, and entrance. In this way, they learn to distinguish between hornet, wasp, and bee nests.

Supplies

- Beamer/tablet or print of pictures
- Worksheet or overviewtable
- Board for classroom discussion

Lesson structure

- Look together at pictures of nests via [Identification - Vespa-Watch](#) and go through the following questions:
 - What stands out about the nests?
 - What stands out to you about the shape, color, or texture of this nest?
 - Where is the entrance to the nest (on the side, typical of the Asian hornet)?
 - Where is the nest located? What does that tell us about the hornet's choice of location?
 - What does the nest seem to be made of?
 - What could be dangerous about having a nest like that in your neighborhood?
- Overview:

Characteristic	Primary nest	Secondary nest
Shape	Mostly round	Round or pear-shaped
Location	Sheltered spot: shed, eaves, hedge, birdhouse	High in trees, sometimes in buildings
Entrance	At the bottom	On the side
Colour	Grey/Brown, paper colour	Grey/Brown, paper colour
Size	Small (size of a tennisball)	Big (size of a football)
Material	Fine wood fibres chewed into paper	Fine wood fibres chewed into paper
Period of usage	Spring (april–june)	Summer–Autumn (july–october)



Activity 2 - Search for nests



50-100 MIN

In short

Pupils go on an exploration of the school grounds to observe real or fictional hornet nests, using binoculars and following safety instructions. Back in the classroom, they practise reporting their observations using a worksheet or an online platform.

Supplies

- Binoculars (optional)
- Observation/report form
- Tablets or computers for online observations

Lesson structure

- **Take the class for a walk around the school grounds (woodland, gardens, edge of the playground)**
 - **Tip** : Check Vespa-Watch to find out where hornets have been spotted
 - Ask the pupils to use binoculars (if possible)
 - Look towards the treetops, the edges of roofs or bushes
 - Stress the importance of safety: don't get too close, just observe.
- **Back in class – Making a test report**
 - Based on a sighting (real or made-up): fill in a report together
 - Ask pupils to consider a real or fictional situation: “*You see a nest high up in a tree in the school playground. What do you do?*”
 - Link this to an online platform if tablets are available:
Enter a sighting for [the Asian hornet - Waarnemingen.be](https://www.waarnemingen.be)

Activity 3 – Make your own nest!



80-100 MIN

In short

Pupils build a model of an Asian hornet's nest, learning about nest types, building materials, structure and the importance of identification. They link practical experience to biology and gain an understanding of the ecology of this invasive species.

Supplies

- Worksheet 3A
- Balloon
- Papier-mâché
- (News)paper
- Scissors
- Glue
- Paint (grey, brown, beige)
- Brushes
- Rope to hang the nest
- Exhibition space



Lesson structure

1. Preparation

- Make papier-mâché glue: DIY zelf papier mache lijm maken - paper mache paste
- Lay out all the materials on tables for each group.
- Briefly discuss the differences between primary and secondary nests: size, location, shape and entrance.

2. Make the basis

- Inflate a balloon to form the base of the nest (small for the primary nest, large for the secondary nest).
- Tie the end securely.

3. Applying papier-mâché: Papier-mâché balloon

- Dip the strips of newspaper into the papier-mâché paste.
- Cover the balloon completely with a first layer.
- Leave the layer to dry for a few minutes.
- Apply 2–3 extra layers for strength.

4. Creating the entrance

- Make an opening on the side of the nest (typical for the Asian hornet).
- If necessary, use a small roll of paper or cardboard as a template for the entrance.

5. Finishing and colour

- Let the nest dry completely (bij voorkeur a whole day).
- Paint the nest in natural colors: grey, brown or beige.
- If desired, details can be added, such as revealing the wood fibre texture or paper layers.

6. Display or hanging

- Discuss with pupils where and how the nest can be displayed.
- If necessary, hang the nest using string or wire, or place it in a safe spot in the classroom.
- Discuss with pupils where and how the nest can be displayed.
- Discuss once again the differences between wasp nests and bee nests.

Activity 4 - How does the Asian hornet spread?



40-50 MIN

In short

Pupils explore the spread of the Asian hornet from Asia to Europe. They mark the route on a world map and analyse real-world observation data from Vespa-Watch. A class discussion examines the factors behind the rapid spread and the importance of monitoring.

Supplies

- Worksheet 3B
- Worldmap or atlas
- Computer/Tablet for Vespa-Watch
- Writing materials

Lesson structure

• Introduction

- Briefly explain that the Asian hornet is native to Asia and was brought to Europe via transport (such as ships).
- Explain that the first infestations began in France and gradually spread to our region.

• Worksheet 3B

- Ask the pupils to indicate on the world map where the Asian hornet came from in Europe.
- Pupils interpret the actual sighting data from Vespa-Watch.

• Collective reflection

- Why have the numbers risen so quickly?
- What factors have contributed to the rapid spread?
- How can monitoring help with control or early warning?



Worksheet 3A – Build your own Asian hornet nest



Did you know that asian hornets turn wood into paper?

The queen scrapes bits of wood from fences, trees or cardboard, mixes them with saliva and turns them into a kind of paper-like building pulp. This is how she builds a nest with thousands of hexagonal chambers, in which her larvae grow up.

Did you know that an asian hornet queen builds two nests a year?

In spring, she starts with a primary nest: a small, spherical nest in a sheltered spot, such as a garden shed, eaves or a nesting box. This is where the first workers grow up. Once there are enough helpers, the colony moves to a secondary nest: a much larger nest, usually high up in a tree. This can grow into a nest as big as a football, containing thousands of hornets! Old nests are never reused. Every spring, the story begins anew...

TASK

Today, as a budding biologist and artist, you will recreate the nest of an Asian hornet. You will learn how this invasive wasp builds its nest, where it does so, and why it is so important to spot these nests in good time.

SUPPLIES

- Worksheet 3A
- Ballon
- Papler-mâché
- (News)paper
- Scissors
- Glue
- Paint(grey, brown, beige)
- Brushes
- Rope to hang the nest
- Exhibition space



STEP-BY-STEP INSTRUCTIONS

- 1. Make the basic shape:** Inflate a balloon or use a ball as a template → this will form the shape of the nest. You can make a primary nest (a rounder shape, about 15 to 20 cm in diameter) or a secondary nest (pear-shaped and easily larger than 30 cm up to 1 metre)
- 2. Covering:** Cover the balloon with strips of grey paper or newspaper (using glue or papier-mâché).
Tip: Use different shades of grey to mimic the 'layers' and create wavy patterns.
- 3. Making the entrance:** Leave a round opening: this is the nest entrance for the hornets.
- 4. Decorating:** Use a pencil or felt-tip pen to emphasise the typical wavy patterns. You can also draw or make a few 'hornets' and hang them in the nest.
- 5. Leave the nest to dry.**
- 6. Done?** Show your nest to the school and explain what you've made.
Tip: Hang the nests in your school's corridor. Make little information signs to go with them, just like in a museum!

CHECKLIST (COMPLETE AFTER THE CRAFT ACTIVITY)

- 1. What does an Asian hornet's nest look like?**

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- 2. Where does it usually build its primary nest (spring)?**

☐ In the ground ☐ In a tree ☐ Under an eave

- 3. Where does it usually build its primary nest (summer)?**

☐ In the ground ☐ In a tree ☐ Under an eave

- 4. What makes this hornet's nest so distinctive?**

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- 5. What did you enjoy or find difficult about this craft activity?**

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Worksheet 3B- How does the Asian hornet spread?

NAME:
CLASS:
DATE:

PART 1 : NUMBERS AND CALCULATION

Look at the table below. Answer the questions afterwards.

Year	Antwerp	Limburg	East-Vlaanderen	Flemish-Brabant	West-Flanders	Total
2017	0	0	0	0	3	3
2018	2	2	7	2	28	41
2019	2	0	8	3	19	32
2020	3	7	44	23	43	120
2021	17	5	74	63	83	242
2022	79	27	477	382	428	1393
2023	611	161	2449	1092	1713	6026
2024	1724	494	2484	1306	1672	7680

Last data update: 7 july 2025. Look at the website of VespaWatch for more recent trends ([Trends - Vespa-Watch](#)).

1. In which province were the first nests found?

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2. Which province had the highest number of nests in 2023?

.....

3. In which province did the number of nests increase the most between 2023 and 2024?

.....

4. Why is it important to keep track of this data every year?

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PART 2: MAKE A GRAPH

Draw a line graph showing the total number of nests per year (2017–2024). Use a separate sheet of paper or graph paper.

Don't forget to include a title, the x-axis (years) and the y-axis (number of nests).



PART 3: COLOUR THE BELGIAN PROVINCES

Here is a map of all the Belgian provinces.



Assign a colour to each province for which you have data, based on the number of nests. **Choose data from one of the years 2022, 2023 or 2024.** Make sure you choose a different year from your neighbour.

- < de 500 nests : Green
- 500 – 1000 nests : Orange
- > 1000 nests : Red

Compare the coloured maps from different years with your neighbours'
What do you notice? From which direction did the Asian hornets enter our country?



Did you know that each asian hornet nest can contain thousands of hornets?

A single nest can produce as many as **10,000 insects** in the summer! That's why it's **absolutely vital to report any suspicious nests quickly**, so they can be safely removed. In this way, you can help out as a **true citizen scientist** and protect our bees and biodiversity!