Asian hornets and other Hymenoptera: poisonings that need close monitoring

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First detected in mainland France in 2004, the Asian hornet is now found throughout the country. A recent law aims to stem the spread of this predator of honeybees, in order to protect the beekeeping sector. As with wasps, bees and other hornets, poisoning can be serious in the event of multiple stings, stings to the mucous membrane (mouth), or allergy to the venom. For all hornets, data on cases in which medical treatment was sought show a higher proportion of serious or even lethal poisonings than for wasps and bees. The professional removal of hornet nests close to homes helps protect the public.

THE ASIAN HORNET, NOW WIDELY ESTABLISHED IN MAINLAND FRANCE

The Asian or yellow-legged hornet, *Vespa velutina nigrithorax*, is an invasive species of Asian origin whose presence in France was first reported in Lot-et-Garonne in 2004. It was thought to have been imported by a horticulturist in a shipment of pottery from China. It readily adapted to its environment and, in the space of 20 years, has colonised virtually all of metropolitan France's *départements*, with the exception of Corsica[1], as well as neighbouring European countries: Spain, Portugal, Belgium, Italy and Germany.

An insect of the Hymenoptera order[2], like the European hornet, the common wasp, the honeybee and the bumblebee, it can be recognised by its brown abdomen bordered by a yellow band, and the yellow tips of its legs.

With no predators, the Asian hornet has thrived by feeding on other insects, particularly honeybees. On 15 March 2025[3], a law came into force to stem its spread and protect the beekeeping sector.

WHAT SHOULD YOU DO IF YOU DISCOVER A HORNET'S NEST?

- Before starting any work in your garden, check that there are no nests in the bushes or hedge.
- If you find a nest, keep a safe distance of 5 metres away and do not attempt to destroy it yourself.
- Do not use traps (plastic bottles with syrup, etc.), as they kill other insects that are vital to biodiversity, while having virtually no impact on the targeted nest.
- If it is an Asian hornet nest, report it to the local authorities or directly to the organisation responsible for combating this species in your *département*.

[1] https://frelonasiatique.mnhn.fr/biologie/#CarteProgression. The Asian hornet was first detected in Corsica in August 2024. The nest was destroyed and increased vigilance has been introduced.
[2] Hymenoptera are characterised by two pairs of membranous wings that are coupled in flight and licking-chewing mouthparts.
[3] https://www.legifrance.gouv.fr/loda/id/JORFTEXT000051329052/

It provides for the creation of a national control plan, the regulation of hornet trapping and compensation for beekeepers.

From February to June, the Asian hornet builds an initial nest that is small and hard to detect, under gutters, inside garden sheds or hollow trees, etc. During the summer, the colony that emerges from this first nest builds a second, larger nest in the open, generally in a tree more than ten metres up and hidden by leaves, with an opening on the side. The colony grows to hold as many as several thousand hornets by early autumn, then dies in winter.

Unlike bees, but like wasps, the Asian hornet does not lose its stinger when it stings. It can therefore sting again, injecting venom each time. Its stinger, which can penetrate thick materials such as rubber boots or leather gloves, is longer than that of wasps and therefore causes a deeper sting.

In humans, the Asian hornet's venom triggers a toxic reaction characterised by pain, redness, local swelling and general signs (vomiting, diarrhoea, headaches, drop in blood pressure, etc.), whose intensity increases in line with the number of stings. The venom can also cause an allergic reaction. This is unrelated to the dose injected and can be triggered by a single sting. Dermal (urticaria), oropharyngeal (throat oedema) and cardiovascular (sudden drop in blood pressure) symptoms can be fatal without immediate medical attention. Potentially serious eye damage has also been reported among fire-fighters and professionals destroying nests, following direct contact with a fluid other than venom, secreted by the hornet.

As with other Hymenoptera that sting humans, the main risks posed by the Asian hornet are multiple stings, stings to the mucous membranes (mouth) and allergy to the venom. Because of cross-allergies between the different Hymenoptera venoms, patients most often become allergic to hornet venom following a wasp sting.

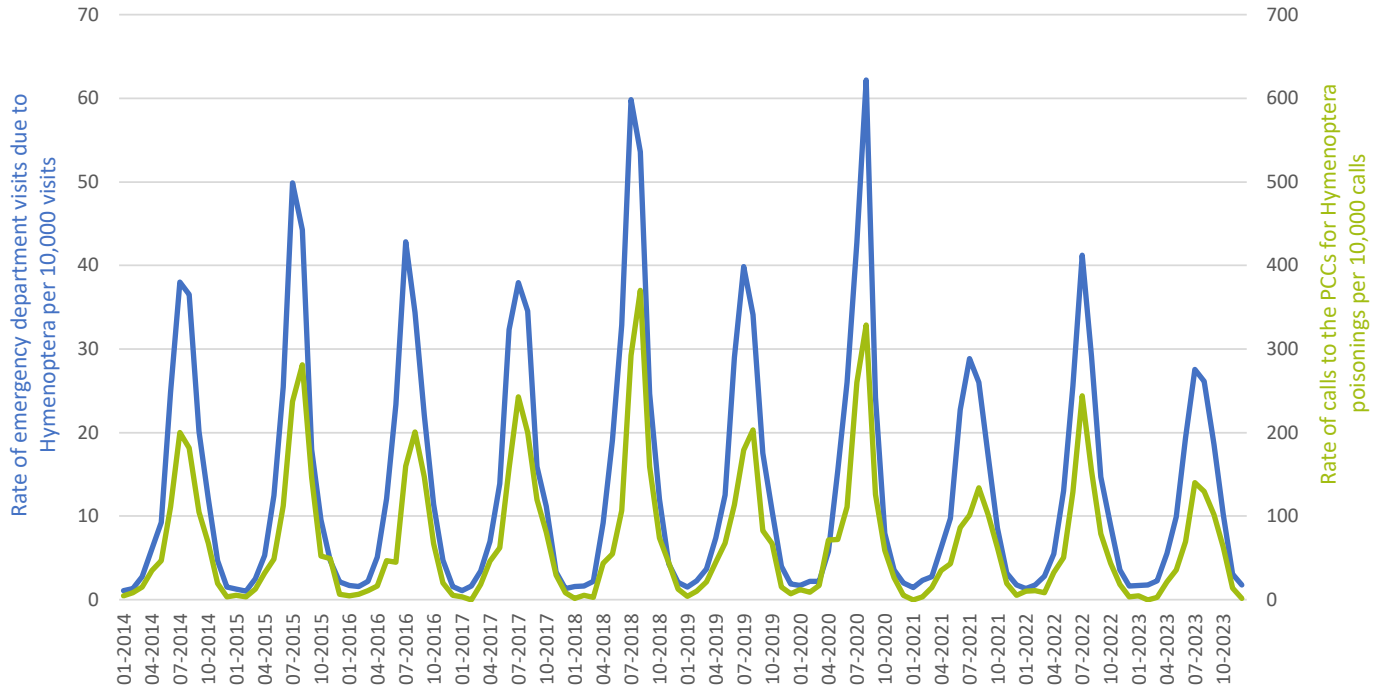

Figure 1 - Rate of Hymenoptera poisonings per 10,000 calls to the PCCs, and rate of emergency department (OSCOUR® network) visits for Hymenoptera stings per 10,000 all-cause visits per month. Mainland France. 2014-2023.

Sources: SICAP information system and OSCOUR® network.

WHAT SHOULD YOU DO IF YOU ARE STUNG BY A HORNET, WASP OR BEE?

- In the event of a reaction such as urticaria (hives), swelling of the tongue, difficulty breathing, discomfort or chest pain, call the emergency services on 15 or 112 (or 114 for the hearing impaired). The same applies with stings in the mouth or throat, multiple stings, or if local symptoms worsen.
- In the event of a known allergy to Hymenoptera venom and signs of severe allergy (anaphylactic shock), use an adrenaline (epinephrine) autoinjector, if available, and dial 15 or 112 (or 114).
- For any other signs of poisoning, call a poison control centre (24/7 emergency number: +33 (0)1 45 42 59 59) or consult a doctor.

A STRONG SEASONAL PATTERN IN POISONINGS

At the request of the French Directorate General for Health, ANSES and the French poison control centres (PCCs) analysed the trend in stings by Asian hornets and other Hymenoptera recorded by the PCCs between 2014 and 2023 inclusive. At the same time, *Santé publique France* analysed emergency department visits[4], hospital admissions[5] and mortality[6] due to Hymenoptera stings over the same period, to draw up a full quantitative review of cases in which medical treatment was sought for this problem.

A total of 6022 calls to PCCs and 179,141 emergency department visits for Hymenoptera stings, 2% of which were followed by hospital admission, were recorded between 2014 and 2023 inclusive. Although they are of different orders of magnitude, the data from the two sources show the same trend over time (Figure 1).

For these two sources, the years 2018 and 2020 were marked by a higher number of consultations for Hymenoptera stings, while 2021 and 2023 saw a lower number. With both data sources, seasonal peaks were observed each year in either July or August.

The species of Hymenoptera involved in the poisoning was stated in a large proportion of the calls to the PCCs. They were mainly wasps (37%), followed by hornets of all species (25%) and bees (19%).

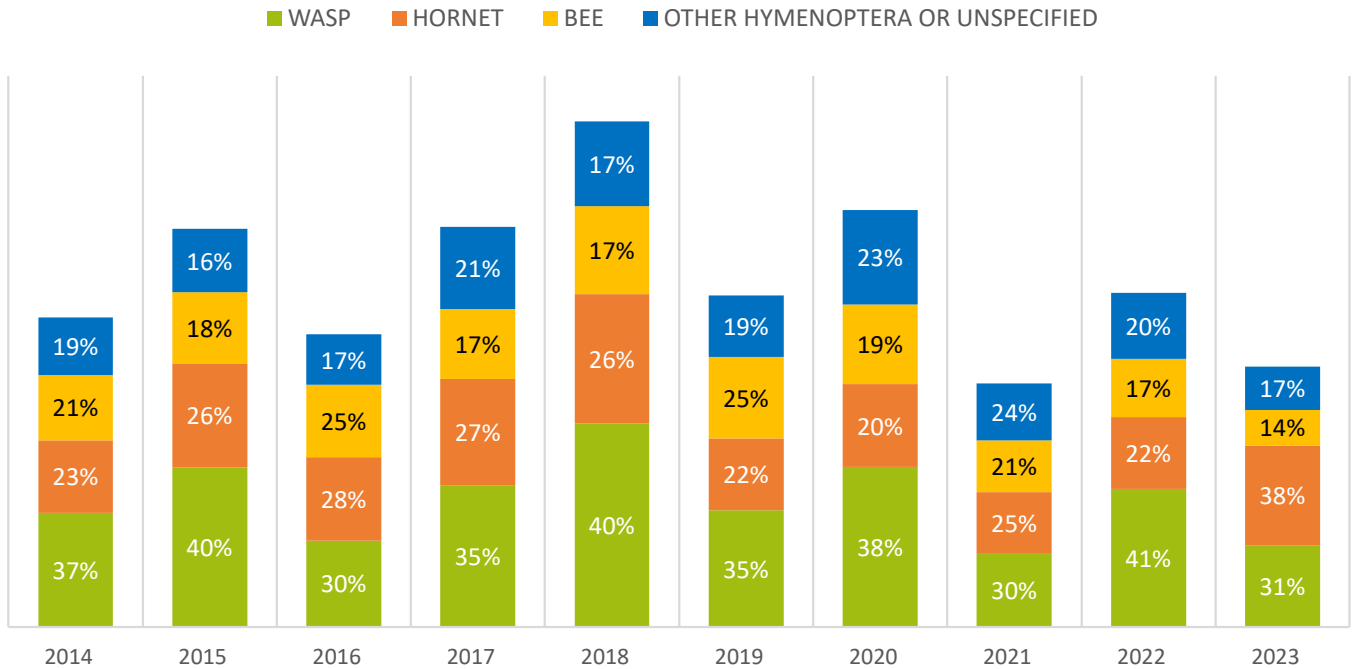

Figure 2 - Number of poisonings by type of Hymenoptera recorded by poison control centres per year. Mainland France. 2014-2023. Source: SICAP.

[4] Organisation of coordinated emergency surveillance (OSCOUR® network), led by *Santé publique France*.
[5] French Programme for the Medicalisation of Information Systems (PMSI).
[6] Epidemiology Centre on Medical Causes of Death (CépiDc).

For the remaining 19%, the species was not identified or corresponded to another Hymenoptera (e.g. bumblebee).

Among all Hymenoptera stings, the percentage attributed to hornets was stable each year (between 20% and 30%), with a slight increase in 2023 (nearly 40%) (Figure 2). In almost half of the hornet stings (48%), the species was not identified, then Asian hornets accounted for just over a quarter (28%) and the remaining quarter (24%) was due to European hornets.

The proportion of poisonings due to Asian hornets remained stable over time.

The seasonal nature of poisonings by Hymenoptera observed in the PCC data is consistent with the life cycle of these insects: stings by bees were observed from April to August, those by wasps from June to September, and those by hornets (all species) from July to October, since hornets are present later than other Hymenoptera, from summer to late autumn.

The geographical data showed that Hymenoptera stings were evenly distributed across mainland France, in terms of both calls to the PCCs and emergency department visits. Hornet stings were more frequent in the west, south-west and south-east of France.

Lastly, people aged between 20 and 39 years were the main victims of Hymenoptera poisonings, both in terms of calls to the PCCs (28%) and emergency department visits (25%).

SERIOUS POISONING OFTEN CAUSED BY HORNETS

Of the 6022 Hymenoptera poisonings recorded by PCCs between 2014 and 2023, only 1.5% were serious (N = 91), i.e. potentially life-threatening or leading to death. Hornets were responsible for 38% of severe forms, despite only accounting for 25% of stings.

A total of 18,213 hospital admissions for Hymenoptera stings were recorded between 2014 and 2023, 13% (2354) of which were in intensive care. This intensive care percentage was highest in 2023 (17%) (Figure 3). It was lower in 2020 (11%), despite this being the year with the most hospital admissions for Hymenoptera stings.

People over the age of 60 were the main victims of serious Hymenoptera stings (PCC data, hospital admissions and intensive care admissions). Men were also more likely to be affected.

According to the death certificates, 256 people died in connection with a Hymenoptera sting between 2014 and 2023 (provisional data for 2023). This number varied from 12 to 47 per year, with three years being particularly notable: 2018, 2022 and 2023. Hornet stings (all species) were mentioned in 27% of these death certificates, with this figure reaching 43% in 2023.

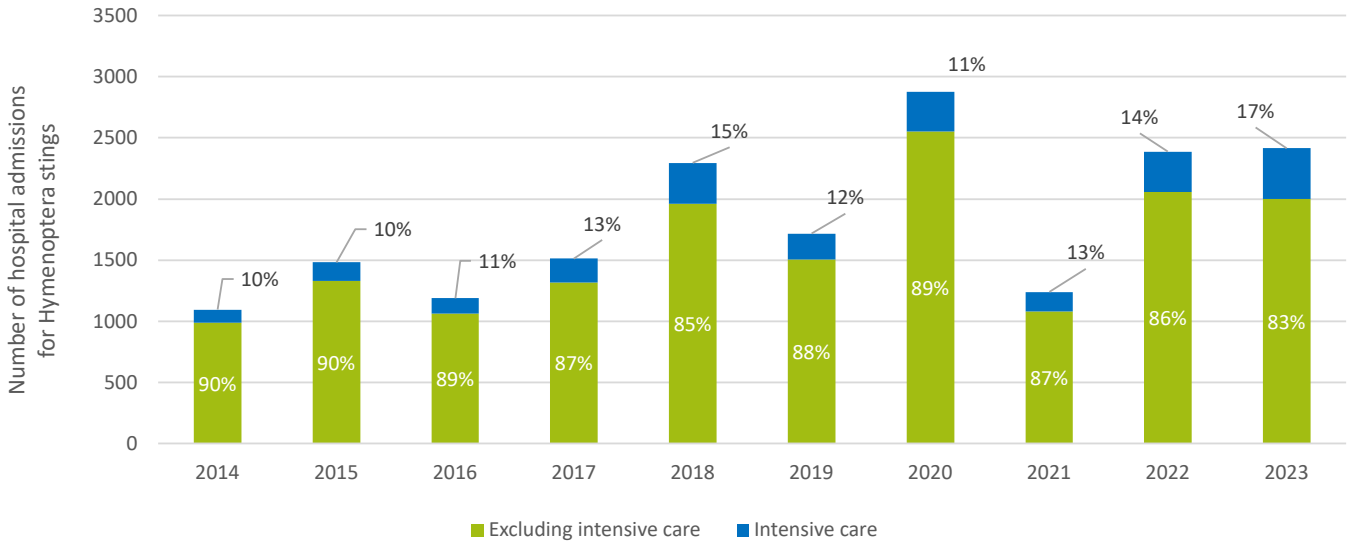

Figure 3 - Annual numbers and percentages of hospital admissions for Hymenoptera stings (intensive care or excluding intensive care). Mainland France. 2014-2023. Source: PMSI.

SERIOUS POISONING MAINLY DUE TO ALLERGIC REACTIONS

An allergic reaction, alone or associated with signs of toxicity, was described in 89% of the serious poisonings due to Hymenoptera recorded by the PCCs. A single sting was enough to cause serious poisoning in almost half of the cases (48%); slightly more in the case of hornets (53% of single stings).

With the Asian hornet predicted to spread throughout Europe by 2100 due to favourable climate conditions, it is essential to adapt to living alongside this species. Protecting the population, particularly when nests are nearby, remains essential to avoid poisoning (see box).

In order to follow the trend in poisonings, ANSES recommends monitoring data on emergency department visits and their correlation with PCC data.

Vigilance is also needed to detect the arrival of new species of invasive hornets, such as the southern giant hornet (Vespa soror), which was recently observed in Spain.

Sandra Sinno-Tellier (ANSES), Jérémy Hamon (ANSES), Magali Labadie (Bordeaux PCC) and Anne Fouillet (Santé publique France)

FIND OUT MORE

Anses. (2025). Poisonings by Asian hornets and other Hymenoptera in mainland France. Study of several sources of health data from 2014 to 2023. Toxicovigilance study report. Request No 2024-AST-0153. ANSES. Maisons-Alfort. 88 p. https://www.anses.fr/sites/default/files/TOXICOVIGILANCE2024-AST-0153.pdf