KENTUCKY STATE UNIVERSITY
COOPERATIVE EXTENSION
KSU EXTENSION CONNECTIONS
FACT SHEET
Information about the Kentucky State University Cooperative Extension Program 2021

Asian Giant Hornet, *Vespa mandarinia* Smith

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Overview:

The Asian giant hornet (AGH), *Vespa mandarinia* Smith, is the world's largest hornet (Gill and Lucky 2020). It was introduced into Washington State and Canada from Asia in 2019. It has been labeled by the media as the "murder hornet" because a single hornet can kill dozens of honey bees a minute (McGann 2019, Tripodi and Hardin 2020).

Fig. 1. Asian Giant Hornet. Washington State Department of Agriculture, Washington State Department of Agriculture, Bugwood.org

Fig. 2. Asian Giant Hornet. Each line is a millimeter. Allan Smith-Pardo, Invasive Hornets, USDA APHIS PPQ, Bugwood.org

Media and Human Health:

Although there was a media frenzy around the introduction of the AGH to the United States, human death by stings is very rare. Hornets do not attack people unless threatened, and death usually occurs from an allergic reaction. Only about 50 people a year are thought to die from AGH stings (Yanagawa et al. 2007).

Lifecycle:

The Asian giant hornet has an annual lifecycle. In the spring, a fertilized queen emerges from overwintering. She searches for an appropriate nesting site in underground cavities or decaying trees. The queen will start a new colony and rear workers until there are enough to take over the duties of the colony. Once enough workers are present (about 40), the queen no longer helps with the colony's duties and only lays eggs. During the fall, the colony begins producing next year's queens. The males develop and wait outside the nest to mate with new queens once they emerge. The new queens must mate before overwintering. During the winter, the queens shelter in a covered area. They will emerge in the spring and begin new colonies (Tripodi and Hardin 2020).

Feeding Strategies:

Hornets are predators and will hunt other arthropods like spiders and insects. Hornets are usually solitary hunters, but the AGH is unique in that it can organize an attack against other hymenopteran nests. The AGH enters a slaughter phase during the fall, during which they attack other colonies of hymenoptera. During this phase, only a few hornets can decimate an entire honey bee colony. These hornets will attack and decapitate most of the adult bees in the colony. The hornets then rob the colony by removing the larva and pupa and flying them to their colony as food for their larva (Tripodi and Hardin 2020).

Characteristics:

Length: 1.5 to 2 inches long. Queens are usually the largest in the colony.

Head: Large and yellowish orange with big dark brown eyes. The mandibles are dark with a black tooth (Fig. 1).

Body: Thorax is dark brown to black. Abdomen has alternating stripes of dark brown and yellowish stripes (Fig. 2).

Distribution:

This hornet is native to Japan, but it is also established in many other parts of Asia. In 2019, it was introduced into the northwestern U.S. by unknown origins. Specimens were first discovered in British Columbia, Canada, in the late summer of 2019 (Tripodi and Hardin 2020). Later that year, a few hornets were also documented in Blaine, Washington. The state set up traps to capture the invasive hornet, and in 2020 several hornets were sighted and trapped near Blaine. In October 2020, a radio transmitter was attached to a hornet that was released and tracked to its nest (Schlosser 2020). Another nest was detected in August 2021 by similar means. Both nests were subsequently destroyed. Entomologists believe that other nests are located near the area of hornet sightings. Authorities are hopeful that eradication efforts will be successful in the future.

Look-alikes:

The Asian giant hornet is not yet present in the U.S. outside of Washington State. However, the U.S., including Kentucky, has a few species of wasps that may be confused with the invasive hornet.

1. The European hornet, *Vespa crabro* (L.), is also invasive and is found throughout the U.S. It is smaller than the Asian giant hornet (about 1.5 inches). The European hornet has a smaller head and fewer bands on the abdomen. The European hornet does not prey on honey bees; it is a generalist predator (Fig. 3).

2. The cicada killer, *Sphecius speciosus* (Drury), is as large as the Asian giant hornet. It hunts cicadas and returns to the burrow to feed them to its larvae. Only the females have a stinger, and it rarely bothers humans. It is common throughout the U.S. and is most active in late summer. The head of the cicada killer is similar in color to its thorax. The bands on the abdomen have peaks and are not straight bands like the Asian giant hornet (USDA 2020) (Fig. 4).

Fig. 3. European Hornet. Hanna Royals, Museum Collections: Hymenoptera, USDA APHIS PPQ, Bugwood.org

Fig. 4. Cicada killer. Hanna Royals, Museum Collections: Hymenoptera, USDA APHIS PPQ, Bugwood.org

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