



# Pest e-alerts



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## Eye on Invasive Species: Asian Giant Hornet

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County offices are likely to be swarmed by the general public with questions about a newly discovered exotic insect, the Asian giant hornet, *Vespa mandarinia* Smith. These so-called “murder hornets” are very large wasps, and they are known to inflict an excruciatingly painful sting. While they can pose a serious threat to humans, especially when attacking in large numbers, they are most harmful to honey bees. These foreign invaders arrived in Washington State without much fanfare last year, but recent press coverage has put these wasps on everyone’s radar. However, only a handful of these hornets have been observed in the northwest corner of Washington and nearby Vancouver Island, Canada, so Oklahoma beekeepers and other Okies have nothing to fear right now. The focus of this alert is how to differentiate Asian giant hornets from other wasps that are much more likely to be encountered in Oklahoma this summer.



Figure 1. Asian giant hornet, *Vespa mandarinia*, measures nearly 2 inches long with a wingspan of 3 inches. Photo credit: Washington State Department of Agriculture.

### Description

Asian giant hornets are purportedly the largest species of wasp worldwide. Adult workers are all female and measure nearly 2 inches long with an incredible 3-inch wingspan. They have a typical wasp-like appearance with warning coloration and a distinctive yellow-orange head, but they are more heavily bodied than our native wasps. These hornets have large, toothed mandibles that they use to decapitate their prey, and they have an exceptionally long stinger that can even penetrate beekeepers’ protective suits (Figs. 1 and 2).



Figure 2. Asian giant hornets have large, toothed mandibles and a distinctive yellow-orange head. Photo credit: Washington State Department of Agriculture.

### Lookalikes

There are any number of North American wasps, bees, and wasp-like insects that may be confused with Asian giant hornets. The most common and obvious lookalike species is the eastern cicada killer, *Sphecius speciosus* Dahlbarn (Fig. 3). Females measure up to 1.6 inches and specialize on cicadas, which they feed to their young. These stout wasps are a fixture in Oklahoma landscapes during the heat of the summer, and females are often seen dragging cicadas along the ground to their nest entrances. Females can sting, but they are non-aggressive. You are more likely to have a close encounter with the highly territorial males, who can't sting but like to dive bomb passersby that stumble through their well-defended area.



Figure 3. Eastern cicada killer, *Sphecius speciosus*. Photo credit: Nancy Hinkle, University of Georgia, Bugwood.org.



Figure 4. Pigeon tremex, *Tremex columba*. Photo credit: Erich G. Vallery, USDA Forest Service, Bugwood.org.

Another large wasp that occurs most commonly in forested habitat is the pigeon tremex, *Tremex columba* L., a species of horntail (Fig. 4). Horntails are long, non-stinging wasps whose larvae feed as woodborers within dead and decaying limbs and branches of many hardwood trees. The pigeon tremex is a slender wasp with brown and yellow coloration. Females are larger than males, measuring up to 1.5 inches long, and possess a long ovipositor, which they use to insert eggs under bark.

A natural enemy of the pigeon tremex is the giant ichneumon wasp, *Megarhyssa* spp. (Fig. 5). These parasitic wasps are generally brown, black, and yellow, very slender, and females have long “tails,” which are the ovipositor and two supporting filaments that sheathe the ovipositor. The body and ovipositor of these insects may extend more than 5 inches, making these wasps appear rather formidable and dangerous. However, these wasps are harmless to humans as they cannot sting. Like the pigeon tremex and other horntails, giant ichneumons are most likely to be found in forested areas.



Figure 5. A species of giant ichneumon wasp, *Megarhyssa nortoni* (Cresson). Photo credit: Vicky Klasmer, Instituto Nacional de Tecnologia Agropecuaria, Bugwood.org.

Other insects that could be potentially misidentified as Asian giant hornets include paper wasps, yellowjackets, bald faced hornets, and even elm sawflies (Figs. 6, 7, 8, and 9).



Figure 6. A paper wasp. Photo credit: Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org.



Figure 7. Western yellowjacket, *Vespula pensylvanica* (Saussure). Photo credit: Whitney Cranshaw, Colorado State University, Bugwood.org.



Figure 8. Baldfaced hornet, *Dolichovespula maculata* (L.). Photo credit: Maryland Biodiversity Project.



Figure 9. Elm sawfly, *Cimbex americana* Leach. Photo credit: Herbert A. 'Joe' Pase III, Texas A&M Forest Service, Bugwood.org.

These insects are not overly large, but their warning coloration may trigger panic. Note that elm sawflies are primitive, broad-waisted, non-stinging wasps that mimic stinging wasps by adopting warning coloration for their own protection from would-be predators.

These are just a few of the many fascinating insects that could be readily misidentified as Asian giant hornet. Keep in mind that unlike some other exotic species, Asian giant hornets are not likely to arrive in Oklahoma for a very long time, if ever. Accidental transport of a worker wasp from the Pacific Northwest would not result in establishment of a new colony because workers are not fertile. Only mated queens can start new colonies. While an overwintering queen could be moved accidentally in soil, say from a potted plant (the leading hypothesis on how it arrived in North America from Asia), we in Oklahoma will not have to manage this pernicious insect anytime soon.

If anyone believes they have an image or actual specimen of Asian giant hornet, please notify me at [eric.rebek@okstate.edu](mailto:eric.rebek@okstate.edu) or Mr. Charlie Konemann in the Plant Disease and Insect Diagnostic Lab (PDIDL) at [gotbugs@okstate.edu](mailto:gotbugs@okstate.edu). A word of caution – never approach a hornet's nest, especially if you know you are allergic to wasp or bee venom.

## References

Cranshaw, W. 2013. Pigeon Tremex Horntail and the Giant Ichneumon Wasp. Fact Sheet No. 5.604, Colorado State University Extension. Available at: <https://extension.colostate.edu/topic-areas/insects/pigeon-tremex-horntail-and-the-giant-ichneumon-wasp-5-604/>.

Merchant, M. 2020. Giant Hornets Genuinely Frightening. *Insects in the City*, blog post dated May 5, 2020. Available at: <https://citybugs.tamu.edu/2020/05/05/giant-hornets/>.

Mertz, L. 2020. Big, Beautiful, and Confusing: Deciphering the True Hornets. *Entomology Today*, blog post dated May 11, 2020. Available at: <https://entomologytoday.org/2020/05/11/big-beautiful-confusing-deciphering-true-hornets-vespa/>.

Washington State Department of Agriculture. 2019. Asian Giant Hornet Frequently Asked Questions. Available at: <https://agr.wa.gov/departments/insects-pests-and-weeds/insects/hornets/faq>.

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#### **Plant Disease and Insect Diagnostic Lab, Oklahoma Cooperative Extension Service**

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