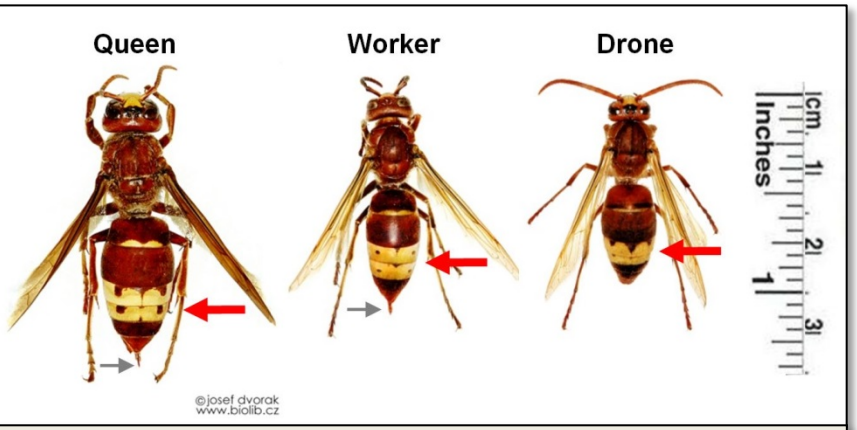
Oriental Hornets

FACT SHEET 18-074-0616

What are Oriental hornets?

The Oriental hornet (*Vespa orientalis* Linnaeus) belongs to the family Vespidae (Wasps, Hornets, Yellowjackets), genus *Vespa* (true hornets). Oriental hornets can be a public health concern, since these large, aggressive insects are capable of inflicting multiple, painful bites and stings. Their home range includes portions of southern Europe, southwestern Asia, northeastern Africa and Madagascar. These insects will establish colonies and forage for food and water in areas frequented by humans. Within their home range, Oriental hornets are considered agricultural pests. The adults will feed on orchard and vine crops, strip vegetation from ornamental shrubs and trees to construct nests, and attack honey bee colonies. There are concerns that Oriental hornets will be accidentally transported into the United States and become established. The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) Program characterizes Oriental hornets as a quarantine pest, not known to occur in the United States. Due to concerns that Oriental hornets could pose a risk to public health and agricultural crops if inadvertently introduced and established in the United States, retrograde shipments of military equipment, vehicles, and aircraft should be monitored and inspected for the presence of this pest.

Range of Oriental hornets (red shading) includes southern Europe, southwestern Asia, northeastern Africa and the island of Madagascar. Map Image: APHC



Oriental hornets have yellow bands on the abdomen (red arrows) that do not extend all the way to the tip. There are differences in color, size, and structure according to sex and caste (function) in the colony. The reproductive queen (left) is larger than female workers (center) and male drones (right). Only females have "stingers" (grey arrows), and workers use these to defend themselves and the colony. Photos: Courtesy of Joseph Dvorak, www.biolib.cz.

How can I identify Oriental hornets?

Adults have two pairs of wings and a body length of 0.9 to 1.4 inches (25 to 35 mm). They are reddish brown in color with distinctive yellow bands on the abdomen (rear body segments) that do not extend all the way to the tip. The queen, workers and drones all have powerful, sharp mandibles (jaws) and will bite if provoked. Only queens and workers have an ovipositor (modified egg laying tube) extending from the tip of the abdomen which acts as a stinger. In addition, drones can be distinguished from workers by counting the number of segments on the antenna: drones have 13 segments while workers only have 12. Workers and drones are smaller than the queen. Workers make up the majority of the colony. They are very active during periods of intense sunlight, and are agile flyers, foraging for food and water at greater distances from the nest compared to yellowjackets.

What do I need to know about Oriental hornet behavior and biology?

Oriental hornets are social insects. They build a paper nest which serves as a "home base" for the colony. A caste system, consisting of egg-laying females (queens) and workers, and male drones cooperate to provide shelter, defense, food and care for the colony's brood (offspring). All Oriental hornet colonies are begun by a single queen that mated during the previous fall season and overwintered (hibernated). Nests are typically established underground. Nests are also found in protected areas such as hollow trees, as well as voids in structures, shipping containers, and parked vehicles and aircraft. The colony's population and activity will peak during the late summer/early fall with around 3-6 combs containing 600-900 cells. Oriental hornet workers are predacious on other insects, capturing large species such as grasshoppers, flies, honey bees, and yellowjackets, which they use to feed the colony's brood. The workers will also girdle twigs and branches of trees and shrubs in order to collect fiber used to construct the paper nest. During the fall months, the founding queen will switch to laying eggs which will give rise to new queens and drones. The new queens and drones will hatch, mate and then the drones will die. Fertilized queens searching for protective areas to overwinter pose the greatest risk for accidental transport.

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Why should I be concerned about Oriental hornets?

The significance of the Oriental hornet as a pest and potentially invasive species warrant considerable efforts and awareness to prevent inadvertent transport. The Oriental hornet is listed as a reportable/actionable pest in the USDA-APHIS National Identification Service Pest Interception Database (Pest ID). This means that cargo inspected and found infested with Oriental hornets will be held at the export location. This quarantine procedure can ultimately prevent critical equipment needed for military operations from being delivered.

Lt. j. g. Noel Cote, an entomologist with the USMC, seals an entrance to an underground nest of Oriental hornets in Afghanistan to prevent re-infestation. Note: be sure to treat hornet nests with an approved insecticide before using exclusion techniques. Photo: Public Domain.

What measures do I need to take to protect against Oriental hornets from infesting cargo awaiting redeployment?

Conduct routine inspections of equipment and aircraft to identify and eliminate hornet presence. If possible, ensure that openings in stored equipment and aircraft are covered to prevent entry. Ensure retrograde cargo and customs and border inspections are conducted appropriately. Avoid prolonged periods of storage between inspection and transport. Utilize baited traps at the perimeter of storage/staging areas to monitor for Oriental hornets. Cone traps, sticky boards, and bottle traps baited with molasses, honey, yeast or meat can be utilized. If commercial traps are used, ensure that the entrance openings are large enough to accept Oriental hornets.

Oriental Hornet ***(Vespa orientalis)*** | **European Hornet** ***(Vespa crabro)*** | **Asian Giant Hornet** ***(Vespa mandarinia)***

Oriental hornet lookalikes: the European hornet (center) is another invasive species that has become established in the eastern half of the United States. The European hornet is similar in size and color to the Oriental hornet (left) but the yellow bands extend all the way to the tip of the abdomen (red arrow). The Asian Giant Hornet (right) is commonly found in temperate and tropical eastern Asia and has a yellow-orange head, dark brown thorax and a yellow and brown striped abdomen. Photos: Courtesy of Joseph Dvorak, www.biolib.cz, APHC and Public Domain.

Which insecticides should I use if I need to control Oriental hornets on a DOD installation?

Insecticides, effective against hornets, for use by DOD certified applicators, available through the military supply system include:

Ready-to-use Aerosols:

-PT® Wasp-Freeze® II Wasp & Hornet Insecticide (NSN 6840-00-459-2443), with the active ingredient prallethrin, will provide quick knockdown of Oriental hornets.

-Zoecon® Wasp-X® Wasp & Hornet Spray (NSN 6840-01-619-6467), with the active ingredients etofenprox, tetramethrin and piperonyl butoxide can be used around structures as well as indoors in locations such as attics and sheds.

Concentrates:

-Talstar® P Professional Insecticide (NSN 6840-01-525-6888)
-Tempo® SC Ultra (NSN 6840-01-313-7359)
-Demon® WP (NSN 6840-01-390-4822)

NOTE: Always follow the pesticide product label directions, wear the recommended personal protective equipment (PPE), and ensure that medical support is readily available in case someone is bitten or stung.

Who should I contact if I need help with Oriental hornet management or identification?

It is important to contact local preventive medicine personnel for help with Oriental hornet management and identification. The ability to recognize Oriental hornet adults and to locate their nesting sites will greatly reduce the potential for this insect to return with cargo redeploying to the United States. Contact the DoD Pesticide Hotline for additional guidance or assistance concerning Oriental hornets at: (410) 436-3773 or by email at: usarmy.apg.medcom-phc.mbx.pesticide-hotline@mail.mil.

References:

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