



# BUG BIZ

Pest Management and Insect Identification Series



## *Dolichovespula maculata*, Bald-faced hornet (Hymenoptera: Vespidae)

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### Description

The bald-faced hornet, *Dolichovespula maculata*, is a social paper wasp within the family Vespidae. Despite its common name, the bald-faced hornet is not a hornet at all but belongs to the same group as yellowjacket wasps. Adult bald-faced hornets are distinctly patterned, with black bodies and white faces, as well as white legs and white markings on the tips of the abdomens. Workers may reach up to three-quarters of an inch (19 mm) in length, while the queen is typically larger. Larvae are white, soft, legless grubs restricted to the hexagonal cells of the paper nest. Pupae, also restricted to these cells, are white in color initially, then darken as they approach maturity.

Bald-faced hornets build paper nests in bushes and trees, but may occasionally form nests on artificial structures such as houses and outbuildings. Within these globular nests are multiple tiers of hexagonal paper cells that contain developing eggs, larvae and pupae. Nest “paper” is constructed from the fibers of wood, chewed, mixed with saliva and reconstituted by workers.

The bald-faced hornet occurs throughout the United States and Canada and is common in the southern U.S., including Louisiana. True hornets are restricted to the Old World with the exception of the European hornet (*Vespa crabro*), which was introduced to eastern North America during the 19th century. Unverified reports indicate its presence in Louisiana but establishment is doubtful. It is documented in several nearby states.

### Life Cycle

The bald-faced hornet, like all members of the order Hymenoptera, undergoes complete metamorphosis. This cycle begins during early spring when the overwintered queen constructs a small starter nest with a few hexagonal paper cells. She lays an egg into each cell. Around six days later, a small larva hatches from each egg. The larvae grow and molt (shed their exoskeletons) several times during the next eight days under typical

conditions, then transform into pupae. The pupal stage requires nine to 10 days for development, after which a young adult wasp emerges from the cell and begins her duties in service to the colony.

The life cycle of a bald-faced hornet colony may be divided into three distinct phases. The first phase, called foundation, begins in the spring of the year with a young queen that was mated during the previous autumn. After preparing her starter nest, she rears a few workers without assistance. Once a sufficient number of workers have been reared, the queen becomes solely devoted to egg laying. This marks the beginning of the ergonomic stage of the colony's life. The workers take over all duties formerly performed by the queen, spending their time increasing the size of the nest, raising larvae and foraging for food and fibers. Mature bald-faced hornet colonies contain between 100 and 400 sterile female workers and one to several queens. The wasps feed on other insects as well as fruit, flower nectar and meat. This phase continues until the colony reaches adequate size, usually during



Adult *Dolichovespula maculata* resting on the leaf of a persimmon tree. Johnny N. Dell, Bugwood.org

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autumn, at which point they enter the reproductive stage. During the reproductive stage, the colony utilizes its large workforce to begin the expensive task of rearing reproductive individuals. These males and virgin queens undertake mating flights to mate with individuals from other colonies, after which the males die. The successfully mated queens overwinter alone, while their parent colony, including the queen mother, declines and eventually dies during late autumn or winter. After overwintering, young queens begin the cycle anew the following spring.



Multiple life stages of the bald-faced hornet. Visible here are the grublike larvae, as well as pupae, which are concealed beneath a paper capping. Whitney Cranshaw, Colorado State University, Bugwood.org.



Bald-faced hornet nest attached to the branch of a tree. Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org

## Ecological Significance and Pest Status

As native insect species, bald-faced hornets are typically considered to be beneficial insects that contribute to a healthy ecosystem. They feed mainly on insects and other arthropods, including caterpillars, flies, spiders, and various garden and crop pests. They will also visit picnics and barbecues for sweets, fermented beverages and protein-rich cuisine. Bald-faced hornets fiercely defend their nests, and each wasp is capable of stinging potential invaders multiple times. Hive defense is handled by the exclusively female workforce. The major weapon, the stinger, is a modified egg-laying apparatus (ovipositor), so only females are capable of stinging, as is the case with all stinging Hymenoptera. In addition to stinging directly, bald-faced hornets may also squirt or spray their venom into the eyes of attackers, causing intense irritation and temporary blindness. Eradication of colonies in proximity to human activity is sometimes necessary.

## Control

Many wasp and hornet killers are available for purchase at home improvement stores and supermarkets. When selecting a spray, choose a product that shoots a stream of liquid from a safe distance, allowing the nest (often hanging overhead) to be sprayed without getting stung. Be aware that a single defensive sting will result in the release of alarm pheromones that attract additional defenders, often in large numbers. Spray the nest at sunrise or sunset, as most individuals will be inside the nest, and the wasps are the least active during this time of day. Plan the activity carefully with special attention to an escape route and risks to nearby humans and domestic animals. Remember to follow the label instructions on the product, as these directions carry the force of law. Alternately, a licensed exterminator or pest control professional may be hired to remove the nest.

## References

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## Contact Us

For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage:

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