

*Providing Leadership in Environmental Entomology*

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## YELLOW JACKETS

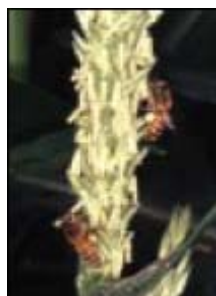
Yellow jackets are beneficial around home gardens and commercially grown fruits and vegetables at certain times because they feed on caterpillars and harmful flies. When the populations peak in late summer and early fall, the yellow jackets' feeding habits become a problem. At this time of year, they have a healthy appetite for many of the same foods and drinks we eat. Yellow jacket stings can result in a life threatening situation if the person is allergic to the venom.

**Identification:** The yellow jacket worker is about ½ inch in length with alternating yellow and black bands on the abdomen. Foraging yellow jackets are often mistaken for honey bees because of their similar color and the fact that they may be attracted to the same food sources. Honey bees are slightly larger than yellow jackets and are covered with hairs or setae that are absent on yellow jackets. Foraging honey bees can be identified by the pollen baskets on the rear legs that are often loaded with a ball of yellow or green pollen. The yellow jacket has a smooth stinger that can be used to sting multiple times. Honey bees have a barbed stinger that can be used to sting only once.



A yellow jacket. Note the lack of pollen baskets.

Photo Credit: C.S. Gorsuch, Clemson Univ.



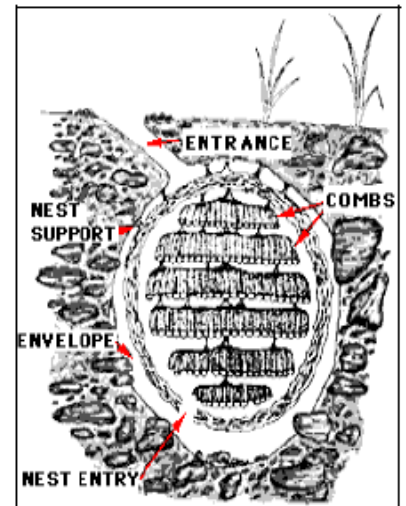
Honey bees with full pollen baskets.

Photo Credit, C.S. Gorsuch, Clemson Univ.

**Life Cycle:** Yellow jackets are social insects that have a division of labor between workers and sexually developed queens (both females) and males. Newly fertilized queens are the only members of the colony that overwinter. In South Carolina, yellow jacket

colonies begin in April or May when the overwintered queen emerges. She locates a suitable nest site, which is normally located in a soil cavity such as an abandoned mouse nest or in a hollow tree. Other possible nest sites are attics, porches, eaves, or sheds. The queen builds a small paper nest and lays several eggs that hatch and mature to adult workers. The workers assume all tasks of nest expansion including foraging for food, defending the colony entrance, and feeding the queen and larvae. The colony rapidly increases in size and may reach several hundred workers by August.

Nests are constructed of layers of comb made of tiny bits of wood fiber chewed into a paper-like pulp. During the peak population period, the colony produces reproductive cells that produce new queens and males. These eventually leave the nest for mating flights. Inseminated queens fall to the ground and seek out a protected



A typical underground yellow jacket nest.

Image Source: Washington State University.

place such as a brush pile, a hollow tree, or a building to spend the winter. Males that have successfully mated quickly die. The parent colony begins to rapidly decline in fall and the original queen and workers die with the onset of cold temperatures. A new colony cycle begins the next spring. During the fall of the year when colonies begin to die, skunks and bears dig into the underground nests and feed on the young yellow jackets. Above ground nests will persist in dry areas, but they are rarely used again the next spring. A huge southern yellow jacket colony was discovered in Charleston County in August, 1991. It contained an estimated 250,000 workers. The nest was thought to have been used for more than one year.

**Food:** Yellow jacket adults feed on foods rich in sugars and carbohydrates such as plant nectar and fruit. They also search for foods high in protein such as insects and fish. These are chewed and conditioned in preparation for larval consumption. The larvae secrete a sugary substance that is eaten by the adults. This exchange of food between the adults and larvae is known as trophallaxis. In late summer and fall, normal food materials are in short supply. The yellow jackets scavenge for alternate food sources, which leads to major conflicts with human activities. They are attracted to carbonated beverages, juices, candy, various meats, cakes, fruit, vegetables, and ice cream. Large numbers of these pesky insects can totally disrupt a picnic and create a nuisance around homes and outside restaurants. Yellow jackets are also a problem around beehives in fall and will enter and rob honey if given the opportunity. They can become a major stress to weak honey bee colonies that cannot protect their food stores.

**Control at Picnics:** Frequent removal of garbage around picnic sites will reduce problems with yellow jackets. All food and beverage containers should be covered until served. Open soda containers should be checked carefully prior to consumption. Live yellow jackets have been swallowed by persons resulting in a life threatening sting in the throat area. Garbage can lids should fit tightly to reduce foraging. Garbage cans and dumpsters can be sprayed with an insecticide labeled for that use.

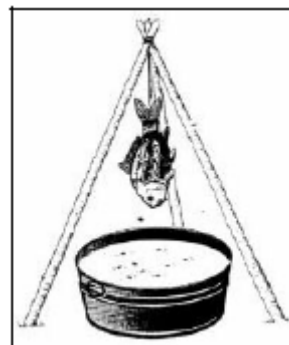
**Control of Underground Nests:** Visit your local hardware store or garden center and purchase a product labelled for yellow jacket control. Follow all label directions. Insecticides should be applied late evening or at night when all foragers are inside the nest. The nest entrance should be identified and marked during daytime. A quick knockdown insecticide is preferred because yellow jackets may fly out to defend the colony when disturbed. Yellow jackets are attracted to light, so do not hold a flashlight while applying an insecticide to a nest. Direct the insecticide dispenser nozzle toward the nest entrance for best control. Check the colony entrance the next day for activity and reapply again if necessary. If daytime control is necessary, the person should wear protective gear including a hat, veil, coveralls, and gloves because returning foragers will likely attempt to defend the colony.

**Control of Above Ground Nests:** Remember, yellow jacket colonies do not normally survive the winter and the first hard freeze will eliminate most colonies. If the colony is located in an out of the way place where human or pet contact is not possible, you may allow cold weather to freeze the colony. If this is not possible, you should visit the local hardware store or garden center and purchase a container of pressurized insecticide labeled for yellow jacket or hornet control. The product should

allow a straight stream of knockdown insecticide to be emitted from a nozzle. If yellow jacket control is necessary during daylight hours, begin spraying the insecticide in a fanning motion as you approach the nest to repel colony defenders and returning foragers. For complete nest elimination, spray the stream of insecticide directly into the nest entrance which will normally be located at the bottom of the nest. Check the nest for activity the next day and reapply if necessary. Protective clothing is highly recommended.

**Control in Buildings:** Elimination of yellow jacket nests in buildings can be difficult. Use an insecticide that is labeled for yellow jacket control in buildings. Since yellow jackets are attracted to light, they may find another exit and may enter the inside of the building, especially if control is done at night. If this happens, you must close off any alternate exits.

**Trapping Yellow Jackets:** There are several inexpensive non-toxic bait traps available for yellow jacket control including the Wasp Trap, the Oak Stump Farm "Yellow Jacket" Wasp Trap and the Yellow Jacket Inn. These are available at garden centers and mail order catalogs. Traps should be placed around the perimeter recreational areas well in advance of outdoor activities. Traps may be placed along side dumpsters or restaurant loading docks. Most trap directions call for a reservoir to be filled with an attractant such as sugar water. Exhausted yellow jackets fall into the liquid and drown. Traps should be serviced daily to remove dead insects because the odor can become very offensive. Wash the trap with soap and water after several days use. Monitor the traps' attractiveness to beneficial insects such as honey bees and alter the bait if necessary. Raw bologna has proven to be a very successful yellow jacket bait and it does not attract beneficial insects.



A homemade trap.

Image Source: Ohio State University Extension Factsheet

**Homemade Trap:** A yellow jacket trap can be made by hanging a raw fish or piece of liver (slightly diced on the exterior) about one to two inches above a container of detergent and water. The detergent acts as a wetting agent and eliminates surface tension causing the yellow jackets to sink. Foraging yellow jackets

are attracted to the raw meat and will often become overloaded with food and fall into the water and drown. This method of yellow jacket control is not as efficient as nest elimination, but it may help reduce the population to acceptable levels.

**“Bee Lining” for Fish Bait.** Bee lining is a person may use to locate a yellow jacket nest by observing workers as they return to their colony with food. A freshly caught small fish should be diced slightly on the exterior with a knife and hung in a tree about 5-6 feet off the ground. Foraging yellow jackets will be attracted to the raw fish and will chew off a tiny particle of the meat. By close observation, a person can follow the flight line of the yellow jacket back to the nest. Foraging yellow jackets will normally make a “bee line” straight to the nest, which is often within 1,000 yards from the food source. Fishermen have been used this procedure to discover yellow jacket nests and use the grubs as excellent fish bait.

**Safety Measures:** Precautions should be taken when working or playing in areas that are likely to be inhabited by yellow jackets. Logging equipment operators often disturb nests in the forest that can make their work very dangerous. A veil, hat and pressurized container of wasp or hornet spray is highly recommended during summer and fall. If a colony is disturbed, a person should slowly walk away while covering the face with both hands to protect the more sensitive body areas. Walk toward dense vegetation or enter a vehicle or building to avoid the stinging insects. Swift movements will only attract more yellow jackets.

Persons highly sensitive to yellow jacket venom should always carry a sting treatment kit during outdoor activities. A yellow jacket does not leave a stinger in its victim, so it can sting several times. Several sting remedies are available to reduce pain and swelling following a sting. A convenient material

to place on the sting site is moistened table salt. Mound the dry salt on the sting entry point and moisten with a few drops of water. Leave the salt on the site for several minutes. This procedure must be applied within 3-4 minutes following the stinging incident to be effective.

Yellow jackets and other stinging insects often get inside moving vehicles resulting in a very dangerous situation. The driver should carefully pull to the side of the road. Any passengers should exit on the side of the vehicle away from traffic. The driver should open all windows and leave the passenger doors open to allow the insect to exit the vehicle. Flying insects usually go to the windows when inside a moving vehicle in an attempt to escape and are rarely aggressive inside a moving vehicle unless provoked. Persons should refrain from swatting the insect inside the vehicle.

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