Wasps and Bees

O & T Guide [T-#10]

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Members of several families of bees and wasps dig in or near turf, making holes or forming mounds. Some are beneficial, some have intimidating behavior, but others can sting repeatedly or in large numbers. Cicada killers and ground nesting bees are solitary although sometimes gregarious or communal in nesting. Yellowjackets and bumble bees are social insects, supporting large, annual colonies. Tiphiid and scoliid wasps search turf for white grubs (larvae of scarab beetles) that they parasitize. Adults of most species can be active from June until killing frosts. (See a separate fact sheet on honey bees.)

M**etamorphosis:** Complete
Mouth Parts: Chewing (larvae, adults)
Pest Stage: Adults

Typical Life Cycle: Egg → Series of Larvae→Pupa→Adult. **Pest Stage**: Adult.

Cicada killers, scoliids and tiphiids produce one generation per year while ground nesting bees have several. Yellowjackets and bumble bees produce numerous generations annually, but their colonies die in the fall, except for a few mated females that survive until spring.

Description of Life Stages:

Egg---minute, rounded to hot-dog shaped, laid singly on food source supplied by the female for most of the above species.

Yellow jackets lay their eggs singly in the cells of tough, papery underground combs created by the workers. Bumble bee queens lay their eggs singly in grape-sized wax and pollen "pots" in their usually underground nest areas. Eggs of any of these insects are rarely seen by most people.

Larva---soft-bodied, white, usually with poorly developed head capsule, segmented. Restricted to nests as described above; rarely seen. Mature larvae of most are less than ½ inch long; cicada killer larvae may reach ¾ inch.

Pupa---quiescent, white initially, then adopting adult coloration at maturity. Restricted to nests; rarely seen. Lengths at maturity similar to those of corresponding larvae.

Adults---size and appearance varies widely on these various insects.

Cicada killer wasp, *Sphecius speciosa*, carrying a cicada. Photo: Ronald F. Billings, Texas Forest Service, www.forestryimages.org

Common bees and wasps encountered on or near turf include:

Cicada killer wasps are about 1 ½ inches long with sleek, well defined body regions and pointed abdomens; females have well-developed stingers. Most are black or rusty with yellow bands on the abdomen.

Adult Scoliid wasp covered in pigweed pollen. Photo: Theodore Webster, USDA Agricultural Research Service, www.forestryimages.org

Tiphiid wasps may be all black or superficially resemble yellowjackets. Scoliid adults may be somewhat hairy and black with one or more yellow bands on the abdomen. Most tiphiids and scoliids will be less than ¾ inch long.

Example of a digger bee, *Xenoglossa* sp. in a squash blossom. Photo: Whitney Cranshaw, Colorado State University, www.forestryimages.org

Digger bees are robust, hairy, golden brown or grayish-brown bees, usually ½ inch long or less as adults.

Adult bumble bee, *Bombus* sp. Photo: Kristina Simms, , www.forestryimages.org

Bumble bees can usually be recognized by their black-and-yellow banded coloration (especially on the abdomen), fuzzy bodies and robust size, from 5/8 to nearly one inch long.

Adult Western yellow jacket, *Vespula pensylvanica*. Photo: Whitney Cranshaw, Colorado State University, www.forestryimages.org

Yellowjackets are distinctively colored yellow and black wasps about ½ to 5/8 inch long. At rest, their grayish wings fold

longitudinally into narrow straps held at angles to the body. All adults have well defined body regions, fuzzy heads and pointed abdomens ending in stingers. Like many other wasps, yellowjackets can sting repeatedly and do not die as a consequence.

Habitat and Hosts: Several of these insects are predators or parasites of other insects. After mating, the female cicada killer hunts for an adult cicada, stings and paralyzes it, and then air-lifts it back to her previously dug nest hole. After dragging the cicada into a small cell at the bottom of the nest, the female lays one egg on it and then walls off the cell, leaving its offspring to complete its development. Each nest hole may accommodate one to several developing offspring.

Scoliid and tiphiid wasps kill or parasitize white grubs in turf. Sometimes tiphiid adults can be numerous, flying lazily back and forth across turf, a foot or two above the ground. These swarms can include hunting females or males searching for mates; the swarms are otherwise harmless. Both can be found foraging for pollen and nectar on flowers. Scoliid females may kill more white grubs than they parasitize.

Native digger bees are often solitary, but some are gregarious, nesting communally in grainy, well-drained soils or in cut banks. Maturing in individual underground cells at the end of the nest tunnel, digger bee larvae develop independently on balls of pollen and nectar gathered by the female.

Bumble bees are common pollinators often seen gathering nectar and pollen from flowers. Their nests are usually underground and are often in vacant rodent burrows. Nests are initiated in the spring by a previously mated, overwintering queen. Her first brood includes only workers that soon take over all duties of the colony except reproduction. The workers enlarge, maintain and defend the nest, gather food and store it in sac-like “honey pots” that they make from wax and pollen. Larvae are tended and fed on a mixture of pollen and honey. After they pupate and emerge, their empty cocoons are often filled with more stored food. By late summer, males and virgin queens are produced and in the fall, all but the recently mated new queens die.

Yellowjackets similarly establish new colonies each year; queens mated the previous fall lay the initial eggs, often in underground cavities. Over the spring and summer, successive generations of workers construct a papery underground nest composed of a series of horizontal, multi-celled tiers enclosed by spherical papery walls. Adults feed on nectar or other sugary solutions such as honeydew or juice from ripening fruits. They feed developing larvae in the nest with bits of caterpillars or flies that they chew up before taking them back to the nest. In exchange, the larvae produce a sweet solution from their mouths that they feed the workers. Each cell in the nest may be used several times to rear larvae. Males and future queens are produced in the fall; the new queens mate and are the only ones from the old colony to survive the winter.

Damage: Digger bees and cicada killers dig nest holes through turf or in soil near managed turf, leaving holes and small mounds of earth; their behavior can be intimidating and cicada killers, in particular, may sting if annoyed. Tiphiid and scoliid wasps are non-aggressive but their presence on flowers or low altitude

patrolling of turf may be intimidating to some people. Females of both species will dig shallow holes through turf to reach their white grub prey. Bumble bees and yellowjackets create their mostly underground nests in abandoned rodent burrows and similar sites. Openings to these nests can be in tall grass, landscaped areas, around buildings or other structures located in or near turf. They readily defend their colonies and can attack and sting intruders in large numbers. As with honey bees, some people are highly sensitive to the venom of these insects and can suffer the same symptoms of envenomization as well as the health consequences.

IPM Notes: Of the bees and wasps described above, yellow jackets and bumble bees represent the greatest stinging threat to humans and neither can be tolerated in high traffic areas. Appropriately labeled insecticides directed at the nests are most effective. Protective clothing for the applicator is advisable as well as insecticide application after dark when the insects are generally less active.

Spot-treatment of nesting areas or broadcast application of recommended insecticides will usually control most of the other pest bees and wasps that damage turf. Where scoliids and tiphiids are concerned, control white grub populations and the wasps will hunt elsewhere.