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Wasps

HOW TO CONTROL THEM



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U. S. DEPARTMENT OF AGRICULTURE

Wasps—

More than 2,500 species of wasps occur in North America. Only about 50 are troublesome to man. They are divided into the following groups:

Hornets and yellow jackets (*Vespa*, *Vespula*).

Polistes (no common name).

Mud daubers (*Sceliphron*, *Chalybion*, and *Trypoxylon*).

These wasps build nests in or around homes—beneath eaves, on porches, behind blinds, in trees, in shrubbery, in rock fences, and in the ground. If someone disturbs a nest, he may get stung severely.

A wasp stings by driving its needlelike ovipositor into the flesh and injecting a venomous fluid into the wound. This causes a painful swelling that may last several days. In some cases it may be necessary to see a doctor.

Most wasps kill destructive insects and are therefore beneficial. *Polistes* catch corn earworms, armyworms, and other pests, and feed them to their young (larvae). Hornets and yellow jackets feed their young on house flies, blow flies, and caterpillars of a variety of moths. But when wasps build nests too close to the house or in shrubbery where children play, they should be destroyed.

HOW THEY DEVELOP

- Hornets
- Yellow Jackets
- *Polistes*

Hornets, yellow jackets, and *Polistes* develop in the same way. Three adult forms exist:

1. Fertile females (queens), which lay the eggs.
2. Fertile males, which mate with the queens.
3. Workers, which are females and usually sterile. (Workers may occasionally lay eggs without mating when the queen dies before the end of the season.)

In the fall, queens and males leave the nest and mate. The males die shortly thereafter, but the queens hibernate in a crack in a rock, under loosened bark of a tree, in buildings, or in a hole in the



WHAT

HORNETS AND YELLOW JACKETS are built more stockily than *Polistes* and mud daubers. They are black, and have yellow or white markings. The queens measure about $\frac{3}{4}$ inch long; the males and workers are about $\frac{1}{2}$ inch long. These wasps are most abundant in the northern temperate region, but they also occur in arctic and tropical regions. They are feared because of their vicious sting.



POLISTES are slender, elongated wasps; they are $\frac{3}{4}$ inch to 1 inch long. They are black, brown, or red, and have a few yellow markings.



MUD DAUBERS are also slender and $\frac{3}{4}$ inch to 1 inch long. They are black and yellow (as in the species *Sceliphron*), metallic blue (*Chalybion*), or shiny black (*Trypoxylon*).



ground. *Polistes* queens also hibernate in attics and basements.

The following spring the queen comes out of hibernation and begins flying about until she comes upon a suitable nest site. She then collects wood or vegetable fiber from nearby plants, chews it into a paperlike substance, constructs a comb consisting of a few shallow cells (later enlarged into a nest), and lays an egg in each cell. She does not lay any more eggs until her first brood develops.

The eggs are long, white, and slightly curved. They hatch into larvae in 2 or 3 days.

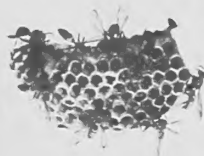
The newly hatched larvae are helpless, grayish-white grubs that resemble the eggs. They hang suspended in the cells, head downward. The bodies stick to the cells by means of a gluey substance that they secrete.

THEY LOOK LIKE . . .

HORNETS' AND YELLOW JACKETS' NESTS are made of a papier-maché material; the wasps produce it by chewing up rotted wood, dead stems and leaves, or paper and cardboard fragments. The nests are large and globular. They are usually found aboveground—on branches of trees, in shrubbery, on gables. Some hornets and yellow jackets build nests underground.



A **POLISTES NEST** is also made of a paperlike material that the wasps produce. It is composed of a circular comb of cells. The cells open downward.



MUD DAUBERS' NESTS are made of clay. They are often built around dwellings or outbuildings, both inside and outside. They are sometimes built in stored machinery and equipment.



Larvae depend on adults for their food and care. The queen cares for the larvae of her first brood (all of which are workers), feeding them daily with freshly killed insects. Workers care for larvae of subsequent broods.

The larval stage lasts 12 to 18 days. As larvae grow, they fill out the cells and depend less on the gluey secretion to hold them in place. When full grown, they spin silken cocoon caps over the cells and transform to pupae.

Pupae are motionless within their cocoons. They resemble adults except for a thin, transparent membrane that covers them. At first they are creamy white, but gradually color comes to wings, legs, antennae, and other body parts. At the end of the pupal stage, which lasts about 12 days, the covering membrane breaks, and an adult emerges.

Once her first brood matures, the queen resumes egg laying. A hornet or yellow jacket queen may lay as many as 25,000 eggs; a *Polistes*, several hundred.

Most wasps are workers. During the life of a colony, a hornets' nest or yellow jackets' nest may contain as many as 15,000 workers to several hundred queens and males. The ratio in a *Polistes*' nest may be several hundred workers to a couple of dozen queens and males.

As soon as they appear, workers take complete charge of nest life. They enlarge the nest by building additional cells. They care for all immature larvae. They forage for food.

• Mud Daubers

Mud daubers also pass through egg, larval, pupal, and adult stages in their development. Only two adult forms exist—the females and males.

In the spring, young adults come out of nests (where they have overwintered as pupae) and mate. The females look for suitable sites to build new nests in which to deposit their eggs. Each selects a sheltered area, which may be in or near a building, and begins constructing clay cells.

First, the female builds a cell. Next, she catches about 20 immature spiders, paralyzes them with her sting, and stores them in the cell. Then, she lays an egg in the cell and caps the cell with a clay covering. She repeats this pattern until she has built 6 to 20 cells.

When her nest building, provisioning, and egg-laying jobs are done, she leaves the nest and does not return. The larvae hatch from the eggs and begin feeding on the paralyzed spiders. In a few days they spin cocoons and transform to pupae. The pupae transform to adults in about 2 weeks.

There may be 1 to 3 generations of mud daubers each year, depending on the section of the country. Females and males are about equal in number. Upon reaching maturity, they leave their nests and carry on their activities independently.

NESTS

Wasps can be identified by the nests they build. The globular, papier-maché nests concealing multi-combed structures are peculiar to hornets and yellow jackets; the single-layer, open-faced, umbrella-shaped nests, to *Polistes*; and the clay-cell nests, to mud daubers. The size of the nests varies with the number of wasps living in them.

Hornets and yellow jackets continually enlarge their nests to accommodate the growing population. They do this by adding new combs or layers

of cells beneath the ones already built. They attach each new comb with a sturdy paper stem.

Polistes also enlarge their nests. But instead of building new layers, they add cells to the original comb.

Among mud daubers, nest building is completed when the female has constructed a group of cells, provisioned them with spiders, and deposited eggs. She may then construct a second group of cells in another location.

With the onset of cold weather, the paper nests of the hornets, yellow jackets, and *Polistes* are abandoned by the insects. The old nests are never again used. They usually disintegrate or are torn to pieces by birds or squirrels. The insects are perpetuated over the winter by the hibernating queens.

The clay-cell nests of the mud daubers do not disintegrate. The insects overwinter in them in the pupal stage.

HOW TO CONTROL WASPS

Wasps can be controlled by applying an insecticidal spray or dust to their nests. Chlordane, dieldrin, and DDT are effective for this purpose. They are available from insecticide dealers as emulsifiable concentrates and wettable powders, from which sprays can be prepared, or as dusts and oil solutions ready for use.

Use a household or garden-type applicator for spraying and a hand duster for dusting.

Dusts are easy to apply to some hornets' and yellow jackets' nests, whether above or under the ground. The extension tube on a garden-type duster can be inserted into the nest opening. Two or three strong puffs of dust will filter through the nest, and will usually kill the colony within 24 hours. A shovelful of moist earth thrown over the entrance of a colony in the ground after treatment will prevent the dying wasps from gaining the surface. You can also treat an underground nest by pouring several ounces of carbon tetrachloride into the opening and then plugging it with absorbent cotton.

Do your control work at night when the wasps are less active and most of them are in their nests. Apply insecticides to the nests, concentrating on the openings. Use (1) a 5- or 6-percent chlordane dust, a 5- or 10-percent DDT dust, or a 1-percent dieldrin dust, or (2) a 2-percent chlordane oil solution, a 5-percent DDT oil solution, or a 0.5-percent dieldrin oil solution, or (3) an emulsion or suspension spray. An emulsion spray can be prepared by mixing a chlordane, DDT, or dieldrin emulsifiable concentrate with water; a suspension spray, by mixing a DDT or a chlordane wettable powder with

water. You can prepare effective sprays for controlling wasps by using any one of the formulations given in the following table:

<i>Emulsifiable concentrates</i>	<i>Ounces to 1 quart of water</i>
25-percent DDT	6
45-percent chlordane	2
15-percent dieldrin	1

<i>Wettable powders</i>	<i>Ounces to 1 quart of water</i>
50-percent DDT	3
40-percent chlordane	1½

It may be possible to dislodge hornets' and yellow jackets' nests and dispose of them in a sack or other suitable container. Before dislodging a nest, plug the opening with absorbent cotton that has been soaked in carbon tetrachloride; the fumes will stun the wasps and you can then move the nest with less danger of being stung. Work quickly. After the nest is dislodged, burn or bury it, or put it into a can containing a few table-spoonfuls of carbon tetrachloride and seal the can tightly.

A 5-percent DDT oil solution, a 2-percent chlordane oil solution, or a 0.5-percent dieldrin oil solution can be used effectively to control wasps in the home. Numerous ready-to-use formulations and aerosol bombs containing pyrethrum and other insecticides are approved for household use and may be purchased at many supermarkets, hardware stores, and drug stores. Most of these commercial products will give effective control of wasps if used according to the manufacturer's directions.

PRECAUTIONS

Most insecticides are toxic. . . . Keep insecticides where children and pets cannot reach them. . . . When applying them, do not contaminate food, dishes, or kitchen utensils. . . . Do not store them with food. . . . Do not breathe the spray mist or dust. . . . If insecticide is spilled on the skin, wash it off promptly. . . . Change your clothes if you spill insecticide on them. . . . When you have finished applying an insecticide, clean the sprayer or duster, and wash all exposed surfaces of the body with soap and water. . . . Use carbon tetrachloride outdoors; avoid inhaling its fumes.

CICADA KILLERS

Cicada killers are solitary, ground-nesting wasps that are common in many sections of the country. They are large (about 1½ inches long)

and rather stocky with yellow and black markings on their bodies. They frequently build their nests in a sloping bank or terrace around the home. Nest building begins when the fertilized female digs a lengthy burrow, in which she constructs several cells. Before laying her eggs in the cells, she leaves the nest and hunts for a cicada. She paralyzes it with her sting, brings it back to the nest, stores it in a cell, and lays an egg on it. When the egg hatches, the larva feeds on the paralyzed cicada.

In a heavily infested area, you can control cicada killers and other solitary, ground-nesting wasps by applying a 5- or 10-percent DDT dust, a 5- or 6-percent chlordane dust, or a 1-percent dieldrin dust, over the soil surface, concentrating on the openings of the nests. If only a few wasps are present, wait until they have entered their nests; then direct a few puffs of dust into each nest opening—or pour in 1 teaspoonful of carbon tetrachloride—and fill it with dirt.

TREATING WASP STINGS

If the victim has a history of hayfever or asthma or other allergy, his physician should be notified immediately when a sting is received. Occasionally, reactions may be severe or even fatal. If only a mild reaction to a wasp sting occurs, consult a first aid manual.



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