

Western Yellowjacket *Vespula pensylvanica*



## Yellowjackets and Paper Wasps



Paper Wasp *Polistes*

# Yellowjackets and Paper Wasps

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Yellowjackets and paper wasps are beneficial insects. They feed their young many insects that ordinarily damage our shade trees and crops. They also kill countless house flies and blow flies.

A few species of yellowjackets, however, such as *Vespula pensylvanica* (the western yellowjacket) and *V. vulgaris* (the common yellowjacket), scavenge for meat and liquid sweets and can become pests, especially at picnics (fig. 1). Even though they may at times become pests, yellowjackets and paper wasps are highly beneficial. Do not control them unless they are a hazard from stings.

## Life Cycle

Yellowjackets and paper wasps have annual colonies, and the only members of the colony to overwinter are fertilized queens. These queens spend the winter in protected locations such as under bark, in stumps, or in hollow logs. They emerge during the first warm days of spring (rarely as early as March, usually May), select a nest site and build a small paper nest in which they lay their eggs (fig. 2). When the eggs hatch, the queen feeds the young larvae for about 18 to 20 days. The larvae then pupate and later emerge as small, infertile females

called workers. Once the first five to seven workers appear, they begin rearing and feeding the brood. The queen is rarely seen again outside the nest. The colony then expands rapidly and depending on species, may total up to 4,000 workers with a nest of 10,000 to 12,000 cells when maximum size is attained in August/September. About this time, reproductive cells are built and new males and queens are produced. These emerge, mate, the males eventually die, and the mated queens seek sheltered locations in which to overwinter. The abandoned nests then rapidly decompose and disintegrate during the winter. They are not used again. In spring the cycle starts over (fig. 3).

## Identification

A typical yellowjacket worker, *Vespula pensylvanica*, is shown on the cover. Workers are about  $\frac{1}{2}$  inch long (13 mm) and appear short and blocky. All yellowjackets are yellow and black or white and black. Paper wasps, *Polistes*, are  $\frac{3}{4}$  inch long (20 mm) and more slender (see cover). Paper wasps may be distinguished from yellowjackets by their long legs and by their color. They are usually red and yellow or mostly yellow with small areas of black. Identification is important as *Polistes* are valuable as biological pest control agents.

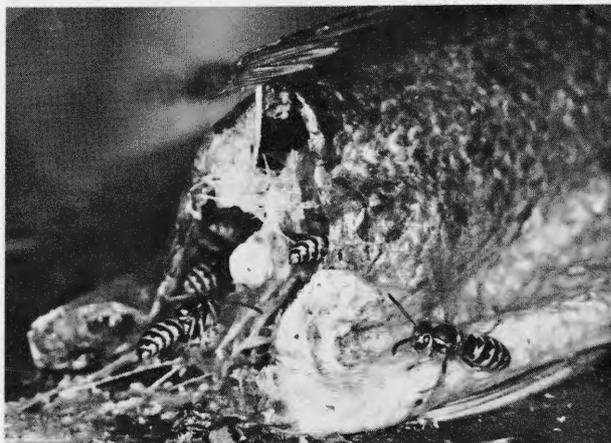


Figure 1. Western yellowjacket workers cutting pieces of flesh from fish. Upon returning to the nest, workers feed these pieces to developing larvae.

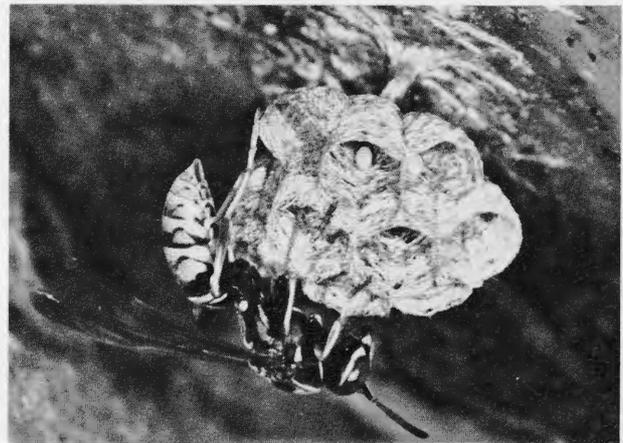


Figure 2. Queen of the paper wasp *Polistes aurifer* (= *Fuscatus aurifer*), tending aerial nest.

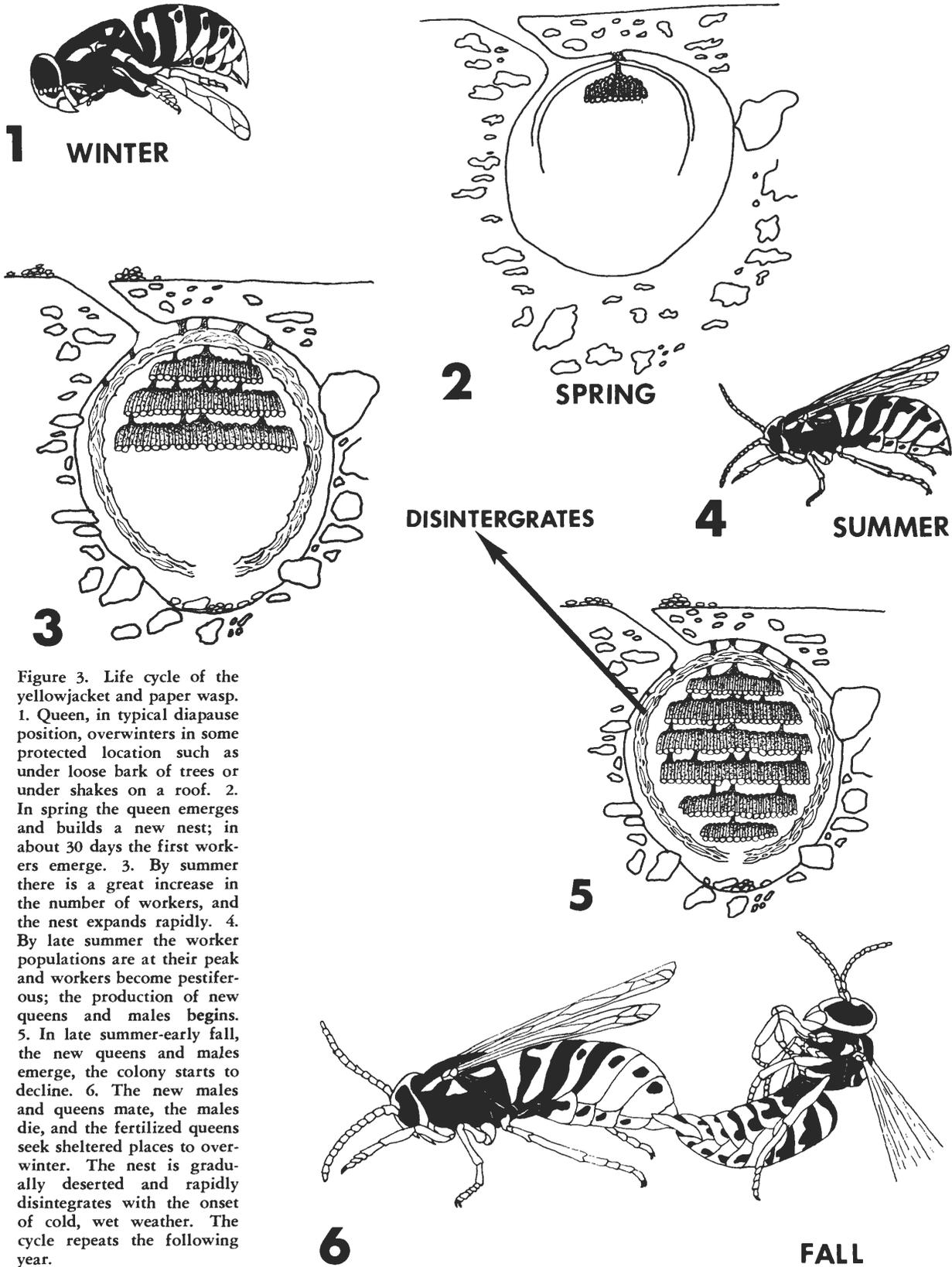


Figure 3. Life cycle of the yellowjacket and paper wasp. 1. Queen, in typical diapause position, overwinters in some protected location such as under loose bark of trees or under shakes on a roof. 2. In spring the queen emerges and builds a new nest; in about 30 days the first workers emerge. 3. By summer there is a great increase in the number of workers, and the nest expands rapidly. 4. By late summer the worker populations are at their peak and workers become pestiferous; the production of new queens and males begins. 5. In late summer-early fall, the new queens and males emerge, the colony starts to decline. 6. The new males and queens mate, the males die, and the fertilized queens seek sheltered places to overwinter. The nest is gradually deserted and rapidly disintegrates with the onset of cold, wet weather. The cycle repeats the following year.

## Types of Nests

There are two groups of yellowjackets: (1) those nesting below the soil in mouse burrows or similar sites, including between the walls of houses (fig. 4-6), and (2) aerial nesters that build their nests in trees, in sheds, or under eaves of houses. Nests are built of wood fiber resembling paper, completely enclosed except for a small opening at the bottom (fig. 7).



Figure 4. Western yellowjackets on mud turret around entrance hole to subterranean nest.



Figure 5. Exposed subterranean nest of the western yellowjacket.

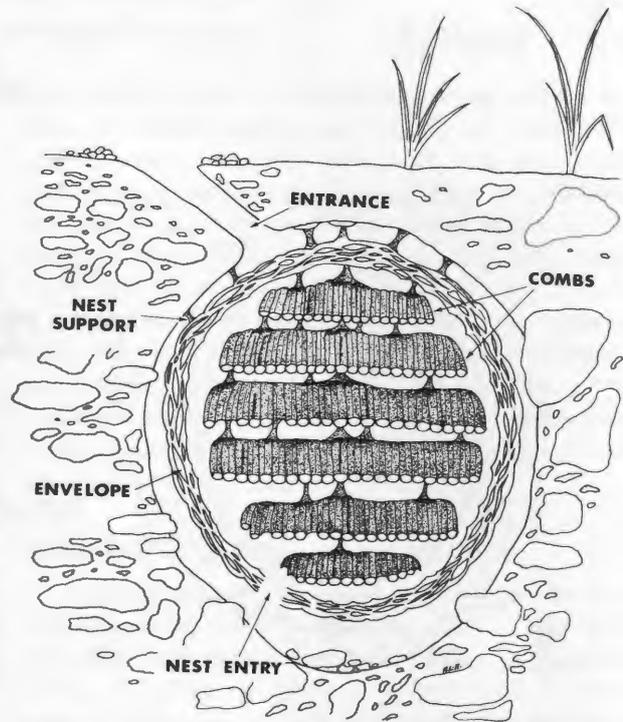


Figure 6. Diagram of an underground nest and components.

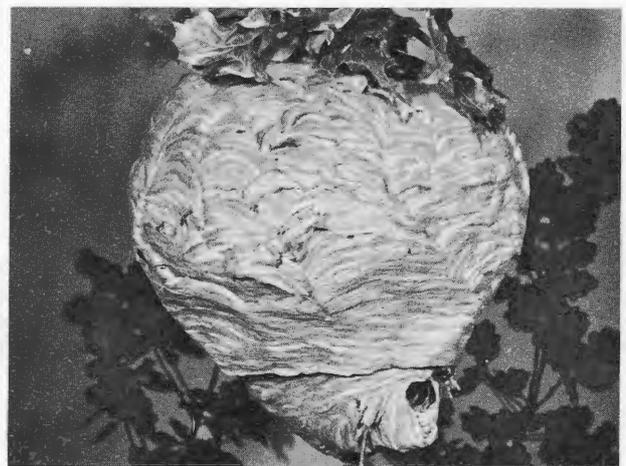


Figure 7. Aerial nest of the baldfaced hornet, *Dolichovespula maculata*.

## Control

Yellowjackets can be pests at picnic tables or when a nest is built on your house. Yellowjackets may also be attracted in large numbers to garbage cans. Various controls follow. Select those most suitable for your needs. Remember, yellowjackets and paper wasps are beneficial insects—control only if absolutely necessary.

Yellowjackets do not reuse their nests the next year. Knowing this may help you decide if you want to risk being stung during a control operation, especially if the nest is in a rarely used part of the yard. If you choose to leave the yellowjackets alone, the nest will disintegrate over the winter months. If the nest is located on the eaves of the house or in the attic, it is advisable to remove it after the yellowjackets are gone because the nest may serve as a source of carpet beetles or other pests.

## Garbage Cans

Keep garbage cans covered; bolt a generous piece of Vapona® No-Pest Strip to the inside of the cover. This material repels yellowjackets as well as being toxic to them.

## Nests

**AERIAL NESTS.** Aerosol products such as Wasp Stopper®, Bee Bopper®, or Wasp Freeze®, which propel the insecticide up to 3 meters, are very effective for controlling colonies in aerial nests. They may also be sprayed with 1.5 EC propoxur (Baygon®) at the rate of 8 ounces per gallon of water in the late evening after wasps return to their nests. Thoroughly wet the nest and the area around the entrance.

**UNDERGROUND NESTS.** Use any one of the following insecticides diluted with the specific amount of water for underground nests. Pour into entrance hole, and then plug with cotton. Do after dark.

- Propoxur 1.5 EC, 8 ounces per gallon.
- Carbaryl (Sevin®), 5% dust. Pour into entrance hole. Do not plug.
- Wasp Stopper®, aerosol bomb gives excellent control of underground colonies if the nest is close to the entrance hole.

**NESTS IN WALL VOIDS.** Use 5% Sevin® dust and an aerosol generator of Resmethrin®. Quickly place the plastic wand of the aerosol generator containing Resmethrin® into the entrance hole; the material (3.5 to 10.5 grams) is released for 10 to 30 seconds. Next plug the entrance hole with steel wool and dust the wool and

surrounding area with about 1 ounce (28 grams) of 5% carbaryl (Sevin®). This method has the advantage that treatment can take place during the day. Returning foragers chew at the steel wool coated with insecticide dust and succumb. It is recommended that protective clothing (bee suit, veil, gloves) be worn during the entire operation.

## Picnic Problems

Hang fish or liver on a string just over a bucket of water with detergent added (fig. 8) to control yellowjackets at picnics. The yellowjackets will try to fly away with pieces of fish or liver that are too heavy for them and will fall into the water. The detergent acts as a wetting agent and trapped wasps will be unable to fly off, thus drowning. This method is very effective.

Knox Out® 2 FM (encapsulated diazinon) used with 1 teaspoon to 6 ounces of meat bait (canned cat

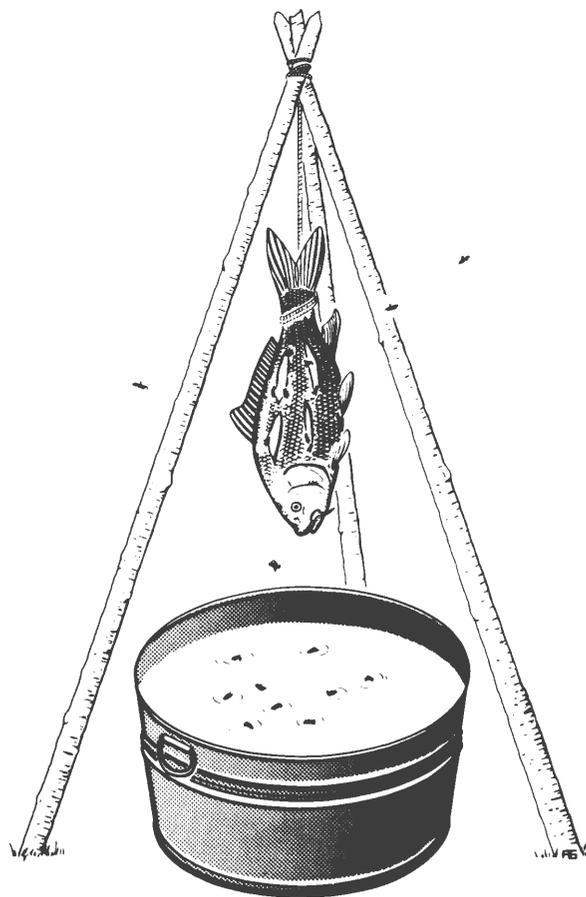


Figure 8. Fish trap.

food, tuna) is effective against scavenging yellowjackets. Other suitable meats include cooked horse meat, chicken, or beef. Knox Out® is toxic to other forms of life, including humans, animals, and birds. The poisoned bait must be kept out of reach of children and pets. One solution is to construct a wire cage for the bait as shown in fig. 9. A half-gallon milk carton with 1/4-inch holes cut in it will also serve the same purpose, and it is much easier to prepare. Be sure to mark these containers with warning signs ("poison") and hang the milk cartons out

of reach of animals (fig. 10).

These baits are attractive only to scavenging species, and attractiveness also varies according to the yellowjacket species involved (*V. pennsylvanica* workers are usually more attracted than those of *V. vulgaris*). In addition, yellowjacket diet preferences change near the end of the season, so protein baits are not nearly as attractive at this time. For this reason it is necessary to get the bait stations into operation at the beginning of the yellowjacket season (July to early August).

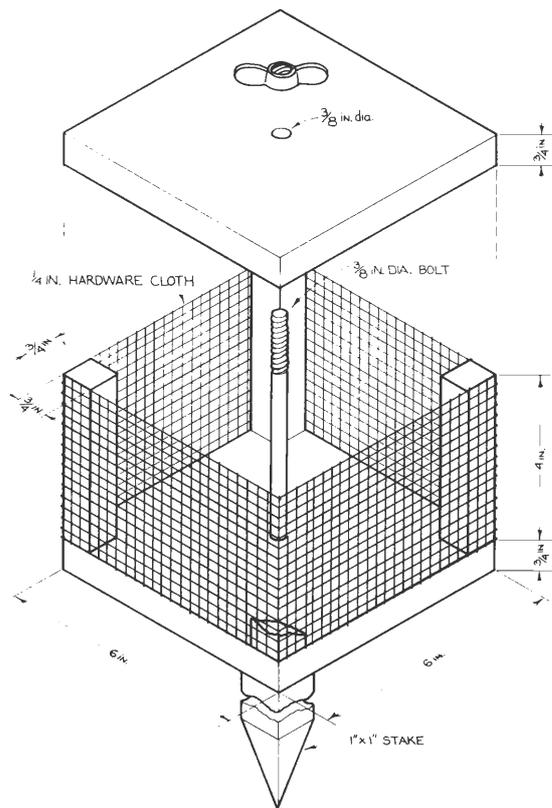


Figure 9. Dispensing station for insecticide-treated bait. The 1- x 1-inch stake can be made any length, but 36 to 40 inches places the station at a convenient height. The top is removable to replace the meat. Yellowjackets can pass through the hardware cloth with ease while all pets, children, and wild animals are protected from coming into contact with the bait.

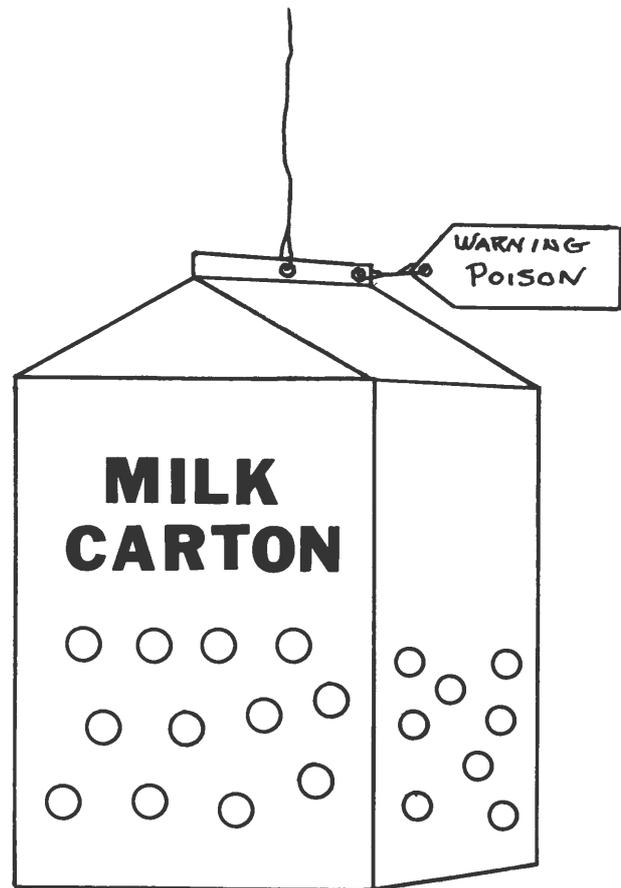


Figure 10. Milk carton with 1/4-inch holes for dispensing poison bait. Hang out of the reach of children and domestic animals.

## Safety Precautions

Some species and colonies of wasps are more aggressive and more likely to attack people than other species or colonies. None of the species is going to take kindly to your attack on their home and young. When aroused, there is a good chance they may swarm out and attack in defense of the nest. If you decide to remove or spray the nest, follow these precautions:

- Cover yourself with thick clothing (including head, face, neck, and hands).
- Wear glasses to protect your eyes. Certain aerial species are capable of squirting their venom for short distances.
- Spray or remove aerial nests during the coolest part of the evening—the cooler the better. Carefully put the pesticide into the entrance hole of the ground nests after dark.
- If you are allergic, do not risk removing the nest yourself. Some people react violently to the sting of bees or wasps. The symptoms may include swelling, nausea, dizziness, difficulty with breathing, or shock. Symptoms may be immediate or delayed for several hours. (For most people without allergies, a sting may be no more than a minor annoyance or irritation at the time of the sting.)

- In late summer, wasps and yellowjackets are attracted to the sweet scent of decaying fruit. Do not wear perfumes, hair sprays, or other scents when in yellowjacket areas. Also, avoid brightly colored clothing and other flower colors.
- Finally, restrain children from throwing rocks at yellowjacket nests. This not only agitates the yellowjackets, but makes them much more likely to sting upon future encounters.

## Treatment of Stings

When stung, immediately apply a poultice (moist mixture) of a meat tenderizer (an enzyme). This will break down the components of the sting fluid, thus reducing pain and damage (but only if the sting is not deep). If preferred, a commercial preparation such as a Sting Kill® swab can be used. Antihistamine ointments and tablets, to be taken orally, seem effective in reducing the reaction to the sting.

People who are highly sensitive to stings should consider a desensitization procedure in an allergy clinic and consult their physician about medical kits such as Ana-Kit®, which contains in addition to antihistamines, aqueous epinephrine (administered by injection), and frequently a bronchodilator material (inhaler).

