

Western Yellowjacket
Paravespula pensylvanica



Yellowjackets and Paper Wasps



Paper Wasp
Polistes

Yellowjackets and Paper Wasps

Peter J. Landolt and Arthur L. Antonelli

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

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

Life Cycle

In the Pacific Northwest, yellowjackets and paper wasps have annual colonies. The only colony members to overwinter are inseminated queens, which spend the winter in protected locations, such

as under bark, in stumps and logs, and within stacks of firewood. The native *Polistes aurifer* (golden paper wasp) frequently overwinters in attics of homes.

The queens emerge during the first warm days of spring (as early as March and April), select a nest site, and build a small paper nest in which they lay their eggs. When the eggs hatch, the queen feeds the young larvae for up to 3 weeks. Larvae then pupate, to emerge as smaller infertile females called workers. Once the first five to seven workers appear, they begin rearing and feeding the brood. The queen rarely is seen again outside the nest. The colony then expands rapidly, and depending on the species, may consist of as many as 5,000 workers and 15,000 cells in the nest for some yellowjacket species.

Colonies attain maximum size in August and September. Worker yellowjackets, then at their peak,

become pestiferous. About this time, new males and queens are produced from reproductive cells. These emerge and mate. The males soon die, and the inseminated queens seek sheltered locations in which to overwinter. The abandoned nests rapidly decompose and disintegrate during the winter. They are not used again. In spring, the cycle starts over.

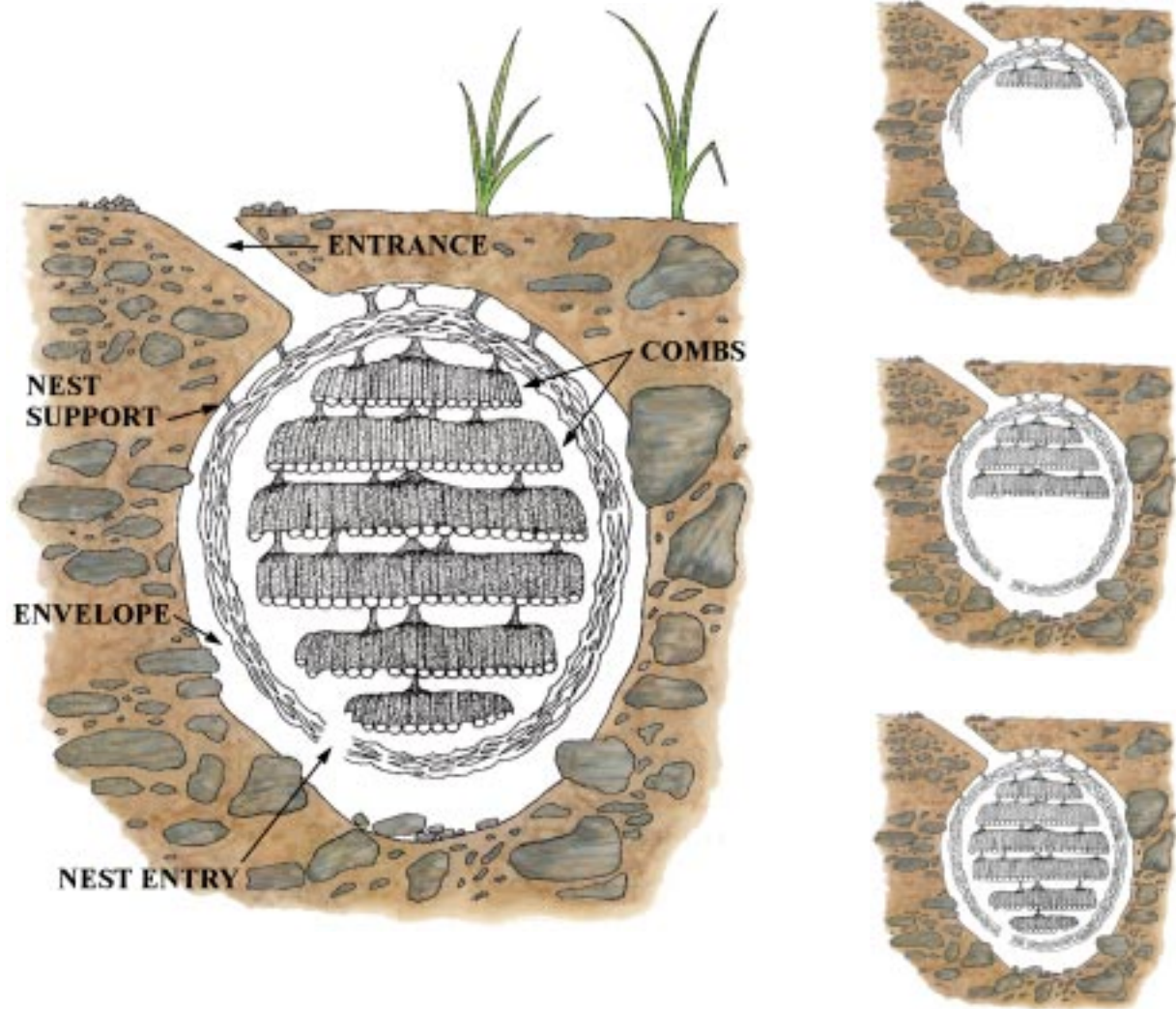
The German wasp has become widespread in Washington. The cycle of this yellowjacket is slightly later, with peak colony size occurring in October and early November. This species has a propensity for nesting in structures and has become a widespread urban pest. Recently, the European paper wasp (*Polistes dominulus*) also has become widespread and abundant throughout Washington. It readily nests on and within human-made structures and is particularly populous in urban and suburban areas. The tendency of the German and European species to found nests in association with people contributes to their pest status.

Identification

A typical yellowjacket worker, *Vespula pensylvanica*, is shown on the cover. Yellowjacket workers are about 1/2 inch long, and appear short and stocky. All yellowjackets are yellow and black or white and black. Paper wasps are up to 3/4 inch long, and are more slender (see cover). Paper wasps may be distinguished from yellowjackets by their more slender body shape



Paper wasp queen, *Polistes aurifer* (= *fuscatus aurifer*), tending aerial nest.



LIFE CYCLE OF YELLOWJACKET. Diagram of underground nest sections, *above left*. Queen begins building a new nest in spring, *upper right*. Nest expands rapidly in summer as the number of workers increases, *middle right*. In late summer-early fall, worker populations and the colony are at their peak, *lower right*. The colony begins to decline, and the deserted nest disintegrates rapidly in winter. Queen, *lower left*, in diapause position, overwinters under loose tree bark, roof shakes, or other protected location. Worker populations reach their peak in late summer, *center* (not drawn to scale, workers are $\frac{1}{3}$ to $\frac{1}{2}$ the size of queens). New males and queens mate, *lower right*; males die, and inseminated queens seek winter shelter. The cycle begins again in spring. Maximum size is attained in August or September.

Nest of the aerial yellowjacket, *Dolichovespula arenaria*.



Exposed subterranean nest of the western yellowjacket.



Guard workers of the western yellowjacket on mud turret around entrance hole to subterranean nest.



and longer legs. Although the golden paper wasp is easily distinguished from yellowjackets by its yellow and dark brown coloration, the newly introduced European paper wasp is quite similar in color pattern to yellowjackets. Identification is important, because paper wasps are valuable as biological control agents of garden pests.

Types of Nests

Yellowjacket nests are built entirely of wood fibers and consist of multiple stacked combs completely enclosed by a paper envelope, except for a small entrance at the bottom of the nest. Nests of most species are placed underground in rodent burrows or other soil cavities. The German wasp, however, often makes its nest inside walls of houses. The aerial yellowjacket (*Dolichovespula arenaria*) and bald-faced hornet (*Dolichovespula maculata*) usually make their nests in trees or on the outside eaves of buildings.

Paper wasps also build nests of wood fiber, but their nests consist of a single comb not enclosed by an envelope. An average nest of the golden paper wasp, the only paper wasp native to Washington, consists of about 200 cells, while the largest nest is probably less than 400 cells. Golden paper wasp nests are most noticeable under eaves of buildings, but they are also constructed in logs, under rocks, within shrubs and grass clumps, and inside pipe. Nests of the European paper wasp are often less than 100 cells in size but may possess 400 cells and more. This wasp appears to be quite flexible in selecting nest sites, including under roof shakes, within meter boxes, bird houses, outside grills, and mail

boxes, under eaves, chairs, and benches, and within shrubbery.

Control

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

Yellowjackets and paper wasps do not reuse their nests the following year, although paper wasps may construct a new nest adjacent to an old one. 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 area of the yard. If you choose to leave the wasps alone, the nest will usually disintegrate over the winter months. If the nest is on the eaves of the house or in an

attic, it is advisable to remove it after the wasps are gone, because the nest may serve as a home of carpet beetles or other insect pests.

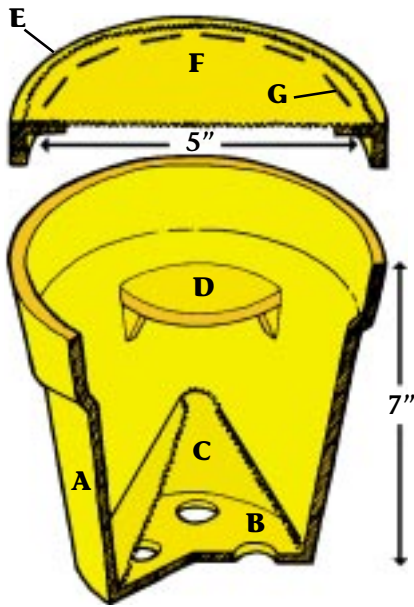
Nests

Aerial nests. Aerial nests are easily controlled using some of the newer aerosol products that propel the insecticide up to 20 feet. Effective materials to use are the synthetic pyrethroids, which have a quick knockdown effect. Apply in the evening after most yellowjackets or paper wasps have returned to the nest. Direct the initial spray stream into the hole or face of the nest, then thoroughly wet the entire nest. Do not attempt to remove the nest until you are certain that all wasps are dead. This may take a day or two, since some foragers do not return to the nest every night. However, when they do return, the insecticide residue should kill them rapidly.

Underground nests. Use a registered hornet and wasp spray. Direct the material into



Western yellowjacket workers often scavenge for meat or sweets at picnics. Workers will feed pieces of meat to developing larvae in the nest.



Cutaway view of cone trap: **A.** plastic container with approximate dimensions; **B.** entry holes on bottom—about $\frac{5}{16}$ -inch in diameter; **C.** window screen cone with $\frac{5}{16}$ -inch hole at tip, set on bottom of plastic container to cover entry holes; **D.** meat platform—may be plastic or $\frac{1}{4}$ -inch plywood, either glued or slotted to inner wall of the container; **E.** lid with center cut out accommodates screen insert to allow meat odor to circulate; **F.** screen insert; **G.** staple to secure lid screen to lid frame lip. Yellowjackets enter through holes in container bottom, continue through the hole in the screen cone, and take the meat, then are unable to escape. The unit may be hung with wires or string, or held up with a metal hoop. Replace the meat bait daily, or it will lose its attractiveness. When doing this, gently remove the unit and place it in a freezer for several hours to kill the yellowjackets. Dispose of the workers, replace the meat bait, and return the unit to its station.

the entrance hole after dark. The aerosol formulation listed to kill aerial nests will rapidly kill subterranean colonies. After treating, do not plug the entrance hole. Returning foragers will enter the nest to be killed by the insecticide residue.

Nests in wall voids and attics. The aerosol formulations described under aerial nest control can also be used to kill nests in wall voids. Consider calling a commercial pest control operator to treat nests in attics for safety reasons. Homeowners trying to treat nests in close quarters like an attic are often badly stung or otherwise injured.

Traps. A number of types of lures and traps are available or can be made to reduce numbers of yellowjackets. Those commercial lures that possess heptyl butyrate are effective against the western yellowjacket. Other chemical lures generally attractive to most pest species are under development and might soon be commercially available. Wet traps (traps that can hold a liquid) can be baited with soft drinks or juices. For example, 50% apple juice in water is quite effective in attracting western yellowjackets and German wasps. Traps can be purchased or made out of a clear, 2-liter soft drink bottle. Cut the bottle one-third of the way from the top, and tape the inverted top like a funnel inside of the remainder of the bottle. Where food baits are used, replace them often because they do not maintain their attractiveness for more than a few days.

A bait trap can be made also by suspending fish or liver on a string just over a bucket of

water with detergent added. 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, where the detergent acts as a wetting agent. Trapped yellowjackets, unable to fly, will drown. A cone trap can be baited with fresh or canned meat.

Safety Precautions

Yellowjackets and paper wasps may become aroused and attack in defense of their nest when disturbed. If you decide to remove or spray a nest, follow these precautions:

- Cover yourself with thick clothing (including head, face, neck, and hands).
- Wear glasses to protect your eyes. Some species are capable of squirting venom for short distances and may target the face.
- Spray or remove aerial nests during the coolest part of the



Suspended fish bait trap.

evening, on a cool day if possible.

- Carefully put the pesticide into the entrance hole of ground nests after dark. They may fly towards the light from your flashlight.
- If you are allergic to wasp stings, do not risk removing the nest yourself. Some people react strongly to the stings of bees and wasps. Symptoms can include swelling, nausea, dizziness, difficulty with breathing, and 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, paper wasps and yellowjackets are attracted to the odors from decaying fruit. Avoid wearing perfumes, hair sprays, or other strong scents when in areas with abundant paper wasps and yellowjackets. Also, avoid brightly colored clothing, particularly yellow, orange and red.
- Restrain children and others from throwing objects at wasp nests. This not only agitates the wasps, but makes them more likely to attack upon future encounters.

Treatment of Stings

There are commercial preparations, such as a Sting Kill swab that can be used. Antihistaminic ointments and tablets, to be taken orally, seem effective in reducing reactions to stings. People who are highly sensitive to stings should consider a desensitization procedure in an allergy clinic, and consult their physician about emergency kits which contain syringes with premeasured doses of aqueous epinephrine (for injection) antihistamine tablets, and frequently a bronchodilator (inhaler), which may also contain epinephrine.



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Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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