

INSECT ARCHITECTURE

# PAPER WASPS



## PAPER WASP

One or more fertile female paper wasps (order Hymenoptera, family Vespidae, genus *Polistes*) built the first sections of this nest in the early spring. These first builders are called foundresses. One of these females becomes the dominant queen. The other females become workers. Some of the females may also leave and take over other nests.

To build the nest, the queen makes hundreds of trips back and forth to gather bits of wood and plant material in her jaws (called mandibles). They chew up the bits, mixing them well with saliva and water.

The queen begins the nest by gluing the sticky mixture to an overhanging structure like the edge of a roof. Then she adds more of the mixture and forms it into cells. The tiny cells are six-sided, and hang downward. In each cell, the dominant queen lays one egg.

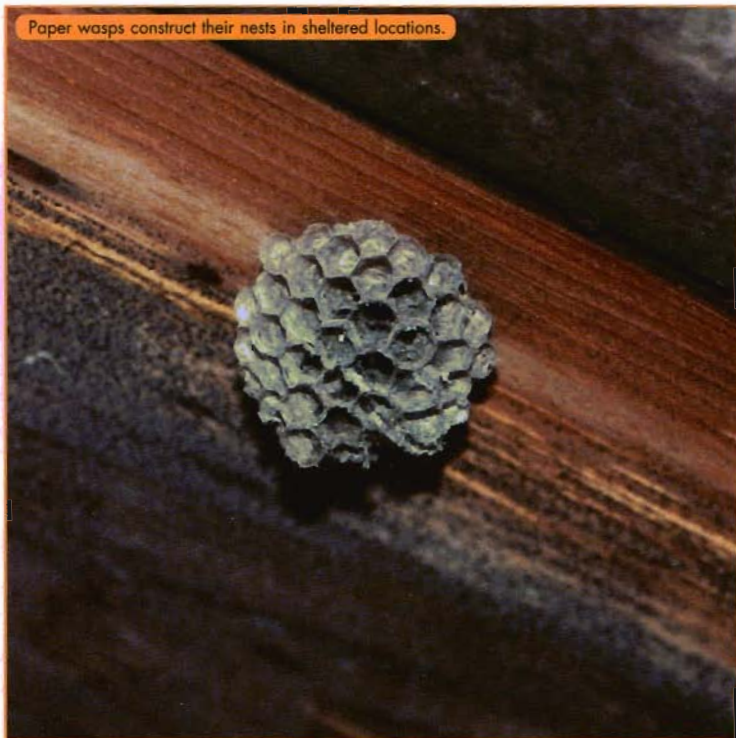
The eggs soon hatch into small white larvae, which the queen must feed. They have huge appetites, and devour the chewed-up insects and caterpillars she brings to the nest for them. When the larvae are full grown they stop eating. The queen caps over their cells. Now they undergo metamorphosis. They first transform from larvae into pupae, and then from pupae into adult female wasps. The metamorphosis takes a few weeks, and then the adult female workers emerge. The workers do not lay eggs as long as they do not mate.

The queen continues to lay eggs. But now the tasks of enlarging the nest and caring for the larvae are taken over by the female workers. Throughout the summer, the population of the colony grows and the size of the nest increases.

Toward the end of the summer a change takes place in the colony. In addition to females, male wasps also emerge from the cells. They soon mate.

When cold weather comes, all the paper wasps in the colony die off except for the fertilized females. Only these females will overwinter and become next year's queens.

Paper wasps construct their nests in sheltered locations.



## LIFECYCLE

ADULT SIZE:  
5/32 - 1 1/4 in.  
(.4 - 3.1 cm)



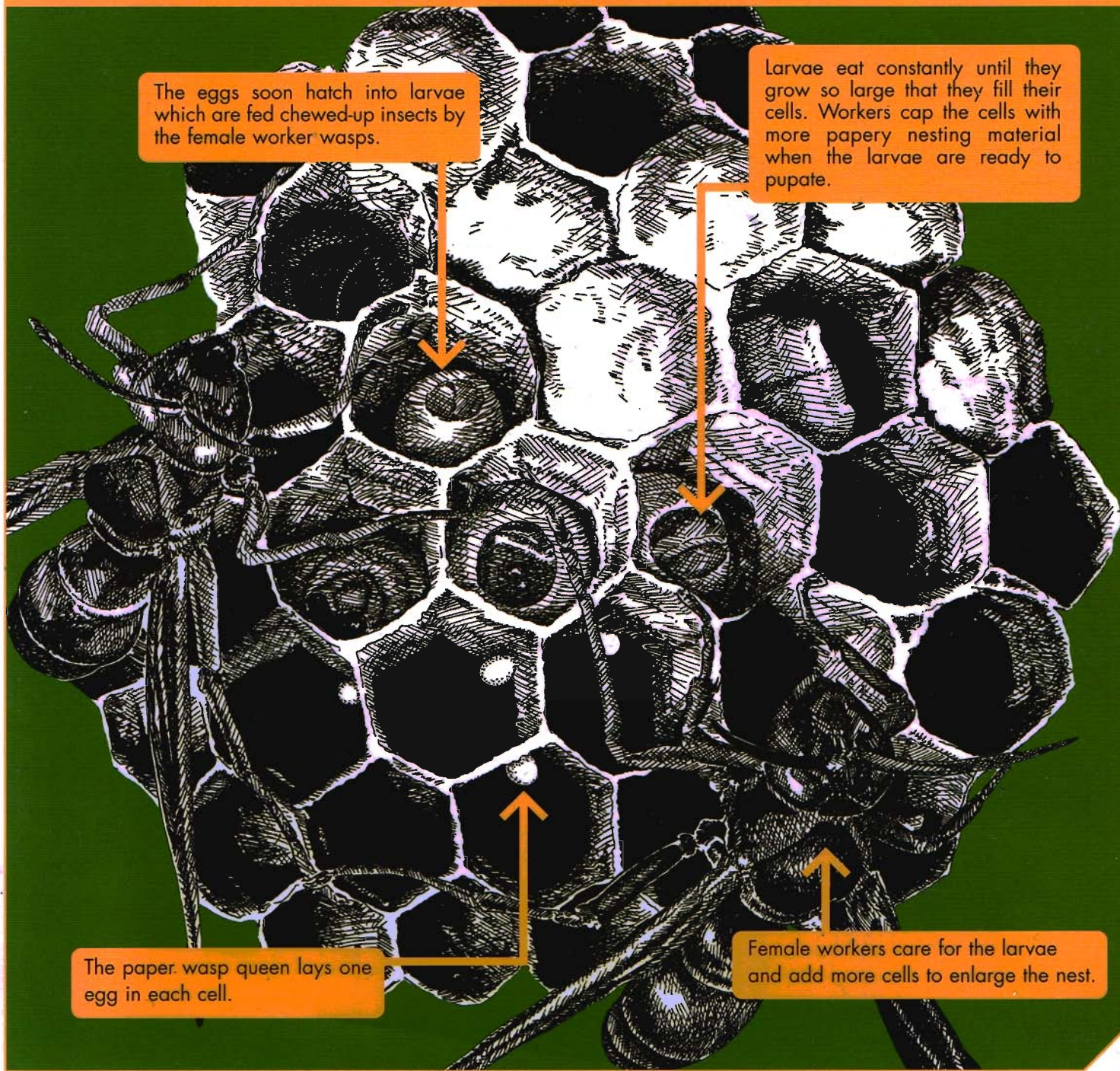
## PAPER WASP NEST

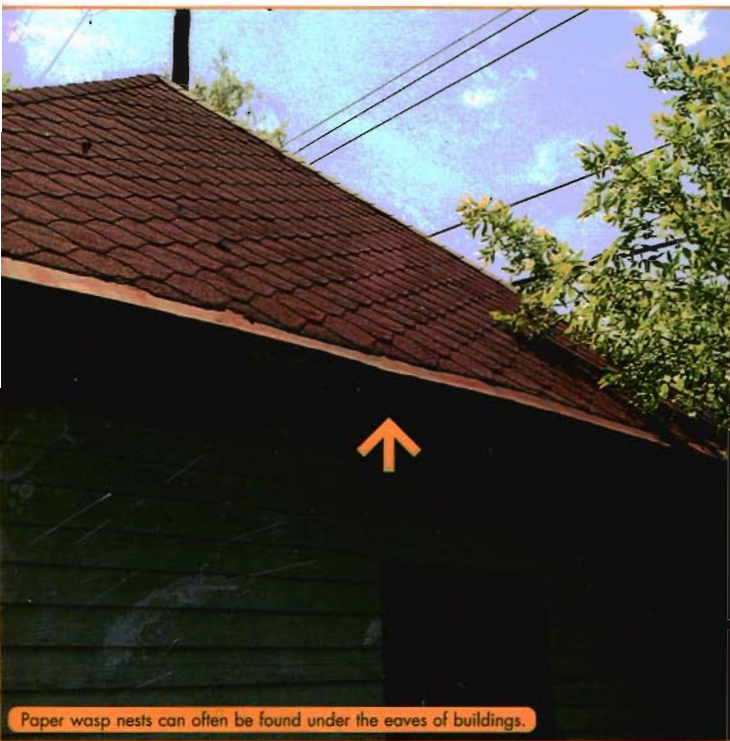
The eggs soon hatch into larvae which are fed chewed-up insects by the female worker wasps.

Larvae eat constantly until they grow so large that they fill their cells. Workers cap the cells with more papery nesting material when the larvae are ready to pupate.

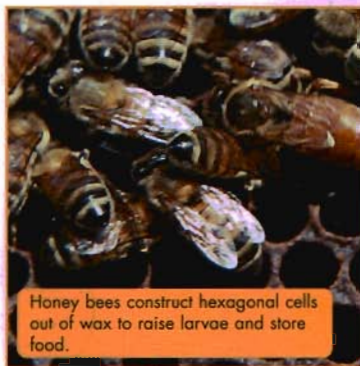
The paper wasp queen lays one egg in each cell.

Female workers care for the larvae and add more cells to enlarge the nest.





Paper wasp nests can often be found under the eaves of buildings.



Honey bees construct hexagonal cells out of wax to raise larvae and store food.



Bumblebees are bigger and furrier than paper wasps. They build nests in the ground.



Look for hornets' nests in the branches of trees.



Yellowjackets are wasps that are attracted to fruit and meat.

## WHERE TO FIND THEM

Paper wasps are sometimes called "umbrella wasps" because their nests look like upside down umbrellas. The nest is attached to trees or buildings by a narrow stem. It is made up of a single layer of six-sided cells. These cells are exposed, not covered by an outer layer of paper.

Paper wasps are considered beneficial because they eat lots of insect pests, but they can be a nuisance if they nest in buildings.

**WARNING:** Paper wasps, like other wasps and bees, can give painful stings. Use caution when observing nests or insects!

### PHOTOGRAPHY / ILLUSTRATION CREDITS

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## SIMILAR SPECIES

Wasps, hornets, and bees are all members of the order Hymenoptera. Many species of this order are social insects. They construct nests in which to live and raise their young.

While paper wasps, hornets, and yellow jackets make their nests out of bits of chewed-up wood, bees use wax secreted from their abdomens to build their hives. Honey bees feed their larvae nectar and pollen rather than insects.

Baldfaced hornets' nests can be big – often 12" in diameter – and usually hang from tree branches. The many paper combs are covered with thin layers of gray paper.