

# LADYBUG

CARD 2

GROUP 5: INSECTS & SPIDERS

CLASS  
Insecta

ORDER  
Coleoptera

FAMILY  
Coccinellidae



Small, brightly colored beetles, ladybugs are often found on green plants in large numbers, eating their way through colonies of aphids. There are 150 species in the United States alone.

## KEY FACTS



### SIZES

**Length:** 1/20-1/2 in.

**Coloration:** Varies. Usually bright shades of orange, red, or yellow, with black.

**Wings:** 1 pair of elytra (wing covers), 1 pair of flying wings.



### BREEDING

**Breeding season:** Spring and summer.

**No. of eggs:** 3-300, depending on species.

**Hatching time:** 5-8 days.



### LIFESTYLE

**Habit:** Hibernates in groups.

**Diet:** Mainly aphids.

**Lifespan:** About 1 year.



### RELATED SPECIES

There are hundreds of species found throughout the world, often identified by how many spots they have.



Range of the ladybug.

### DISTRIBUTION

Almost worldwide, but especially in temperate climates.

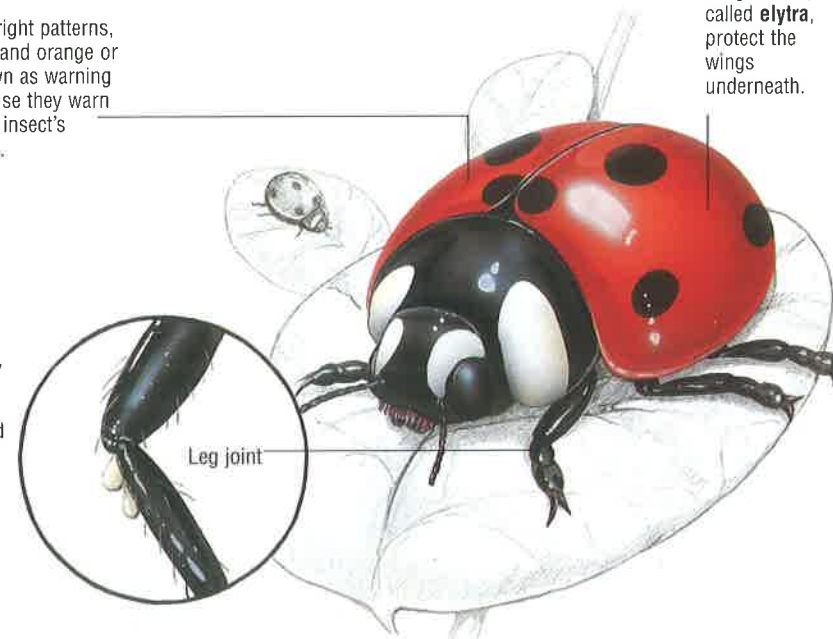
### CONSERVATION

Numbers were drastically reduced by pesticides commonly used by farmers and gardeners to destroy aphids, their food supply. Numbers are now increasing; some are bred specifically for controlling lice in plant nurseries.

## FEATURES OF THE LADYBUG

The ladybug's bright patterns, usually of black and orange or yellow, are known as warning coloration because they warn predators of the insect's unpleasant taste.

If attacked, a ladybug defends itself by **reflex bleeding**; that is, it oozes blood from its leg joints. This blood contains an unpleasant substance called **coccinelline**, which repels ants and most birds.





*Ladybugs are numerous in many areas in which pesticides are banned, and have replaced them as a natural means of killing plant-eating insects. Most ladybug species are encouraged to thrive by farmers and gardeners.*

### HABITAT

Although they are found in most parts of the world, ladybugs prefer more temperate climates, and are particularly abundant in North America and Europe. They are rarely seen in tropical rainforests, where a variety of other insects are found.

Most European ladybugs are found in neglected gardens, forests, weed patches, and vacant lots full of weeds. These are all places in which aphids,

the ladybug's principal food source, are found.

Ladybugs have been introduced to some areas of the world for the purpose of pest control. They are imported and bred in farms before being sold to gardeners and farmers. At the turn of the century, an Australian ladybug, *Rhodalia cardinalis*, was imported to California and saved the citrus crops from the cushion scale bug.

### DIET

Most ladybugs feed almost exclusively on aphids, which are found in many yards and in trees. Aphids are defenseless, so ladybugs do not need any special skills to catch them. Some ladybugs feed on red spider mites, which are considered to be one of the worst agricultural pests.

Ladybug larvae, which eat more than adult insects, also eat other, smaller ladybug larvae if aphids are scarce.

### DID YOU KNOW?

- Not all species of ladybugs have spots. The *Paramysia oblonguttata*, for example, is striped.
- A single ladybug larva in captivity was observed to have eaten 90 adult insects and 3,000 larval insects during the course of its 10- to 15-day larval phase.

- One species of ladybug can have individuals that vary in appearance. For example, the two-spot ladybug can be red with two to six spots, or it can be completely black.
- The larva of the tiny wasp, *Perilitis coccinellae*, hatches on a ladybug and then eats it alive.

Right: Preparing to take off.

Left and below: Ladybugs feed on aphids.



P.Couder/Nature



N.C.Fuller/Aquila Photographics

### LIFECYCLE

Most ladybugs mate in the spring or summer. The female lays a cluster of eggs, numbering between three and 300, depending upon the species. The eggs are laid as near to the aphid colonies as possible.

In most species, the eggs hatch in five to eight days, and the larvae proceed to eat 350 to 400 aphids in the two weeks it takes them to become fully grown. At this point, they pupate, or enter a non-feeding stage before they mature into their adult form. The ladybug's entire lifecycle is only four to seven weeks.

Ladybugs in temperate areas usually hibernate in the winter. Millions gather in the Southwest, where they cover the ground like a blanket. In England, the most common of the larger species, the seven-spot *Coccinella 7-punctata*, often hibernates in the open, fully exposed to view.

Below: Ladybugs mating on a leaf.



F.Saver/B.Coleman Ltd.



### NATUREWATCH

Ladybugs hibernate in the winter, so they are most easily observed in the summer. The best way to find ladybugs is to look for those plants on which aphids commonly feed, such as roses, cherry trees, and bean plants. Ladybugs are usually unaffected by the presence of an observer, so they may be watched as they feed. A close inspection of the food

plant may reveal clusters of orange ladybug eggs.

Some ladybugs hibernate in the open; others, under the dense, protective needles on pine branches or under pieces of pine bark.

To count how many species live in your area, note the number of spots on the ladybugs in your yard, and the types of plants on which they feed.

# HONEYBEE

CARD 1

GROUP 5: INSECTS & SPIDERS

CLASS  
*Insecta*

ORDER  
*Hymenoptera*

FAMILY  
*Apidae*

GENUS & SPECIES  
*Apis mellifera*



Premaphotos Wildlife

**The honeybee is found throughout the world and is highly valued for the honey it produces. The industrious honeybee is thought to have originated in Asia.**

## KEY FACTS



### CHARACTERISTICS

**Length:** Queens,  $\frac{1}{2}$  in. Drones,  $\frac{3}{4}$  in. Workers,  $\frac{3}{8}$  in.  
**Coloration & form:** Queens, dark and long-bodied. Drones, larger than workers, no stinger. Workers, orange-banded.  
**Mouthparts:** Proboscis.  
**Wings:** 2 pairs hooked together.



### BREEDING

**Eggs:** Up to 1,500 laid per day.  
**Hatching time:** 3 days.



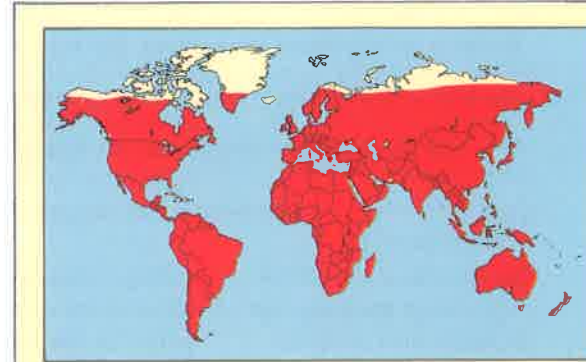
### LIFESTYLE

**Habit:** Live in large colonies.  
**Diet:** Nectar and pollen.  
**Lifespan:** Queens, 7 years. Drones, 4-5 weeks. Workers, 8 weeks.



### RELATED SPECIES

The giant honeybee (*Apis dorsata*), found in the tropics, builds huge, free-form combs that hang from the trees.



Range of the honeybee.

### DISTRIBUTION

Believed to have originated in India, honeybees are now found throughout the world wherever flowers grow.

### CONSERVATION

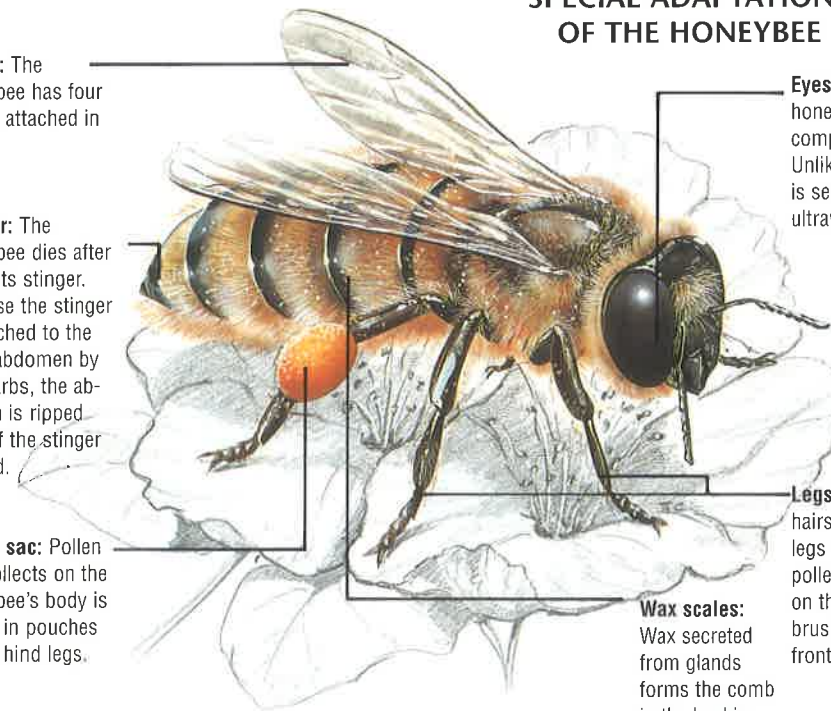
The bee's economic value should guarantee its survival, but bad weather, disease, and predators all present dangers.

## SPECIAL ADAPTATIONS OF THE HONEYBEE

**Wings:** The honeybee has four wings, attached in pairs.

**Stinger:** The honeybee dies after using its stinger. Because the stinger is attached to the bee's abdomen by tiny barbs, the abdomen is ripped apart if the stinger is used.

**Pollen sac:** Pollen that collects on the honeybee's body is stored in pouches on the hind legs.



**Eyes:** The honeybee has compound eyes. Unlike humans, it is sensitive to ultraviolet light.

**Legs:** Feathery hairs on its front legs collect pollen. Stiff hairs on the middle legs brush it from the front legs.

**Wax scales:** Wax secreted from glands forms the comb in the beehive.

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*The honeybee uses a unique behavior to communicate the location of food to other bees in its colony. After spotting an abundant food source, the worker returns to the hive and performs a dance. The movements indicate the direction and distance of the food source.*

## LIFECYCLE

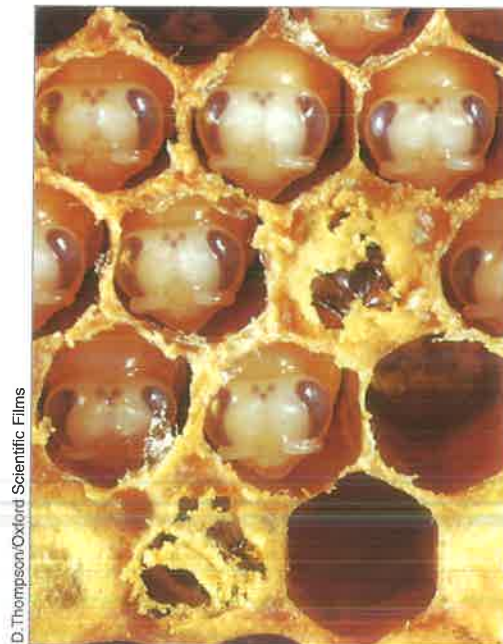
The lifecycle of a honeybee begins when the queen lays an egg in each cell of the comb. A fertilized egg will develop into a female worker; an unfertilized egg produces a male drone.

The egg hatches three days later, and the larva is fed with nutritious *royal jelly* that is produced by the workers. After several days, worker and drone bee larvae are fed honey and pollen. A larva fed solely on royal jelly will develop into a queen bee.

During the eight days it takes the larva to develop, it

undergoes several molts before spinning a silk cocoon within the egg cell. Inside the cocoon, the larva *pupates*—develops into its adult form.

The worker bees maintain the colony. For the first two weeks of their lives, they clean the hive and feed the larvae. After the tenth day, they begin building the comb cells. From days 16 to 20, they receive and store nectar and pollen. On day 20, they briefly guard the entrance of the hive before leaving it to collect nectar and pollen for their remaining weeks of life.



**Right:** A swarm of honeybees pauses on the branch of a tree during its search for a suitable site to establish a new colony.

**Left:** In each egg cell, a larva hatches and is fed by the workers. Before its final molt, the larva's cell is capped with wax. Two young bees are visible breaking out.



M. J. Hoare/Natural Science Photos



## NATUREWATCH

Honeybees are relatively large insects, and therefore easy to spot outdoors. They suck nectar from flowers and pick up pollen on their bodies; they are often seen scraping the pollen into pouches on their hind legs.

Honeybees are active mainly in warmer months. Even then, they prefer to



Ardea London

stay in their hives on particularly cool or windy days.

## DID YOU KNOW?

- Enzymes in the worker bees' stomachs turn nectar into a honey-like substance. This substance is then regurgitated into storage cells in the hive, where it is

fanned by other workers in order to evaporate the excess water. The result is honey—the bees' vital source of food during the winter months.

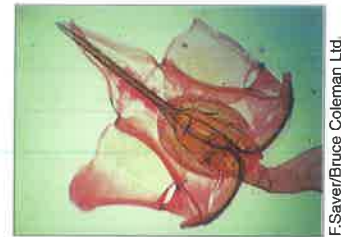
## DEFENSES

The honeybee's sting is a powerful method of defense. When threatened, it pierces its victim with its stinger, which is attached to the bee's venom gland. As the bee struggles to free itself from its victim, its lower abdomen tears away, causing death.

Despite its painful sting, the honeybee has many predators. Birds eat honeybees in large numbers. Hornets pose another threat.

Common wasps attack and kill honeybees foraging on flowers. Hunting wasps kill

them and take them back to their nests to feed to their young. Caterpillars of the wax moth destroy the honeycombs, and larvae of the bee-wolf beetle feed on bee larvae inside the hive.



*The barbed stinger of a bee.*

F. Saver/Bruce Coleman Ltd.

## FEEDING & HABITS

Wild honeybees build their nests inside old, hollow trees, under cliff overhangs, or in cave entrances. Today, most honeybees nest in artificial hives provided by beekeepers.

Throughout the spring and summer, worker bees leave the nest to collect nectar and pollen with which they produce honey. The nectar is stored in their *crops* (stomachs), while the pollen that collects on their bodies is scraped into pouches on their hind legs.

If a worker discovers a plentiful supply of nectar, it communicates the location to

other bees by doing a special dance on the surface of the honeycomb.

It is the queen bee who regulates the nest's activity. In her life, which lasts anywhere from one to seven years, she will lay up to 1,500 eggs a day. The queen dominates the colony by use of a scent called *pheromone*. When female workers are exposed to this scent, they are prevented from sexually maturing.

When the nest becomes too crowded to be affected by her scent, or when she grows too old, the queen leaves the nest and a new queen emerges.