



# WILDLIFE NOTES

## Ladybug

### *Rodolia cardinalis*

Ladybugs have been called the most beneficial of all beetles, and it's not hard to figure out why. Since the dawn of agriculture their voracious appetites for crop pests have made them invaluable to our food-growing efforts, and they're being used more and more today as biologically sound alternatives to pesticides.

These small, oval insects with their bright, spotted shells have long been welcome guests in agricultural settings. Their name reflects a religious gratitude for their services, for in Europe they were dedicated to the Virgin Mary as "Our Lady's Beetles." The familiar children's rhyme, "Ladybug, ladybug, fly away home/ Your house is on fire, your children will burn," also grew out of the European farming experience. After harvesting crops, it was customary to burn what was left to clear the field and destroy any insect pests. Ladybug larvae, unable to fly, also perished in the fires.

There are 475 species of ladybugs, or Coccinellidae, in the continental United States, and all but two are beneficial. None, though, provides a more dramatic example of usefulness than *Rodolia cardinalis*, which saved California's citrus crop 100 years ago. The cottony-cushion scale, a destructive insect introduced accidentally from Australia in 1868,

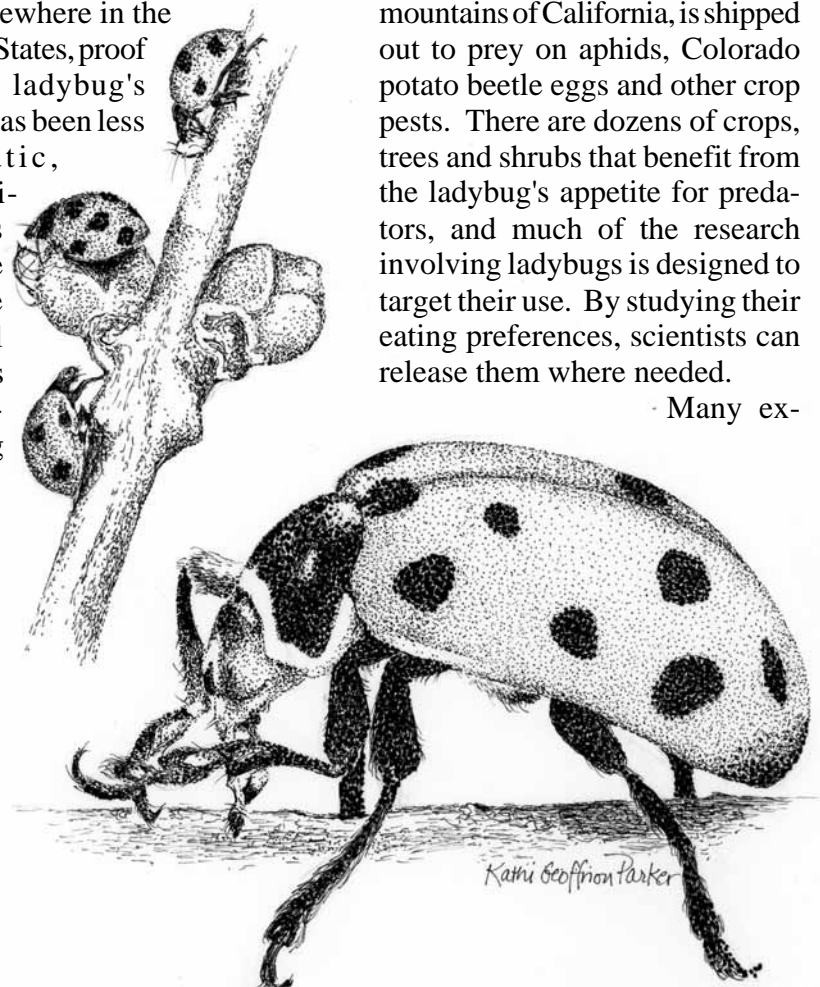
was wiping out peach, lime, orange and other trees. By the mid-1880s farmers had tried every compound they had, but the pest was still so bad that many just gave up. An American biologist in Australia saw that *Rodolia cardinalis* fed on the scale, and a few hundred ladybugs were shipped to California. Within two years, the pest was under complete control and the citrus industry was saved.

Elsewhere in the United States, proof of the ladybug's worth has been less dramatic, but scientists have made small inroads in exploiting

similar predatory relationships.

*Coccinella septempunctata*, known commonly as the seven-spotted ladybug, has been introduced with some degree of success in a number of states to control aphids on alfalfa and corn. *Chilocorus kuwanii* has similarly been used in an effort to curb a scale harmful to euonymus, a decorative shrub. *Hippodamia convergens*, gathered in the mountains of California, is shipped out to prey on aphids, Colorado potato beetle eggs and other crop pests. There are dozens of crops, trees and shrubs that benefit from the ladybug's appetite for predators, and much of the research involving ladybugs is designed to target their use. By studying their eating preferences, scientists can release them where needed.

Many ex-



periments are being conducted with ladybugs (and other predators) brought to the United States from overseas. This is necessary because fully a third of U.S. crop pests were imported, usually accidentally. Often they have no natural predators in their new surroundings, and their old ones must be found and brought in where possible. There are a number of indigenous species that consume pests, but not in numbers sufficient to commercially rival pesticides.

Although commerce in ladybugs is still in its infancy in many states, ladybugs are a hot commercial item in some parts of the country, particularly in the West. Many are sold to farmers by the thousand for specific pest control purposes. The problem with this, according to scientists, is that ladybugs will sometimes eat the pest, then fly away, laying eggs elsewhere and leaving the next generation of pests without a predator. "They benefit somebody," said one researcher, "but rarely the person who paid for them."

Ladybugs work best en masse, and the site of thousands gathered on a fruit tree in the spring is dramatic. They're drawn together by sex pheromones. A female will release the pheromone, and males can detect it from several miles away. Other females release more, and soon ladybugs are bunched in huge numbers.

After mating, the female lays eggs on the underside of a leaf or in a bark crevice. Since the young don't have wings, the eggs are always laid on a pest-infested plant or tree where food is close at hand. The young are insatiable, devouring eggs, aphids, mites and scale insects. Each female lays hundreds of eggs, and each of the larvae may eat thousands of pests. After a few weeks each larva reaches full size, then hangs itself up by the tail to the surface of a leaf and transforms into a short, stout chrysalis. This pupal stage lasts 10 to 14 days, then the shell that has developed splits and a winged, adult ladybug emerges.

The adults that make it through the summer will hibernate during the winter, and a valuable peculiarity ensures that many will make it. Ladybugs secrete a foul-tasting substance that makes them unpalatable to birds. Some species hibernate in large clusters, but many hide singly under bark, in old haystacks, or in houses or other buildings. A ladybug hibernating in a pioneer home was thought of as a sign of good luck.

The use of ladybugs and other alternative methodologies in pest management is in its infant stage, but as farmers and backyard gardeners look to environmentally sound controls, more will turn to a source of pest predation that's as old as farming itself – the ladybug.

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