

Multicolored Asian Lady Beetle, *Harmonia axyridis* Pallas (Insecta: Coleoptera: Coccinellidae)¹

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Introduction

The multicolored Asian lady beetle *Harmonia axyridis* Pallas was introduced from Asia both purposefully for classical biological control of arthropod pests and accidentally into the United States many times during the twentieth century. It finally became established and quickly spread over the entire United States sometime in the late 1980s and early 1990s.

Distribution

By 1994, *Harmonia axyridis* had colonized the United States from Florida to Canada and from coast to coast.

Description

H. axyridis adults occur in several color patterns or “morphs” varying from solid orange, orange with black spots to red with black spots. They should not be mistaken for another introduced ladybird from Europe, the seven-spotted lady beetle, *Coccinella septempunctata* Linnaeus, that is often found feeding on the same insect hosts and plants.



Figure 1. Plain orange morph of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.

Credits: Russell F. Mizell, University of Florida



Figure 2. Spotted orange morph of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.

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Figure 3. Spotted red morph of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.
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Figure 4. The seven-spotted lady beetle, *Coccinella septempunctata* Linnaeus.
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Life Cycle

H. axyridis oviposit in or near prey infestations. The larvae are larger than most native ladybird larvae and are especially fond of crapemyrtle aphids, *Tinocallis kahawaluokalani* (Kirkaldy), found only on crape myrtle, *Lagerstroemia indica* L. Crapemyrtle aphids also originate from Southeast Asia, home of *H. axyridis*. Many native beneficials also feed on crapemyrtle aphids. It is suspected that *H. axyridis* may be responsible for reduction in the numbers of native beneficial insects including other ladybird species through cannibalism and by elimination of scarce prey. This supposition remains to be proven scientifically.

Use in Classical Biological Control

H. axyridis is a voracious predator of arthropod pests such as aphids, mites, thrips, scale, and Lepidoptera eggs. As a predator, it is beneficial for most of the year and has contributed to a decrease in pesticide use in a myriad of orchard and other crops. Both *H. axyridis* larvae and adults feed on pests and quickly build up to large numbers locally.

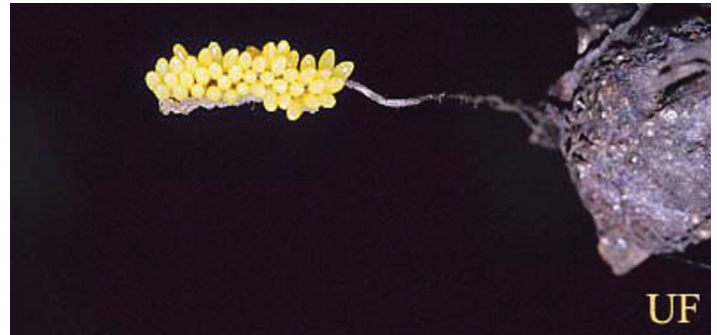


Figure 5. Eggs of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.
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Figure 6. Larva of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.
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Figure 7. Pupa of the multicolored Asian lady beetle, *Harmonia axyridis* Pallas.
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Status as an Overwintering Pest

Unfortunately, like many of our native ladybird species, *H. axyridis* adults aggregate in high numbers to overwinter. In Japan, *H. axyridis* overwinter en masse in rocky outcrops on the sides of mountains and in other structures similar to the behavior of the [convergent lady beetle](#) [10 February 2022], Guérin- Méneville, in the U.S. However, unlike other ladybirds in the U.S., *H. axyridis* is attracted to light colored dwellings and other manmade objects, which it uses as overwintering sites. As a result of this behavior, *H. axyridis* enters dwellings it is attracted to through cracks, crevices

and other small openings around windows, doors and roofs.

Flight to overwintering quarters is triggered by the onset of cold weather and scarcity of prey, occurs at different times from year to year, and occurs progressively later from northern to southern latitudes: October in Michigan and November-January in north Florida. These mass migrations to overwintering sites proceed over a period of a few days in the north to a few weeks or more in the southern United States, again dependent on local weather. During the overwintering phenomena, the ladybirds respond to and aggregate in large numbers on dwellings, which usually are white, beige or tan, although occasionally darker colored buildings also are used. Usually these dwellings have walls facing in the general directions of south to west, which in the fall months due to the sun's lower azimuth are highly reflective of sunlight. These bright reflective surfaces shine intensely and are visible and attractive to the ladybirds from long distances. This is especially true for areas of the United States and Canada, which are hilly or mountainous, e.g., Tennessee and New York, where light colored dwellings in the mountains or higher elevations may be visible for miles.

As a result of this overwintering behavior, *H. axyridis* are a nuisance during and after the flight periods as they aggregate in the walls and other parts of dwellings. *H. axyridis* may enter houses in large numbers, 15,000 to 20,000 is not uncommon. Inside the walls, floors, attics, crawl spaces, etc., of dwellings, they crawl around looking for cool places to spend the winter. With large numbers of ladybirds, this annoying movement can be heard from inside the house. Moreover, the interior walls of the dwellings are often warmer than the ladybirds require for dormancy. Therefore, they continue to crawl around and often exit the dwelling walls into the interior over the course of the winter or in spring. Once in the warm interior, they fly around and land on walls, drapes, furniture, etc., causing much general annoyance to the human inhabitants. The ladybirds are of special consternation to inhabitants that are entomophobic (fear of insects). *H. axyridis* also produces a yellow viscous, foul-smelling defensive compound when it is disturbed that may soil whatever it contacts. Therefore, when people disturb them or try to remove them by sweeping, with vacuum cleaners or with other tools, the foul odor spoils the air and yellow spots on people, expensive furniture, and drapes result.

This phenomenon of large aggregations of overwintering *H. axyridis* is all too common now across the United States and Canada. The ladybirds often return to the same buildings year after year. In addition to the problem for affected

homeowners, the situation is a black eye on classical biological control, which in most cases is a highly touted and effective alternative to the use of chemical pesticides.



Figure 8. Large number of multicolored Asian lady beetle, *Harmonia axyridis* Pallas, collected from a building.

Credits: Ronald F. Billings, Texas Forest Service, www.forestryimages.org

Management

Recommendations for protecting buildings from overwintering *H. axyridis* have not been fully developed. All buildings infested by these ladybirds should have any cracks, crevices, or holes in the exterior walls and especially around windows and doors sealed or caulked to prevent entry. The ladybirds often enter attics and can accumulate in large numbers in these spaces over the years. Once the ladybirds are inside a building there are several options for removal. The best option is to purchase a black light trap and use it in rooms where ladybirds are observed as soon as they are seen. The light traps when operated at night are very effective.

Use of a vacuum cleaner or other cleaning tools that handle the beetles roughly, while effective, will result in production of the defensive compound by the ladybirds with its unwanted side effects as previously described. Despite their overwintering behavior, *H. axyridis* are very valuable as natural enemies of many insect pests and should be tolerated and conserved when possible.

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