

# MuseumPests.net

A Product of the Integrated Pest Management Working Group

## Multicolored Asian Lady Beetle

*Harmonia axyridis* (Pallas)



### GENERAL INFORMATION

The multicolored Asian lady beetle, *Harmonia axyridis* is in the beetle family Coccinellidae that are commonly referred to as ladybugs. This voracious beetle, native to Asia, has been introduced in North America and Europe as a biological control agent of aphids. Both introductions have led to established populations, frequently reaching very large numbers of individuals in agricultural areas. In its native range the multicolored Asian lady beetle is likely kept in check by natural predators and competition with other species, however in North America and Great Britain these do not exist and have led to its success.

Recent concerns about this ladybeetle have developed regarding its impact on native non pest species such as other lady beetles, butterflies and some aphids. Additionally, adult beetles when threatened will excrete defensive droplets that can be an irritant if inhaled and has a noxious odor. There have been a few reported cases of adult beetles biting humans but very infrequently. In fact some debate still exists if this beetle was in fact responsible for the bites.

Within a museum or historic home environment, the beetles that enter structures in great numbers during the fall season to can be a source of numerous problems. As the summer temperatures decline, the beetles are attracted to man-made structures due to geographic, lighting and temperature conditions. Once they land on the man-made structure, they find their way in through cracks and gaps left in the construction process. They will spend the cold winter in wall voids and attic spaces where they gather on top of each other in clusters of several hundred to several thousand beetles. It is typical to find that some of the overwintering beetles emerge into the inside of the structure during the winter and die. The large numbers of dead lady beetles that accompany live



### DIAGNOSTIC MORPHOLOGY

#### Adults:

- Measure up to 9mm long and 5 mm wide
- Wing covers (elytra) yellowish orange to red in color, with 0 to 19 black spots.
- Pronotum covering the thorax commonly with black M-shaped marking but variable (see upper image at right)
- Highly variable in color and pattern



#### Immature Stage:



Actual Size

- Larval length from .5mm to 10mm
- Base color is black with orange marking on back
- Body has many spines along entire length

populations in structures can attract dermestid beetles that will feed on the dead lady beetles. These same dermestid beetles can then transfer to and potentially damage items in the collections. The beetles have been known to be attracted to certain works of art due to the exhibit lighting and defecate on the artwork. Also they are a nuisance to visitors when they accumulate on windows and walls within the structures they inhabit.

The color and spotting variation that we see in adult beetles is due to food and temperature conditions during the life of the beetle larva. If a larva has a diet rich in aphids and other insects, the color of the adult will be a bright red, while a larval diet consisting more of pollen will yield an adult with a more yellow coloration. Excessive spots on the adult indicate that the temperatures during the pupal stage were colder and the pupal stage lasted longer. No spots on the adult wingcovers indicates warmer temperatures during pupation and a shorter pupal period.

### SIGNS OF INFESTATION

The beetles are first seen on sunny windows in the autumn and often group on window ledges, the floor beneath windows and ceilings. Dead multicolored Asian lady beetles will often be found when sweeping floors and littering window sills. Other pest species, such as larder beetles and carpet beetles, may be an indicator of lady beetle infestations in an inaccessible area, i.e. inside of walls or above drop ceilings.

### FOOD SOURCES

Lady beetles are generalist predators. *Harmonia axyridis* feeds on aphids (Order Hemiptera: Sternorrhyncha) commonly found on plants in

gardens and on house plants. The multicolored Asian lady beetle will also feed on scale insects, mites, butterfly larvae, and other native ladybugs and insects. They can also feed on some pollens and nectaries.

### LIFE CYCLE

This species goes through complete metamorphosis. The larval stage normally consists of four instars or molts, each one increasing in size, and slight differences in color. Full development from egg to adult takes about 18 days depending on temperature conditions. Adults typically live for up to 90 days however, they can survive for up to three years. Though some differences in behavior exist between locations, in general adults migrate together into overwintering sites at the end of October. Overwintering sites can be natural crevices in rocks or trees but also include buildings and homes, which accounts for its tendency to be a pest.

### CONTROL & TREATMENT

The beetles themselves do not pose a pest threat to museum collections. However, large groups of overwintering adults will often die in buildings, like museums, and this creates food sources for other museum pests. Beetles, both dead and live should be removed from inside buildings. Sweeping and vacuuming are effective methods for their removal. Prevention is similar to other pest species, they should be excluded from all collection spaces, making sure that window and door seals are in place and effective. Additionally, exterior cracks in building walls, especially on the south and west facing sides, should be sealed to disallow access to spaces between exterior and interior walls.

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## Fact Sheet: Multicolored Asian Lady Beetle

Integrated Taxonomic Information System [www.its.gov](http://www.its.gov)

Koch RL. 2003. The multicolored Asian lady beetle, *Harmonia axyridis*: A review of its biology, uses in biological control, and non-target impacts. 16pp. *Journal of Insect Science*, 3:32,

Gordon Robert D. 1985. The Coccinellidae (Coleoptera) of America North of Mexico. *Journal of the New York Entomological Society*. Volume 93, fascicle 1, pages 1-912

Brown P. M. J. et al. 2008. *Harmonia axyridis* in Europe: spread and distribution of a non-native coccinellid. *BioControl*, 53:1.

Jasinski, J., Multicolored Asian Lady Beetles Integrated Pest Management Program, PowerPoint Presentation from The Ohio State University Extension, 2009

Image of Multicolored Asian Lady Beetle adult in lower left of sheet: Lynn Jones

Image of diagnostic larva: Česká Lípa, Czech Republic, Encyclopedia of Life: [http://eol.org/data\\_objects/2000578](http://eol.org/data_objects/2000578)

Image of Diagnostic Adult thorax: Udo Schmidt, Germany, Encyclopedia of Life: [http://eol.org/data\\_objects/13547023](http://eol.org/data_objects/13547023)