

**NAME OF SPECIES: *Harmonia axyridis* (Pallas)**

Synonyms: *Coccinella axyridis* Pallas

Eight junior synonyms: *Coccinella bisex-notata* Herbst 1793, *Coccinella 19-sinata* Faldermann 1835, *Coccinella conspicua* Faldermann 1835, *Coccinella aulica* Faldermann 1835, *Harmonia spectabilis* Falderman 1835, *Coccinella succinea* Hop 1845, *Anatis circe* Mulsant 1850, *Ptychanatis yedoensis* Takizawa 1917

Numerous subspecies and aberrations have been described

Common Name: Multicolored Asian lady beetle, Halloween beetle

**A. CURRENT STATUS AND DISTRIBUTION**

**I. In Wisconsin?**

1. YES    X            NO

2. Abundance:  
Entire state

3. Geographic Range:  
Ubiquitous

4. Habitat Invaded:  
Various trees, including maple, walnut, willow, oak, pine, poplar plantation, alfalfa, soybean, corn, winter wheat

5. Historical Status and Rate of Spread in Wisconsin:  
Recorded in numbers since 1994

6. Proportion of potential range occupied:  
Entire

**II. Invasive in Similar Climate Zones**

YES    X            NO

United States: Released extensively for classical biological control: California in 1916, 1964 and 1965; Washington in 1978-1982; Connecticut, Georgia, Louisiana, Maryland, Washington D.C., Delaware, Maine, Mississippi, Ohio, Pennsylvania, North Carolina in 1978-1981

Current populations may be from accidental seaport introductions. Now present in all states east of the Mississippi.

Canada: British Columbia, Nova Scotia, Ontario, Quebec

Europe

South America

**III. Invasive in Similar Habitat Types**

YES    X            NO

*Albus, Acacia, Acer, Betula, Carya (Pecan), Castanea (chestnut), Citrus, Fagus, Hibiscus, Juglans, Laderstroemia, Leriodendron, Magnolia, Malus, Pinus, Podocarppus, Prunus, Quescus, Phamnus, Salix, Sambuca, Spirea, Tllia, Tsuga, Ulmus, Vitis, Zanthoxylum*  
alfalfa, soybean, corn, winter wheat

**IV. Habitat Affected**

1. Hosts:

Numerous aphid species, Tetranychidae, Psyllidae, Coccoidea, immature stages of Chrysomelidae, Curculionidae, and Lepidoptera, pollen and nectar

Non-target:

Coleoptera: Coccinellidae: *Adalia bipunctata, Adonia variegata,*

*Coleomegilla maculate, Coccinella septempunctata, C.*

*septempunctata brucki, Cycloneda sanguinea, Propylea japonica, P. quatuordecimpunctata*

Lepidoptera: Nymphalidae: *Danaus plexippus*

Neuroptera: Chrysopidae: *Chrysoperla carnea*



	alkaloids.
	2. Presence of Competitors: Yes, but usually outcompetes native coccinellid species
	3. Rate of Spread: Rapid
<b>II. Environmental Effects</b>	1. Alteration of ecosystem/community composition? YES    X            NO Notes: Outcompetes and displaces other predators, engages in intraguild predation, has many non-target prey.
	2. Alteration of ecosystem/community structure? YES    X            NO Notes: Change in arthropd species composition, species richness
	3. Alteration of ecosystem/community functions and processes? YES                    NO    X Notes:
<b>III. Socio-economic</b>	1. Effects of Restricting Entry: An effective biological control agent for several aphid species
	2. Effects on Human Health: High numbers aggregating in buildings become a nuisance and the beetles release an odor that may be offensive to some. Respiratory ailments can be agravated.
<b>D. PREVENTION AND CONTROL</b>	
<b>I. Detection Capability:</b>	Notes: Easily recognized and located in habitats.
<b>II. Costs of Prevention :</b>	Notes: Considered beneficial. Considered a nuisance when adults aggregate in buildings during the fall and may cause allergic reactions, therefore, prevention aimed at home/structure invasions.
<b>III. Responsiveness to prevention efforts:</b>	Notes: No state level preventive measures taken.
<b>IV. Control tactics:</b>	1. Cultural: Prevent entry into structures by sealing openings and cracks exceeding 1/16 inch with weatherstripping or caulking. Physical removal of beetles from building (sweeping, vacuuming) 2. Biological: Predators: Other coccinellids, only if <i>H. axyridis</i> is smaller Eight species of birds (Russia) Parasitoids: Phoridae, <i>Phalacrotophora</i> sp. parasitize pupae (Asia) Tachinididae: parasitize adults: <i>Degeria lutuosa</i> (Korea), Strongygaster triangulifera (United States) Braconidae: <i>Dinocampus (=Perilitus) coccinellae</i> (Korea and United States) Entomolopathpgens: <i>Hesperomyces virescens</i> (Laboulbeniales : Laboulbeniaceae); microsporidia 3. Chemical: Synthetic pyrethroids: permethrin, cypermethrin, cyfluthrin, deltamethrin, lambda-methrin concentrated along doors, windows, and overhangs on the south, west, and east sides. Etofenprox and acetamiprid were highly toxic to most developmental stages, Abamectin was highly toxic to eggs, larvae, pupae, and adult ladybirds; pyrazophos was highly toxic to eggs and larvae at a rate much lower than the recommended dose. Chemicals such as camphor could be used as repellants from structures or use attractants into baited shelters with chemical attractants such as conspecific, fecal, and aggregation site persistent residue volatiles. 4. Regulatory: none
<b>V. Minimum Effort:</b>	Notes: Management at discretion of home owner.
<b>VI. Most Effective Control:</b>	Notes: Prevent entry of beetle into buildings and/or treat perimeter

	of homes with deterrent chemicals.
<b>VII. Cost of prevention or control vs. Cost of allowing invasion to occur:</b>	Notes: Preventive costs mainly home/property owner expense. Invasion may shift native arthropod natural enemy populations.
<b>VIII. Non-Target Effects of Control:</b>	Notes: Risks associated with use of insecticides. Alternative control methods may be necessary for the pests it controls.
<b>IX. Efficacy of monitoring:</b>	Notes: Easily recognized.
<b>X. Legal and landowner issues:</b>	Notes: None. Management at discretion of home owner.

## F. REFERENCES USED:

Albright, D.D., D. Jordan-Wagner, D.C. Napoli, A.L. Parker, F. Quance-Fitch, B. Whisman, J.W. Collins, L.L. Hagan. 2006. Multicolored Asian lady beetle hypersensitivity: a case series and allergist survey. *Ann Allergy Asthma Immunol*: 97: 521-527

Colunga-Garcia, M., S.H. Gage. 1998. Arrival, establishment, and habitat use of the multicolored Asian lady beetle (Coleoptera : Coccinellidae) in a Michigan landscape. *Environ. Entomol.* 27: 1574-1580 .

Galvan, T.L., R.L. Koch, W.D. Hutchison. 2005. Toxicity of indoxacarb and spinosad to the multicolored Asian lady beetle, *Harmonia axyridis* (Coleoptera: Coccinellidae), via three routes of exposure. *Pest Manag. Sci.* 62: 797-804

Koch, R.L. 2003. The multicolored Asian lady beetle, *Harmonia axyridis*: A review of its biology, uses in biological control, and non-target impacts. 16pp. *J. Insect Sci.* 3:32, available online: [insectscience.org/3.32](http://insectscience.org/3.32)

\*\* Multiple references within this article.

Koch, R.L., R.C. Venette, W.D. Hutchison. 2006. Invasions by *Harmonia axyridis* (Pallas) (Coleoptera : Coccinellidae) in the Western Hemisphere: Implications for South America. *Neotrop. Entomol.* 35: 421-434.

Labrie, G., E. Lucas, D. Coderre. 2005. Can developmental and behavioral characteristics of the multicolored Asian lady beetle *Harmonia axyridis* explain its invasive success? *Biol. Invasions.* 8: 743-754.

Riddick, E.W., J.R. Aldrich, A.D. Milo, J.C. Davis. 2000. Potential for modifying the behavior of the multicolored Asian ladybeetle (Coleoptera: Coccinellidae) with plant-derived natural products. *Ann. Entomol. Soc. Am.* 93: 1314-1321.

Riddick, E,W, P.W. Schaefer. 2005. Occurrence, density, and distribution of parasitic fungus *Hesperomyces virescens* (Laboulbeniales: Laboulbeniaceae) on multicolored Asian lady beetle (Coleoptera: Coccinellidae). *Ann. Entomol. Soc. Amer.* 98: 615-624.

Saito, T., S. Bjornson. 2006. Horizontal transmission of a microsporidium from the convergent lady beetle, *Hippodamia convergens* Guerin-Meneville (Coleoptera: Coccinellidae), to three coccinellid species of Nova Scotia. *Biol. Contr.* 39: 427-433

Youn, Y.N., M.J. Seo, J.G. Shin, C. Jang, Y.M. Yu. 2003. Toxicity of greenhouse pesticides to multicolored Asian lady beetles, *Harmonia axyridis* (Coleoptera: Coccinellidae). *Biol. Contr.* 28: 164-170.

<http://www.ars.usda.gov/is/br/lbeetle/index.html?pf=1>

[http://www.colostate.edu/Depts/Entomology/courses/en507/papers\\_2001/mannix.htm](http://www.colostate.edu/Depts/Entomology/courses/en507/papers_2001/mannix.htm)  
<http://www.entomology.wisc.edu/mbcn/kyf210.html>  
<http://www.extension.umn.edu/yardandgarden/ygbriefs/e615ladybeetles.html>  
<http://wihort.uwex.edu/gardenfacts/X1050.pdf>

Reviewer(s): Celia K. Boone

Date Completed: August 2007