**Harmonia axyridis**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Family / Order / Class / Phylum</th>
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<td>Harmonia axyridis Pallas</td>
<td>Coccinellidae / Coleoptera / Insecta / Arthropoda</td>
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</table>

**COMMON NAMES (English only)**
Harlequin ladybird
Multicoloured Asian ladybird
Multicoloured ladybird

**SYNONYMS**
Coccinella axyridis Pallas
Coccinella bisex-notata Herbst
Coccinella 19-sinatu Faldermann
Coccinella conspicua Faldermann
Coccinella aulica Faldermann
Harmonia spectabilis Faldermann
Coccinella succincta Hop
Anatis circe Mulsant
Pychranatis yedoensis Takizawa

**SHORT DESCRIPTION**
Polyphagous predatory ladybird, 5–8 mm long, very variable in colour pattern (yellow to orange to black) with a very variable number of spots (0-21).

**BIOLOGY/ECOLOGY**

**Dispersal mechanisms**
Highly dispersive, flying readily between host plants during breeding periods, migrates over long distances in Asia and America.

**Reproduction**
Undergo a complete metamorphosis life cycle (egg, four larval instars, pre-pupa, pupa and adult); 20-50 eggs produced per adult and per day, 1000-4000 in their lifetime; adults typically live for a year, being reproductively active for about three months; generally bivoltine but can produce four generations per year in favourable conditions.

**Known predators/herbivores**
It is predated by a few species of birds and some beetles. A phorid, two tachinids and a braconid, *Dinocampus coccinellae*, are known to be parasitoids. It is also parasitised by: a soil-borne fungal pathogen *Beauveria bassiana*, an ectoparasitic fungus, *Hesperomyces virescens*, a male-killing bacterium, *Spiroplasma* and an ectoparasitic mite, *Coccipolipus hippodamiae*.

**Resistant stages (seeds, spores etc.)**

**HABITAT**

**Native (EUNIS code)**
G: Woodland and forest habitats and other wooded land.

**Habitat occupied in invaded range (EUNIS code)**
G: Woodland and forest habitats and other wooded land, G3: Coniferous woodland, G5: Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice, I: Regularly or recently cultivated agricultural, horticultural and domestic habitats, I1: Arable land and market gardens, I2: Cultivated areas of gardens and parks, J1: Buildings of cities, towns and villages.
Habitat requirements
The wide native latitudinal and longitudinal range in Asia shows that it can develop and reproduce in both warm and cool climates and it is well adapted to winter temperatures below freezing and to summer temperatures up to 30°C.

DISTRIBUTION
Native Range
Central and Eastern Asia, Eurasia (China, Taiwan, Japan, Mongolia, Russia – North, Central and East).
Known Introduced Range
USA, Canada, S. America (Argentina, Brazil), South Africa, Egypt, Europe (Austria, Belgium, Northern France, Netherlands, Germany, Greece, Italy, Luxemburg, Switzerland, England, Wales).

Trend
Increasing.

MAP (European distribution)

INTRODUCTION PATHWAY
Introduced intentionally as a biocontrol agent for aphids and unintentionally in horticultural/ornamental material.

IMPACT
Ecosystem Impact
Reduction in biodiversity of other aphidophages and non-pest insects. It is likely to have a negative effect on other aphidophages in three ways: resource competition, intraguild predation and direct intra-specific competition.

Health and Social Impact
They are a pest of orchard crops (apples and pears) because as aphids become scarce in late summer and autumn the beetles feed on soft fruit causing blemishing and an associated reduction in the market value. Their tendency to aggregate in clusters of grapes prior to harvest make them difficult to separate from the grapes and so they are sometimes processed with the grapes to make wine. The alkaloids contained within these beetles adversely affect the taste and bouquet of the vintage. The large aggregations formed during autumn and winter in buildings are regarded as a nuisance, because of this beetle’s propensity to swarm.
Economic Impact
Those derived from the wine industry and reduction in fruit quality and also management measures required in domestic dwellings.

MANAGEMENT
Prevention
Stopping its use as a biocontrol agent and ensuring that fruit and cut flower imports are free from the ladybird will reduce introduction events.

Mechanical
Invasion into households can be limited by preventing entrance; holes can be sealed or covered with fine mesh. Adults and late instar larvae are large and relatively easily identified and can be removed from unwanted locations manually, e.g. using a vacuum cleaner. Light traps can attract adults but the efficiency of these is not yet quantified.

Chemical
Chemical control in field situations such as orchards and vineyards is not applicable because of the impact of insecticides on other aphidophages and beneficial insects.

Biological
It has a range of natural enemies which could be used to control populations. However this requires further consideration and investigation. The use of novel control methods will undoubtedly be required.

REFERENCES


OTHER REFERENCES


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