

## Multicoloured Asian lady beetle (*Harmonia axyridis* (Pallas, 1773)) (Coleoptera: Coccinellidae) for the first time in the fauna of Latvia

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The article presents the information on the first finding of a Multicoloured Asian lady beetle (*Harmonia axyridis* (Pallas, 1773)) (Coleoptera: Coccinellidae) in Latvia. The species has been found in an orchard on a cherry plum *Prunus cerasifera* Ehrh. in Jersika, Līvāni municipality in the southeast part of Latvia, where imago, larvae and grubs of this species were observed in great numbers. At present, there are 61 species of lady beetles known in the fauna of Latvia.

Key words: Multicoloured Asian lady beetle, *Harmonia axyridis* (Pallas, 1773), Coleoptera, Coccinellidae, fauna, Latvia

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### INTRODUCTION

During the last century the Multicoloured Asian lady beetle (harlequin lady beetle), *Harmonia axyridis* (Pallas, 1773) (Coleoptera: Coccinellidae) has been studied very intensively all over the world. The scientists pay attention to the biology, genetics, dynamics of population of the species, as well as to its distribution in the world. The distribution range of this species is East Asia. It is distributed in the area from the Altai, through South Siberia to the Far East in Russia, Mongolia, China, Korean Peninsula, Japan, Taiwan, and the Oriental region (Kovář 2007). This species in its natural distribution range is an important biological aphid predator (Hukusima, Kamei 1970, Hukusima, Ohwaki 1972), therefore in the last century it has been introduced in a number of regions of the world, including non-Arctic regions and Europe

(Chapin, Brou 1991, Koch 2003, Kovář 2007). The species is invasive and having been introduced in a new place, it distributes rather quickly and domesticates new territories.

*Harmonia axyridis* (Pall.) is included in the tribe Coccinellini Latreille, 1807. Taking into account the great polymorphism of the species, many scientists have described a range of its subspecies, forms of aberration and colours. Now there are more than 16 synonyms known (Koch 2003, Kovář 2007). The taxonomic history of the species has been very difficult, and there are still many questions concerning the taxonomy of this species. For instance, several authors note that the beetles found in North America slightly differ from those that populate East Asia (Chapin, Brou 1991, Koch 2003).

A thorough biological review on *Harmonia axyridis* (Pall.) has been done by Koch R.L. (2003) from the University of Minnesota, U.S.A. He notes, that the holometabolous life cycle is similar to that of other aphidophagous coccinellids, proceeding through the egg, four instars, pupal, and adult stages.

The species was introduced and spread in Europe, too. According to the data of Catalogue of Palaearctic Coleoptera it is distributed in the Czech Republic, Finland, Great Britain and Germany (Kovář 2007). Apart from these countries *Harmonia axyridis* (Pall.) has spread in other territories as well: Italy, Belgium, Denmark, Norway, Poland etc. (Tolasch 2002, Bazzochi et al. 2004, Staverlokk et al. 2007, Adriaens et al. 2008, Steenberg, Harding 2009). *Harmonia axyridis* (Pall.) is an invasive species in Denmark. A few adult specimens were recorded in 2006 as new species to the Danish insect fauna. By October 2007 huge numbers of larvae, pupae and adults were found in greater Copenhagen and aggregations of overwintering adults were reported from indoor locations (Steenberg, Harding 2009). *Harmonia axyridis* (Pall.) as invasive species was recorded also in 2006 for the first time in Norway (Staverlokk et al. 2007). In 2007 I observed this species in large quantities in the city centre greenery in Kielce (Poland).

In August, 2009 *Harmonia axyridis* (Pall.) was found in Latvia. This so far is the first and only finding of this species in the Baltics. The aim of the present publication is to provide new information on the distribution of this species introduced in Europe. This is the 61<sup>st</sup> species of lady beetles registered in the fauna of Latvia.

## MATERIAL AND METHODS

Multicoloured Asian lady beetle was found visually, while examining fruit-trees. The material for the collection was obtained using an entomological net. Only eight specimens of lady beetle were taken for the collection. The material collected is kept in the Beetle Collection of the

Institute of Systematic Biology in Daugavpils University (DUBC).

The photographs in nature were done using the photo camera Canon EOS – 1 MarkII Ds, using the object-lenses Canon Lens EF 300 mm 1:4 L IS and Canon Lens Ultrasonic 180 mm. The collection material was investigated in the laboratory using Zeiss stereomicroscope Zeiss Stereo Lumar V12 and Axiocam digital camera.

The map of the finding of the species has been produced using the software Arc Gis 9.

## OBSERVATIONS OF MULTI-COLOURED ASIAN LADY BEETLE IN LATVIA

**Labels data:** Latvia: Līvāni municipality, Jersika, „Kurpnieki”, 16.08.2009., (8 ex., A.Barševskis leg.).

As it can be seen from the collection material and according to the author's observations, the multicoloured Asian lady beetle (*Harmonia axyridis* (Pallas, 1773)) was found in Latvia for the first time on 16.08.2009 in a deserted garden on young shoots of cherry plums (*Prunus cerasifera* Ehrh.) in Līvāni municipality, Jersika, „Kurpnieki” (see Figure 1). On the tops of the shoots of cherry plums there were great colonies of aphids. Lady beetles and their grubs were actively feeding on aphids on the sunlit plums. The species was observed in greater numbers and in several forms of colour of imago (red, orange with or without spots and black with four big red spots). We found imago, larvae, their exuviae and grubs on the leaves of plums. We observed also the copulation of imago (see Figures 2-5). Also later, in August and September of 2009 the lady beetles of this species were regularly observed on cherry plums in the abovementioned orchard.

Taking into consideration all the said, we have concluded that *Harmonia axyridis* (Pallas, 1773) can pullulate in Latvia and it is not an incidental case of this species' immigration. It is necessary

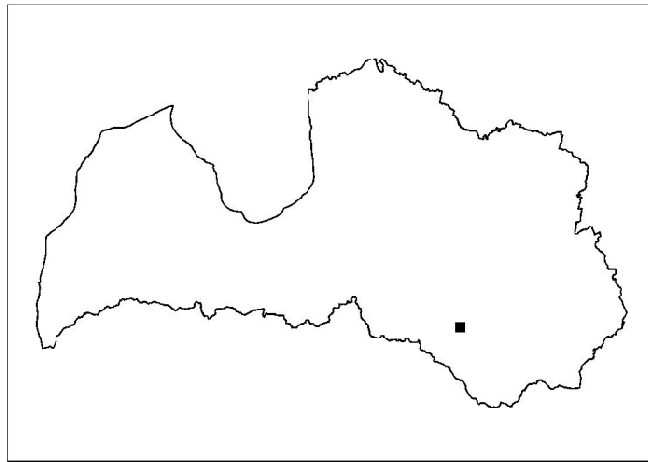


Fig. 1. The map of the finding of *Harmonia axyridis* (Pall.) in Latvia



Fig. 2. Imago of *Harmonia axyridis* (Pall.) on young shoots of cherry plums (*Prunus cerasifera* Ehrh.) in Latvia



Fig. 3. Imago and pupa of *Harmonia axyridis* (Pall.)



Fig. 4. Imago of *Harmonia axyridis* (Pall.)



Fig. 5. Larvae of *Harmonia axyridis* (Pall.)

to carry out further research into the distribution of the species and to continue the monitoring of its population in the abovementioned orchard. It is possible to project that this species will be found also in other neighbouring countries of Latvia.

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## REFERENCES

- Adriaens T., San Martin y Gomez G., Maes D. 2008. Invasion history, habitat preferences and phenology of the invasive ladybird *Harmonia axyridis* in Belgium. *BioControl* 53: 69–88.
- Bazzocchi G.G., Lanzoni A., Accinelli G., Burgio B. 2004. Overwintering, phenology and fecundity of *Harmonia axyridis* in comparison with native coccinellid species in Italy. *BioControl*, 49: 245–260.
- Chapin J. B. ; Brou V.A. 1991. *Harmonia axyridis* (Pallas), the third species of the genus to be found in the United States (Coleoptera : coccinellidae). *Proceedings of the Entomological Society of Washington*, 93 (3): 630-635.
- Hukusima S, Kamei M. 1970. Effects of various species of aphids as food on development, fecundity and longevity of *Harmonia axyridis* Pallas (Coleoptera: Coccinellidae). *Research Bulletin of the Faculty of Agriculture, Gifu University*. 29:53–66.
- Hukusima S, Ohwaki T. 1972. Further notes on feeding biology of *Harmonia axyridis* (Coleoptera: Coccinellidae). *Research Bulletin of the Faculty of Agriculture, Gifu University*. 33:75–82.
- Koch R.L. 2003. The multicolored Asian lady beetle, *Harmonia axyridis*: A review of its biology, uses in biological control, and non-target impacts. *J. Insect Sci.*, 3: 32.
- Kovij I. 2007. Coccinellidae: *Harmonia Mulsant*, 1846, pp. 615 – 616. – In I.Lobl & A.Smetana (ed.): *Catalogue of Palearctic Coleoptera*, Vol. 4. Stenstrup: Apollo Books, 935 pp.
- Staverlokk A., Saethre M.-G., Hagvar E.B. 2007. A review of the biology of the invasive harlequin ladybird *Harmonia axyridis* (Pallas, 1773) (Coleoptera, Coccinellidae). *Norw. J. Entomol.*, 54: 97 -104.
- Steenberg T., Harding S. 2009. The harlequin ladybird (*Harmonia axyridis* Pallas) in Denmark: spread and phenology during the initial phase of invasion. *Ent. Meddr.*, 77 (1): 27–39.
- Tolasch T. 2002. *Harmonia axyridis* (Pallas, 1773) breitet sich in Hamburg aus – Ausgangspunkt für eine Besiedlung Mitteleuropas? *Entomologische Nachrichten und Berichte*, 46: 185 – 188.

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