ACADEMY OF SCIENCES OF MOLDOVA
SECTION OF NATURAL AND EXACT SCIENCES
INSTITUTE OF ZOOLOGY

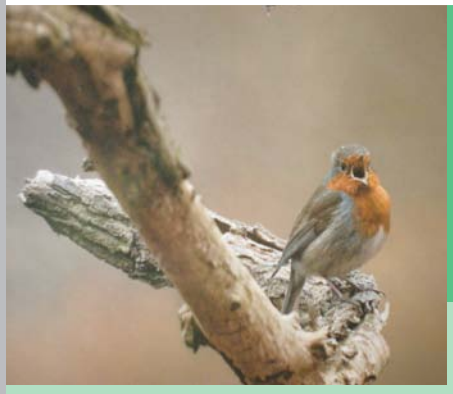
VIII-th International Conference of Zoologists

ACTUAL PROBLEMS OF PROTECTION AND SUSTAINABLE USE OF THE ANIMAL WORLD DIVERSITY



10-12 OCTOBER 2013

Book of Abstract



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The materials of VIII-th International Conference of Zoologists **„Actual problems of protection and sustainable use of animal world diversity"** organized by the Institute of Zoology of the Academy of Sciences of Moldova are a generalization of the latest scientific researches in the country and abroad concerning the diversity of aquatic and terrestrial animal communities, molecular-genetic methods in systematics, phylogeny, phylogeography and ecology of animals, taxonomy and evolution of animals, structure and dynamics of animal populations from natural and anthropized ecosystems, population functioning and animal role in ecological equilibrium maintenance, monitoring, evaluation of threats, and assessment of risks of aquatic ecosystems, biological control in regulation of pests number, invasive animal species, their ecological and socio-economic impact, protection of rare, endangered and vulnerable animal species under conditions of anthropogenic pressing intensification

The proceedings are destined for zoologists, ecologists, ethologists and for professionals in the field of protection and sustainable use of natural patrimony.

The reviewed materials are approved and recommended for editing by the Scientific Council of Institute of Zoology of A.S.M.

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or permanent water pools in spring. The larvae of polycyclic species *Oc. sticticus* occur in temporary water bodies after floods. In our surveys larvae of these species were not collected.

The work was performed within the projects 11.817.08.14 F and 11.817.08.40F

THE ACCLIMATIZATION AND TROPHIC SPECTRUM OF *HARMONIA AXYRIDIS* IN THE REPUBLIC OF MOLDOVA

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In the context of current research study of invasive insects in the Republic of Moldova on framework Project funded by NEF: 2/3056-4373 from 05.02.2013 «Identification of invasive animal species in Moldova and assess their impact on ecosystems», the ladybird species *Harmonia axyridis*, commonly known as the Asian lady beetle (because it occurs in numerous colour forms) has become an important goal.

Early information about the species *H. axyridis* in the Republic of Moldova have exposed colleagues from the Institute of Zoology (I. Chiriac and A. Andreev), who observed it in the 70's of last century. Information can be considered credible because in Soviet times (the 60's) this species was launched for the acclimatization near the Carpathian Mountains of Ukraine. Semyonov (1974) mentions that the results of introduction are not known, probably, acclimatisation was slowly and unnoticed. However, after about 50 years, this species has completely acclimated to conditions (in special climatic) of various countries from Europe, including in the Republic of Moldova.

The first generation of ladybird beetle in 2013 developed large populations in crops (walnut, apple, plum, cherry, sunflower, corn, mulberry), forest (oak, elm) and in those spontaneous were had attacked different aphids species. On the leaves of walnut and apple were recorded all stages of development of ladybug: egg, larva, pupa and imago, but on the other cultures – just some. The plant lice species from referred plants are trophic basis of the *H. axyridis* (tab. 1). From the results presented it the table it follows that *H. axyridis* in 2013 has a spread to all areas of country and more intense in the Center (69,2%). Most preferred are: walnut aphids – in Center 68,2% and in North 98,5%; apple aphids – Center – 15,5% and in South 3,2%). From the respectively results which currently are incomplete because this year is the first of the studying and has been analysed just the1st generation we conclude that:

1. Species *H. axyridis* has been acclimatized definitively on the territory of our country;

2. From the expanding of Asian ladybug on a wide range of harmful aphids of plants, it can be predicted that this species will develop further successfully – the second generation in 2013 in and of course in subsequent years;

3. The effective of Asian ladybug will contribute significantly at reducing sucking pest of fruit trees including insects with small tales such as aphids, spider mites and scale insects (adults, larvae, eggs, etc.).

Table 1.

Distribution and trophic spectrum of Harmonia axyridis in the Republic of Moldova (first generation of 2013)

Locality	№ of specimens	Researched *aphids* species and their host plants								
		I	II	III	IV	V	VI	VII	VIII	IX
North										
Naslavcea (Ocnița)	2	2	0	0	0	0	0	0	0	0
Brânzeni (Edineț)	3	3	0	0	0	0	0	0	0	0
Parcova (Edineț)	18	18	0	0	0	0	0	0	0	0
Viișoara (Edineț)	2	2	0	0	0	0	0	0	0	0
Lopatnic (Edineț)	1	0	0	0	0	1	0	0	0	0
Mihailovscoe (Râșcani)	2	2	0	0	0	0	0	0	0	0
Bălți (Izvoraș)	18	18	0	0	0	0	0	0	0	0
Glinjeni (Fălești)	21	21	0	0	0	0	0	0	0	0
Total	67	66	0	0	0	1	0	0	0	0
%	12,9	98,5	0	0	0	1,5	0	0	0	0
Center										
Chișinău (Park UASM)	114	64	50	0	0	0	0	0	0	0
Chișinău (Primăria)	141	141	0	0	0	0	0	0	0	0
Chișinău (Ciocana)	19	19	0	0	0	0	0	0	0	0
Chișinău (Telecentru)	3	0	0	0	0	0	3	0	0	0
Chișinău (IPPAE)	7	0	0	7	0	0	0	0	0	0
Criuleni (Onițcani)	20	20	0	0	0	0	0	0	0	0
Țigănești (Strășeni)	2	0	0	0	0	0	2	0	0	0
Bravicea (Călărași)	24	20	0	0	0	0	0	0	0	4
Meleșeni (Călărași)	19	4	4	2	7	0	0	0	0	2
Bogzești (Telenești)	8	8	0	0	0	0	0	0	0	0
Cucoaia (Telenești)	3	0	2	0	0	0	1	0	0	0
Total	360	276	56	9	7	0	6	0	0	6
%	69,2	76,6	15,5	2,5	1,9	0	1,6	0	0	1,6
South										
Cimișlia	7	7	0	0	0	0	0	0	0	0
Bugeac (Comrat)	28	0	0	8	0	16	3	1	0	0
Vișinăuca (Cantemir)	1	1	0	0	0	0	0	0	0	0
Pelinei (Cahul)	39	0	0	5	17	0	7	0	10	0
Ciumai (Taraclia)	2	2	0	0	0	0	0	0	0	0
Cucoara (Cahul)	2	1	0	0	0	1	0	0	0	0

Locality	№ of specimens	Researched *aphids* species and their host plants								
		I	II	III	IV	V	VI	VII	VIII	IX
Vinogradovca (Taraclia)	14	2	3	5	0	0	4	0	0	0
Total	93	13	3	18	17	17	14	1	10	0
Total in the country	520	355	59	27	24	18	20	1	10	6
%		68,2	11,3	5,2	4,6	3,4	3,8	0,2	1,9	1,1

Legend: I – *Chromaphis juglandicola*; **II –** *Aphis pomi*; **III –** *Hyalopterus pruni*; **IV –** *Myzus cerasi*; **V –** *Brachycaudus helichrysi*; **VI –** *Aphids* on wild plants; **VII –** *Aphisds* on *Zea mays*; **VIII** – *Aphids* on *Quercus pubescens*; **IX –** Fruits of *Morus alba, M. nigra*.

STUDY CONTRIBUTIONS REGARDING FORMS OF *HARMONIA AXYRIDIS* IN THE REPUBLIC OF MOLDOVA

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The species *Harmonia axyridis* is an outstanding ladybug thanks to variations of body colours, spots size, and spots count of the elytra which divided this species in many forms. Therefore, in Russia and Ukraine this coccinellid beetle is called harlequin ladybird, changeable or with 19 points, etc. On the strength of the increased population density of the first generation in 2013, we decided to study the relation of these forms according host plant of the aphid which are trophic base of multicoloured Asian lady beetle.

From the results shown in Tab. 1 can be see that the species had developed enough (520 specimens) for to undertake research regarding forms and life stages: larvae – 77 specimens or 14,8%; pupa – 22 (4,2%); pupal exuvia – 133 (25,5%); imago – 288 (55,3%). These specimens were collected in different stages from different plants attacked by aphids or not (agricultural: 7 – walnut, apple, plum, cherry, sunflower, mulberry – fruit; forest: oak and *Ulmus* spp; on spontaneous grasses (*Onopordum acanthium*, *Artemisia absinthium, Cirsium serrulatum*, *Rosa canina, Verbascum thapsus*, *Achillea millefolium*, *Humulus lupulus*).

The most representative conclusions about forms of harlequin ladybird are based on nut and apple aphid where *H. axyridis* had developed: 216 specimens or 60,8 % on the walnut tree and 38 (64,4%) on the apple tree. Within multicolored Asian lady beetle collected on the nut tree prevailed the next forms: *H.axyridis* var. *novemdecimsignata* – 88 specimens (40,7%); *H. a.* var. *siccoma* – 55 (25,4%); *H. a.* var. *succinea* – 54 (25%); *H. a.* var. *spectabilis* – 14 (6,4%) and *H. a.* var. *conspicua* – 5 (2,3%). On the apple tree were recorded *H. a.* var. *siccoma* and *H. a.* var. *novemdecemsignata* by 13 specimens (34,2% for each),

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The contents can in no way be taken to reflect the views of the European Union.

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