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The Conference emphasizes the importance of faunistic research and provides selected or extended abstracts, short communications or full papers from 26 presentations by professors, scientific researchers, graduate, master or doctoral students from nine countries: Italy, Czech Republic, Poland, Lithuania, Latvia, Russia, Canada, USA, Ecuador.

Key words: aphidology, biodiversity, Bucculaticidae, Carabidae, Coleoptera, Cossidae, Crysomelidae, Curculionoidea, guava, Hyllobius, Gracillariidae, fauna, faunistics, field methods, entomology, Kurtuvėnai Regional Park, leaf-mines, leaf-mining insects, Lepidoptera, Lepidoptera phylogeny, Lithuanian Entomological Society, micro-mounts, Nepticulidae, Tischeriidae, Tortricidae.

Published on 18 September 2014
Urgent need for increased faunistic research

Recent decades have been characterized by faunistics and systematics regaining their significance and now these disciplines are becoming an important area of biological research. One of the most fundamental challenges for mankind of the 21st century is to document the extent and distribution of global biodiversity as well as understand the ecological processes that generate and maintain it. Such information will be essential for informing and guiding efforts to safeguard the natural ecosystems that provide the Earth’s life support systems. Without the baseline data of faunistic and taxonomic diversity providing means for the identification of the species in a region, no one can move forward in properly planning their conservation or their control in case of invasive species.

Fast development of modern research techniques, which flourished at the end of 20th century, slightly diminished interest in faunistic research. On the other hand, the negative impact on ecosystems, including threats from human activity that causes habitat destruction and modification in the face of the global biodiversity crisis and climate change, led to an urgent need for significant intensification of biodiversity studies.

The Conference emphasizes the importance of faunistic research that includes studies into the nature of insect fauna: from sampling, species identification and regional biodiversity inventory, evaluation of species abundance, documentation of described species (morphology incl. variability, bionomics incl. life cycles and habitats) and description of new taxa to taxonomic, phylogenetic, trophic, chorolological and other analyses of regional and global faunas.

The research postulated in the Conference involves a large-scale investigation of various groups of insects, which, in spite of their tremendous economic importance, constitute one of the world’s least known faunas and for which there has been a disturbing decline of qualified specialists.

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The Conference brought together international academics from the Baltic countries and Poland (speakers from other countries were also welcomed), including professors and graduate, master or postgraduate (doctoral/PhD) students, which presented methodological novelties and faunistic research in their respective fields.

The first aim of the Conference was to provide opportunities for academics from various countries representing a range of disciplines in entomology to share their research by means of the conference podium.

The Conference’s second aim was to provide opportunities for academics to receive informal in-depth feedback through discussions and enable them to establish contact with professionals from other countries and institutions.

Number of given presentations:
Italy – 2, Czech Republic – 1, Poland – 6, Lithuania – 15, Latvia – 6, Russia – 1, Canada – 2, USA – 4; Ecuador – 1.

Number of participants who provided presentations:
Italy – 2, Czech Republic – 2, Poland – 8, Lithuania – 18, Latvia – 8, Russia – 1, Canada – 4, USA – 3; Ecuador – 1.
SELECTED

ABSTRACTS and PAPERS

(PER-REVIEWED)
CONTENTS

Aphid (Hemiptera, Sternorrhyncha: Aphidoidea) fauna of Lithuania: current state of knowledge. By Rimantas Rakauskas (Vilnius University, Vilnius, Lithuania) / 9

The first record of Stigmella malella (Lepidoptera, Nepticulidae), an apple tree pest in Kurtuvėnai (NW Lithuania). By Anna Karlsone, Janis Strautinis (Daugavpils University, Latvia), Justyna Patrycja Rudak, Kornelia Cyprijanska (Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland), Romualdas Šopoka (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 11

Evolution of the weevil rostrum (Coleoptera: Curculionoidea): internal structure and evolutionary trends. By Steve R. Davis (Natural History Museum, University of Kansas, USA) / 13

Global issues of biodiversity. By Greta Pastorino, Alex Borrini (Genoa University, Italy) / 18

The first discovery of the rare species Enteucha acetosae (Lepidoptera, Nepticulidae) in the Kurtuvėnai Regional Park. By Anna Patrycja Chrachol (Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland), Tatjana Makevič (Lithuanian University of Educational Sciences, Vilnius, Lithuania), Agata Malecka (Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland), Tautvydas Kirtiklis (Lithuanian University of Educational Sciences, Vilnius, Lithuania), Jekaterina Voskresenska (Daugavpils University, Daugavpils, Latvia) / 21

Recent faunistic and taxonomic studies of mining moths from the Bucculatricidae and Gracillariidae families (Lepidoptera) in Russia. By Svetlana Baryshnikova (Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia) / 23

First discovery of leaf-mining Nepticulidae and Tischeriidae (Lepidoptera) associated with the Chilean endemic genus Podanthus Lag. (Asteraceae) as a host-plant. By Arūnas Diškus, Jonas R. Stonis (Lithuanian University of Educational Sciences, Vilnius, Lithuania) & Nixon Cumbicus Torres (Universidad Técnica Particular de Loja, Ecuador) / 30

Study methods of Nepticulidae: micro-mounts of genitalia structures. By Jonas Rimantas Stonis, Arūnas Diškus (Lithuanian University of Educational Sciences, Vilnius, Lithuania), Andrius Remeikis (Nature Research Centre, Vilnius, Lithuania), Asta Navickaitė (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 32

Short review of sampling methods used in applied entomology. By Jacek Jackowski & Jacek Twardowski (Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland) / 36

Fomoria weaveri (Lepidoptera, Nepticulidae), an interesting Nepticulidae species in the Kurtuvėnai Regional Park (Lithuania). By Juris Pikelis (Daugavpils University, Daugavpils, Latvia), Ligita Šlapelytė, Dovilė Masalskaite (Lithuanian University of Educational Sciences, Vilnius, Lithuania), Marcin Cierpiz (Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland) / 41

Some data on Macrolepidoptera from the Kurtuvėnai Regional Park. By Dalius Dapkus, Tatjana Makevič (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 43

Systematics of carpenter moths (Lepidoptera: Cossidae) and the discovery of new lepidopteran glands. By Steve R. Davis (Snow Hall University of Kansas, USA) / 45
Study methods of beetles of the genus *Hylobius* and related mycobiota. By Donatas Stanionis (Lithuanian Research Centre for Agriculture and Forestry, Institute of Forestry, Kaunas, Lithuania) / 48

Revised fauna of the Nepticulidae (Lepidoptera) of continental East Asia: lots of effort to elucidate the little-known diversity of pygmy moths. By Agnė Rocienė & Jonas Rimantas Stonis (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 51

How good are the ground beetles (Coleoptera, Carabidae) as indicators of biodiversity in the example of the Kirtuvėnai Regional Park, Lithuania. By Jacek Twardowski, Jacek Jackowski (Wrocław University of Environmental and Life Sciences, Wrocław, Poland) & Raimonds Cibuļskis (Daugavpils University, Daugavpils, Latvia) / 63

The first photographic documentation and new data on *Enteucha guajavae* (Lepidoptera, Nepticulidae), a pest of guava from equatorial America. By Andrius Remeikis (Nature Research Centre, Vilnius, Lithuania), Jonas R. Stonis, Arūnas Diškus (Lithuanian University of Educational Sciences, Vilnius, Lithuania) & Donald R. Davis (National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA) / 65

Lithuanian Entomological Society: activities, challenges and prospects. By Andrius Petrašiūnas (Lithuanian Entomological Society and Vilnius University, Vilnius, Lithuania) / 75

Genetic polymorphism at the cytochrome oxidase I gene: application in biosystematics of aphids. By Jurga Turčiūnavičienė (Vilnius University, Vilnius, Lithuania) / 77

The leaf-mining Lepidoptera of Central Asia: 18-year anniversary of the first revised checklist. By Nurgozel Saparmamedova (Toronto, Canada / formerly Institute of Zoology, Turkmenian Academy of Sciences, Asgabat, Turkmenistan), Jonas Rimantas Stonis, Arūnas Diškus, Remigijus Noreika & Virginijus Sruoga (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 78

Fauna and biogeography of Chrysomelidae *sensu lato* (Insecta: Coleoptera) of Latvia. By Andris Bukejs (Formerly Daugavpils University, Daugavpils, Latvia) / 82

Lepidopteran diversity and phylogeny: 15 years ago and now. By M. Alma Solis (Smithsonian Institution / United States Department of Agriculture, Washington, D.C., USA) / 85

*Paralobesia cypripediana* (Lepidoptera, Tortricidae): a stealthy micromoth attacking *Cypripedium reginae* (Orchidaceae). By Jean-François Landry (Canadian National Collection of Insects, Arachnids, and Nematodes, Agriculture and Agri-Food Canada, Ottawa, Canada), Marilyn H. S. Light & Michael MacConaill (Gatineau, Québec, Canada) / 90

First faunistic data of the Nepticulidae fauna (Lepidoptera) of northwestern Lithuania. By Justine Zaberga, Liva Legzdina (Daugavpils University, Daugavpils, Latvia), Wojciech Otfinowski (Wrocław University of Environmental and Life Sciences, Wrocław, Poland) & Žygimantas Obelvičius (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 92

What is new and most interesting about the Nepticulidae of the Crimea and Lithuania. By Asta Navickaitė, Arūnas Diškus & Jonas Rimantas Stonis (Lithuanian University of Educational Sciences, Vilnius, Lithuania) / 96

Checklist of moths and butterflies of the Czech Republic (Insecta: Lepidoptera). By Zdeněk Laštůvka & Jan Liška (Mendel University, Brno, Czech Republic) / 118

The wetlands of Zeri: flora, vegetation and amphibian population of Peloso Lake (Toscany, Italy). By Alex Borrini (Genoa University, Genoa, Italy) / 121

**CONTENTS**

SELECTED ABSTRACTS & PAPERS OF THE FIRST BALTIC INTERNATIONAL CONFERENCE ON FIELD ENTOMOLOGY AND FAUNISTICS
STUDY METHODS OF NEPTICULIDAE: MICRO-MOUNTS OF GENITALIA STRUCTURES

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INTRODUCTION
In the studies on Lepidoptera, in particular Nepticulidae, description of external characters is often insufficient and mounts of genitalia have to be prepared. Nepticulidae species diagnostics most often relies on the characters of male (sometimes on the characters of female) genitalia (Fig. 2), which compared with other morphological structures are distinguished by high specificity (Puplesis & Robinson, 2000; Puplesis & Diškus, 2003). Reliable species identification and descriptions of Nepticulidae are impossible without the examination of genital structures (Diškus & Stonis, 2012). It was noticed that the male genitalia characters of Nepticulidae vary little and specific at the level of both species or higher taxonomic rank (Šimkevičiūtė et al., 2010; Navickaitė et al., 2011; Stonis et al., 2012b). The shape of valva, transtilla, vinculum, uncus, gnathos, phallus (especially including cornuti on vesica) are essential diagnostic characters of Nepticulidae species.

DESCRIPTION OF THE METHODS
Temporary micro-mounts of genital structures in glycerine. The stages of preparing temporary micro-mounts of genital structures are as follows. 1. Under a stereoscopic microscope with an attached background of sticky white plastic plate, using a handled minutien pin, the abdomen of the insect is snapped off by gentle movements up and down. 2. The snapped off abdomen is transferred into a test tube with a handled minutien pin steeped in glycerine; about 1 ml of potassium hydroxide (10% KOH) is dripped into the test tube using a pipette (Fig. 1B). 3. The test tube is heated on an open flame (e.g. spirit lamp) or in boiling water; the abdomen is boiled until it becomes transparent. During the boiling, the test tube should be jolted to prevent air bubbles squirting out together with the abdomen. 4. The content of the test tube is poured out into a clean small Petri dish and then, using a preparation needle, transported to an other dish with distilled or boiled water. 5. Gently moving the handled minutien pin, the abdomen is rinsed. 6. A drop of glycerine is dripped onto a clean cavity slide (with shallow depression) which is covered with a cover
slip in such a way as to leave part of the glycerine drop uncovered. 7. The rinsed mount is transported into the glycerine drop and carefully squeezed under the cover slip with the handled minutien pin; the mount should be thrust between the slide and cover slip ventral part upside; for this purpose, a stereoscopic binocular microscope with magnification of 28–56 times is used; the temporary micro-mount is examined using a study microscope with higher magnification. 8. The temporary micro-mount is stored in a supersaturated sugar solution (i.e. in sugar crystal) or in a glycerine drop (in a minute test tube or pit of plastic strip which is covered with another strip of the same kind of plastic (Puplesis, 1994).

Temporary slides in glycerine, contrary to permanent slides in Euparal, are less suitable for detailed documentation of overlapping sclerites and comparison of morphological structures. Therefore permanent mounts (slides) are necessary (Stonis et al., 2012a).

**Permanent micro-mounts (slides) of genital structures in Euparal.** The stages of preparing permanent micro-mounts of genital structures are as follows (Fig. 1A, C, D). 1. The genital armature stored in glycerine is rinsed with distilled or boiled water then transferred with a handled minutien pin into a pit (depression) of a clean cavity slide with a 30% ethanol (ethyl alcohol) solution and, under a stereoscopic microscope, separated from the abdomen. 2. After the dissection, the genital armature and the abdomen pelt are transferred into a depression of a clean cavity slide with 70% ethanol and the mount is carefully

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**Figure 1.** Preparing micro-mounts of Nepticulidae: A, B – tools and chemicals; C – slide trays with labelled permanent genitalia mounts; D – genitalia and stained abdomen pelt under cover slip in Euparal.
Figure 2. Permanent mounts in Euparal: A – male genitalia of Acalyptus platani (phallus dissected from the capsule), slide no. RA239; B – female genitalia of A. platani, stained with spirit solution of Chlorazol Black, slide no. RA243.

rinsed; the scales adhering to the abdomen pelt are cleaned using a very small, thin brush or(and) a very thin, sharp-pointed handled minutien pin. 3. After this partial dehydration, the genital armature and the abdomen pelt are stained with spirit solution of Chlorazol Black. 4. The final dehydration of the genitalia and abdomen pelt is performed: pure ethanol is dripped over the mount which then is carefully rinsed using a handled minutien pin. 5. A small drop of Euparal (if thicker than fresh honey it should be diluted with Euparal essence) is dripped on a clean slide. 6. Using a stereoscopic microscope, the genitalia and abdomen pelt are transferred into the Euparal drop and covered with a very small cover slip (Fig. 1D). The genital armature is fixed ventral part upside whereas the separate sclerites can be spread or even separated (dissected); sometimes the abdomen pelt or separated sclerites of genital apparatus (e.g. phallus dissected from the capsule) are fixed under a separate cover slip but on the same slide. 7. The mount is labelled (a paper label is tagged on the slide); each prepared permanent micro-mount must be numbered. 8. It is recommended to photograph the permanent genital mounts right after the preparation (in our study, the
genital micro-mounds were examined using Leica DM2500 microscope and Leica DFC420 digital camera connected with the microscope and computer; the photographs of the genital structures must be supplied with the slide numbers and species identification data. 9. Mounts (slides) are placed onto a special card or plastic slide tray (Fig. 1C) and dried for 2–3 months at room temperature or for 20 days in a heating oven (at +50°–60°) (Diškus & Stonis, 2012).

DISCUSSION

Only the temporary mount provides the possibility to observe (and photograph) the morphological structures laterally or to image morphologically interesting or diagnostically important sclerites from all sides whereas it is impossible to roll and observe or photograph laterally the permanent mount. But as the examined temporary mounts are stored in glycerine their structures are not as clearly visible as those of transparent permanent mounts (the quality of their photographs also are worse than those of permanent and highly transparent micro-mounds). Some time ago, drawings or photographs of temporary mounts alone sufficed for documentation of newly discovered species. Nowdays, all Nepticulidae species are mainly described and compared based only on permanent mounts. However, the preparation of temporary mounts preserves the natural structure of spatial genitalia of Nepticulidae, i.e. it changes little or does not change at all. Moreover, temporary mounts offer a possibility of repeated examination and documentation of the spatial characters of structures and sclerite links. For this reason, it is recommended that the initial observation and documentation of little-known (or exotic) fauna is conducted using glycerine as a mounting medium; Euparal should be used during further examination.

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