

15.45 – 16.00

Evaluation of spray technology with minimum requirements for the control of desert locust *Schistocerca gregaria* (Orthoptera: Acrididae)

Muhammad Ashfaq, Muhammad Ishfaq, Waqas Wakil M. Didar Goggi

16.00 – 16.15

Comparison of insecticidal activity of essential oils against red flour beetle *Tribolium castaneum* Herbst (Coleoptera: Tenebrionidae)

Muhammad Tayyib Naseem, Khuram Zia, Rashid Rasool Khan, Faisal Nazir

S62: IPM challenges and prospects in annual and perennial crops III.*Room Brussels***Organizers:** József Fail, Stefan Toepfer

14.30 – 14.45

Pesticide free control of Flea beetles (*Phyllotreta* spp.) in Rocket (*Eruca sativa*)

A. Pintér, F. Tóth

14.45 – 15.00

Determination of the optimum dose for sterilizing Greenhouse Whiteflies, *Trialeurodes vaporariorum* (Westwood) (Hem.: Aleyrodidae) by gamma radiation

Maryam Moradi, Mehdi Zarrabi

15.00 – 15.15

Predatory mites to control *Thrips palmi* Karny (Thysanoptera: Thripidae): Prey consumption rates and compatibility with chemical insecticides

Andrew G S Cuthbertson, James J Mathers, Pat Croft, Lisa F Blackburn, Weiqi Luo, Phil Northing, Tamotsu Muari, Robert J. Jacobson, Keith F.A. Walters

15.15 – 15.30

Investigation of life history parameters for the development and validation of a simulation model describing the population development of the currant-lettuce aphid, *Nasonovia ribisnigri* in glasshouse lettuce

Phil Northing, Andrew G S Cuthbertson, Anne Ainsley, Pat Croft, Lisa F Blackburn, Philip A S S Mason, Keith F.A. Walters

15.30 – 15.45

The effects of cultural control methods on the Lesser date moth (*Batrachedra amydraula* myer) infestations

M. Latifian, H. Pejman, A.R. Ahmadi

S63: Sensory ecology (Pheromones) I.*Room Copenhagen***Organizers:** Bill S. Hansson, Gábor Szűcs

14.30 – 15.00

The importance of background odor for insect olfactory orientation to a resource

Monika Hilker

15.00 – 15.15

Mate choice is a matter of "taste": Host plant shift induced changes of contact pheromones affect mate and species recognition in herbivorous insects

Tobias Otte, Sven Geiselhardt, Monika Hilker

15.15 – 15.30

The Search for Bed Bug Pheromones: A behavioural and electrophysiological study of the common bed bug

E. Weeks, Michael A. Birkett, M. M. Cameron, J. G. Logan, J. A. Pickett

15.30 – 15.45

Half a century of pheromone science

Hans E. Hummel, E. Hecker, K.-E. Kaissling

15.45 – 16.00

Round table discussion**S64: Plecoptera taxonomy***Room Maastricht***Organizers:** Ignac Sivec, Dávid Murányi

14.30 – 14.45

Systematics, biogeography and genetic structure of the genus *Besdolus* Ricker, 1952

R Fochetti, B. Gaetani, S. Fenoglio, T. Bo, T. Kovács, M.J. López-Rodríguez, J.M. Tierno de Figueroa

14.45 – 15.00

Molecular genetics of four morphological species of *Anacronueria* genres (Plecoptera: Perlidae) in sympatric speciation. Its Implications on taxonomical, phylogenetical, speciation

Maribet Gamboa, Jazzmin Arrivillaga

15.00 – 15.15

On the identity of *Isoperla curtata* Navás, 1924: a behavioural and molecular approach

J.M. Tierno de Figueroa, B. Gaetani, J.M. Luzón-Ortega, M.J. López-Rodríguez, R. Fochetti

15.15 – 15.30

Plecoptera of the Balkans: history of investigations, and the present knowledge on distributional patterns

Dávid Murányi, Ignac Sivec

15.30 – 15.45

The stonefly-fauna (insects: Plecoptera) of Austria: Diversity, ecology and zoogeography

Wolfram Graf

15.45 – 16.00

Recent findings of rare and endangered stoneflies (Insecta: Plecoptera) in Croatia
Aleksandar Popijač, Ignac Sivec

16.00 – 16.15

Are they any future of classical taxonomy?

Ignac Sivec

Alps, the Central Midlands, the Hungarian Plains, the Western Dinaric Balcan, Italy (Southern Alps), and the Carpathians. (Sub-)endemic species are concentrated at the south-eastern margins of the Alps indicating the effects of earlier glaciation processes. Most species are crenal or rhithral preferring elements but some potamobiont Perlid- and Perlodid-taxa, which are extremely rare or even extinct in most of Europe still live in the south-eastern plains of Austria.

The paper presents the current status of the knowledge on Stoneflies in Austria and analyses distributional patterns of selected species. Ecological notes and remarks on taxonomical problems are added.

Recent findings of rare and endangered stoneflies (Insecta: Plecoptera) in Croatia

Aleksandar Popijač¹, Ignac Sivec²

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² Slovenian Museum of Natural History, Prešernova 20, PO Box 290, SI-1001 Ljubljana, Slovenia, isivec@pms-lj.si

Only 28 species of Plecoptera were known for Croatia until the last few years when we started intense studies on stoneflies throughout Croatia. During these studies, we stumbled upon some remarkable stonefly species, which are for a longer time absent from many countries in Europe. Some of these species were found in rather rich populations at some localities through the flow of several rivers. For example, *Brachyptera monilicornis* is living in several smaller and bigger rivers on the north-western border of Croatia with Slovenia. In the same border area live also *Taeniopteryx nebulosa*, *Besdolus imhoffi*, *Perla carantana*, *Perla illiesi*, and *Protonemura julia*. Furthermore, on the eastern border of Croatia with Bosnia and Herzegovina, *Marthamea vitripennis* was found again after one century, together with *Perla burmeisteriana*, *Besdolus imhoffi* and mayfly *Oligoneuriella rhenana*. *Besdolus imhoffi* lives also in few more rivers in the north-western mountainous area as in the southern Mediterranean part of Croatia. On the northern border of Croatia with Slovenia and with Hungary endangered *Xanthoperla apicalis* lives. All these stoneflies are included on the recent list of 50 strictly protected Plecoptera species in Croatia.

Are they any future of classical taxonomy?

Ignac Sivec

Slovenian Museum of Natural History, Prešernova 20, PO Box 290, SI-1001 Ljubljana, Slovenia, isivec@pms-lj.si

Biodiversity is one of the most popular Word in biology in the last two decades after 1992 Conference in Rio. A lot of money was spent for this topic, however today we do not know much more about actual biodiversity, and all over the world we are facing a great decrease in number of classical taxonomists. Modern molecular methodologies are creating a kind of new »taxonomy« that has a very little or nearly nothing in common with the classical ones. Is this the beginning of end of classical taxonomy we know in the last couple of hundred years?

Situation is not the same at all groups of organism. What was the situation in small group of aquatic insects like stoneflies (Plecoptera).

S65: Genetically modified plants – Effects on insects III.

Room Rome

Grasshoppers and butterflies as biodiversity indicators in a GM-plant monitoring program – An Austrian case study

Kathrin Pascher, Dietmar Moser, Stefan Dullinger, Leopold Sachslehner, Patrick Gros, Norbert Sauberer, Andreas Traxler, Georg Grabherr, Thomas Frank

Department of Conservation Biology, Vegetation Ecology and Landscape Ecology (CVL) University of Vienna, Austria

Biodiversity is a key parameter in an ecological monitoring of GM-plants which is mandatory according to the Directive 2001/18/EC. The program 'Biodiversity Nature Safety' (BINATS) was developed and implemented on 100 representative test areas (625x625 m) – which include fields and adjacent landscape elements – in the Austrian agrarian region. Vascular plants and landscape structures already have become standard elements of biodiversity monitoring programs in cultural landscapes. In addition to these indicators Orthoptera and Lepidoptera were selected as representative indicators based on a *a priori* cost-benefit-calculation and tested for their applicability in the field.

In total, 53 different grasshopper and 41 butterfly species were registered across the test areas. In general, habitat diversity, landscape patch shape complexity and share in grassland were positively, and land use intensity as well as temperature negatively correlated with species numbers. Only in case of butterflies the relationship between summer temperatures and diversity was hump-shaped.

BINATS provides a standardised design for future inventories of biodiversity in the agrarian region into which additional animal indicators and their particular inventory needs can easily be integrated if needed. Baseline data are now available as reference for detecting and assigning unintended biodiversity effects of GMP cropping as well as of other changes in agricultural practices by means of regular monitoring.

Metabolomic responses to herbivory in genetically modified potato

Maaïke Bruinsma, Andreas Plischke, Paul M.

Brakefield, Peter G.L. Klinkhamer

Institute of Biology Leiden, Leiden University, The Netherlands

An important question in risk assessment of genetically modified (GM) crop plants is whether unintended genetic or phenotypic side-effects occur in the plant after modification. Side-effects can be caused by gene disruption or altered gene regulation, and one result may be a change in the production of plant metabolites. Such effects on the metabolome level can have ecological consequences for a plant's interactions with pathogens and herbivores, since many of these interactions are mediated by chemical composition of the plant. In this study we present results of a metabolomic approach to study leaf chemistry in response to herbivory or virus infection in a GM potato variety, in comparison to its respective non-modified counterpart. The GM potatoes are modified in their starch metabolism to reduce amylose content in tubers for industrial starch production. Analysis of leaves with ¹H-NMR spectroscopy and multivariate data analysis revealed no separation in metabolomic profiles, suggesting that metabolite levels were not changed due to genetic modification. Both varieties showed similar chemical responses to aphid herbivory and virus infection, i.e. a, decrease in sugars, an increase of phenolic compounds and a change in glycoalkaloids patterns. We suggest that metabolomic techniques should be an integral part of ecological risk assessment of GM crops.