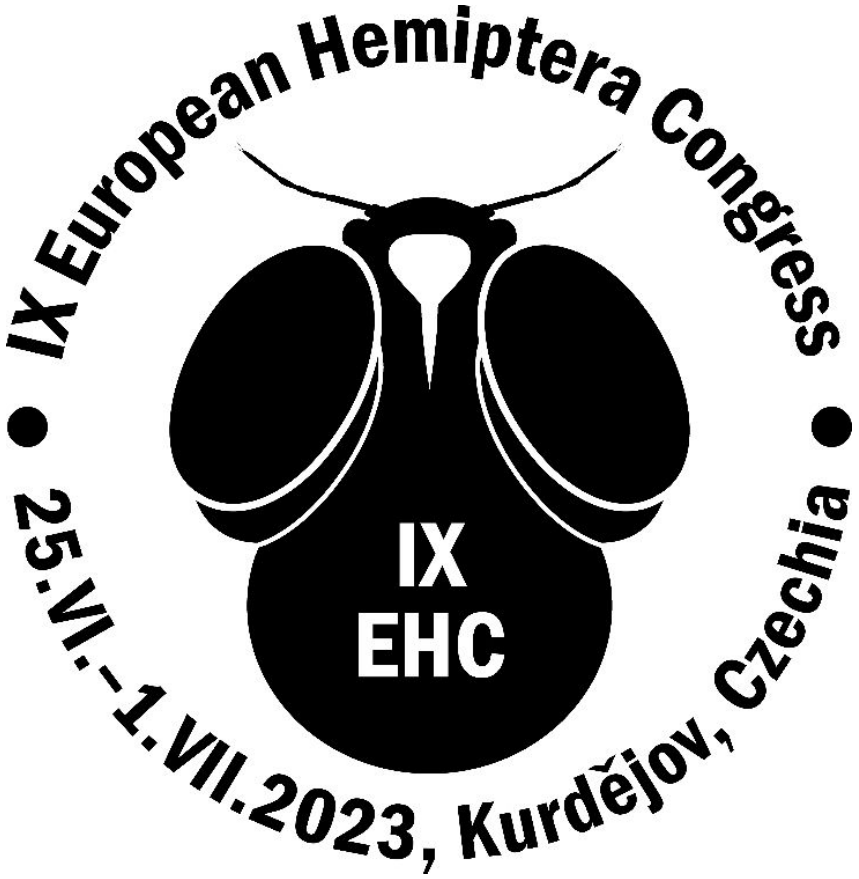
# 9TH EUROPEAN HEMIPTERA CONGRESS

## Kurdějov, Czechia, 25.6.–1.7.2023

*Book of abstracts*




**Editors:**
**Petr KMENT & Igor MALENOVSKÝ**

**Organising institutions**

Department of Botany and Zoology, Faculty of Science, Masaryk University, Brno
Moravian Museum, Brno
National Museum of the Czech Republic, Prague

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## Planthopper and leafhopper communities (Hemiptera: Fulgoromorpha et Cicadomorpha) of the post-mining coal slagheaps in the Upper Silesia region (southern Poland) [P]

ŚWIERCZEWSKI D. (1), ORŁOWSKA K. (2) & WALCZAK M. (2)

*(1) Faculty of Science and Technology, Jan Długosz University, Częstochowa, Poland; (2) Institute of Biology, Biotechnology and Environmental Protection, Faculty of Natural Sciences, University of Silesia, Katowice, Poland*

Slagheaps and other post-mining dumping grounds are interesting sites for ecological research on many groups of insects. Such areas, as a result of spontaneous natural succession or intentional reclamation, undergo partial or complete overgrowth with grass-dominated vegetation. Within the groups of insects inhabiting grassland communities of postindustrial areas, apart from orthopterans and butterfly larvae, hemipterans are the largest consumer group of grass biomass. As they are phytophagous, their piercing-sucking mouthparts provide them with access to internal plant tissues, which are free from macrocontaminations. The study was carried out in 2014 on planthopper and leafhopper communities inhabiting selected post-mining coal slagheaps on the boundaries of the cities of Rybnik and Rydułtowy (Upper Silesia, southern Poland). The plots represented vegetation at different stages of development: from very simplified, composed exclusively of perennials to well-stratified. On 5 research plots, a total of 50 Auchenorrhyncha species were collected (10 species of planthoppers and 40 species of leafhoppers) represented by 907 specimens. The results of the zoocenological analysis revealed that the community dynamics was mostly influenced by eurytopic species such as *Psammotettix confinis*, *Macrosteles laevis*, *Balclutha calamagrostis* and *Errastunus ocellaris*. Chorological analysis indicated that wide-ranging elements form the major groups: Trans-Palaearctic, Euro-Siberian and European. Regarding hostplant specificity, polyphagous and oligophagous shared the highest percentage ratio. Considering the number of annual generations, bivoltine species prevailed over the monovoltine ones. Taking into account the overwintering stage, forms hibernating as eggs dominated over nymphs and adults. The results obtained indicate a significant instability of the studied environments, which is typical for urban ecosystems, particularly when they are shaped differently from more pristine ones. At the same time, urban centers support some degree of biodiversity that is indigenous to the region, including rare and endangered species. Concluding, further studies are needed across multiple urban and post-industrial sites so that we can better understand these environments.

## The bugs in a-gadda-da-vida – evolutionary paths, models and conundrums of the Hemiptera [O]

SZWEDO J.

*Laboratory of Evolutionary Entomology and Museum of Amber Inclusions, Department of Invertebrate Zoology and Parasitology, University of Gdańsk, Poland*

The Hemiptera is one of the Big Five insect orders, with fossil history reaching the Carboniferous. Its concept, content, classification varied through centuries, with still numerous unanswered questions. The geological history of the order and its lineages is complex, with periods of fruitful development and dramatic changes, originations, and radiations, and extinctions. These changes, sometimes rapid and turbulent, sometimes mild and prolonged, are preserved in the fossil record, but also in the features of contemporary taxa. The evolutionary

history of the Hemiptera has been tumultuous, and its scenario is still full of ambiguities and gaps. This is due not only to the characteristics of the fossil record but also to its interpretation. The evolution of the hemipterans must be understood in the context of time and environmental changes, sometimes slow, sometimes rapid. Equally important in understanding of the evolutionary pathways of these insects are interactions with other organisms. Adaptations to new habitats and environments, new food sources and ways of their exploitation, resource sharing and avoidance of competition, and escape from predators, parasites and parasitoids – these phenomena have left a lasting mark on their evolutionary scenario. However, the bugs are also a playground for microorganisms, sometimes being neutral, sometimes harmful, often entering into close symbiotic relationships with hosts. Endosymbiosis could be an opportunity, but also an evolutionary rabbit hole. Interactions with other animals, e.g. in various forms of trophobiosis appeared. Specific reproductive strategies, sexual dimorphism and sexual conflicts, parthenogenesis, complex sexual and reproductive behaviors, including traumatic insemination and parental care – these could be beneficial at a particular time and place, risky at others. Major global changes of abiotic and biotic nature have shaped the evolutionary pathways of the Hemiptera during 300 million years. These insects survived many troubling events, adapted fast, in hardship and toil to new challenges, new environments, associated organisms and partners, particular lineages flourished, the others went extinct, interacted with changing environments and other organisms at various levels and scales.

## The first damsel bug (Heteroptera, Nabidae) from Eocene Lublin amber [O]

SZWEDO J. & BOJARSKI B.

*Laboratory of Evolutionary Entomology and Museum of Amber Inclusions, Department of Invertebrate Zoology and Parasitology, University of Gdańsk, Poland*

The true bug family Nabidae – damsel bugs, contains about 30 genera and 400 species, divided into two subfamilies, Prostemmatinae and Nabinae, and up to eight tribes. The internal classification has been unclear and controversial, confusing researchers from different fields. Fossil Nabidae are uncommon in the fossil record. The oldest representative of the family – *Cretanazgul camillei* Garrouste et al., 2020 – comes from Cenomanian, Kachinian amber. Two species are known from Baltic amber – '*Nabis' lucidus* Germar & Berendt, 1856 and *Metatropiphorus succini* (Jordan, 1952). We present the first fossil Nabidae from a new source of fossil resins – Eocene amber from the Lublin area. Amber occurs in fine clastic sediments accumulated in the middle and late Eocene of the Górka Lubartowska area (north Lublin region, SE Poland). The amber-bearing sediments are formations of the littoral zone or shallow siliceous shelf. Accumulations of amber occur in marine sediments associated with regressive facies, deposited in fairly low energy environments. The amber piece from Górka Lubartowska contained a fossil of a true bug presenting features of the Nabidae, but also features not found in modern damsel bugs. The most conspicuous features of this fossil are a short head, with stalky eyes, rostrum base strongly shifted ventrad, short, two-segmented tarsi and the presence of fossula spongiosa on all legs. Some morphological details of this inclusion are shared with representatives of modern Prostemmatini (Prostemmatinae), others with Carthasini and Arachnocorini (Nabinae), placing it in an intermediate position. Analyses of the morphological features of the fossil and comparisons with modern representatives of the family have allowed hypotheses to be put forward regarding its palaeoecology, behavior and habitat. It can be assumed that this fossil was a riparian bug, hunting near banks or marginal growths near freshwater bodies, estuaries and sea coasts, similar to contemporary members of the families Leptopodidae, Saldidae or Gelastocoridae. Among the recent Cimiciformes, including the