

25TH ANNIVERSARY OF
MUSEUM OF AMBER INCLUSIONS
UNIVERSITY OF GDAŃSK



**Fossil Record
in Resins and Sediments**

BOOK OF ABSTRACTS

UNIVERSITY OF GDAŃSK
23-26 MAY, 2023



FossilRRS Conference



**Fossil Record in Resins
and Sediments**

**25th Anniversary
of Museum of Amber Inclusions
University of Gdańsk**

BOOK OF ABSTRACTS

**University of Gdańsk, Faculty of Biology
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WELCOME

The Museum of Amber Inclusions University of Gdańsk is pleased to invite you to celebrate its 25th anniversary and attend the conference *Fossil Record in Resins and Sediments*, which will be held in Gdańsk, Poland, from 23rd-26th May 2023.

Twenty-five years ago, the natural history collection of amber and inclusions, started from modest beginnings – scientific collection of the Diptera inclusions of Professor Ryszard Szadziewski. What revolutionised the collection was the donation of 50 kg of raw Baltic amber, which completely changed the view on amber, its inclusions and its amber taphocoenosis. The uniqueness of the scientific collection of the Museum of Amber Inclusions is in its positioning within the structures of the University. We are not a collection of specimens, musealia that cannot be touched, but a collection where amber is the basis of scientific discovery and research. Twenty-five years ago, we were at the point when interest in inclusions was developing, and the amber market was growing, and we were present at the Amberif Fair, among the amber workers and collectors, at the centre of the amber (and inclusions) fever. The scientific backbone of the Museum is its collection, research facilities and friends among scientists. The flesh is a collaboration with amber workers, collectors and enthusiasts of amber and inclusions. The blood is the circulation of information, data, ideas, and opinions.

New technologies allow us to look more and more closely into worlds hidden millions of years ago in the solidifying drops of resins. It is the 21st century and we are discovering new pages written in the books of amber, its inclusions and its deposits, but also in the stone books of palaeontology. We will not be able to answer more and more questions on our own – cooperation, exchange of information and experience of geologists, palaeontologists and biologists is needed.

The Conference, which is being held at the University of Gdańsk and supported by the Ministry of Education and Science, will offer an outstanding scientific programme thanks to the participants. It is an opportunity to share the current state of knowledge, new working hypotheses, to debate new findings and new tools, to discuss and find new interpretations of existing data and opinions.

It is with great pleasure that we invite all of you in the spring of 2023 to this Conference, we encourage scientific openness, warm discussions, collaboration, and a shared reading of palaeobiology in fossil resins and sediments. We trust that your stay in Gdańsk – the World Capital of Amber and Museum of Amber Inclusions will be a memorable opportunity for both professional and personal satisfaction.

HONORARY PATRONAGE



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Fossil Record in Resins and Sediments

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Gdańsk, Poland

ABSTRACTS

NEW INSIGHTS INTO THE JURASSIC COLEORRHYNCHA MYERS ET CHINA, 1929 (HEMIPTERA) FROM EUROPEAN DEPOSITS

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The Coleorrhyncha Myers et China, 1929, commonly named moss bugs, are phytophagous insects of the order Hemiptera Linnaeus, 1758. The modern-day taxa are included in a family Peloridiidae Breddin, 1897 with a so-called Gondwanan distribution. The remaining families are known only from the fossil record – †Hoplorigidiidae Popov et Shcherbakov, 1991, †Karabasiidae Popov, 1985, †Progonocimicidae Handlirsch, 1906, and †Permoridiidae Burckhardt et al., 2022, the latter with taxonomic affiliation controversial. Known fossils record of these insects comes spans the Permian to Lower Cretaceous, with taxa described mostly from adpressional and compressional fossils, and rarely from Lower Cretaceous fossil resins (Lebanese amber, Burmese amber).

Progonocimicidae Handlirsch, 1906 is the largest family within the Coleorrhyncha, comprising 26 genera, from Australia, South America, Asia and Europe, from the Permian (Changhsingian) to the Cretaceous (Cenomanian). It is traditionally divided into two subfamilies, viz., Progonocimicinae Handlirsch, 1906 and Cicadocorinae Becker-Migdisova, 1958. The main difference between them is the structure of dScP vein, claval vein A_1 , and claval fracture (Fig. 1).

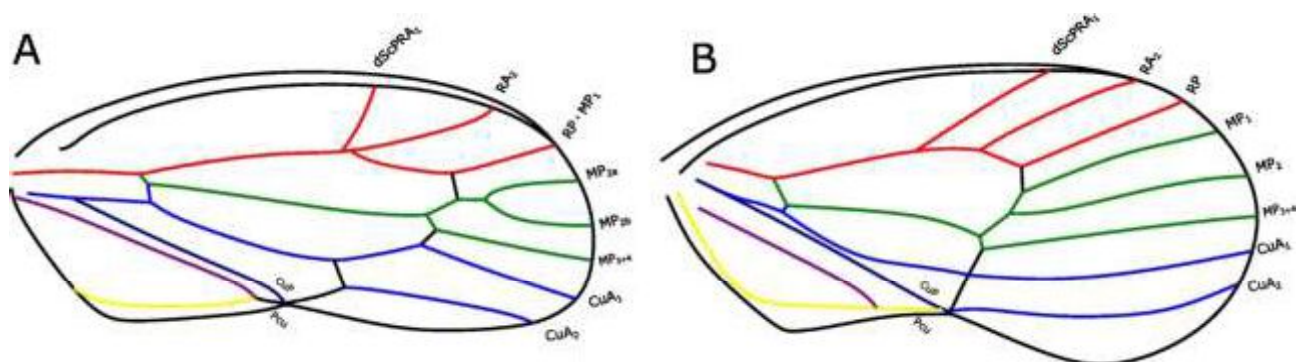


Fig. 1. Tegmen venation of A. Progonocimicinae *Actinoscytina belmontensis* Tillyard, 1926, B. Cicadocorinae *Mesocimex lini* Wang, Szweo et Zhang, 2009. After WANG et al. 2009⁵, modified.

The known Jurassic record of Progonocimicidae includes 68 species, of which only 6 European ones are assigned to the Progonocimicinae. The vast majority are included in the Cicadocorinae, but their distribution is restricted to Asia. In the fossil insects material from Germany, the Progonocimicidae represents 0.7-10% of all fossilized insects¹. New material from the Jurassic of Germany (Grimmen) and Luxembourg (Bascharge)

has revealed the first specimens of Cicadocorinae from Jurassic European deposits. These fossils present a set of new taxonomic and diagnostic features. The new specimens and the data resulting from them will facilitate work with vestigial material that is superior to complete specimens and allow revisionary studies.

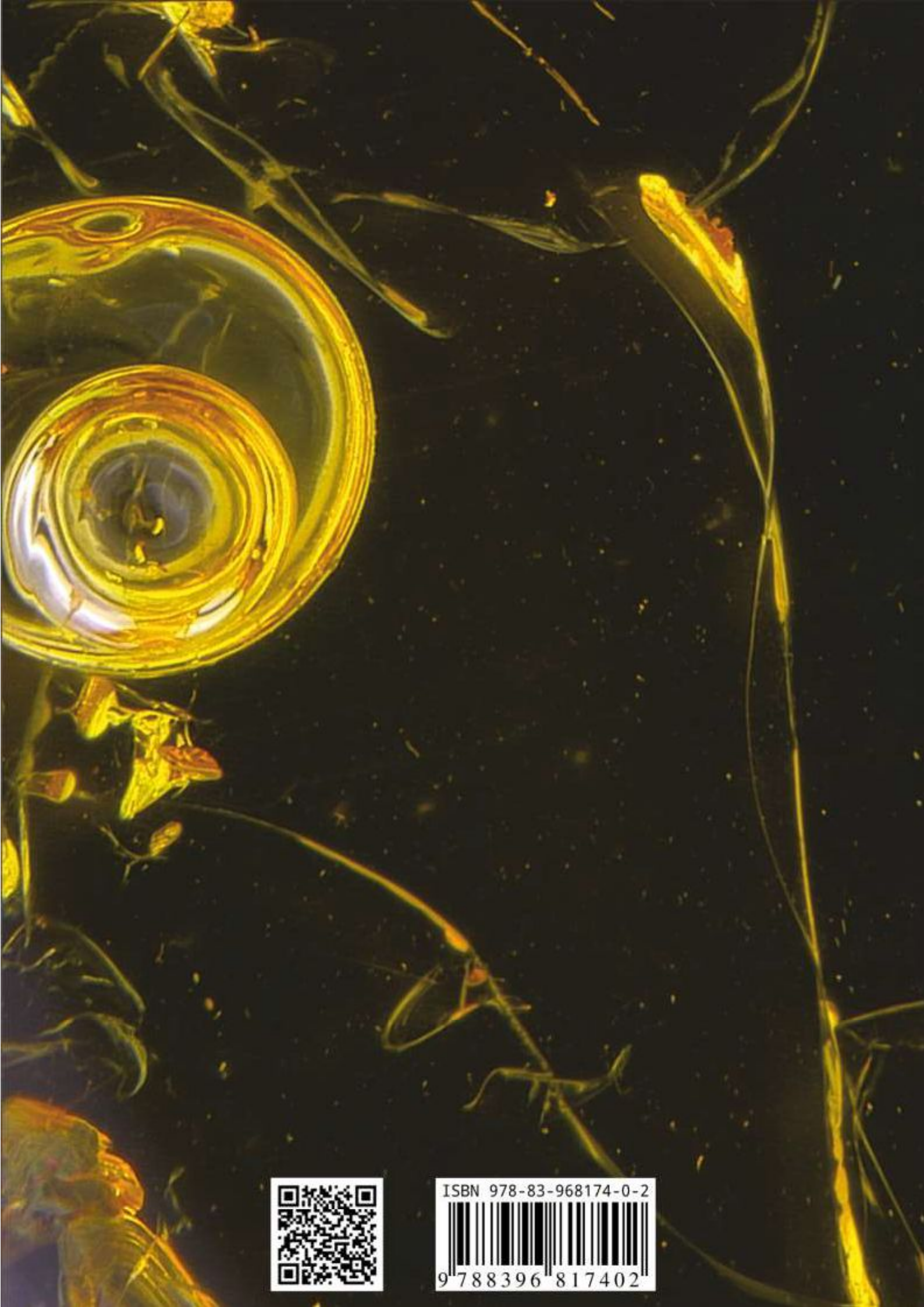
The abundance and good state of preservation of specimens (often quite complete specimens, with preserved coloration and fine morphological details) may result due to their relative abundance in Jurassic palaeoecosystems and the taphonomic conditions under which they were subjected to fossilization. During the Jurassic era, around 183 Mya, the Toarcian Oceanic Anoxic Event (TOAE) occurred and it was probably the most extreme ocean deoxygenation event in the entire Phanerozoic². The main factor responsible for these events were volcanic eruptions in the Karoo-Ferrar region and the resulting sharp increase in atmospheric carbon dioxide levels³.

Environmental changes in forest habitats, their depletion and conversion from diverse ones to low-diversity assemblage, affected associated insects, including Progonocimicidae. The fossil record also suggests a significant increase in tropical cyclones intensity during the period of TOAE⁴, which should also be taken into account in palaeoecological and taphonomic considerations. The taphonomic conditions prevailing in the deep-sea marine sediments into which organic remains drifted, the anoxia, and the lack of bacterial activity resulted in good preservation of their remains and thus an abundance of Coleorrhyncha fossils in the studied deposits.

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