

## Klapperich's Chinese Plecoptera, and some Plecoptera types in Museum Koenig, Bonn, Germany

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Johann Friedrich Klapperich was an entomologist working mainly on Coleoptera (Roer 1987). In 1937, he went to Fukien, China for two years to collect insects for the Museum Koenig at Bonn. That his large collections contain also Plecoptera was not known. In 1966, while working with the Diptera: Blephariceridae of the late B. Mannheims, I was handed as a loan for study 3 wooden boxes (ca 35 x 25 cm) with pinned stoneflies collected by Klapperich in Fukien (Fujian, People's Republic of China), mostly large Perlidae.

This collection was kept in the Limnologische Flussstation Schlitz for many years. The late Joachim Illies identified a few *Styloperla inae* Chao. *Nemoura klapperichi* Sivec, 1981, was named from this collection, the holotype remains in it. During his repeated visits to the Schlitz institute, Ignac Sivec prepared genital preparations of most of Klapperich's specimens. They were numbered and Ignac referred to these numbers in his many notes (in Slovenian) and excellent pencil drawings, mainly of genitalia and eggs, on numerous DIN A5 pages. The documents were photographed before Ignac returned home. When the Limnologische Flussstation Schlitz was closed early in 2007 I took Klapperich's collection to my home, hoping that Ignac would complete its study by a list of names or name labels. Ignac now tells me that he is at it and tries to complete his study.

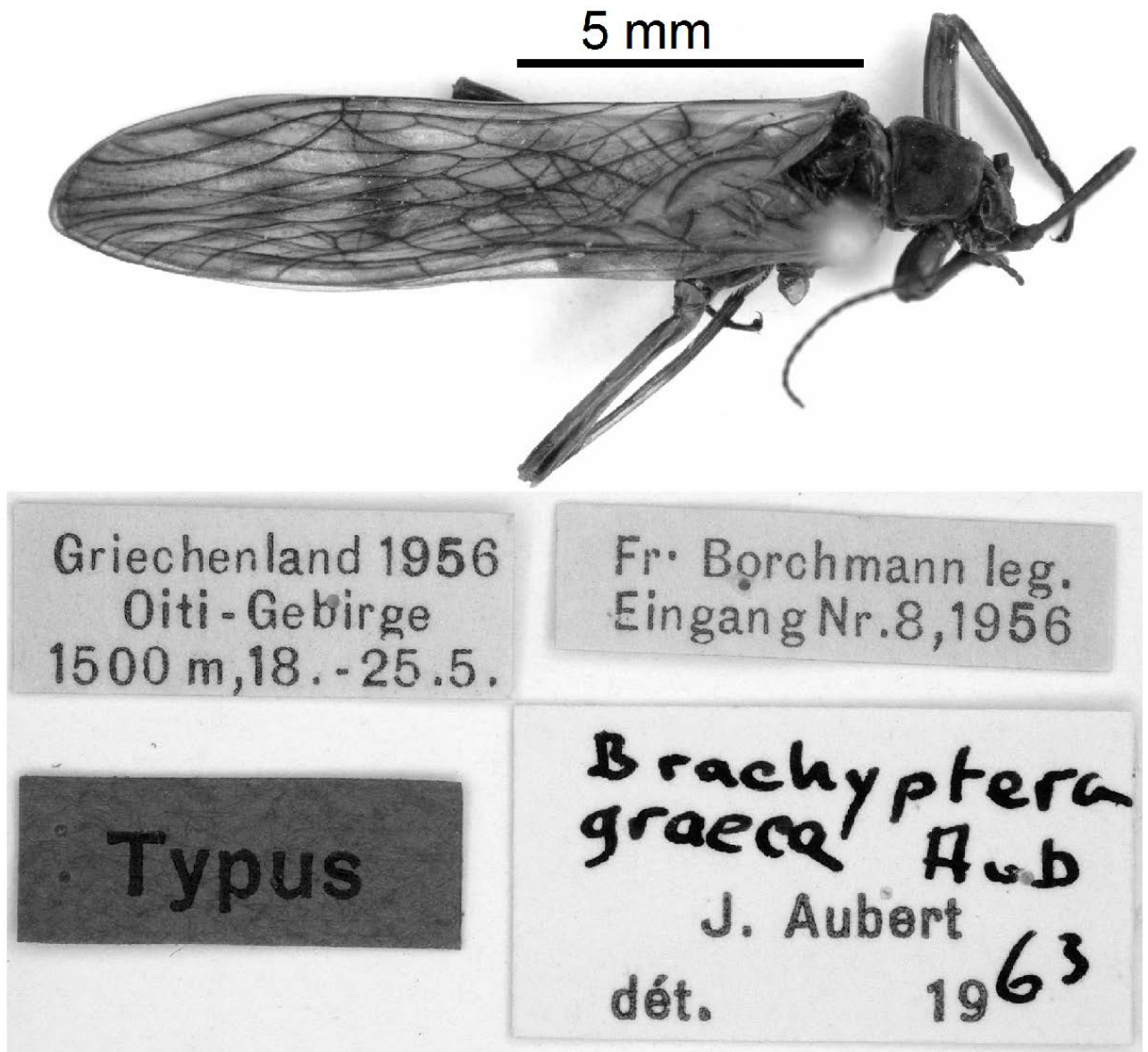
To ensure proper curation and continued availability of this material, the collection was returned to Museum Koenig in April, 2013, together with a specimen list, the beforementioned photographs and digital copies thereof. A few more Perlidae collected by Klapperich in Fukien turned up in a mixed stonefly collection that I was sent three years ago. It was now also returned to Museum Koenig. The Chinese Perlidae in this last collection remains unstudied. Most other specimens are common German species, mainly from North Rhine Westphalia.

Also included in this recently obtained collection was the holotype male of *Brachyptera graeca* Berthélemy, 1971. The late J. Aubert had labelled this male as type of *Brachyptera graeca* Aubert, 1963 (Figure 1). Some females were labelled as allo- and paratypes, respectively. However, that name was never published. Instead, Aubert (1963) published a description and excellent genitalia figures of these specimens as a redescription of *Brachyptera beali* (Navás, 1924).

The holotype of *B. beali* eventually proved to be a different species (Berthélemy 1971). Berthélemy therefore designated the male in Museum Koenig studied and illustrated by J. Aubert as holotype of a new species, incidently using the same name as the unpublished one on Aubert's labels, naming *B. graeca* Berthélemy, 1971. Berthélemy did not mention

the females which therefore have no type status. He erroneously stated that Aubert had labelled the specimen as “holotype” of *B. beali* and suspected this had happened in error, instead of “neotype”. Apparently, Berthélemy never saw the actual specimen. Probably, the above confusion has resulted from some error or misunderstanding in correspondence between C. Berthélemy and J. Aubert.

Regardless the description of *B. graeca* Berthélemy, 1971 is valid, the name is available (ICZN, article 13.1.2), and the holotype is in Museum Koenig, Bonn.



## Literature Cited

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## A First Look at Regional Changes in Stonefly (Plecoptera) Assemblages under Climate Change

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Many of you know that my colleagues and I have been modeling distributions of stoneflies within the middle USA. We have a good approximation of pre-European settlement distributions for 78 of 146 species known from Illinois, Indiana, Michigan, Ohio, and Wisconsin at USA Geological Survey watershed scale HUC12 (avg. 200 km<sup>2</sup>). This sets the base distribution for stoneflies in the region. Summing modeled species within a drainage yields a pattern of species richness (Fig. 1). The richest areas are those that are unglaciated (southern third) and heavily forested. The first major product from this work is Cao et al. (2013) for Illinois. This year we will publish the regional model and its validation.

We are also examining how climate change will influence species ranges and the pattern of species richness across the area using downscaled climate data from nine climate models and two emissions scenarios throughout the 21<sup>st</sup> century. As an example of how climate change scientists think climate in the middle USA will change, the shift in heat index (how hot it feels) is presented for both Illinois and Wisconsin (Fig. 2). Even with low emissions (in orange) it will feel much hotter by the end of the century. High emissions (red) are predicted to lead to drastic changes.

Nearly 100 physical variables plus specimen data were used in Maxent software to create the pre-settlement maps. Each of these variables (forest cover, slope, surficial deposits, etc.) might have some ameliorative effect upon changing temperature and rainfall patterns. However, running the climate change models with all these variables is very time consuming, so at this point we have ran the models with climate alone, trying

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