



Biogeography  
of the Carpathians

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## ***Ptychoptera albimana* Fabricius, 1787 (Diptera, Ptychopteridae), a complex with important lineage divergencies in the Carpathian Area**

Edina<sup>1</sup> Török<sup>1,2</sup>, Lujza Keresztes<sup>1,3</sup>, Levente-Péter Kolcsár<sup>1,4</sup>

*1 Hungarian Department of Biology and Ecology, Faculty of Biology and Geology, Babes-Bolyai University, Clinicilor 5-7, Cluj, Romania1.*

*2 e-mail: [edinatorok7@gmail.com](mailto:edinatorok7@gmail.com)*

*3 e-mail: [keresztes2012@gmail.com](mailto:keresztes2012@gmail.com)*

*4 e-mail: [kolcsar.peter@gmail.com](mailto:kolcsar.peter@gmail.com)*

The present biodiversity crisis gives new perspectives in biodiversity conservation and management. However a number of organisms are consequently neglected, due to their taxonomic impediment. Dipterans are organisms with a rather neglected taxonomy, but with a high potential in evolutionary ecology studies. *Ptychoptera albimana* is a widespread European aquatic dipteran which was considered monotypic in its range due to its conspicuous wing pattern and body design. However our recent morphometry investigations using linear and geometric morphometry on wing and male genital structures revealed highly divergent pattern between western and eastern population in contact in the Carpathian Basin Area and make questionable the taxon status of the species. The morphological differences on the male terminalia between the two allopatric structures are important which reflect long term isolation and most probably surviving Pleistocene glaciations in at least two distant refugia. The western morphotype were identified among populations from Luxembourg, Germany and Hungary and most probably represents a postglacial expansion from one or more western Mediterranean refugia. The eastern morphotype identified among populations from Romania and Bulgaria is conspicuously different in a series of details on wing ratio and genital structures from the previous form and the Carpathian-Balkan region is the most likely refugia and postglacial expansion centre for this lineage. Further phylogeography studies can reveal the population history of these two divergent structures identified in the case of *P. albimana* and the taxonomic importance of these evidences can be test using an integrative approach.

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### REFERENCES

- UJVÁROSI L., KOLCSÁR L.P., TÖRÖK E. 2011. An annotated list of Ptychopteridae (Insecta, Diptera) from Romania, with notes on the individual variability of *Ptychoptera albimana* (Fabricius, 1787). *Entomologica romanica* 16: 39-45.
- PAULS S. U., THEISSINGER K., UJVÁROSI L., BÁLINT M. & P. HAASE 2009. Patterns of population structure in two closely related, partially sympatric caddisflies in Eastern Europe: historic introgression, limited dispersal, and cryptic diversity. *J. N. Am. Benthol. Soc.*, 28(3): 517–536.