ARPHA Conference Abstracts 1: e30489
doi: 10.3897/aca.1.e30489

OPEN ACCESS

Conference Abstract

Phylogeny of the genus *Pseudosinella* (Hexapoda, Collembola) from the Western Carpathians caves reveals Miocene diversification

Ľubomír Kováč‡, Martina Žurovcová§, Natália Raschmanová‡, Andrea Parimuchová‡, Nikola Jureková‡, Vladimír Papáč|

‡ Department of Zoology, Institute of Biology and Ecology, Faculty of Science, P. J. Šafárik University, Košice, Slovakia
§ Institute of Entomology, Biology Centre CAS, České Budějovice, Czech Republic
| Cave Care Department, Slovak Caves Administration, State Nature Conservancy SR, , Rimavská Sobota, Slovakia

Corresponding author: Ľubomír Kováč (lubomir.kovac@upjs.sk)

Received: 11 Oct 2018 | Published: 19 Oct 2018

Citation: Kováč Ľ, Žurovcová M, Raschmanová N, Parimuchová A, Jureková N, Papáč V (2018) Phylogeny of the genus *Pseudosinella* (Hexapoda, Collembola) from the Western Carpathians caves reveals Miocene diversification. ARPHA Conference Abstracts 1: e30489. https://doi.org/10.3897/aca.1.e30489

Abstract

The observations from the recent period revealed that the Western Carpathians, a part of the Carpathian mountain chain, is the northernmost region in Europe with the occurrence of the obligate cave fauna. The collembolan genus *Pseudosinella* Schäffer, 1897 is a polyphyletic taxon derived from the genus *Lepidocyrtus* Bourlet, 1839 from which it differs in reduced number of eyes. It covers about 350 species with predominantly Holarctic distribution of which about 39% are confined to caves. We studied the morphology and molecular traits to identify cave species of the genus *Pseudosinella* occupying the Western Carpathian caves and clarify their phylogenetic relationships. Based on morphological traits we hypothesized that *Pseudosinella aggtelekiensis* (Stach, 1929) and *P. paclti* Rusek, 1961 are descendants of the different phyletic lineages, the former species lacking morphologically related edaphic species. On the other hand, several species related to *P. paclti* were found in caves, superficial subterranean habitats and in the soil. Molecular phylogeny analysis has shown two distinct groups of cave species following pattern of allopatric distribution. The first group consisted of populations of *P. aggtelekienis* from the Slovak Karst and an undescribed species from fragmented and isolated karst in eastern

Slovakia. In the second group different populations of *P. paclti* occupying caves of the central karst regions were incorporated together with a new highly troglomorphic species confined to a small karst area. After an approximate estimate of the geological timing of the species isolation (RelTime), the two distinct *Pseudosinella* lineages separated approx. 9.54 mya followed by subsequent diversification in *P. paclti* lineage 8.36 mya, and in *P. aggtelekiensis* lineage 6.99 mya. This study contributed to assumption that the Western Carpathian Mts played an important role as speciation centre of the obligate cave fauna in Europe.

Keywords

Collembola, Pseudosinella, molecular phylogeny, subterraean habitat, genetic divergence, Slovakia, Werstern Carpathians

Presenting author

Ľubomír Kováč

Presented at

24th International Conference on Subterranean Biology, 20-24 August 2018, Aveiro, Portugal