The European widespread *Ptychoptera albimana* Fabricius, 1787 (Diptera, Ptychopteridae): deep morphological divergences, low genetic variability

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Aquatic insects with large distribution area exhibit highly divergent allopatric structures through their ranges as a consequence of the Pleistocene climate changes. This paradigmatic pattern has frequently been demonstrated in cold-adapted mountainous species, while a number of euritherm species are consequently neglected. Dipterans are of major importance in almost all types of aquatic ecosystems. In the current study a comparative morphological analyses and molecular tools (mtCOI sequences) were used to test taxonomic hypotheses in the case of the European widespread *Ptychoptera albimana* which presents highly divergent morphological structuring throughout its range. However such morphological divergent structures are symparthric in some cases, but are clearly separated along an altitudinal gradient. The typical *P. albimana* were identified mostly at low altitudes in Europe (Luxembourg, Germany, France and Hungary, but also in Romania, in Dobrogea and Bulgaria in Stara Planina) between 50-300 m (lowland-hilly area). In contrast, divergent morphologica structures were identified from the Carpathians and Rhodope Mts., up to 500 to 800 m (mountainous area). In contrast the standard BOLD mtCOI sequences (650 bp) frequently used in molecular taxonomy not reflect a similar pattern and suggest recent area dynamics of populations from different isolated refugia in Europe with secondary contact and genetic introgression. The present integrative study confirms the species status of *P. albimana* and detects postglacial morphological divergences due to some local adaptations in more or less isolated wet habitats through its range.

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