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Conference Abstract

DNA barcodes combined with geometric morphometry challenge species hypothesis in palaemonid shrimp

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Abstract

Although the Mediterranean Region is known as a hotspot for biodiversity and endemism its freshwater fauna is still greatly unexplored, and even the emblematic taxa such as decapods require in-depth integrative investigation. In our research we used integrative approach composed of various geometric morphometric and molecular methods to challenge the taxonomic status of two freshwater shrimps representing Palaemonidae: *Palaemon antennarius* and *Palaemon minos*. Basing on 352 COI sequences, three Molecular Operational Taxonomic Units (MOTUs) were defined. Two of them belonged to *P. antennarius*: first inhabiting Apennine Peninsula and Sicily, the second one from the Balkan Peninsula. The third MOTU corresponded to *Palaemon minos* from Crete. The Balkan MOTU of *P. antennarius* was closer to *P. minos* in terms of genetics, than to the other conspecific MOTU. The carapace shape variation, studied on 180 individuals, was mainly explained by the geographic distribution. Balkan and Cretan groups were clearly distinguished, while other samples were distributed along the shape gradient from Sicily

and southern Apennine Peninsula to the Balkans. The results of our study showed that, either the MOTU assigned to the Apennine Peninsula and Sicily constitutes a separate species or, alternatively, *P. minos* should be synonymised with *P. antennarius*.

Keywords

integrative taxonomy, DNA barcode, geometric morphometrics, carapace shape, biodiversity hotspot

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