
Freshwater gammarids (Amphipoda) from Crete and Peloponnese – the study of the diversity and origin of insular freshwater fauna

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Abstract

Islands are considered to be natural laboratories of evolution and the Mediterranean Region is one of the most precious biodiversity hotspots in the world. However, the studies upon biodiversity and origin of insular fauna focused mostly on terrestrial or marine species, leaving aside the freshwater fauna. Gammarid amphipods are among the most numerous groups of benthic macroinvertebrates living in lotic ecosystems in Europe and in the Mediterranean Region. So far, around 120 freshwater species of two genera, *Gammarus* and *Echinogammarus*, have been reported from the area, with only 15 known from the Mediterranean islands. Given the high cryptic diversity discovered recently in European gammarids, we conclude that number of species already reported may be underestimated. Our main goal is to reveal the diversity, phylogenetic relationships and origin of freshwater gammarids inhabiting Crete and Peloponnese. We have revealed presence of five freshwater species on Crete. Morphologically four of them were identified as the members of *Echinogammarus* already known from Crete. Also we discovered one species new for science and belonging to *Gammarus*, genus that has not been yet described from Cretan freshwaters. Interestingly, despite the wide distribution of the species, it presents a genetic uniformity between the sites. It suggests that the colonisation was recent, probably during Pleistocene glaciations. Several both mitochondrial (COI and 16S) and nuclear (28S, EF- α and ITS-1) markers were used for the time-calibrated phylogeny reconstruction to reveal the origin of freshwater gammarids inhabiting Crete and Peloponnese as well as their phylogenetic relationship with other Mediterranean species.

Keywords: amphipoda, origin, biodiversity, Crete, Peloponnese, Mediterranean, freshwater

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