GENETIC STRUCTURE AND PHYLOGENETIC RELATIONSHIPS INCONGRUENT WITH PALAEOGEOGRAPHY AND CURRENT TAXONOMY IN HYGROPHILOUS ISOPODS OF GREECE

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The genus *Trachelipus* comprises stenoecious animals living in humid habitats, such as dense forests and around inland waters, which are generally threatened by human activities and the fast rates of climatic change. Species–level taxonomy has been under debate after the application of molecular markers for phylogeny reconstruction. Herein we investigate the phylogenetic relationships and the genetic structure of a large number of both endemic and European *Trachelipus* populations from both mainland and insular Greece (i.e. Greek endemic species: *T. kytherensis*, *T. aegaeus*, *T. cavaticus*, and *T*. n.sp.; European species: *T. camerani* and *T. squamuliger*). We employ one nuclear and two mtDNA markers, aiming to identify possible geographic structure in their divergence and to evaluate the consequences of habitat fragmentation due to climate change and other anthropogenic activities on the genetic structure of such stenoecious animal species. The results reveal very large amounts of genetic differentiation even among neighboring populations, and a geographic pattern that is largely incongruent with current taxonomy, but also with established palaeogeography. Some populations that are considered conspecific exhibit large genetic distances and cluster in different clades. The occurrence of more than one clade in mainland Greece raises the possibility of repeated episodes of clade expansion/contraction during Pleistocene glaciations. In any case, it is evident that in these relatively sedentary animals, habitat fragmentation promotes population divergence at a very high rate. In fact, the genetic distances recorded herein among closely related populations are comparable with those reported for different genera in other isopods and arthropods.