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DNA barcode reference library of gammarids from the Carpathian biodiversity and endemism hotspot

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The Carpathian Arch has a complex geological history, spanning millions of years of Alpine orogenesis and associated Paratethys regression. Recent studies showed that the Carpathians are characterized by very rich biodiversity and high level of endemism. Amphipod crustaceans of the family Gammaridae are among the most diverse animal groups inhabiting aquatic ecosystems of the area. They are also commonly used as bioindicators and model organisms in ecotoxicological studies. On the other side, gammarids have been recently reported for high level of cryptic diversity within conventionally recognized morphospecies. Thus, there is a need for a wide-scale assessment of the real level of diversity within this group and its spatial distribution over the area. We have amplified the COI barcoding marker from over 700 individuals collected on ca. 130 sampling sites covering the whole Carpathian Arch. By using several methods of molecular species delimitation, including the barcode index number (BIN), and tools for spatial mapping of genetic diversity we have revealed that nearly all morphospecies living in the area are in fact complexes of cryptic species, mostly endemics with narrow distribution ranges. Most of the diversity is centered in the Southern Carpathians, yet the northern region of the Arch included probably local glacial refugia for numerous *Gammarus* lineages.