

PROCESSES THAT SHAPED ZONITES DISTRIBUTION: A COMBINED PHYLOGENETIC AND NICHE-MODELING APPROACH

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Zonites is a landsnail distributed in the circum-Aegean region, i.e. western Turkey, several Aegean islands and in SE continental Greece (Peloponnisos and Evvoia). The genus has a patchy and disjunct distribution, and some of its species are only found as fossils or characterized as ‘rare’ and ‘in the process of extinction’. Recent phylogenetic analyses indicated that its diversification dates back to the Neogene and it was influenced by the palaeogeographic events in the Aegean archipelago. In this study we focus on its continental distribution, and we examine the impact of processes, such as vicariance, dispersal and, especially, extinction which seems to have played an important role on its evolution and present distribution. We combine molecular phylogenetic analyses with a niche-modeling technique, Maxent. Maxent predicts the actual or potential distribution of a target group over a geographical region of interest from a sample of localities of known occurrence and spatially explicit environmental conditions. Species distribution models can further corroborate or even elucidate the phylogeny within a taxon by depicting environmental differences among the resulting clades. Mitochondrial markers reveal three distinct lineages within continental Greece: one in central Evvoia, a second one comprising species from west and north Peloponnisos and a third that includes the remaining Peloponnese and south Evvoia. The genus’ absence from Sterea Ellada that “connects” Peloponnisos and Evvoia, combined with the revealed phylogeographical pattern, the estimated divergence-times and its predicted distribution based on the Maxent models, reflect the impact of past and present climatic conditions on *Zonites* diversification.