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[A molecular and epidemiological study of Grillotia \(Cestoda: Trypanorhyncha\) larval infection in Etmopterus spinax \(Elasmobranchii: Squaliformes\) in the Mediterranean Sea and Northeast Atlantic Ocean.](#)

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Abstract:Amongst other factors, topographic features can influence the genetic variability among populations of marine organisms. This applies to host species but also to their parasites, which are poorly studied regarding this aspect, as well as with regard to their use as bioindicators. In the present work, the ribosomal DNA (28S rDNA) was used to assess genetic diversity of *Grillotia* (Cestoda, Trypanorhyncha) larvae in one of its paratenic hosts, namely *Etmopterus spinax*, across five different regions (off Scotland, Celtic, Alboran and Balearic Seas and off Cyprus) belonging to three major geographic areas (Northeast Atlantic, western and eastern Mediterranean). The obtained sequences revealed a total of 18 polymorphic sites and 17 haplotypes, as well as significant values of variance throughout the five different regions. Reconstructed phylogenetic trees highlighted that all *Grillotia* sp. sequences formed a monophyletic group, but divergent lineages split into different main clades which were in relation to the area of origin, with a consistent cluster of sequences from the Atlantic Ocean, as well as another from the Eastern Mediterranean. In contrast, low genetic differentiation was observed between samples from Balearic and Alboran Seas, and with respect to *Grillotia*

sp. larvae from the Gulf of Naples analysed in a previous study. Geographical differences in parasite infection descriptors (prevalence, abundance, and intensity) were assessed, revealing significant differences among the sampled regions. The present study indicates that geographical distance and submarine barriers affect not only the connectivity of hosts but also their parasite infrapopulations by limiting interpopulation dispersal. It underlines the usefulness of parasites as biological tags for the study of susceptible and data-poor host species such as deep-water sharks and its potential implications for host population management and protection

measures.

Keywords: *Etmopterus spinax*, *Grillotia*, Mediterranean, Atlantic, Phylogeography, 28S rDNA.