

**Biodiversity assessments and changes in the Gulf of Naples (central-western Mediterranean Sea): insights from decapods**

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**Abstract text:**

A renewed interest on marine biodiversity has recently led to the reevaluation of the taxonomic and faunistic work. In fact, detailed biodiversity studies are now considered a powerful tool for developing long-term monitoring system and understanding the trajectory of changes in marine ecosystems. All this holds especially true when past data are reviewed under the prism of modern taxonomic approaches. Since 2017, we have been re-assessing the knowledge of the decapod biota (order Decapoda) living in the Gulf of Naples and nearby (Tyrrhenian Sea, central-western Mediterranean Sea), one of the most studied worldwide areas in terms of biodiversity. Field campaigns were carried out from the tide level until 700 m depth, while the laboratory work was carried out through an integrative taxonomic approach, thus merging morphological and molecular tools. About ~900 specimens were selected, yielding 190 molecular taxonomic units. Taxonomic incongruences were found in >10 species, revealing yet uncovered cryptic diversity. Two new species were detected from Italy, namely *Lysmata olavoi* and *Scyllarus subarctus*. Northern spread of thermophilic species was found in four taxa, namely *Synalpheus africanus*, *Pachygrapsus maurus*, *Pachygrapsus transversus*, and *Ocypode cursor*. Finally, the presence of three rare species

(*Typton spongicola*, *Paragalene longicrura*, and *Euchirograpsus liguricus*) was confirmed in the region after about a century. Present results will re-assess our knowledge on a group that holds ecologic and economic interest and will help to shed light on the ongoing human-driven changes affecting the investigated area. Finally, our data will constitute useful foundations for future conservation and management plans.