

ICES/PICES 6ZPS 2016/ S4

Multidisciplinary approach to Oncaeidae diagnostics in the Gulf of Naples: from Giesbrecht to the molecular era.

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The Study of Oncaeidae in the Gulf of Naples (Tyrrhenian Sea, Mediterranean Sea) started with the original species descriptions of Wilhelm Giesbrecht (1893) based on observations using light microscopy. Among the 49 mesopelagic oncaeid species reported in Mediterranean Sea belonging to four different genera, 11 species (three genera) are regularly found in the Gulf of Naples. Two thirds of these species were described from the Gulf of Naples, seven by Giesbrecht at the end of nineteenth Century and one in 1995; none of them has been molecularly identified before. Molecular phylogenies on copepods are restricted to a few families, mainly in the order Calanoida. For calanoids, the number of GenBank nucleotide entries is around 531,000 (about 70% of all copepod nucleotide entries) of which about 516,000 are for the family Calanidae. For the entire order Poecilostomatoida this number drops to 382 (0.05%) while for the Oncaeidae it reduces to only 106. These numbers clearly show an under-representation of this family in the phylogenetic analyses run to date on copepods and call for a more detailed study. The rationale of the present work is to molecularly identify members of the Oncaeidae in the locality where a significant number of species were first described. Morphological identification of many Oncaeidae species is problematic because of the fine scale differences characterizing the species. There is a need for more precise identification tools in order to better study the ecology and distribution of the different taxonomic units.

Keywords: Copepoda, Oncaeidae, Molecular taxonomy, Gulf of Naples

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