Sponges in the Jordanian coastline of the Gulf of Aqaba (Jordan)

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ABSTRACT

Studying the biodiversity of the sponge community is an important step to understand their impact on the coral reef ecosystem where specialists are rare and needed. This work aimed to document the taxonomic composition of the sponge community in the coral reefs of the Jordanian coastline of the Gulf of Aqaba using a combination of underwater photography and up-dated histological study. Five hundred and eighty samples were observed, of which 120 samples were collected from thirteen stations along the Jordanian coastlines of the Gulf using SCUBA diving technique. In Situ documentation, histological preparations (spicules and sections), SEM of major types of microscleres spicules and taxonomic description of each specimen were done. Fifty three different sponge specimens were identified. Most identified species (92%) were found to be part of the Demospongia class and representing two subclasses, 10 orders, 29 families, 38 genera and 48 species. The other 8% the identified species were found to be part of the class Calcarea and representing two subclasses, 2 orders, 3 families, 3 genera and 4 species. The largest order among Demospongia was found to be Haplosclerida, where the largest and most diverse genera (Callyspongia: Family Callyspongiidae) was obtained. The identified sponge species were belonged to different regional origins, (47%) Indo-Pacific, (30.1%) potentially endemic to the Red Sea, (15%) cosmopolitan, (2%) endemic to the Gulf of Aqaba (Siphonochalina siphonella Levi) and (6%) as unidentified species. In this study, 15 species were new records for the Gulf of Aqaba and 2 species are believed to be new records for the Red Sea. Three sponge samples were identified down to the generic level (Batzella sp., Haliclona sp. and Niphatis sp.) but could not be traced further. One sample, Fessubera quadranugilata Levi, is proposed as new combination (Batzella quadranugilata). About half of the sponges, (45.2%) were encrusting mainly on cryptic places and artificial barriers. There was a clear association of (24.5%) the identified species with many organisms. Seasonal and geographical variations could be the causes of the general spicule size reduction. The most abundant station for sponge fauna in this study was the Container Port (CP), while the collective stations of the Marine Science Station (MSS) harbored the most diverse sponge community. Phosphate Loading Berth (PLB) station showed the least abundant site, which might be attributed to phosphate pollution. Orders Hadromerida and Poecilosclerida were shown to be the most successful orders capable for dispersal along the Jordanian shores. The most frequent sponge species along the Jordanian shores were Grayella cyathophora Carter and Negombata magnifica (Keller).