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First Record of Two Species of Echinodermata for Libyan Waters

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Abstract

Two species of Echinodermata were reported for the first time from the deep Libyan waters. The goose foot starfish *Anseropoda placenta* (Pennant, 1977) and the common brittle star *Ophiothrix fragilis* (Abildgaard in O.F. Müller, 1789) were observed in Tripoli, Libyan waters by Libyan fishers. Subsequently, they are collected by trawling in the deep waters. This report discusses details of these new observations.

Keywords: *Anseropoda placenta; Ophiothrix fragilis*; Libyan waters

Introduction

The benthic macro fauna, especially belonging to the phylum Echinodermata, is insufficiently studied in the Libyan waters. Accordingly, there is a gap in knowledge and insufficient data related to this topic. This is due to the lack of comprehensive studies and research dealing with this kind of marine branch. Nevertheless, it is already confirmed the presence of common Echinodermata species in the Libyan waters [1-4]: *Arbacia lixula* (Linnaeus, 1758), *Asterina pancerii* (Gasco, 1876), *Coscinasterias tenuispina* (Lamarck, 1816), *Centrostephanus longispinus* (Philippi, 1845), the Non-Indigenous Species (NIS) *Diadema setosum* (Leske, 1778), *Echinaster (Echinaster) sepositus* (Retzius, 1783), *Holothuria* (*Platyperona*) *sanctori* Delle Chiaje, 1823, *Holothuria (Holothuria) tubulosa* Gmelin, 1791, *Ophidiaster ophidianus,* NIS *Ophiocoma scolopendrina* (Lamarck, 1816), *Paracentrotus lividus* (Lamarck, 1816). However, Echinodermata species from the Libyan waters remain insufficiently studied. This note reports two species of Echinodermata recorded for the first time from the deep Libyan waters.

In August 2020, one individual of both species *Anseropoda placenta* and *Ophiothrix fragilis* were collected by trawling at 73 m, and 78 m depth, respectively, in Tripoli, Libyan waters (Figure 1). Accordingly, the collected specimens were shared with one of us (AF) for identification. The two specimens were preserved in alcohol.

The goose foot starfish *Anseropoda placenta* (Pennant, 1977) is belonging to the order Valvatida and family Anseropodidae. It is an Atlanto-Mediterranean species [5]. The species occurs sub tidally from 10-500 m depth on muddy sand or muddy gravel. *A. placenta* is collected at 73 m depth of a muddy sand bottom of the Libyan waters. *A placenta* is characterized by its very thin body taking a leaf like form with around 200 mm diameter. It is distinguished by five short webbed arms and its skin with granular textures of small plates. In addition, *A. placenta* has on its upper surface a red disc and five red lines radiating along the arms with pale pink between them (Figure 2). It feeds on benthic crustaceans (amphipods, cumaceans, mysids, crabs and hermit crabs), molluscs and echinoderms [6].

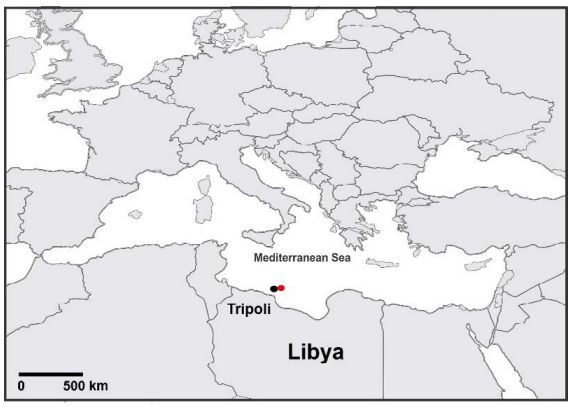

Figure 1: Location where the two species were collected in Tripoli, Libyan waters. Black circle: Location of collection of *Anseropoda placenta*; Red circle: Location of collection of *Ophiothrix fragilis*.

Figure 2: The collected specimen of *Anseropoda placenta* from Tripoli, Libyan waters.

The common brittle star *Ophiothrix fragilis* (Abildgaard in O.F. Müller, 1789) is belonging to the order Amphilepidida and family Ophiotrichidae. It is a common species of the Northeast Atlantic Ocean, Black, and Mediterranean Seas [5 and 7]. This species prefers hard substrata including sand and shell bottoms and is often found in empty shells or under stones, from shallow water down to 350 m. It has also been reported from the eastern Mediterranean caves [8]. *O. fragilis* was collected at 78 m depth in a sand bottom of the Libyan waters. It is characterized by its grey ranging through red body color with around 20 mm in diameter. It is distinguished by its five long, slim, and spiny arms, typically five times the diameter of the body in length (Figure 3) [6 and 9]. Common brittle stars are detritivorous species feeding

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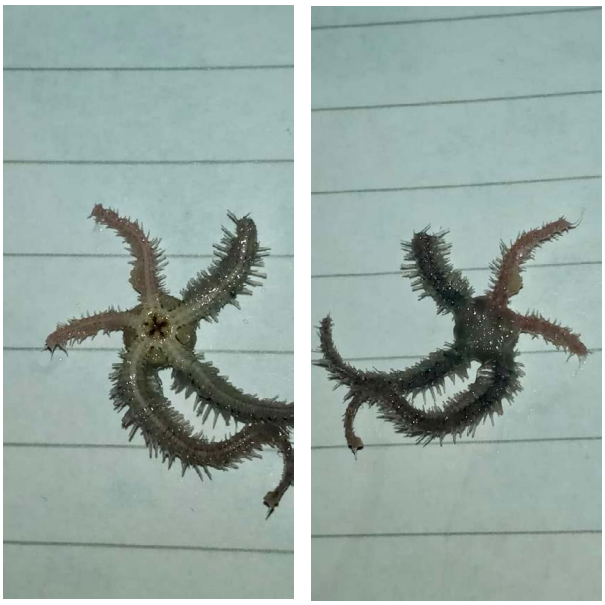

Figure 3: the collected specimen *Ophiothrix fragilis* from Tripoli, Libyan waters.

on decaying material from the ocean floor. They feed on diatoms, and phytoplankton, and they are prey to many species of fish, crabs, and some species of starfish [9].

From an ecological point of view, the presence of *Anseropoda placenta*, *Ophiothrix fragilis* in Libyan waters provide several ecosystems functions and services. They play an essential ecological role as high-level predators in the structure and function of intertidal and sub tidal benthic communities, where they promote heterogeneity and diversity [9 and 10]. In addition, some Ophiurids, like *Ophiothrix fragilis* can have large aggregations that provide similar ecological roles to mollusks reefs: they enhance organic matter deposition, increase benthic-pelagic coupling and foster the presence of species among them [11].

These two new marine records from the Libyan waters prove the efficacy of citizen-sciences as an important monitoring tool for reporting new marine species. Accordingly, these new records of Echinodermata species in the Libyan waters complement the data known from this region.

In this context, it is recommended to enhance citizen science as an effective monitoring tool to detect new marine species in the Libyan waters. Furthermore, within citizen science, and for better results, it is necessary to focus on enhancing the link between Libyan fishers and research.

From a protection and conservation point of view, further research on Echinodermata diversity in the Libyan waters is required to monitor the existing species status and investigate the presence of new records, especially the non-indigenous ones. Finally, it is also essential to finalize an updated checklist of the Echinoderms species from the Libyan waters.

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