

SHARK RECORDS IN THE STRAITS OF MESSINA (CENTRAL MEDITERRANEAN SEA): *HEXANCHUS GRISEUS* (BONNATERRE, 1788)

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Abstract

The problem of the biogeographical distribution of organisms is still connected to the distinction in the districts of the Mediterranean Sea. In this context, the Straits of Messina, as it has ecological features of significant interest that pose the questions and suggest biogeographical implications. The intense hydrodynamism, the low temperatures and the abundance of salts, transported to the surface from the deep water, make available a large amount of organic matter consumed by coastal populations. In this context, should be included repeated sightings of *Hexanchus griseus*, an abyssal species, which in the Strait is found at depths from 5 and 40 m, in special conditions of moon phase and current.

Keywords: Strait Of Messina, Biogeography

The biogeography distribution of marine organisms is linked to the subdivision into different districts of the Mediterranean basin. Nevertheless, the active interactions existing among several communities and their habitats reject such classical model of distribution. The Strait of Messina represents the junction of two basins, the Ionian and the Tyrrhenian Sea. Here, strong sea currents drive a complex displacement of water [1, 2]. Waters move between the two basins over a sill 70-110 meters deep, with a NW-SE oriented mouth. The sill morphology has a fundamental role not only for the hydrological regime of the Straits but also for the distribution of benthic populations occurring in this environment [3, 4]. Such hydrodynamism is responsible for the high biodiversity of the area. Intense strong currents and upwelling phenomena release a large quantity of organic matter that is used by coastal benthic populations. The peculiar morphologic, oceanographic and biological asset of the area determines an Atlantic-like ecosystem [5, 6]. In this particular environment has been repeatedly detected the species *Hexanchus griseus* (Fig. 1).



Fig. 1. *Hexanchus griseus* in the Giardini Naxos harbour

This species is a benthonic deep water shark that commonly lives between 700 - 2000 meters; is one of the biggest sharks of the Mediterranean Sea that can reach 5 meters in length and 800 kg of weight [7]. In the Straits of Messina, *H. griseus*, during particular moon and tide phases, comes to shallow waters up to 15-30 meters of depth. During these periods, six-gill sharks have been commonly sought by scuba divers. From 1993 we had begun a visual scuba dive program of this species and were found numerous specimens including an adult female of 4 meters (Iaria pers. comm.). In 2007 *Hexanchus griseus* was sampled in an upwelling area south of the Straits of Messina (Giardini Naxos), under the framework of EU project ("Ge.In.Fa.Co. - individuazione e messa a punto di un modello per lo sviluppo sostenibile e per la gestione integrata della fascia costiera nell'area di Giardini Naxos - POR SICILIA 2000-We hypothesize that there is a strong correlation between vertical migrations of *H. griseus* and presence of a large quantity of organic matter and benthic organisms. Probably the species follows northern upwelling currents as well as other many species characteristic of the area. In the near future we aim to undertake a collaborative project of underwater tagging and photo-identification to gain insight on six-gill shark migration and distribution in the Mediterranean Sea 2006).

References

- 1 - De Domenico E., 1987. Caratteristiche fisiche e chimiche delle acque nello Stretto di Messina. *Doc. et Trav.*, IGAL, Paris, 11: 225-235.
- 2 - Mosetti F., 1995. Tidal and other currents in the Straits of Messina. In: The

Straits of Messina Ecosystem. L. Guglielmo, A. Manganaro and E. De Domenico (eds), Italy, pp 13-30.

3 - Di Geronimo S.I. and Giacobbe S., 1987. Bionomie des peuplements benthiques des substrats meubles et rocheux plio-quaternaires du Déroit de Messina. *Doc. et Trav.*, IGAL, Paris, 11: 153-169.

4 - Giacobbe S., Rinelli P. and Spanò N., 1996. Echinodermi e Crostacei decapodi in fondi mobili litorali del versante calabro dello Stretto di Messina. *Biol. Mar. Medit.*, 3 (1): 400-406.

5 - Fredj G. and Giaccone G., 1987. Bionomie des fonds a Laminaires du Déroit de Messina. *Doc. et Trav.*, IGAL, Paris, 11: 237-238.

6 - Di Geronimo S.I. and Fredj G., 1987. Les fonds a Errina aspera et Pachylasma giganteum. *Doc. et Trav.*, IGAL, Paris, 11: 243-247.

7 - Compagno L.J.V., 1984. FAO Species catalogue: sharks of the world. FAO fisheries synopsis, vol. 4, part 1.