

Sea cucumbers: the new resource for a hungry fishery (CUMFISH)

Projecto

Mercedes González-Wangüemert^{*1}, Chantal Conand², Sven Uthicke³,
Giomar Borrero-Pérez⁴, Karim Erzini¹, Ester Serrao¹

¹ Centro de Ciências do Mar (CCMAR), Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal

² Ecomar Laboratory, Université de La Reunion, Saint Denis 97715, Reunion, France

³ Australian Institute of Marine Science, PMB No 3, Townsville, Qld 4810, Australia

⁴ Instituto de Investigaciones Marinas y Costeras (INVEMAR), Cerro Punta Betín, Santa Marta, 1016, Colombia

Sea cucumber stocks have been overfished in many countries from Indian and Pacific oceans as result of ever-increasing market demand, uncontrolled exploitation and/or inadequate fisheries management. The life-history traits of holothurians make them especially vulnerable to overfishing because they have low or infrequent recruitment, high longevity and density-dependent reproductive success.

This situation has resulted in catch of new target species from Mediterranean Sea and Northeastern Atlantic Ocean whose fisheries are in the process of development. Among the new economically important species to stress *Holothuria mammata* (Grube, 1840), *H. tubulosa* (Gmelin, 1970) and *H. polii* (Delle-Chaije, 1823) (Fig 1).



Holothuria polii



Isostichopus badionotus



Holothuria tubulosa



Holothuria mammata

Eostichopus regalis



Figure 1. Sea cucumbers target species

The main problem of these fisheries is the existence of several sea cucumber species living at the same region with similar external morphology, very difficult identification and with scarce information about life strategies, population dynamics and evolution history. Another target species from the Mediterranean Sea, Atlantic Ocean, Antilles and Gulf of Mexico is *Eostichopus regalis* (Cuvier, 1817), which is commercialized mainly for human consumption in the NW Mediterranean (Catalonia) (Fig 1). The last considered species is *Isostichopus badiionotus* (Selenka, 1867) which is found throughout the Caribbean and is very common in Bermuda (Fig 1).

Therefore, the main goals of this proposal are to study the incipient sea cucumber fisheries of several sites from Mediterranean Sea and Atlantic Ocean (Fig 2) and to assess the genetic structure of these species including the selection effects of fisheries. More precisely, the aims are: 1) to clarify the taxonomic status of holothurian target species, 2) to

quantify the captures from these incipient fisheries, 3) to increase the knowledge of biological features of these species, 4) to assess the genetic diversity and gene flow between populations of these new target species, 5) to identify the possible stocks, 6) to assess the effects of human selection (fishery) on sea cucumber genetic structure, and 7) to suggest management measures for the sustainability of their fisheries.

To implement this project and to accomplish the aims we rely on other highly qualified researchers working on different subjects such as sea cucumber systematics, population genetics, phylogeography and fisheries: Dr. Gonçalves from Coastal Fisheries Research team, Centro do Ciências do Mar, CCMAR (Portugal); Dr. Aydin from Ordu University (Turkey); Dr. Lleonart from Consejo Superior de Investigaciones Científicas, CSIC (Spain); Dr. Ramón from the Instituto Español de Oceanografía, IEO (Spain).

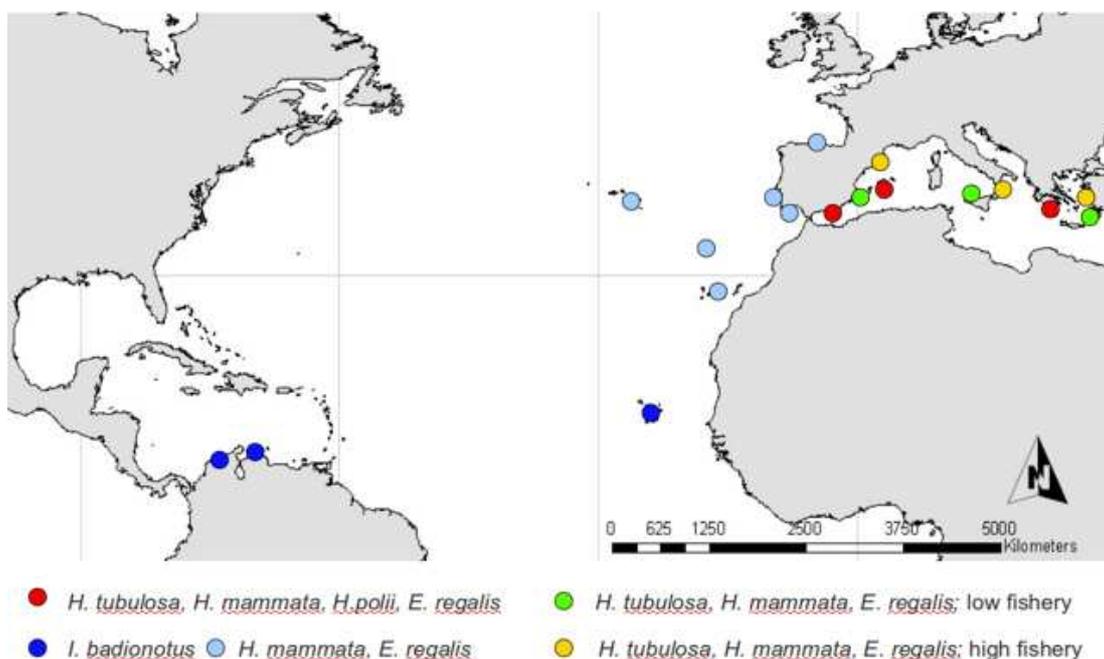


Figure 2. Sampling sites (Tasks 1, 2, 3, 4 and 5: red blue circles; Task 6: green circles, areas with low fishery pressure and orange circles, areas with fishery pressure)

This project will begin next year (1 January 2012) with three years long and it has been funded from FCT (Fundação para

a Ciência e a Tecnologia, Ministério da Ciência, Tecnologia e Ensino Superior, Portugal). A grant is associated to this

project for a PhD student according the rules of Portuguese research fellows. The grant call will be published in <http://www.ccmар.ualg.pt/> during February 2012. All researchers wishing to collaborate with us, they will be welcome.

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