



# Analysis of the Loggerhead sea turtle bycatch data in artisanal fisheries reported by fishermen surveys versus scientific observations within marine protected area

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## Introduction

The Cabo de Gata-Níjar Marine Protected Area (CGMPA) is situated in the Western Mediterranean (Fig. 1), in the southeast of the Iberian Peninsula. This coastal area covers 16.853 ha, mainly shallow (<50 m) and represents a typical Mediterranean littoral ecosystem, such rocky reefs, sandy bottoms and Seagrass beds (*Posidonia oceanica*). Human activities are permitted under precautionary management all over the area except in the "No take-zones", where all extraction is completely prohibited (Fig. 1). This study was part of a Spanish Research Project (PARCGA, Monitoring Artisanal and Recreational Fisheries in the Marine Reserve of Cabo de Gata-Níjar) whose objective is to obtain a reliable picture of the fishing activities in the Marine Reserve through the description of the fishing fleet and the estimation of catches.

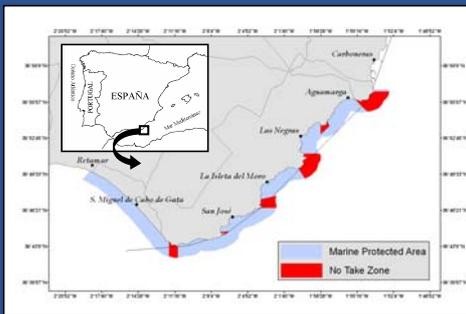


Figure 1. Cabo de Gata-Níjar Marine Protected Area

Loggerhead sea turtle (*Caretta caretta*, Linnaeus 1758) can be incidentally captured by artisanal gears (Fig. 2), but information on the quantification of the impact of these fisheries is inconsistent and scarce as demonstrated Báez *et al.*, (2006). The interviews surveys have been used wide in the sea turtle biology but there are insufficient studies to test the data providing by fishermen. Moore *et al.* (2010) proposed a protocol that consists of in-depth interaction with fishermen to collect data and use it to map artisanal fisheries sea turtle bycatch.

The aim of this study was to compare the direct data (observers onboard) loggerhead sea turtle incidentally caught by the artisanal vessels versus data from fishermen surveys in these vessels within a Marine Protected Area.



Figure 2. Accidental catch of loggerhead seaturtle by artisanal fishing gear (*Sepia* trammelnet)

## Methodology

Local fishing activities are restricted to artisanal fisheries, which are often coast with boats smaller than 10 m. *Mullus* and *Sepia* trammelnets are the most common gears in addition to *Octopus* pots and Pound nets.

- Data collection
1. Study period: March-08 to April-10
  2. Subzones (fishing grounds): 1) Cabo de Gata; 2) San José; 3) Agua Amarga (Fig. 3)
  3. Observers onboard and landing sites (Ports and beaches): 165 fishing sets from 8 artisanal boats
  4. Telephone surveys (8 boats): Monthly (1026 fishing sets)

We tested the differences in loggerhead sea turtle bycatch data in artisanal fisheries reported by fishermen surveys versus scientific observations within marine protected area, using the chi-squared ( $\chi^2$ ) test. Expected value in the  $\chi^2$  tests were calculated according to the number of fishing operations observed for each case (surveys and onboard observed data).

## Discussion

In general, we observed a low frequency of the incidental catches of sea turtle in the study area. Moreover, we did not observed significant differences between the loggerhead sea turtle bycatch reported by fishermen surveys versus scientific observations ( $\chi^2$  value= 0.435, P= 0.5091).

## References

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## Results

- Loggerhead sea turtle incidentally catch: 2 (observed on board)  
11 (telephone surveys)
- Subzones (fishing grounds) (Fig. 3): Cabo de Gata (zero reported bycatch)  
San José (observed bycatch per unit effort = 0.024)  
AguaAmarga (observed bycatch per unit effort = 0.037).

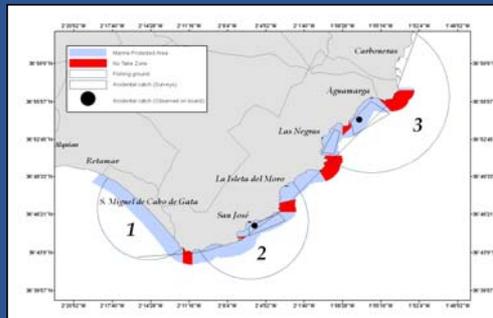


Figure 3. Incidental caught of a Loggerhead with a trammelnet fishing gear: Scientific observations and surveys data



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