

Spatial distribution of fishing activity from the southern Portugal purse-seine fleet based on Automatic Identification System (AIS) data.

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Abstract

The analysis of fishing effort has been traditionally hampered by the lack of spatial fishing activity data. This situation has changed since the implementation of monitoring systems in fishing fleets. Besides the implication for fisheries management, spatial data provides an incredible challenge in the context of Ecosystem Based Management and Marine Spatial Planning (MSP). However, most of the studies conducted so far were based on Vessel Monitoring System (VMS) data which frequently present low resolution and legal constraints. This study analyses the spatial distribution of effort and catch of the local Algarve purse-seine fleet, based on Automatic Identification System (AIS) data, catch *per weight* for every fish species on a trip base (N boats=18; N days=489; 2013-2014).

The main goal of this study is to merge AIS and commercial data sets in order to map fishing grounds, effort, and catch for the purse seine fishery of the Algarve (southern Portugal). Fishing events were validated through on-board visits during a typical seine trip or confirmed by surveys carried out to the skippers. The information of operational procedures gathered during on board fishing trip was matched with AIS vessel tracks to discriminate particular events. Despite the complexity, three “fishing events” classes were identified and validated: steaming-searching, fishing, and hauling. The identified fishing events were used to map the fishing activity. Mapping of fishing grounds, effort and catches are presented and analysed. The hypothesis that the fishing fleet behaviour may reflect the spatial distribution of fish is also discussed.

Key words: *Automatic Identification System (AIS), Purse seine, fishing ground, Marine Spatial Planning, Ecosystem Based Management*