

How to integrate fishermen knowledge and participation to improve the management advice of a deep-sea artisanal fishery

Inês Farias, Teresa Moura, Nuno Veiga, Neide Lagarto, Ivone Figueiredo

In mainland Portugal, the most important deep-sea fishery involves a reduced number of artisanal fishing vessels that target the black scabbardfish, *Aphanopus carbo*. This fleet is established in one fishing village and most of the vessels belong to a single cooperative of fishing operators (ArtesanalPesca, AP). The Portuguese Sea and Atmosphere Institute (IPMA) has been promoting the cooperation with AP to improve data to be used in the assessment and proposal of management measures for the target and non-target species. Two integrative approaches aiming to acquire relevant information on the fishery were established between these stakeholders. The first approach consisted on setting a self-sampling plan defined by the scientific counterpart and executed by the fishermen, involving 16 of the 17 vessels that formed the fleet. Its rationale was to collect information concerning the fishing trips, the species caught, and the fishing community; and to improve the use of existing information. Despite the large quantity of data that was gathered, their reliability varied between vessels. To ameliorate data reliability, a non-random selection of the sampling units is considered more adequate. In the second approach, the sampling plan was co-designed by the two stakeholders. The sampling units consisted of five vessels whose selection was constrained by a predefined sampling factor, the spatial location of the fishing grounds. The main goal was to infer about the spatial overlap between target and non-target species. The achievement of this goal was highly dependent on fishermen personal experience and on their perception of the survey objective.

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Contact author: Inês Farias, Instituto Português do Mar e da Atmosfera (IPMA), Portugal, ifarias@ipma.pt