

Suitability maps to show potential areas of high concentrations of unwanted catch. Can they be a new tool to aid fisheries management?

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The bottom trawl fishery in the Mediterranean Sea is a multispecies fishery with vessels of mostly low tonnage capacity, as big industrial fleets are absent. Since there are no established quotas for the demersal fishery, the reasons behind discarding mainly involve undersized individuals and species with low or no commercial value. Here, we address the spatial dimension of discards reduction aiming to identify areas that are most likely to show high biomass of potential unwanted catch. For this purpose we used unwanted catch data of commercial bottom trawlers operating in two areas of the Eastern Mediterranean basin: Aegean and eastern Ionian Seas. Biomass of species with established minimum landing size (MLS) and those with non-minimum landing size (NMLS) was modeled along with satellite environmental parameters, season and haul duration by means of Generalized Additive Models. Results revealed different selection pattern based on bathymetry. Moreover, for waters >150m depth, haul duration was important in terms of unwanted catch quantity, independently of MLS or NMLS category showing a biomass reduction as haul duration increases. Unwanted catch biomass was higher for NMLS species at <150m depth. For NMLS species, the effect of area was found significant (possibly due to differences in species composition) along with the effect of sea surface temperature by season. Furthermore, suitability maps were constructed assessing potential areas with high risk of unwanted catches. The usefulness to predict such maps as a tool to avoid areas with high likelihood of unwanted catches and provide management advice is discussed.

Keywords: unwanted catch grounds, suitability maps, bottom trawl fishery, Generalized Additive Models, Eastern Mediterranean, satellite environmental parameters

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