ICES CM 2017/F:225

Socioeconomic implications of the observed climate change distributional impacts in commercial marine species

Authors: Alba Aguión, Diego Salgueiro-Otero, Iratxe Rubio, Elena Ojea

Abstract

The role of climate change in marine species distributional shifts is now broadly recognized and globally reported. Although wide evidence exists on the ecological impacts to marine taxa worldwide, the socioeconomic impacts of such changes remain unexplored. Here, we synthesize the implications for fisheries and fishery-dependent communities behind this evidence. First, we conduct a systematic literature search for distributional impacts of climate change on commercial species. Only 18 out of 112 potential articles meet our criteria of a spatial shift significantly explained by climate change. Second, based on these articles we construct a dataset gathering 175 observations for 70 species. We find four types of distributional impacts: latitude, depth, area and boundary changes. Third, we relate our database to stock information (Fishbase) and to country catches and landings (Sea Around Us) using R. While latitudinal and depth shifts show a strong directionality (poleward and deepening shifts), area and boundary changes show a mixed response. The greatest impacts in area and northward shifts happen to lower catchability species. Observed impacts mostly happen to species with high and very high commercial importance although 40% of them keep low market values. Expectedly, Northern countries are the most affected in terms of catches and landed value. Around 70% of our observations are concentrated in the North Sea and North East US shelf. This highlights a poor scientific coverage on shifting stocks of commercial species elsewhere, and thus a lack of knowledge on the socioeconomic implications, a crucial matter for climate change adaptation.

Keywords: climate change, shifting stocks, latitude shift, fisheries, commercial stocks, fishbase, sea around us, meta-analysis, fisheries dependence.

Contact author: Alba Aguión Tarrío, Future Oceans Lab, Torre CACTI, University of Vigo Campus Lagoas Marcosende 36310 Vigo – SPAIN. Phone: +34 986 130 173 . Email: aaguion@uvigo.es