


Abstract

Behaviour of Fish in Bottom-Trawling Gear to Assess the Effectiveness of Cetacean Excluder Devices and Codend Selectivity Modifications †

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Abstract: The selective retention of fish is a consequence of size and species-dependent fish behaviour during the trawling process. The observation of fish reactions to trawl gear is critical to understanding the behavioural mechanisms responsible for trawl selectivity and to develop future trawl gear for research. In demersal trawling, there is a need to develop more species-selective trawls to minimize discarding and bycatch in multispecies fisheries. This requires observational tools that can operate at depths and light levels encountered by the commercial fleets and with the ability to quantify the herding and capture efficiency by species and age groups of such gears. A range of optical and acoustic observation techniques has been developed over the past few decades to assist in these goals. Work with underwater cameras in fishing gear varies from the simple observation of the presence of certain species during capture to the study of the complex interactions of fishing gear and species during the trawling process. Previous work seems to show that there are different response patterns in the general behaviour of some fish species when entering a trawl. One of these behaviours is that the vertical preference in the trawl cavity differs between species. Several authors have complemented behavioural studies carried out at sea with experimental studies to further explore the interaction between fish and fishing gear. Some authors indicate that the vertical preferences of some fish species change as they move through the net towards the codend. This implies that behavioural selection can potentially change along the horizontal axis of the fishing net. A description of the bycatch (cetaceans, sharks, and skates) and fish behaviour within bottom trawling gear was given through the use of underwater cameras. The objective was to determine the most suitable fishing gear configurations to prevent the escape of the fishing catch during fishing trials carried out to test the operation of dolphin-exclusion devices and selective codends. The behaviours recorded by the cameras were classified into seven types of behaviour: orientation, reaction, resistance, re-entry, final entry, escape attempts, and panic reaction.

Keywords: fish behaviour; fisheries; bycatch; selectivity; cetaceans; technology



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