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Acoustic data collected by fishing vessels on chilean jack mackerel aggregations and spatio-temporal patterns of abundance in the south pacific region

Aquiles Sepúlveda and Nicolás Alegría

Abstract

Chilean Jack mackerel (Trachurus murphyi), a transboundary species from the South East Pacific, represents one of the most important commercial fisheries of Chile and High Sea fisheries. Because of their migratory and patchy behaviour of the Coastal zones off Chile and the High Sea, there are difficulties to detect and quantify fishing grounds and schools of this species. Acoustic and annual research surveys made off Chile are normally based on systematic design transects. However, research vessels use, require a high cost and time effort to evaluate distribution and abundance levels of fish with a reduced chance to extend survey areas incorporating distant fishing grounds. Fishing vessels equipped with calibrated split beam transducers of 38 KHz and scientific echo-sounders EK-60 from SIMRAD, were implemented since year 2000 by the fishing industry of south-central Chile. Furthermore, acoustic data were analyzed with Echoview. The aim of this study is to communicate our findings after a long time monitoring and collection of acoustic data taken by fishing vessels over Jack Mackerel schools off south-central Chile, considering different levels of abundance and a changing status of the stock, and in season and during inter annual climate variations like El Niño/La Niña Events. According to our results there is a highly dependent relationship between hydrographic structures and the occurrence, density and stability of fishing zones. Future conditions and oceanographic features of the South Pacific that should be considered as part of an ecosystem based approach to fishery management are discussed.

Keywords: Acoustics, Fishing vessels, Adaptive strategy, Oceanographic Events, Ecosystem approach

Contact Author: Aquiles Sepúlveda, asepulveda@inpesca.cl, Departamento de Pesquerías, Instituto de Investigación Pesquera, Av. Colón 2780, Talcahuano, Chile