

Climatic oscillations effect on the yellowfin tuna (*Thunnus albacares*) Spanish captures in the Indian Ocean

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The yellowfin tuna (*Thunnus albacares*) (YFT) is among the eight marine species with the highest catches globally. The Spanish purse seine freezer fleet operating in the Indian Ocean is one of the most important YFT fishing fleets in the world. The South Oscillation Index (SOI), Pacific Decadal Oscillation (PDO), and Indian Ocean Dipole (IOD) are interrelated, and have combined effects in the Indian Ocean. Moreover, Madden-Julian Oscillation (MJO) is the dominant component of intraseasonal variability in the tropical Indian and Pacific oceans where the sea surface is warm. The main aim of present study is to understand the effect of these four climatic oscillations on Spanish purse seine YFT catches in the Indian Ocean. The ultimate goal is to estimate the specific time lag of the effect of each climatic oscillation on the YFT catches for management purposes. To estimate this, we adjusted different General Additive Models between the response variable (corrected YFT catches per unit of effort per year), compared to a combination of SOI, PDO, IOD, and MJO lagged up to 8 years. Our results suggest that there is a lagged effect modulated mainly by PDO-SOI, which could be related to a good recruitment, larval survival, or improved spawning. Thus, negative PDO phase (or positive SOI phase) lagged between 3 and 6 years could favor future stock abundance, while positive PDO phase (or negative SOI phase) lagged 3 or 6 years could negatively affect future stock abundance. © 2020 John Wiley & Sons Ltd

climatic oscillation

Indian Ocean

IOD

MJO

PDO

SOI

yellowfin tuna