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The OHA-SIS-BIO and THEMISTO programs in the Southern Indian Ocean (SIO) employ acoustic methods to detect and quantify biological activity. OHA-SIS-BIO, a long-term hydroacoustic observation program from 2010 to 2023, aims to deployed autonomous passive acoustic systems across 9 fixed sites in the SIO. These acoustic data allow to attest the occurrence and migration movements of two sub-species of blue whales using their specific calls in the region spanning La Réunion, Crozet, Kerguelen archipelagos, and St. Paul and Amsterdam islands. Concurrently, the THEMISTO program employs active acoustics, specifically the multifrequency EK60/80 echosounder, to measure densities of intermediate trophic level organisms like macrozooplankton and micronekton, crucial prey for whales. Operating continuously during ObsAustral campaigns in the SIO from January to March, 2013-2023, this program covers a vast latitudinal gradient, from tropical to polar regions. This geographical and temporal concordance would allow associating the migrations of blue whales with the seasonal variability of their prey. The objective of the association of these two acoustic programs is to better understand the relationships between the dynamics of primary production, consequently the densities of prey, and the seasonal acoustic activity patterns of different blue whale subspecies in their so-called feeding areas.

Keywords: Monitoring - Occurrence -blue whales preys– Zooplankton – passive acoustic – active acoustic

Characterization of the fish shoals depending on bottom variables in various ecosystems

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Fisheries acoustic tools, widely used in open ocean contexts, have become more common in shallow waters, but there is still a lack of information in ultra-coastal area (<15 m depth). Additionally, environmental parameters beyond bathymetry, such as seafloor terrain, likely play significant roles for biocenose aggregation, distribution and diversity in shallow waters.

Pelagic fish shoals, aggregations of fish, are sensitive to environmental factors and can serve as proxies to monitor ecosystems. Various physical parameters, such as time of day and distance to coast, influence fish distribution.

This study aims to investigate the impact of topographic variables on pelagic shoals across offshore to coastal areas (5-500 m depth). Two datasets from French Brittany and West African coasts were analyzed to highlight global patterns and local specificities. The analysis focuses on coastal and shallow waters, aiming to identify common patterns across systems while recognizing potential differences, particularly in upwelling systems.

This study highlight the importance of ultra-coastal area, with a high relative biomass (Sv). The analyze of common patterns revealed the importance of bathymetry in all studied systems. Some other topographic variables have been discovered as important in many systems. However, each system presents its own specificities, with similarity between systems with or without upwelling.



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