able to adapt to changing environmental conditions. Despite strong annual variability and the presence of major stressors (overfishing, climate change), the marine pelagic ressources, mainly fish and plankton remained relatively stable over the two decades, advancing our understanding on the resistance of this east border upwelling system.

Ichthyological importance of shallow coastal areas for pelagic communities: contributions of echosounding

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Marine communities are strongly structured by bathymetry and distance from the coast. Shallow coastal areas host diverse and abundant fish communities and are subjected to strong anthropogenic pressures. However, assessments of good ecological status of pelagic fish populations do not generally take into account the ultra-coastal fringe of the coastline (<20m depth and <5km from coast). Data presented in this study were acquired in Brittany (France) during eleven acoustic surveys conducted in 2020 and 2021 using a splitbeam EK80 echosounder (70, 120 and 200 kHz). Pelagic fish shoals were extracted from the echogram and characterized by spatial (location in the water column), morphological (size and shape of the shoal) and acoustic descriptors. Shoal descriptors were compared between coastal and ultra-coastal areas, taking into account variability between sites, seasons and years. Results showed different shoal structures with notably smaller shoals of pelagic fish in the ultracoastal zone but with a stronger acoustic response, suggesting a higher density per school than offshore and/or different species. This study highlights the uniqueness of ultra-coastal areas for marine pelagic fish communities and underlines the need to integrate their monitoring into marine management and action strategies to improve management and protection systems for these biocenoses.

Sound-scattering layers related to pelagic habitat characteristics: the case

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Understanding the relationship between sound scattering layers (SSLs) and pelagic habitat characteristics is a substantial step to apprehend ecosystem dynamics. SSLs are detected on echo sounders representing aggregated marine pelagic organisms. In this study, SSL characteristics of zooplankton and micronekton were identified during an upwelling event in two contrasting areas of the Senegalese continental shelf. Here a cold upwelling-influenced inshore area was sharply separated by a strong thermal boundary from a deeper, warmer, stratified offshore area. Mean SSL thickness and SSL vertical depth increased with the shelf depth. The thickest and deepest SSLs were observed in the offshore part of the shelf. Hence, zooplankton and micronekton seem to occur more frequently in stratified water conditions rather than in fresh upwelled water. Diel vertical and horizontal migrations of SSLs were observed in the study area. Diel period and physicochemical water characteristics influenced SSL depth and SSL thickness. Although chlorophyll-a concentration insignificantly affected SSL characteristics, the peak of chlorophyll a was always located above or in the middle of the SSLs, regularly matching with the peak of SSL biomass. Such observations indicate trophic relationships, suggesting SSLs to be mainly composed of phytoplanktivorous zooplankton and micronekton. Despite local hypoxia, below 30m depth, distribution patterns of SSLs indicate no vertical migration boundary. The results increase the understanding of the spatial organization of mid-trophic species and migration patterns of zooplankton and micronekton, and they will also improve dispersal models for organisms in upwelling regions.

Applying Acoustic Scattering Layer Descriptors to Depict Mid-Trophic Pelagic Organisation: The Case of Atlantic African Large Marine Ecosystems Continental Shelf

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Hydroacoustic is a reliable and often used tool to monitor and study marine ecosystems. This study focus on acoustic scattered layers, which are the echosounder detection of pelagic marine organism of low trophic level, important in ecosystems functioning. Data have been recorded at 38 kHz in the three Atlantic African Large Marine Ecosystems (AA LME). To describe parsimoniously ecosystems, compare them and understand the difference, 14 descriptors have been used. Some of them are based on already used descriptors and others are new. The aim of this study is to ensure that these descriptors are relevant to monitor and compare systems. So, we first explore spatial (intra- and inter-LME comparisons) and then temporal dimension (inter-

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