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Preparing the ground for ecosystem-based fisheries management: a Namibian case study.

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Abstract

The Benguela Current ecosystem is one of the most productive eastern boundary upwelling systems in the world. Its wealth in marine fauna supported fisheries since the turn of the 19th century and went through a range of major changes since the 1950s. The impact of fisheries over the past 50 years may have altered the ecosystem in a variety of ways including fishing down the marine food web. Thus, in a time series of landings observed a gradual shift appears to have occurred, from larger, long-lived piscivorous species with high trophic levels (early in the time series) to smaller, short-lived zooplanktivores and invertebrates with lower trophic levels (later in the time series). Published and unpublished sources were consulted to obtain catch statistical data and compute a mean trophic level of the fishery landings, i.e., to investigate whether fishing down the marine food web occurred in Namibia from 1950-2000. Three periods marking different trends and developmental stages of the fishery were identified, viz. an 'undeveloped' stage (1950-1964), marked by the dominance of southern African sardine, a 'developing/mature' stage, characterised by increased fishing effort, landings and diversification of target species (1965-1969), and a 'senescent' stage with declining trends in total landings, mean trophic level and ratios of piscivorous to zooplanktivorous fishes in the landings (1970-2000). The study briefly introduces the Benguela upwelling ecosystem and environmental anomalies, the political and management regimes prior to independence and other possible causes for observed decline in mean trophic level of landings during 1970-2000.

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