

Fish diversity and distribution in the Gambia Estuary, West Africa, in relation to environmental variables



The Gambia Estuary, a "normal" estuary with a decreasing salinity gradient from the mouth towards the head, is moderately exploited by small-scale fisheries and does not receive any severe pollution from either agriculture or industrial activities. Neither the Gambia River nor its estuary are artificially impounded. As the last large West African estuary free of major human disturbance, it is of considerable interest for comparative studies on the effect of major environmental perturbations in West African estuarine ecosystems. The aquatic environment and fish communities of the Gambia Estuary (about 250 km long) were studied by purse seine sampling at different periods in the river cycle, covering all hydro-climatic seasons that are characteristic of West African estuaries. Emphasis was placed on the diversity, composition, structure and distribution of fish assemblages in relation to fluctuations in physico-chemical factors such as water temperature, salinity and turbidity. Results on the aquatic environment, mainly the salinity range (from freshwater to 39) and dissolved oxygen (never a limiting factor for fish in the estuary) and on the main

characteristics of the fish fauna (high diversity of life cycles, all the ecological categories represented) indicated that the Gambia Estuary was free of major climatic perturbation and reinforced the choice of this system as a reference for the study of the effects of major perturbations on estuarine tropical fish communities.

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Obtenir le document : EDP Sciences

Mots clés : Fish community, Aquatic environment, Estuary, Gambia, West Africa

Thème (issu du Text Mining) : MILIEU NATUREL, FAUNE

Date : 2004-03-15

Format : text/xml

Source : <https://doi.org/10.1051/alr:2004001>

Langue : Anglais

Télécharger les documents : <https://www.alr-journal.org/10.1051/alr:2004001/pdf>

Permalien : <https://www.documentation.eauetbiodiversite.fr/notice/fish-diversity-and-distribution-in-the-gambia-estuary-west-africa-in-relation-to-environmental-variables>

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