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Mangrove ecosystems determine fish diversity in southern Benin water bodies : implications for fish biodiversity and aquatic ecosystems conservation

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Abstract

The degradation of natural ecosystems combined with overfishing lead to a decline in fish captures and a high risk of fish biodiversity loss in Beninese natural ecosystems. Moreover, the mangrove ecosystems which play a significant role fort he prevention of floods and carbon sequestration are subject to destruction due to human activities. This research has been initiated to assess fish diversity and inventory fishing practices in the coastal lagoon, Gbaga lagoon and Hlan lake. For that purpose, fish specimen have been collected from traditional fisheries in traditional salt production and non production areas. Fish were identified using the fish identification key of Paugy et al (2004). A survey and field visits have been conducted to record the fishing technics used in the three ecosystems. The specific diversity and distribution have been determined by calculating Shannon and Pielou's indexes. The results show a variation of the specific diversity from one water body to another. The highest specific richness has been recorded in the Coastal Lagoon with 21 fish species belonging to 16 families. In Gbaga Lagoon and Hlan lake, the study revealed 19 species (18 families) and 18 species (13 families) respectively. The families with the highest number of species include Cichlidae (5), Claroteidae (1), Claridae (2), Eleoetridae (2) and channidae (2). The Shannon's diversity calculated for the water bodies is H'= 2.50; 2.74 and 3.01 in Coastal Lagoon, Hlan Lake and Gbaga Lagoon respectively showing that fish species are diversified in the three aquatic ecosystems. The Pielou's equitability Index show a homogenous distribution of fish species within the in the ecosystems. The traditional salt production activities (leading to mangrove destruction), although present in the coastal lagoon (Avlékété, Djegbadji, Houakpe-Daho), don't affect fish diversity. The fishing gears and technics used in the water bodies include sill nets, creels and hawks nets and casting nets The adoption of new policies and strategies such as the establishment of he Mono Transboundary Biosphere Reserve and improved salt production technics and their effectiveness will contribute to the sustainable management of fisheries resources and the conservation of the mangrove ecosystems and fish biodiversity.

Keywords: Coastal Lagoon silting, Conservation, fish species, Mono Biosphere reserve, Southern Benin, Sustainable strategies

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