Assessment Of Species Diversity And Distribution Of Eels In Pangani And Rufiji Riverine Systems, Tanzania

Authors : LYDIA GASPARE[1], CATHERINE MWAKOSYA[2]
[1]SCHOOL OF AQUATIC SCIENCES AND FISHERIES TECHNOLOGY,[2]TANZANIA FISHERIES RESEARCH INSTITUTE

E-mail Address: kaijagelaurian@yahoo.com

ID: 12088

Submission:

Background

BACKGROUND
Specific objectives

1. To identify eel species in Pangani and Rufiji coastal riverine systems using morphological characteristics
2. To determine species distribution of eel species in Pangani and Rufiji riverine system.
3. To determine the effects of environmental variables on diversity and distribution of eel species

Statement of research problem

In recent studies in other parts of the world, eels especially the economically utilized families of Anguillidae and Congridae, are undergoing drastic decline. The decline, among other reasons is associated with overexploitation. The African eel being the only catadromous species has a three species classified as near threatened yet there is insufficient information on Anguillidae and Congridae species in the WIO to support management. Currently there is no data on catch, diversity abundance or distribution of eels in Tanzania. According to researchers, information on species identification, diversity, abundance, and habitat preference is crucial in the management and conservation of eels. This study aims at filling this scientific gap through species identification, and assessing the abundance and distribution of eels. The data will form a baseline for designing effective monitoring strategies.

Method

Sample collection

Pangani and Rufiji rivers have the largest estuarine ecosystems in Tanzania and harbor a great deal of diversity compared to others. This study was carried out to assess eel diversity status in relation to selected environmental parameters for spatial and temporal scale. Eel samples were collected from July 28th 2021 to March 27th 2022 on a 15 km stretch of the rivers considering the accessibility by local fishers. Preliminary identification of species was done on site using knowledge of fishers

Species identification using morphological features

Morphological identification of the eels was carried out as explained by Ege (1939) identification key and Watanabe (2004) for Anguillidae and a Food and Agriculture Organization (FAO) sheet was also use to identify the Congridae, Muraenidae and Ophichthidae

Recording of environmental parameters

Environmental variables such as dissolved oxygen, pH, Turbidity, Temperature and salinity, were measured using a multi-parameter water quality analysis device (HANNA 9829). These parameters were recorded on monthly basis on-site during fishing at selected sampling sites. The depth of the fishing ground was recorded using a weighted calibrated rope.

Results

Diversity status were analyzed from all fisheries data by using PAST (version 4) software. Results showed that the two coastal riverine systems are habitat for four eel species and Pisodonophis boro is the significant contributor (> 80%) for both temporal and spatial scale. The most influential factors for species distribution was salinity and temperature

The Thrsoidea macrura id distributed from the low stream to mid stream regions where the co habitat with both anguilla bicolor and Pisodonophis boro. anguilla bicolor and is more abundant in upstream areas with more fresh water and Pisodonophis boro are common in both midstream and upstream zones of the estuarine section.

Conclusion

There are three classes of Anguilliformes present in Tanzanian coastal riverine systems, one Anguillidae (Anguilla bicolor), one Congridae (Conger cinereus), one Muraenidae (Thyrsoidea macrura) and one ophichthidae (Pisodonophis boro)

The most prevalent species is the Pisodonophis boro of all the species on both spatial and temporal scale.

Salinity and temperature are the most important factors affecting eel distribution in coastal riverine systems

there was no Anguilla mossambica found in this zones which is alarming as it was recorded in the past to be found in this rivers thus conservationnof eels is critical