

The Socio-economic Characteristics Of The Eel Value Chain And Their Implications For The Fishery Sustainability In Tanzania

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Background

Although Eels (Anguillidae and Congridae) are rarely mentioned in fisheries frame survey reports they are an important resource utilized by small-scale fishers of the West Indian Ocean (WIO) region that requires management attention for their sustainability. However, due to its high rate of utilization, eel stocks have dramatically decreased worldwide and two species (*Anguilla bengalensis* and *A. bicolor*) are already categorized as near threatened by the International Union for Conservation of Nature (IUCN).

Some studies reported that Japanese and European eels have declined by 99 % and 80% respectively. Moreover, several countries in Asia had shown an interest in tropical eels, particularly in the (WIO) region, while there is no clear information on how eels of Tanzania and riparian are managed. This is due to a lack of information studies that have been conducted on the socio-economic context of the fishery.

Therefore, this study aims; 1) To identify the actors in the Eel fishery value chain and their biographic information. 2) To describe their fishing practices and value chain 3) To describe the governance mechanism of eel fishery in the Rufiji estuary.

Method

This study focuses on the Rufiji estuary in Nyamisati and Kiomboni villages where eels are mostly and frequently fished, traded, and consumed. Both qualitative and quantitative data were collected. Interviewees were selected by snowball sampling from the group of people who reside locally, and those who were known to regularly participate in fishery activities. Data collection was done through interviews, semi-structured questionnaires, Focus Group discussion, participant observation, and Literature review. Imitating approach was used to get very sensitive information. Interviews proceeded if consent was obtained and assured confidentiality. All interviews and questionnaire surveys were conducted face-to-face between August 2021 to February 2022 and lasted for 25minutes and took place at the landing sites, respondents' homes, and where the identified actor was found. A total of 120 interviews were conducted with all identified actors during fieldwork. Data were analyzed by using an excel worksheet and results were presented in percentage frequencies followed by a narrative explanation for interpretations.

Results

The characteristics of eel fishery actors in the Nyamisati and Kiomboni About 13 actors were identified these are; fishers, processors, traders, fishing tools suppliers, service providers, tax collectors, village leaders, village committee members, Beach management unity-BMU, government officials, and naval

carpenters

The age range of all actors was between 15 and 75, with a mean age of 40 years. About 61% of all respondents were men, married with one or two wives having about four children; with at least one family member working in fishing. The majority have more than 10 years of fishing experience. Low levels of formal education were observed with the majority (90%) having only attained primary level education while no respondents indicated to have acquired college-level schooling. About 85% of the respondents depend on fishing as their main occupation, however, 95% of fishers also engaged in rice crop production activities for food.

Fishing practices and eels' value chain in the Rufiji estuary

The study found that there are no specific fishers who target eels, but crab fishers are the one who demands Anguillids locally named mkunga pakacha, and mkunga luti for baits. The study found that eels baits are more preferred than other baits because they last for even one month when salted and kept within the soil.

The main gear used in eel fishing in the Rufiji estuary is baited handline. Fishing is done by dugout canoes with an average length of 3-3.5m, with a capacity of carrying two people and paddling. Fishing is done throughout the year but mostly during low tides of neap tide simply because eels inhabit the muddy, bottom, so it becomes easy to identify their holes, during the daytime. Fishers spend fewer hours reaching the fishing ground where they spend an average of 4 hours fishing. Fishers select fishing grounds based on their fishing experience.

Eel's fishers supply the domestic market with fish meat, and congers swim bladder has exported. The congers locally named Ibrahim/nyeta, are only utilized as food for humans and traded in different forms such as fresh, dried, smoked, or sun-dried. Fresh eels are sold depending on size, while fried Eels are sold in pieces and valued according to size from 500-1000 TZS per piece. The destination market of processed eels is in Dar es Salaam, Mtwara, and Lindi, where prices reach about 2000-4000TZS. Prices of smoked eels were found higher because of high processing costs like firewood, time, and transportation costs. During the rainy season, the general price of eels increases due to difficulties in processing and accessibilities of marketing places.

Governance mechanism and policy implications

However, it was found that there are no specific rules and regulations either formal or informal which guide the eel fishery. Eel fishery is impacted by other rules and regulations set for other species; like seasonal closure of prawns fishing in the Rufiji delta caused the diversification of many prawn fishers into fishing crabs, who also demand eels as baits.

Conclusion

The eel fishery value chain in the Rufiji estuary is still unrecognized as among of fishery that contribute to the fisher's income and food whereas eels are mostly utilized as baits in crabs fishing and their gas bladders being exported. Therefore, it requires much attention and pre-cation should be taken due to its unrecognized utilization like baits, food for humans, and export of their gas bladders. This requires specific rules and regulations which will guide their utilization together with the introduction of non-baited gears to minimize bait fishing for their sustainability. However, it should be noted that all regulations and rules set for any particular fish species should recognize all actors and the sustainability of other species before

being implemented.