Investigating fishers’ perceptions and associated adaptations to climatic and environmental changes in small-scale fisheries

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Introduction

The degradation of coastal ecosystems due to climate change, in tandem with human driven environmental change, seriously threatens the livelihoods of the communities that depend on them for income, protection and nutrition. Fishers’ perceptions to these changes and associated adaptations can shape their attitude and response towards regulations that impact them negatively, resulting in poor compliance and further environmental degradation. Using a holistic management approach by combining local perceptions with modern management systems is likely to be more successful than government driven top-down management plans. An increase in fisher compliance is especially important in areas with a lack of resources and staff for monitoring and policing, as well as high levels of corruption. Increased effectiveness can alleviate some of the pressures driven by climate change, resulting in higher socio-ecological resilience. This study uses an ethnographic framework to better understand the environmental attitudes and perceptions of fishers within the Zanzibar Archipelago. This information can be used to improve fisher compliance within the Western Indian Ocean region, contributing significantly to the sustainability of small-scale fisheries.

Methods

Local knowledge of environmental and climatic transformations was documented using a semi-structured survey technique, documenting observed changes across domains. Participants were selected using a non-random cluster sample with the aid of community leaders. They were then asked to free list their observed changes for each of the domains they are familiar with. For each change, respondents were asked to identify the causes, timing and adaptive responses. A total of 141 interviews were conducted in three small-scale fishing communities from the Zanzibar Archipelago: Nungwi, Unguja (N = 50), Mokotoni, Unguja (N = 42) and Wesha, Pemba (N = 49).
Results

Of all the changes perceived in the marine environment 86.96% were negative, with 8.96% and 4.08% being regarded as positive or indifferent respectively. In the habitats identified by fishers as their main fishing grounds, 64.96% of recorded changes were related to a reduction of sea resources. The most common perceived causes of this reduction were overfishing (52.41%) and damaged habitats (28.61%). Destructive fishing practices were attributed as the primary cause (71.26%) of the environmental degradation. Adaptations to these perceptions ranged from increasing fishing effort, changing fishing grounds and seeking alternative livelihoods.

Conclusion

The results suggest that most observed changes perceived by fishers are those directly linked to harvesting strategies and resource extraction. Associated adaptations however, coupled with low education levels, indicate a low adaptive capacity and a lack of alternative measures, resulting in further destructive exploitation and poverty traps. Understanding these socio-ecological drivers underpinning fishers’ behavior is critical for establishing inclusive and effective management strategies for local small-scale fisheries.

Keywords

Perceptions, climate change, environmental change, small-scale fisheries