Women in fisheries: Importance of considering seasonal changes and social adaptive capacity for sustainable fisheries development.

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Background:

Women are widely understood to be a vulnerable sector of society, but are largely under-represented in fisheries management. Studies investigating women's adaptive capacity, especially to climatic changes, are currently limited. Across the tropics, women use seagrass beds and inter-tidal zones for harvesting, or gleaning, invertebrates. Despite the long history of gleaning, information is limited for women's activities and capacity to adapt to climatic changes, such as increased levels of rainfall. With IPCC climate predictions of increased rainfall across the West Indian Ocean, I investigated how seasonality, in particular heavy rainfall, affects seagrass and invertebrate communities, and women's adaptive capacity in Zanzibar. In this case study, I explored how indicators of adaptive capacity change based on livelihood variables, such as age and fortnightly expenditure, in times of heavy rainfall.

Methods:

I used household and key informant interviews to generate indicators of social adaptive capacity. To assess the seagrass and invertebrate diversity in the intertidal zones, I used women's perceptions of the intertidal-zone, landing surveys and ecological surveys. I ran mixed models on nine indicators of adaptive capacity to compare between the dry and rainy seasons, and to explore how indicators vary between different groups of women. I ran paired t-tests to assess differences in livelihood variables between seasons.

Results:

In this case study, women reported that invertebrates were most abundant during periods of rainfall, which is thought to be as a result of decreased gleaning effort. Women identified that seagrass is their preferred gleaning habitat. Rainfall may therefore provide a recovery time for seagrass beds and associated invertebrates. Biodiversity inventories and landing surveys identified seven species of seagrass, and between 23 and 31 species of fish and invertebrates across the three study sites. Managers of the Menai Bay Conservation Area reported no formal monitoring of gleaning catches or women's gleaning activities, and monitoring of intertidal zones for impacts of coastal development were limited. Women's reliance on fluctuating resources means it is vital they can adapt. In this study, I found total adaptive capacity scores were not significantly affected by rainfall, but dimensions of adaptive capacity were. Of the nine tested dimensions of adaptive capacity, women's occupational multiplicity was likely to be most affected by heavy rainfall, with elderly women being most vulnerable.

Conclusion:

Future management and monitoring are required to assess changes in seagrasses and associated invertebrates, to help protect resources, income and assure food security for future generations. From this case study we can derive lessons for fisheries development, and highlight the need for management which considers women to satisfy both the needs of the environment and human development.