

# Community based fishery management within the Menai Bay conservation area: A survey of the resource user

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## ABSTRACT

Management strategies are challenging to implement in Zanzibar's fisheries because the local people depend upon these resources for basic subsistence. This difficulty epitomizes the vital need for sustainable management: the more people need a fishery, the harder it is to limit fishing to allow regeneration. Comparing fisheries management strategies in two coastal villages in Unguja, the largest island of Zanzibar, Tanzania, this paper confirms the results of existing scholarship that community-based strategies provide the most promising solutions to this challenge. Interviews with officials from the Department of Fisheries and Marine Resources, Village Fishermen Committees, and 51 fishermen in the villages of Kizimkazi Dimbani and Jambiani reveal the efficacy of strategies where local fishermen are centrally involved. The fishermen interviews reveal ignorance of existing fishing regulations and a lack of enforcement while fishermen at both sites noted that many illegal methods of fishing are still in use and expressed concern that such methods damage fish stocks. The Village Fishermen Committees, a recently implemented community-based initiative, are well attended by fishermen, and constitute a management strength that this paper concludes should be the foundation of future policy. To be successful, these committees need additional educational and financial resources.

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## 1. Introduction

Overfishing is having a devastating impact on fisheries worldwide. Efforts to establish sustainable harvest management systems and to foster fishery recovery have been successful when the economic means exist to make the required changes. However, in areas of poverty, where people rely upon the fishery for subsistence, management changes are much more difficult to achieve, while the cost of collapse is correspondingly greater. Accordingly, establishing successful management schemes for subsistence fisheries offers substantial gains for human welfare. Adding environmental resilience to these fisheries has the potential to greatly improve the quality of life of the communities that depend on these resources; strategic management is the key to achieving these benefits.

A growing literature concerning small-scale fisheries (SSF) concludes that broad social, economic and biologic factors can affect a policy's outcome and are vital to the success of any

management scheme [7,12]. These factors each significantly impact the willingness of communities to accept management strategies [7]. As social, economic and biological circumstances differ among communities, decision-makers must include local stakeholders in the policy-making process or risk overlooking factors that will affect a strategy's adoption. As Torre-Castro and Lindstrom explain, "gaining knowledge about the wide institutional setting takes time but the investment is worth it in the long run" [21]. Management strategies must account for the broader policy landscape, and incorporate knowledge of and participation by existing community institutions.

- Socially, a management strategy must align with the rules that govern relationships within the community. It must take into account social norms and leadership structures to gain acceptance.
- Economically, a management strategy must seek to increase the income of fishermen, and not unduly burden fish consumers, thereby increasing net social benefits. This requires developing appropriate markets for fish, ensuring access to those markets and an equitable price for fishermen.
- Biologically, a successful management plan prevents fishing effort above the maximum sustainable yield from a fishery and

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strives to increase the resilience and carrying capacity of the fishing environment. Fishing resources are vitally important for the people whose livelihoods they support; having a successfully managed fishery generally results in corollary beneficial biologic outcomes. Water quality and biodiversity are critical factors for a long lasting fishery that benefits communities beyond fishing activities.

Subsistence fisheries around the world are at a pivotal point. Population growth and demand for seafood are increasing production pressure and catch sizes are deteriorating as a result. In the absence of new management strategies, many fisheries will collapse and the communities, which rely on them, will suffer substantial hardship.

This study of two villages in Zanzibar provides evidence that largely supports the conclusions of previous research in the field. In each village, knowledge of current management methods in place is low and perceptions of illegal fishing activity are high. Future policies targeting reductions in fishing pressure and supporting the livelihoods of local villages are unlikely to be successful unless they account for key variations in the economic and social incentives facing fisherman and are accompanied by well-targeted educational campaigns.

## 2. Background

### 2.1. Literature review

Our research builds off of previous studies that investigate differences in practices, conditions and management policies in small-scale fisheries in a developing economy context. In particular, the survey that we carry out fits within the conceptual framework for management of small-scale fisheries laid out by Andrew et al. [2] as “diagnosing” the ecological, economic, and institutional constraints currently facing fishing communities in Tanzania. Similar community-focused research by Isaacs [10] used information gathered from four fishing villages in South Africa to understand the impact of institutional restructuring on the allocation of fishing rights and benefits obtained from the fishing sector, exposing policy shortcomings resulting from a failure to diagnose community constraints. A similar comparative analysis of small-scale fisheries in Angola, Namibia, and South Africa was carried out by Sowman and Cardoso [19]. The researchers found large differences in the legal and policy frameworks in place throughout the region, suggesting varying impacts on fishermen associated with initiatives towards trade liberalization in the region.

Previous research on small-scale fisheries has focused in large part on the extent to which communities participate effectively in the development of fisheries planning and management. Participatory governance is a key goal of the Sustainable Fisheries Livelihoods Program initiated by 25 Western African countries and the Food and Agriculture Organization (FAO) of the United Nations, as outlined by Allison and Horemans [1]. Additionally, Nielsen et al. present key factors for success in co-management systems of governance from villages studied in Southeast Asia and Southern Africa, which include: community collaboration in defining management objectives and integrating local knowledge into decision-making structures [15]. The case presented by Hauck in South Africa reveals that enforcement alone may not instill compliance, but rather the process by which laws are implemented and their ‘social, economic, political and institutional contexts’ must be taken into account to achieve compliance [9] (pp. 640). Cinner et al. draw parallels between co-management systems of governance in Kenya, Zanzibar and Madagascar showcasing increased compliance by including fishing

communities in management decisions and by providing data feedback on fish stock levels [3].

Evidence from shifting management strategies to address overcapacity across many Southeast Asian countries [17] has shown the importance of focusing on both resource management and policies that address non-resource issues of poverty and marginalization of coastal communities. Similarly, the case studies of the Shetland Islands, United Kingdom and Kayar, Senegal from Cunningham and Bostock [7], and the fishing community of Kaledupa, Indonesia [6] also reveal the importance of a multifaceted community-based approach to fisheries management. While changes in management can substantially alter the incentives for fishers, Cinner’s study of coastal Kenyan villages revealed poverty to be a key factor in the responsiveness of fishers, with poorer fishers more likely to use illegal gear and less willing to exit the fishing industry under hypothetical declines in fish stocks [4,5].

### 2.2. Study area

The archipelago of Zanzibar is comprised of two main islands, Unguja and Pemba, which sit just below the equator and about 35–45 km off the coast of mainland Tanzania. Zanzibar has a population of 1.3 million, with 896,721 living in Unguja [13]. The Menai Bay Conservation Area (MBCA) was founded in 1997 and currently covers the southern half of the Unguja coastline from Mazizini, the southern-most town in the urban area of Stone Town, to the eastern coastal village of Bwejuu (see Fig. 1). The villages of Kizimkazi Dimbani and Jambiani, were chosen for this study because fishing activities constitute important sources of livelihood in each village and because both are governed by the regulations of the MBCA, enabling comparisons of policy efficacy across the conservation area.

In addition to the fishery, the economies of both villages rely upon tourism. The importance of tourism is more pronounced in Jambiani where it represents the main source of jobs. Both villages have similar sized fishing fleets: Kizimkazi Dimbani has a total of 280 fishermen and a population of 1360, while Jambiani has 260 fishermen and a population of 8000 [20] and [23]. The age of fishermen interviewed averaged 41.5 years (SD=14.62) old with 20.0 years of experience fishing (SD=13.45), with no significant

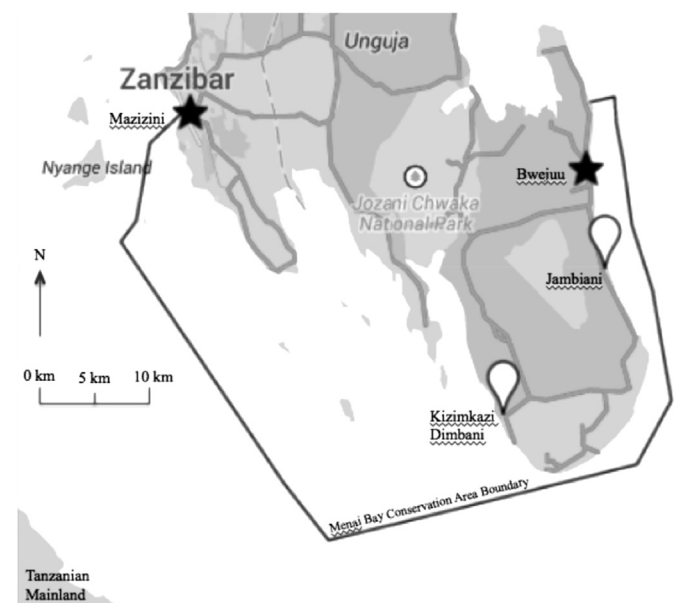


Fig. 1. The boundary waters of the MBCA are shown above with the border towns of Bwejuu and Mazizini marked with stars and the two study areas marked in white.

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