Fisheries Research 164 (2015) 249–253

Contents lists available at ScienceDirect

Fisheries Research

journal homepage: www.elsevier.com/locate/fishres

Viewpoint

Interplay between perceived changes in fishery and social structures in Tanzanian coastal fishing communities

Robert Katikiro [a,b,*], K.H.M. Ashoka Deepananda [c], Edison Macusi [d]

[a] Leibniz Center for Tropical Marine Ecology (ZMT) GmbH, Fahrenheitstrasse 6, 28359 Bremen, Germany
[b] Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP), P.O. Box 845, Mtwara, Tanzania
[c] Department of Fisheries and Aquaculture, Faculty of Fisheries and Marine Sciences & Technology, University of Ruhuna, Matara 81000, Sri Lanka
[d] Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños College, Laguna 4031, Philippines

ARTICLE INFO

Article history:
Received 9 March 2014
Received in revised form
18 December 2014
Accepted 18 December 2014
Handling Editor George A. Rose

Keywords:
Social structure
Kinship
Social cohesion
Individualism
Fisheries
Coastal Tanzania

ABSTRACT

The dynamics and impacts of a fishery on sociocultural aspects of fishing communities are rarely studied. Here, we seek to describe how perceived changes in a fishery system – such as declining fish stocks, market failures and the loss of important species – may strengthen or weaken sociocultural patterns, specifically social networks and cohesion, identity, and traditional institutions. These findings are based on 103 semi-structured interviews, 10 focus group discussions, and nine life history interviews with individuals selected randomly from five coastal villages in the Mtwara district of Tanzania. Data were also complemented by a literature review and participant observation. Over 90% of people interviewed reported that the roles of informal village institutions, such as kinship and neighbourhood, have in recent years become loose and changeable due to the perceived ecological changes in the fishery and the influx of people without a fishing culture background. Nearly three-quarters of respondents indicated that the increased monetisation of fisheries products has led to unfettered private actions that have negative impacts, including degradation of resources, creating front groups in order to conceal private intentions, and social tensions like theft of fishing gear. The findings suggest that approaches to understanding and promoting the development of fishing communities in developing countries should include objectives that recognise how sociocultural systems alter and adapt in the face of extreme conditions within the fishery.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Changes occurring in a fishery can trigger a transformation of social structures and dynamics that would eventually affect customary practices and traditional lifestyles of fishing communities (Crona et al., 2010). Some of these traditions, as argued by Mcclanahan et al. (1997), have been known to have positive impacts on fisheries management and are as good as conventional forms of fisheries management. Several authors (e.g., Cinner and Aswani, 2007; Symes and Hoefnagel, 2010; Urquhart et al., 2011) indicate that the changes in a fishery, such as the size of fish catch and availability, the abundance and diversity of fish species, the size of fish stocks, as well as the state of fishing habitats, are starkly evidenced in social dynamics and structure among small-scale fishers in coastal settlements.

Despite the increasing reports on changes that occur in the small-scale fisheries sector in many parts of the world (Barnes-Mauthe et al., 2013), detailed information about the influences of rapid development processes on the fishing communities and their dynamics is still rare (Crona and Bodin, 2010). In most countries of the Western Indian Ocean (WIO) region, which is home to diverse coastal cultures (Diop et al., 2011), for instance, the impact of the quickly changing natural environments on the shape of fishing communities, their fishing practices and their social dynamics is comparatively poorly studied (Cinner and David, 2011). Here, we draw on our recent interviews and focus group discussions in Mtwara rural district, southern Tanzania, to illustrate empirically the interconnectedness between perceived changes in the fishery status and social structure in coastal fishing communities of the WIO region by using a case study from Tanzania. We identify three broad areas deserving greater attention by policy makers: history of fishery, shift in power structure, and loss of important

* Corresponding author at: Leibniz Center for Tropical Marine Ecology (ZMT), Fahrenheitstrasse 6, 28359 Bremen, Germany. Tel.: +49 421 2380033; fax: +49 42123800.
E-mail addresses: robert.katikiro@zmt-bremen.de (R. Katikiro), ashoka.dkhm@googlmail.com (K.H.M. Ashoka Deepananda), edmacusi@gmail.com (E. Macusi).

http://dx.doi.org/10.1016/j.fishres.2014.12.009
0165-7836/© 2014 Elsevier B.V. All rights reserved.

social structures. In so doing, we underscore the need for improving understanding of sociocultural patterns in small-scale fisheries, with a particular focus on developing countries.

2. Mtwara rural district, southern Tanzania

The current study was carried out in five randomly selected coastal villages in the Mtwara rural district: Mnete, Nalingu, Msimbati, Mngoji and Mkubiru (Fig. 1). All study villages are situated in a marine protected area (MPA) known as the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP), created in 2000. Between 60% and 80% of people in the study villages rely on marine fisheries resources for their livelihood strategies (Malleret, 2004). The fishery in Mtwara rural district, including the study villages, is almost exclusively shallow water based. It is dominated by artisanal fishers utilising a wide variety of gear types, including hand lines, traps, nets, beach seines, spears and sticks, long lines, *juya*, *tandilo* (Malleret, 2004) and, most recently, ring nets. Artisanal fisheries are also dominated by the collection of shellfish and other invertebrates on reef flats and intertidal areas, primarily by women and children. A large proportion of the fishers, although probably with a tradition of fishing in the area, are in fact commercially oriented, even if that is partly opportunistic in the sense that if fish suitable for marketing are caught then they are sold; otherwise the catch is eaten (Labrosse et al., 2004).

Catch composition is multi-species, mostly reef fish. Most commonly species caught are demersal fish, followed by some large and small pelagic; crustaceans, octopus and squid are also common (Labrosse et al., 2004). Fishing vessels are mainly dugout canoes (*mitumbwi*) and some dhows, as is common in other coastal areas of Tanzania (Masalu et al., 2010). The majority of fishing vessels operating in this district are not motorised.

2.1. Historical overview of the fishery in the study villages

There is little written information available regarding the state of the marine fishery in the colonial period (1884–1960) in Tanzania, and the Mtwara rural district is not exceptional. Interviews and focus group discussions in this district revealed situations where influxes of people from hinterland areas to the coast were the main concern in terms of disruption of traditional uses of fisheries resources, leading to the rise of destructive fishing activities like dynamite fishing. Over 90% of people interviewed for this study admitted that although the majority of households in their villages derive their livelihoods from fishing-based activities, a substantial number of residents in their villages were originally from a non-fishing family and clan group during the colonial period. They

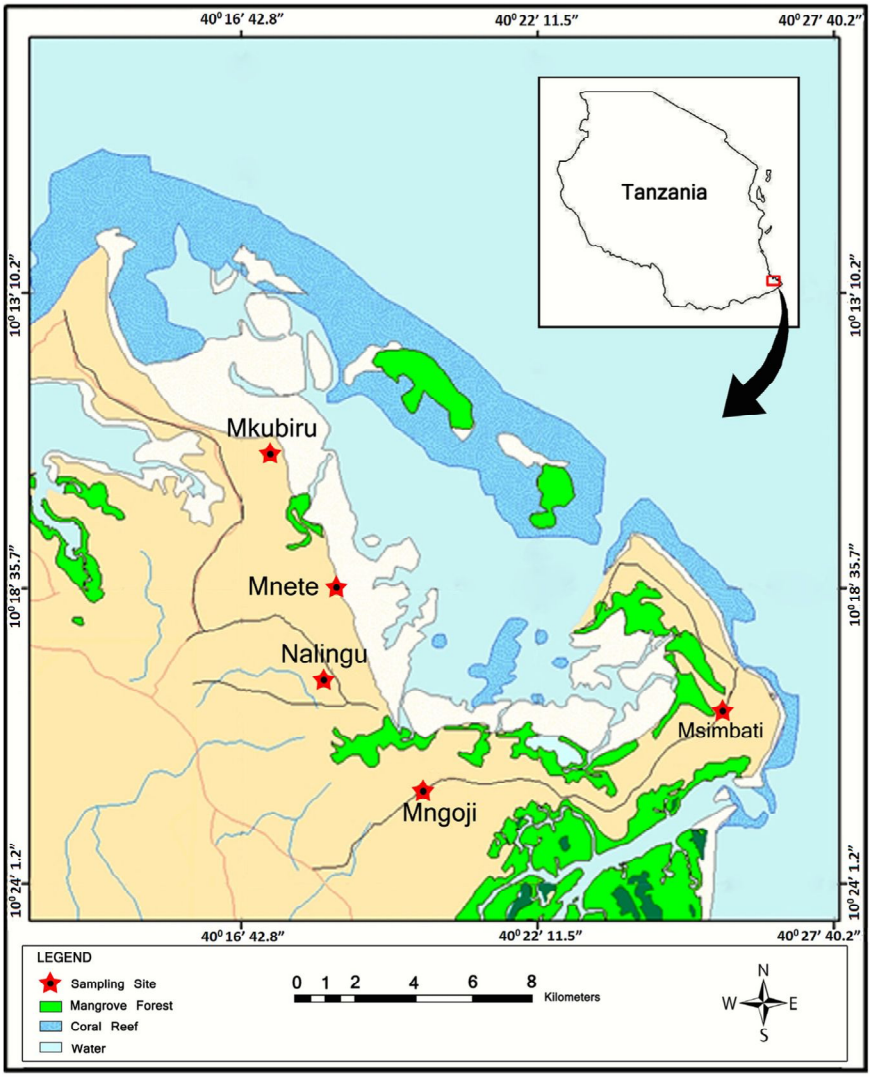


Fig. 1. Map of the study area.

reported that these people came from communities that practised other activities, such as farming, hunting, herding, trading, and ironworking. These households are not necessarily distinguished by greater assimilation of the fishing culture but by the fact that they have not respected the fishing institutions upon which others have relied. Such institutions included sharing the fish catch and information about productive fishing grounds and markets, respect for certain fishing grounds, prohibition of fishing during periods of crop harvest, as well as restraint from fishing based upon orders and instructions given by traditional leaders.

On the contrary, people with a migrant origin take the easiest means in search of fish, abandoning existing norms and relationships within the community. Interestingly, nearly two-thirds of the respondents indicated that people in the study villages have been harvesting marine resources (fish, in particular) for centuries, although the activities were primarily for subsistence needs using locally made gear, such as traps, weirs and hooks. Furthermore, people with migrant origins continue to harvest fisheries resources without any concerns about what kind of gear or methods should be used or what negative repercussions might impact the social structure. Collectively, they are often associated with a greater tendency towards individualising and, as a result, strain social ties within the family and community. This subversion of the historical context of the fishery has become so prevalent that it reveals a complete erosion of traditionally accepted uses of fisheries resources.

Significant changes in the fishery are reported to have occurred during the post-colonial period, especially in the early days after independence in 1961. Nearly 40% of the respondents mentioned that the Ujamaa villagisation programme, from 1962 to 1974, partially contributed to the migration of people to coastal villages, leading to a modification in the way in which traditional communities related to their fishery. During the times of traditional fisheries management in the study villages, it is believed that immigrant fishers had to seek permission from the leaders, who then gave access rights to them to settle in their midst and to fish, while adhering to set norms. Later, this was no longer the case, as new settlement villages (*Ujamaa* villages) consisted of people from diverse cultures. Some migrants even developed their own sociocultural patterns and categories in fishing operations that became distinct from those of host communities. Over 65% of respondents indicated that their mode of social organisation, related to family and kinship (reciprocal) in the fisheries production, gradually shifted to a labour and market orientation. The majority of respondents (80%) felt that the social patterns of relationships between fishers have altered spontaneously, from mutually amicable to somewhat paternalistic, in the post-colonial period.

Stakeholders, new to traditional uses of resources, can easily underestimate the importance of those traditions, as many place less value on culture and local institutions than do natives. This study indicated that these stakeholders may expect traditional institutions to become looser, at natives' expense, so that they can channel their own newer methods in order to harvest resources. This requires fisheries managers and policy makers to reconcile resource users' expectations, while being explicit about the range of uncertainties associated with different scenarios regarding the impact upon and status of the fishery.

2.2. Shift in power structure

The perceived changes in the fishery in study villages are dependent on both internal and external socio-politial/economic and cultural settings of the areas investigated. Both villages were closely related in this respect; however, the degree of influence differed, especially in those villages where leadership arose from opposition political parties that did not control the central government. Overall, three-quarters of the participants in all focus group meetings agreed that village-environment management committees in these villages have largely failed to execute their duties following strong opposition from village leaders and some influential community members. In Nalingu village, for example, the socio-political setting was highly fragmented and augmented by pressure emanating from a few tycoons and an affiliation with the opposition party – the Civic United Front (CUF) – who, because of the informal power structure that existed in this village, had power over most villagers, including the village government leaders and the fishery. In this way, a small proportion of respondents (18%) felt that there had been a deliberate exclusion of some villagers from fishing activities. This is interpreted as a stripping of their livelihood, resulting in reducing solidarity and trust among villagers.

Power differences have triggered a growing resistance to a number of government-supported projects aimed at managing the marine environment in sustainable ways. Seventy percent of respondents considered that many households in the study villages – notable examples being in Nalingu, Mkubiru and Mnete villages – allegedly fanned the conservation threat by propagating the belief that the establishment of a marine park (MBREMP) would lead to them being expatriated. They did this through strong opposition to any of the processes and activities related to the MBREMP in their villages. In a short while, their move spread even to the villages like Msimbati and Mngoji that had previously exhibited strong support for conservation. Ultimately, opposition to conservation, spearheaded mostly by a few individuals who feared losing their interests and powers, disunited households in most seafront villages delineated within the MBREMP jurisdiction.

There is a genuine danger that neglecting issues of power relations in fishing communities may disrupt co-management schemes, which are essential for achieving the effective governance of fisheries. There is a need to reconcile hierarchy at the local level, especially in the context where local institutions are often beset by elite control and by weak capabilities towards sustainable resource uses.

2.3. Loss of important social structures

Consistent with the perceived changes in fisheries resources, and particularly the decline in fish catch and the loss of important species, social structures have been subjected to various challenges, as illustrated in Table 1. For example, 80% of respondents reported that informal institutions defined by kinship, neighbourhood or friendship, were now looser and more changeable when compared to the past 30–40 years. The rapid growth of the fish trade has caused certain social values to shift from one form to another. For example, over half the respondents reported a rise in the desire to own goods produced outside the village, such as television sets and mobile phones. This situation has further increased exploitation of the fisheries resources to earn money for purchases of these goods.

The concept and practice of self-help, which used to permeate every corner of society through the *mkumi* or *kucha kumi* system – a social arrangement through which people share their time and labour to help one another with fishing, house repairs, planting or reaping of crops – is also reported to be in decline. Similarly, friendship networks, which also cooperated in the mutual provision of assistance and support in difficult times, have in recent years failed to be nurtured, especially among poor people. In general, some respondents (30%) highlighted that the growing pressure on kinship and neighbourhood ties had led to the erosion and eventual collapse of the relationships of mutual help, solidarity and social exchange that constituted a critical safety net for poor households. This, in turn, has resulted in increasing social isolation.

Less than 10% of respondents remarked on the degree of social differentiation thought to have been attributed to decline in fish

Table 1
Altered social structures following perceived changes in the local fishery.

Indicator of change	Implication
Sacredness	Less considered as sacred object of veneration than when fishery resources were abundant. Hence, esteem and respect for nature diminished; fisher family connectedness also appears to have diminished due to lesser exposure together in the same livelihood.
Political organisation over kin groups	Power and primacy of political organisation enacted high degree of institutionalisation and facilitated the extraction of resources
Collective actions	Strong resistance coupled with diverse economic interests for management ideas, thus, limiting regulation of resource use
Religious taboos	Professional cults in fishing instituted by religious belief, e.g., avoiding going to the sea on certain days of the year or women approaching the sea when menstruating, etc., are violated
Indigenous technical knowledge systems	Intimate knowledge by resource users as to the status of resources, including rates of sustainable harvesting, etc. are, less enforced today as the old norms and values have become unsatisfactory
Access by outsiders	Acceptance or non-acceptance of immigrants by clan or village leaders is no longer effective or followed
Division of labour	Social organisation is drastically changed; fishing operations are profit-oriented, with strong individualistic orientation

Source: Focus group discussions and life history interviews.

stocks. According to their opinions, this was linked to the tension created by the different views concerning the support of the establishment of the MBREMP, and not the ecological changes in the fishery. Some respondents, particularly 'older' respondents, expressed concerns regarding the limit in reciprocity and trust among villagers due to the residual impacts of the establishment of the MBREMP. Thirty-two percent of respondents described how the resulting divisions are affecting not only families and households, but the entire village, and social interactions between people of different status have become limited and suspicious.

Study respondents indicated that social organisation among fishing households is somewhat flexible to allow organisation following environmental change. Organisation of family labour is geared towards striking a balance between livelihood needs and fisheries resources. Unfortunately, many external organisations working in coastal areas of Tanzania do not seem to appreciate the uniqueness of cultures and the sophistication of social organisation. One of the organisational dimensions is the age-set system, which forms the basis of decision-making within the society and the social division of labour. Elders wield both political and spiritual power. They transmit their accumulated fishing knowledge and experience to the younger generation and serve as spiritual guardians and sponsors of religious ceremonies. However, this is no longer valid, as traditions cherished in the past are nowadays rejected by many young people as they strive to earn money from declining resources.

Recognising how sociocultural patterns become altered, and by whom, is useful in providing a platform to gather and learn from past history and from ongoing adaptation initiatives associated with the decline of fisheries and their benefits. However, it is worth mentioning that the reduction of social cohesion is not only associated with declining fisheries resources but also other shrinking opportunities, including the ability to mobilise assets. This has major implications for the social organisation of poor fishing communities.

3. Conclusion and policy implication

It is more likely that social structures within coastal villages in the Mtwara rural district are changing due to the influx of diverse groups of people from villages without a fishing culture. The existing sociocultural structures are disrupted, leading to new social tensions that could erode the socially embedded institutions that intristically linked villagers and the management of their fishery. Currently, social bonds that were previously strong have withered, but there are a few primary bonds such as family and clan networks that have managed to survive and even flourish within situations where fisheries stocks are in rapid decline. Much work needs to be done in coastal areas to support fishing communities' realisation of their unique identities and cultural values. The findings concur with previous studies that found that the fishing industry is seen as part of the social fabric through which the community bonds, values, knowledge, language and traditions are established, confirmed and passed on (Brookfield et al., 2005). This also is in line with studies that have shown that demographic changes that potentially threaten the social fabric among fishing communities have effects on informal institutions such as respect for traditional leaders, sharing fish catch and fraternity patterns in fishing activities (Hamilton, 2007; Krause and Glaser, 2003). Future policy measures enacted on fisheries should focus on the social bonds and provide some impetus and optimism for their revival.

The wider value of our findings here points to a fine balance of traditional and modern structures, norms and practices as a necessity for sustaining the local fishery in a given context. The Mtwara coastal fishery is just one example of small-scale fisheries development in recent years that demonstrates how fisheries are intertwined with the social structure. It is clear that successful fisheries management may be achieved, provided local practises are able to support it through different ecological, technological, institutional and cultural means. Similarly, an inclusion of both traditional and modern structures is crucial in addressing the future development of small-scale fishing communities (Walley, 2004). Changes in the fishery may cause profound changes in social relations within a community (Caplan, 2009). These changes could mean greater insecurity and enhanced vulnerability for certain social groups, while bringing prosperity for other groups. It is thus important to understand what the gains and losses are, and how they are dispersed. More generally, this study suggests that there is an opportunity for changing unequal social relations attached to resource use.

Acknowledgements

The authors wish to thank the households and village governments in the MBREMP for participating in interviews and focus group discussions. REK is thankful to the Evangelisches Studienwerk e.V. Villigst for financial support through a study grant number 850661. The authors are also very grateful to the two anonymous reviewers and the editor for their valuable comments and suggestions that helped to improve this article.

References

Barnes-Mauthe, M., Oleson, K.L.L., Zafindrasilivonona, B., 2013. The total economic value of small-scale fisheries with a characterization of post-landing trends: an application in Madagascar with global relevance. Fish. Res. 147, 175–185, http://dx.doi.org/10.1016/j.fishres.2013.05.011.

Brookfield, K., Gray, T., Hatchard, J., 2005. The concept of fisheries-dependent communities: a comparative analysis of four UK case studies: Shetland, Peterhead, North Shields and Lowestoft. Fish. Res. 72, 55–69, http://dx.doi.org/10.1016/j.fishres.2004.10.010.

Caplan, P., 2009. Understanding modernity/ies on Mafia Island, Tanzania: the ideas of a moral community. In: Larsen, K. (Ed.), Knowledge, Renewal and Religion: Repositioning and Changing Ideological and Material Circumstances among the Swahili on the East African Coast. Nordic Africa Institute, Uppsala, pp. 213–235.

Cinner, J.E., Aswani, S., 2007. Integrating customary management into marine conservation. Biol. Conserv. 140, 201–216, http://dx.doi.org/10.1016/j.biocon.2007.08.008.

Cinner, J.E., David, G., 2011. The human dimensions of coastal and marine ecosystems in the western Indian Ocean. Coast. Manage. 39, 351–357, http://dx.doi.org/10.1080/08920753.2011.589207.

Crona, B., Bodin, Ö., 2010. Power asymmetries in small-scale fisheries: a barrier to governance transformability? Ecol. Soc. 14, 32.

Crona, B., Nyström, M., Folke, C., Jiddawi, N., 2010. Middlemen, a critical social–ecological link in coastal communities of Kenya and Zanzibar. Mar. Policy 34, 761–771, http://dx.doi.org/10.1016/j.marpol.2010.01.023.

Diop, S., Arthurton, R., Scheren, P., Kitheka, J., Koranteng, K., Payet, R., 2011. 11.13 – the coastal and marine environment of western and eastern Africa: challenges to sustainable management and socioeconomic development. In: Wolanski, E., McLusky, D. (Eds.), Treatise on Estuarine and Coastal Science. Academic Press, Waltham, pp. 315–335.

Hamilton, L.C., 2007. Climate, fishery and society interactions: observations from the North Atlantic Deep Sea Res. Part II Top. Stud. Oceanogr., effects of climate variability on sub-arctic marine ecosystems. In: A GLOBEC Symposium GLOBEC-ESSAS Symposium on Effects of Climate Variability on Sub-arctic Marine Ecosystems, vol. 54, pp. 2958–2969, http://dx.doi.org/10.1016/j.dsr2.2007.08.020.

Krause, G., Glaser, M., 2003. Co-evolving geomorphical and socio-economic dynamics in a coastal fishing village of the Bragança region (Pará, North Brazil). Ocean Coast. Manage. 46, 859–874, http://dx.doi.org/10.1016/S0964-5691(03)00069-3.

Labrosse, P., Mohammed, A., Kamukuru, A., Anderson, J., 2004. An Assessment of Currently Exploited Shallow-water and Intertidal Fisheries in MBREMP and Recommendations for a Fisheries Management Strategy. IUCN-EARO Publication, Nairobi.

Malleret, D., 2004. A Socio-economic Baseline Assessment of the Mnazi Bay-Ruvuma Estuary Marine Park. IUCN-EARO Publication, Nairobi.

Masalu, D.C.P., Shalli, M.S., Kitula, R.A., 2010. Customs and Taboos: The role of Indigenous Knowledge in the Management of Fish Stocks and Coral Reefs in Tanzania. University of Dares salaam, World Bank, CRTR.

Mcclanahan, T.R., Glaesel, H., Rubens, J., Kiambo, R., 1997. The effects of traditional fisheries management on fisheries yields and the coral-reef ecosystems of southern Kenya. Environ. Conserv. 24, 105–120.

Symes, D., Hoefnagel, E., 2010. Fisheries policy, research and the social sciences in Europe: challenges for the 21st century. Mar. Policy 34, 268–275, http://dx.doi.org/10.1016/j.marpol.2009.07.006.

Urquhart, J., Acott, T., Reed, M., Courtney, P., 2011. Setting an agenda for social science research in fisheries policy in Northern Europe. Fish. Res. 108, 240–247, http://dx.doi.org/10.1016/j.fishres.2010.12.026.

Walley, C.J., 2004. Rough Waters: Nature and Development in an African Marine Park. Princeton University Press, Princeton.