

Saving the Commons: Community Involvement in the Management of Mangrove and Fisheries Resources of Chwaka Bay, Zanzibar

S.M. Mohammed

Institute of Marine Sciences, University of Dar es Salaam, P.O. Box 668, Zanzibar, Tanzania

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Abstract—For generations, fishing and mangrove cutting have been an integral part of the lives of the communities around Chwaka Bay in Zanzibar. However, overexploitation due to heavy demand, as well as the open access nature of these resources, has led to their dramatic decline, threatening the social and economic wellbeing of these communities. Fish catches have decreased from 950 metric tonnes in 1990 to about 200 metric tonnes in 2001 and mangrove wood harvests have similarly declined. Formal management measures have failed to arrest the decline. Local communities have so far only been partially involved in the management of their reserves. It is proposed that an integrated management structure that encourages full participation of local communities in resource management be set up to help avert further decline of the mangroves and fisheries of Chwaka Bay.

INTRODUCTION

Chwaka bay (Fig. 1) is a shallow lagoon located on the east coast of Unguja Island in Zanzibar. The bay boasts large intertidal flats richly covered with mixed assemblages of algae and seagrasses. On its southern fringes, it is bordered by a dense mangrove forest, the largest mangrove on Zanzibar island. A modest fragmented coral reef, part of the extensive reef that fringes the eastern coast of the island, guards the entrance of the bay. These three interlinked ecosystems form the basis of the once-rich fishery of Chwaka bay.

Both the mangrove forest and the fishery of the bay have been under intense exploitation pressure, mainly from the burgeoning population of Chwaka bay; the population of the surrounding villages has been increasing at 3.8% per annum, a rate that is slightly higher than the national average of 3.6% (ZSD 1997, Williams 1998). Easy access

of the coast has also attracted people from other areas, including mainland Tanzania, who have settled around the bay. This population increase has added to the intense pressure bearing on the local environment and resources.

Resources under pressure

Fisheries resources

Chwaka Bay villagers' main livelihood opportunities depend on fishing and mangrove cutting. The womenfolk are primarily seaweed farmers, but also engage in beach gleaning for shellfish and other crustaceans, the sardine fishery and in cutting firewood for sale. However, fishing is the single most important occupation of the majority of the people in Chwaka bay. The fishery is essentially artisanal, with fishermen relying on traditional, locally made gear and vessels. About 34.7% is net fishing while the rest is done using

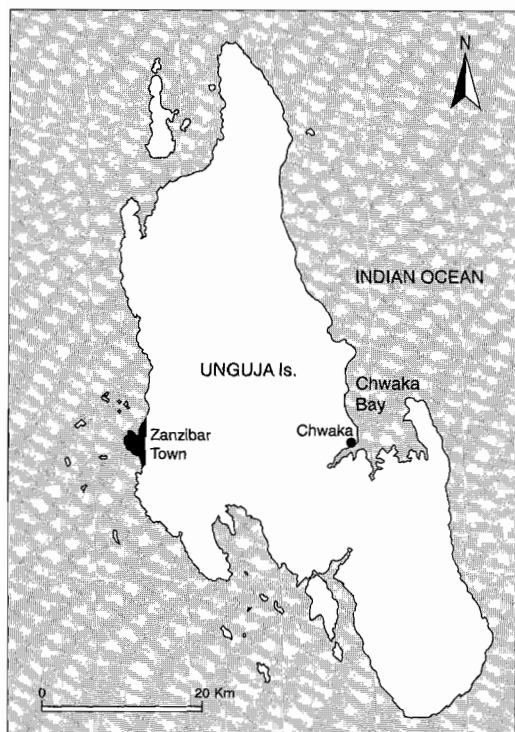


Fig. 1. Map of Zanzibar Island showing Chwaka Bay

hand lines and basket traps (Mohammed & Jiddawi, 1999). Locally made boats are the principal fishing vessels used. Given the low mobility provided by these vessels and the rudimentary gear used, the fishery is heavily concentrated within the bay proper and very few fishers venture outside it.

Owing to pressure from sustained exploitation, the fishery of Chwaka Bay has seen a steep decline for several years. In 1990 total fish production from the bay was 950 metric tonnes but has since declined to 200 metric tonnes (Jiddawi, 1997). The decline in production is spread over a wide range of the major species landed. However, the most affected groups are lobsters, eagle rays, milkfish, travelly fish and sardine, all of which have been fished to near -extinction (COLE 1996). Other fisheries are in serious decline or completely wiped out. For instance the sea cucumber fishery, once a major activity in the bay for both men and women, has collapsed.

The fishing pressure exerted on Chwaka bay is attributed to two interlinked factors. The first

one is the ever-increasing demand for fish and related resources from local residents and those in outlying villages as well as Zanzibar Town, from where fish traders commute daily to buy fish from Chwaka village main market. The recent rapid expansion of the tourism industry on the islands, especially on the east coast of Unguja Island, including the area around the bay, has imposed further demands on the resources. The tourist industry, which offers higher prices for the catch, has fuelled demand, thus intensifying even further the pressure on the stocks. A second and possibly more important factor is that the fishery is entirely open access and for many villagers, fishing is the only source of employment. The result of this fishing pressure is predictable: less fish for local consumption and sale, which has triggered social problems, including resource-use conflicts. Some conflicts have led to fights at sea between neighbouring villagers. In addition, the use of destructive fishing techniques such as poison, dredge nets, small mesh-size nets and beach seines has worsened the situation (COLE, 1996).

Mangrove Resources

The Chwaka Bay mangrove forest is the largest single mangrove stand on Zanzibar. Shunula (1990) identified eight species of mangroves: *Avicennia marina*, *Rhizophora mucronata*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Sonneratia alba*, *Xylocarpus granatum*, *Lumnitzera racemosa* and *Heritiera littoralis*. Aerial surveys carried out in the early 1990s indicated that the Chwaka Bay mangrove forest totalled 1827 ha (Nasser and Mohammed 1996) but this area has now been significantly reduced.

Mangrove cutting is the second most important economic activity after fisheries for the people of Chwaka Bay. The forest yields building poles, timber, firewood, honey, fish and mangrove bark. Local villagers also harvest mangrove products for medicinal purposes; *Xylocarpus granatum* and *Lumnitzera racemosa* are known to cure stomach disorders and other ailments (Nasser, 1994; Williams & Basha, 1996; Shunula & Whittick, 1996). However, commercial harvesting of mangrove poles for building purposes is the single most important mangrove exploitative activity. The preferred species harvested for this purpose include

R. mucronata, *B. gymnorrhiza*, *C. tagal* and *A. marina* (Ely et al., 2000). Being more termite-resistant than other tree species, mangrove has long been the wood of choice for construction purposes, and many houses around Zanzibar island are constructed from mangrove poles originating from Chwaka Bay. According to Ely et al. (2000) approximately 15 % of mangrove pole used for construction in Zanzibar Town come from Ukongoroni and Charawe villages alone. This is in addition to the amount used locally in surrounding villages.

Mangrove cutting is allowed under law only for pole production, but there has been a shift towards mangrove cutting for making charcoal, a highly valued source of fuel, principally from *B. gymnorrhiza* and *C. tagal*. Unlike for pole production, any size of tree can be used for charcoal burning and this has led to widespread clear-cutting. The practice is the single most destructive exploitation of mangroves seen on the island, resulting in reduced mangrove wood quality, quantity and availability as well as environmental degradation. The once tall, thick mangrove trees in Chwaka Bay mangrove forest have now all but disappeared.

Community ownership and management of resources

In eastern Africa the sea is generally regarded as an extension of coastal lands, but unlike land, the sea is the common property of surrounding communities, with each village having its own access rights subject to the approval and direction of the community leaders according to local customs (Tobisson et al. 1998). This is true for the Chwaka bay area, include lagoons and intertidal areas. The exception is ownership of some sand banks in the intertidal where fence traps (locally known as *uzio*) have been built. These sand banks are regarded as the property of individuals or families through traditional rights. The right of occupation and harvesting of fish from these traps is enforced through customary law and is passed down within families. However, there are only eight fence traps in the whole of Chwaka bay and the area occupied is very small (Ely et al., 2000).

The mangrove forest is also open access and

all villagers have equal rights to its resources. However, individual villages have laid claim to sections of the forest, and members of particular villages are free to harvest mangrove wood and other products from these forest areas. Non-village members, including commercial cutters, are denied direct access to these resources but can easily obtain permits from the government to harvest from other areas.

Community management of resources

The people of Chwaka Bay are generally of a common stock (Pakenham, 1947) holding communal rights and obligations to resources. For generations villagers around the bay exercised some control on the exploitation of mangroves in areas traditionally identified as being under the jurisdiction of the village concerned. Under this arrangement, for example, villagers are allowed to cut mangrove wood only for personal use. However, superimposed on this community-based management structure, is a more formal one under which the government issues permits to non-village residents for commercial exploitation, effectively weakening the local management authority.

Resource management in Chwaka Bay has a long history. For example, formal mangrove management efforts in Zanzibar, including the Chwaka Bay area, have their origins in 1946 when the Government formulated the Wood Cutting Decree with the view to conserve and develop forest areas on the island. This measure was aimed at restricting the cutting of wood, including mangroves, on Government land (Griffith, 1950). In addition, a General Notice was issued during this period, specifying areas to be closed for cutting. In 1949, a five-year working scheme was implemented to regulate domestic and commercial bark harvesting for tannins, and cutting for poles and firewood (Griffith, 1950). The scheme also encouraged the planting of more bark tannin-extractable trees (*B. gymnorrhiza* and *R. mucronata*), as a measure to ensure sustainable exploitation of the resource. Then in 1965 the authorities issued the Forest Reserve (Constitution) Order under which all mangrove forests on the island were declared forest reserves. Management

measures proposed under this order included closing and opening of forest areas at 10 year rotations, issuing of licenses to harvest mangroves, restriction on some uses like lime burning and bark collection. Field patrols were also introduced to curb illegal harvesting. However, these measures were not sufficient to arrest excessive exploitation of mangroves, and the destruction continued. The formal management inadvertently weakened the traditional community-based management systems and the open areas were soon exhausted and villagers and commercial cutters alike were forced to cut mangroves from 'closed' areas.

The weakened sense of community ownership of the resource, poor community involvement in management decisions, lack of awareness on the part of the local communities of the fragility of the resource base, and the absence of alternative livelihood opportunities were key factors responsible for the mangrove depletion. Beginning in 1996 fresh efforts were made to involve local communities in the management of mangrove resources. This included the enactment of the Environment Legislation and review of the Forest Legislation, both of which called for the involvement of local communities in the management of their resources. Under this initiative, local communities have established conservation committees in various villages, including those around the Chwaka Bay. Community Forest Management Groups, also formed under this initiative, are empowered to issue permits for cutting, and are encouraged to patrol their forest areas. Making the conservation committees the sole authority with the powers to issue permits makes conservation sense, as this empowers the communities to control the amount of cutting. Since then a number of mangrove management plans have been drawn up by the communities, which emphasise rational exploitation. Among other things, the plans set up harvest quotas as well as delimiting sections of the mangrove forest as high protection areas which are totally closed to cutting.

Another initiative for mangroove protection was the inauguration of the Integrated Coastal Zone Management (ICZM) plan for Chwaka Bay–Paje area in 1996 (COLE, 1996). A result of coordinated

efforts by government departments and local stakeholders, including local communities, this initiative was funded by USAID and received technical assistance from the Coastal Resource Centre of the University of Rhode Island. The plan proposed comprehensive multi-sectoral strategies to manage marine and coastal resources in the Chwaka bay area. This included the formation of Coastal Resources Management committees (CRMC) and sub-committees on fisheries, mangroves, seaweed and tourism.

The CRMC for Chwaka-Paje pilot site observed the breakdown and non-compliance of laws governing harvesting of coastal and marine resources. The ICZM plan encouraged the involvement of communities in defining and implementing management measures, and reviving and strengthening traditional management efforts. The plan also aimed to determine sustainable levels of exploitation and the promotion of non-consumptive, non-timber uses of mangroves, such as ecotourism. Increasing community awareness on issues related to mangrove and fisheries resource use is an important element of the plan.

Another initiative was the launching in 1995 of the Jozani–Chwaka Bay Conservation Area (JCBA) partnership, a collaborative initiative between the government of Austria, the Zanzibar Commission for Natural Resources, CARE Tanzania, and GEF/UNDP biodiversity conservation fund (Masoud, 2001). Among the goals of the initiative was the enhancement of community awareness of resource conservation and the improvement of the living conditions of the communities in the project area. Conservation Committees were established in some of the villages around the project area and the Jozani Environmental Conservation Association (JECA)—an advisory committee registered as an NGO in 1999—was formed to advise on activities in the area.

CONCLUSION AND RECOMMENDATIONS

Despite years of overexploitation and ineffective management, the fisheries and mangrove resources

of the Chwaka Bay area remain the principal basis for the social and economic development of the area's communities. Experience shows that the involvement of stakeholders—especially the local communities—in resource management, is key to the sustainable, long-term utilisation of these resources. In the Chwaka bay area measures to vest management authority to the local communities have begun. The success achieved so far is principally due to enhanced conservation awareness on the part of the local communities, reinforced by a sense of ownership of the resources. The challenge facing the government and the communities alike is that of identifying workable alternative livelihoods for the local residents.

For villagers around the bay, who depend on fishing and mangrove cutting, farming is a poor alternative as the land bordering the bay is mostly coralline rag and generally unsuitable for agriculture. Thus merely increasing awareness on conservation matters may not be enough to sustain success. Alternative livelihoods need to be identified and one option is to involve the local communities in tourism. This has had a measure of success in the JCBCA project area. The tourist attractions in the area include the Jozani ground water forest and its associated fauna and flora, and the extensive mangrove forest that runs along the coastline. Part of the money accrued from the tourism in the area is shared with the communities, of which a significant portion is spent on community development activities such as improvement of social services like schools, health services, water supply and electrification (Masoud, 2001). In addition, a savings and credit scheme was established in 1999 for the purpose of issuing loans to village groups to fund small-scale economic activities such as beekeeping, vegetable growing, handicrafts making, and weaving. However, due to problems like low repayment of loans, this funding activity was later replaced with an Accumulated Savings and Credit Association, from which members can borrow, at 5% interest and payable in three months, up to three times the amount saved (Masoud, 2001). A similar approach can be introduced in other parts of the Chwaka bay area. What is needed, however, is a strong policy directive at the national level and empowerment at the local level.

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