

Aquatic Resource Management in the Western Indian Ocean African Region

R.K. RUWA

*Kenya Marine and Fisheries Research Institute
P.O. Box 81651, Mombasa, Kenya*

RUWA, R.K. 1997. Aquatic resource management in the Western Indian Ocean African region, p. 23-25. In J.H. Annala (ed.) Fisheries and aquaculture research planning needs for Africa and West Asia. ICLARM Conf. Proc. 50, 80 p.

Introduction

In multidisciplinary studies of aquatic systems, water must be considered as a resource as well as one with biological and physical resources. Prominent for communities living around aquatic systems are their fisheries resources. These resources play an important role in providing them with employment; they also play an important part in their nutrition.

Exploitation of Aquatic Resources

FISHERIES RESOURCES. The majority of fishers in the region are artisanal. Industrial fishing is still not common and practised mostly by foreigners. Artisanal fishers fish mainly in lagoons and shallow waters around coral reefs, using canoes and sailboats, as only a few have engine-driven boats. Gear are mostly beach seines, cast nets, traps and fishing lines.

The main marine fisheries resources include various types of finfish; tuna

and tuna-like fish; crustaceans (lobsters, prawns/shrimp, crabs); and molluscs (octopus, squid, cuttlefish, bivalves).

Total catches by the countries of the Western Indian Ocean African region contribute less than 7% of the total annual catches of the Western Indian Ocean region (FAO 1990). This is probably due to lack of appropriate technology and vessels that can be used to fish offshore. Fishing on the high seas requires substantial investment which is not easily affordable in the local countries. This may also explain the significance of foreign investments in the fishing industry in this region.

Looking to the future, fish yields from offshore ocean areas are predicted to increase (World Resources Institute 1992). However, it is unlikely that countries with low standards of fishing technology which also lack ships to venture on to the high seas will significantly increase their catch beyond the shallow water coral reef zones. The latter therefore will continue to be threatened by the effects of overfishing.

MANGROVE RESOURCES. The Western Indian Ocean region is not well

endowed with mangrove forests (Ruwa 1994). Mangroves provide wood for fuel, building, furniture making, fodder, etc. However, there are no statistical records such as those for fisheries resources to determine the quantities harvested.

ALGAL RESOURCES. The potential for economic exploitation of algal resources in the region has been recognized (Mshigeni 1983). However, the majority of the local communities in the region have yet to appreciate their potential value.

MANAGEMENT OF AQUATIC RESOURCES. With the increased demand for cheaper sources of protein for the burgeoning populations in developing countries, fisheries are now viewed as potential resources to provide cheap protein and create employment opportunities in fishing and related activities such as aquaculture. Whereas artisanal fishing provides for local needs, industrial fishing yields surpluses for export markets and therefore contributes to foreign earnings.

A common problem with all developing countries is the lack of information for proper management that will ensure sustainable use of their resources. In cases where the information is available, data gaps which are also common make considering management decisions difficult. Thus, because of insufficient information, quantifying the contributions of fisheries to nutrition, employment, and foreign exchange earnings or income generation becomes hard work.

Fisheries production is the outcome of various aquatic processes, hence the need for interdisciplinary research strategies. These help us to understand variations in fish abundance in relation to various critical habitat contributions

(e.g., from mangroves, seagrass beds, coral reefs, etc.) and to formulate management strategies.

INTEGRATED COASTAL ZONE MANAGEMENT. In the past, the development of models that addressed particular aspects of the resource was considered sufficient to guide the sustainable management of aquatic resources. However, these models address only part of the problem. What they fail to address are factors such as (1) changes in the use of critical habitats as a result of tourist activities, creation of protected areas, anthropogenic inputs, artificial reefs, aquaculture practices, sand and coral mining, change of fishing grounds, etc.; and (2) changes in legal enforcement and institutional arrangements.

Integrated coastal zone management (ICZM) takes into account a wider range of factors. ICZM can be defined as a process aimed at minimizing resource conflicts in the exploitation and management of coastal resources for their sustainable use and development by considering the interests of concerned stakeholders. The major components of ICZM are interlinkages of research, planning, implementation, evaluation, and educational, legal and administrative institutions. However, the success of ICZM is jeopardized for the following reasons:

- at the national level, the role of institutions is not well defined, thus leading to power or responsibility overlaps and consequent loss or reduction of authority;
- an isolated or sectoral approach is commonly pursued ostensibly for the retention of authority;
- in most cases, coastal and marine research lacks a planned multidisciplinary approach that is necessary for ICZM;

- the planning process in coastal zones does not include or adequately consider the interests of all stakeholders;
- there is significant ignorance of the appropriate environmental education necessary to ensure sustainable use of the coastal and marine environment; and
- an international approach to coastal zone problems is still in its infancy, with its success dependent on the success of national approaches to ICZM.

References

- FAO. 1990. 1988 Fishing statistics - catches and landings. FAO Yearbook. Vol. 66. FAO, Rome.
- Mshigeni, K.T. 1983. Algal resources, exploitation and use in East Africa. *Prog. Phycol. Res.* 2:387-419.
- Ruwa, R.K. 1994. Halophytic coastal marsh vegetation in East Africa, p. 201-210. *In* V.R. Squires and A.T. Ayoub (eds.) *Halophytes as a resource for livestock and for rehabilitation of degraded lands*. Kluwer Academic Publishers, Dordrecht.
- World Resources Institute. 1992. *World resources 1992-93*. Oxford University Press, New York and Oxford. 339 p.