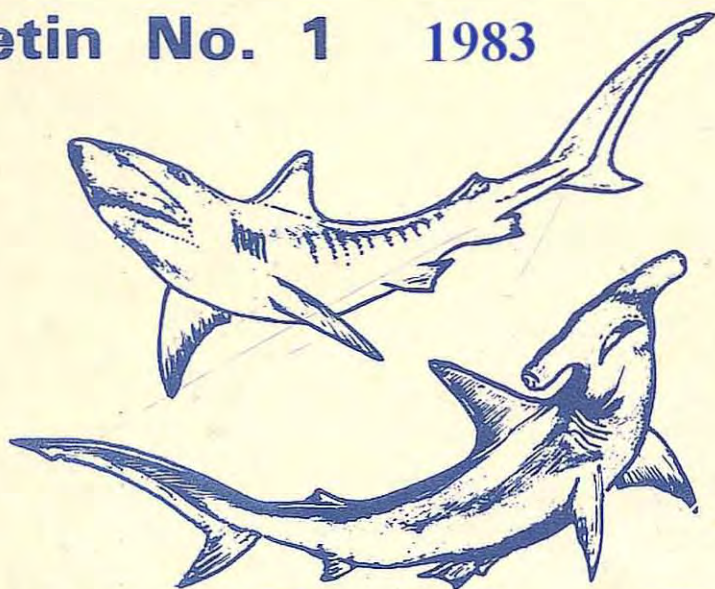


KENYA AQUATICA

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RESEARCH INSTITUTE

EDITORIAL NOTE

The need has been felt for a long time for a bulletin covering aquatic resources out-puts of the country quickly and comprehensively. The Board of Management of Kenya Marine and Fisheries Research Institute realised this need and directed the Institute to take immediate action for ensuring that information on aquatic resources is compiled for easy communication to the people.

The editorial group has decided to start reporting activities related to aquatic resources under the title "KENYA AQUATICA". As far as possible efforts will be made to include short scientific communications, critical reviews, seminar proceeding and other ad hoc publications. This comprehensive coverage will be possible only through cooperation of various Institutions, Departments, Societies and individuals who are concerned with aquatic resources.

Kenya Aquatica is a technical and extension series for rapid dissemination of information on aquatic resources and allied information from Research Officers, Fisheries Officers and any individual for transfer of Technology to the fishermen and industry and any other relevant information needed for National Development.

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M O M B A S A

AN OVERVIEW OF FISHERIES MANAGEMENT, RESEARCH AND DEVELOPMENT

ABSTRACT

Fisheries management essentially involves the making of decisions on how resources can be harvested, and in this context fisheries research can be regarded as a tool for management which will enable those charged with making decisions and formulating policies to ensure control or adjustment of the fishing operation, purposely brought into play in order to optimize the use of the fishery resources. In a way therefore the development, research and management are three aspects which serve the same process, the utilization and exploitation of the resources. Opportunity for management strategies are varied, and this paper attempts to discuss the biological approach to fishery development and management.

Certain distinct components will be considered thus:

(1) Fishery Resources

The fishery resources are important because the abundance of the stocks contribute to the fisherman's perception of the supply. When the stocks are abundant and are at a higher density on the fishing ground, the fisherman can usually catch more fish per unit input.

For fishery management, therefore, it is important if factors that govern the stock characteristics are understood. The theory of population dynamics which describes the way a given stock or resources behave is very extensive. In general, however, when a given stock is subject to any degree of fishing intensity, the stock density is reduced. In addition to fishing induced changes in the stock there are other equally important causes which may contribute to the fluctuations in the stock. Some of these factors are naturally induced and others are possibly related to pollutants or other habitat modifications.

Management problems associated with stock and resources involves controlling the size - specific, fishing mortality and the fishing effort so that the fishing effort will be optimal, will not exceed the maximum equilibrium yield, and will have a positive influence on yield per unit recruit factor. Besides, the management of any stock needs to be considered in relation to

that stock and other, perhaps, not utilized stock and which may be living in the same fishing ground. This consideration receives an increased importance in a divided fish stock, i.e., the fished stock and unfished component when it is realized that as price of fish change and as the technology of fishing also change more and more species come into commercial production.

(2). Fishery Management

Fishery management involves the making of decisions geared towards the development and exploitation of fishing industry and fish stock. The primary function of the management therefore is to establish regulations that increase benefits. It may be recognized that these types of regulations which generate benefit also generate costs. However, if the regulations are good, the generated benefits will be in excess of the costs.

Management objectives, means and standard therefore raise a number of questions:-

- (a) How can maximum sustainable yield be determined, and what is its relation to fishing effort;
- (b) What is the capacity and extent of the fishing vessels to harvest the optimum yield?;
- (c) Should foreign vessels be allowed in a given local water?;
- (d) If fees are to be levied, what are the appropriate fees?

Organised research activities will provide answers to most of these questions, It is known that the magnitude of the yield is related to the magnitude of the fishing effort. Thus the establishment of an optimum yield also implies an establishment of an optimum level of fishing mortality, which in turn implies optimal fishing effort.

There are problems connected with parameters discussed above. For example:-

1. The maximum Sustainable Yield calculations require an instantaneous response of the population to changes in recruit, growth, natural and fishing mortality. Fishing ground, being wild habitats which cannot precisely be monitored or controlled, do not allow most fish populations to respond instantaneously to change in parameter value. Above all the marine fish characteristics calculations are based on single species, and yet it is a fact that in a normal fishing ground and fishing activity a singly species ecosystem is an abstraction.

2. Development of resources

Fishery management, basically manipulates variables with a view to reducing fishing costs and increasing the catch. Thus decisions by fishery managements can influence the shape and the supply and demand trend. There are various tools which management uses in this exercise.

- (a) Research and development regarding new sources of raw materials;
- (b) Creating and opening new markets;
- (c) Increasing fishing efficiency by adoption of more efficient technology as it becomes available;
- (e) Reducing randomness and risks;
- (f) Development joint ventures.

It is not intended to discuss all these variables in details. Management must take into consideration constraints which may go hand in hand with any new development.

Institutions Essential for Proper Management of the Fishing Industry

(a) The most important body involved in management of fishing in any given country is a relevant arm of the Government whose responsibilities include, among other, the formulation of policies, objectives and time schedule for different activities relevant to the industry. Occasionally lack of trained manpower means that this body (usually a ministry) does not undertake duties elucidated above, and more often therefore relies on information from down below.

(b) A Department of Fisheries

A department or a division of fishery is primarily concerned with the development, extension and implementation of policies, and rules, and generally the promotion of fishery development.

(c) Planning Units of Agencies

Planning units issue responsibilities for nations planning and

coordination of all development activities. For some unknown reasons or factors in many developing countries, fishery planning is not done at all and fishery industries are therefore left to stagnate, or develop in a very haphazard manner.

(d) Research Institutions

These are primarily concerned with the development of production oriented research aimed at providing information which can enable managers, developers planners and policy formulating and executing agencies to make proper decisions.

4. Kinds of regulations essential for proper Management of fishing industry.

These vary from country to country. In the main, however, they should include:

(a) Protection and conservation provisions, generally aiming at supporting protection and conservation of fish defined.

(b) Territorial waters and maritime zone legislations essentially made to provide the legal basis for a government to declare the limits of internal waters, territorial waters, and the management and development of the resources therein.

Over enthusiasm can backfire and more often it is not true that the benefit accruing to a given country will increase or multiply many folds by merely doubling legislations.

(c) Merchant shipping provisions to give an allowance to fishing vessels requirements as well as lay down requirements for manpower training. As with other existing regulations and legislations in a number of developing countries, provision to cater for the fishing industry is just not there.

(d) Pollution Legislation

Primarily to allow for measures to be taken which ensures that pollution is prevented and controlled in order to preserve the quality and ecological balance of the aquatic environment. The interest and

Concern shown towards this type of legislation is not in proportion to action being taken. In a number of developing countries, there is no definite legislation on pollution control.

This discussions are meant to form a baseline for management and development planning. The importance of coordination among various agencies is stressed if meaningful and planned exploitation of the aquatic resources is to be realized. In a way therefore, the purpose of the paper is to initiate and forment discussion among people and organizations that are charged with development and exploitation of the aquatic resources with a view to maximising the utilization of the same for the benefit.

S. O. Allele