

# Development Strategies for Fisheries in the Eastern Caribbean

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## RESUMEN

Las pesquerías de las islas estado del Caribe Oriental se discuten brevemente. Se sugiere que, a pesar de la diversidad en los patrones sociales y políticos imperantes en estos estados, la pesca actual y potencial permanecen esencialmente igual. Los tipos básicos incluyen la pesca del arrecife en la cual un gran número de peces e invertebrados es explotado con artes de pesca comparativamente sencillas, como la cala y la nasa. Se ha desarrollado, hasta cierto punto, alguna pesca costero-pelágica de caránidos y clupeidos. La pesca deportiva se ha desarrollado a distintos niveles en los diferentes estados, dependiendo principalmente de la demanda turística. Se ha desarrollado también, en forma limitada, la pesca pelágica de altura, ya que se han dedicado esfuerzos más recientemente a pesquerías más allá del arrecife y de los cayos. Aunque hay diferentes criterios científicos sobre las perspectivas de desarrollo pesquero, hay un grupo apreciable de opinión que favorece el punto de que pueden alcanzarse aumentos significativos de producción.

Los mayores obstáculos para el desarrollo pesquero son la falta de capital y de personal adiestrado técnicamente. La mayoría de las economías de las islas continúan experimentando severas dislocaciones y se le da una baja prioridad a la necesidad de personal pesquero entrenado. Ninguna isla estado tiene los recursos para iniciar un proceso de desarrollo más allá de la simple operación artesanal. Se sugiere en la ponencia que la única forma en que podrían aplicarse subregionalmente los servicios y tecnología necesarios, sería mediante un esfuerzo innato verdadero que envuelva a los gobiernos e instituciones regionales, tales como la Universidad de las Indias Occidentales y el Banco de Desarrollo del Caribe. En apoyo del establecimiento de un cuerpo pesquero subregional se hace referencia a organizaciones similares concierne al campo agrícola. Se sugiere finalmente que la matrícula del Instituto de Pesca del Golfo y el Caribe tendría un papel importante que jugar en la planeación de la clase de organización necesaria.

The fisheries of the Eastern Caribbean island arc share certain common features. They are essentially artisanal fisheries which exploit either reef or coastal resources or off-shore pelagic resources. Generally, the fisheries operate on a daily basis and mostly rely on direct marketing from beaches or fishing centers. In exploitation of reef fisheries very simple methodologies are employed, including hand lining, fish potting, and beach seining. Near-shore and off-shore pelagic fisheries employ mainly trolling, but there is some limited gill netting. There are no reliable production figures even in those countries which have fisheries departments.

During the past several years there have been numerous discussions both at national levels as well as in international circles on the subject of the development of fisheries in the Caribbean and a few ad hoc surveys. The more recent international effort includes the UNDP survey conducted almost 15 years ago, while the IOCARIBE proposals for oceanographic investigations

in the Eastern Caribbean and the WECAFC proposal for the establishment of a presence in the area are the current discussion topics. These facts suggest that it is generally assumed at professional levels that fisheries development in the area is a practicable proposition.

While it can be assumed that some development is possible, there has not yet been made any clearly defined proposal as to the nature of the development and how best development might be effected. Whether or not development other than at the artisanal level is possible has not yet been determined. There are a number of possible courses of action which might be employed ranging from, at one extreme, the UNDP type of regional operation embracing a larger number of countries and international organizations at considerable costs, to, at the other extreme, the purely local national effort. In this paper it is argued that consideration be given to an approach which would employ existing indigenous institutions to effect development of artisanal fisheries.

Several factors have operated against fisheries development in the Eastern Caribbean over the years. These factors are physical factors over which the community can have no control and sociological factors over which, with effort, it would be possible to exercise some degree of control.

Physical factors affecting fisheries potential in the area are primary productivity and bathymetry. Although it has been stated that the Caribbean Sea is one of the best known areas, there has been comparatively little work done on measures of primary productivity in the Eastern Caribbean. Those that are available indicate levels comparable with the most barren areas of the world's oceans. Figures appear to range from 50 to 100 gC/m<sup>2</sup>/year and it is possible that mean levels in the area may be even lower. Owing to the size of the individual island states, there is no significant nutrient input which might have major effect on primary productivity in coastal waters. On the other hand, there is always the possibility that there may be a faster turnover of organic matter, at least in some areas, and that there might also be higher secondary productivity than might be found at higher latitudes. Whatever the real situation might be, there is no doubt that overall productivity will be significantly lower in the Eastern Caribbean than say the continental shelf of South America between the Amazon mouth and Venezuela.

The second physical factor, the bathymetry of the area, must play a profound role in dictating the type of fishery practicable. As the bulk of the states in the Eastern Caribbean have narrow island shelves the possibility of developing demersal fisheries, such as have been developed in the Bahamas and Cuba, is remote. This means that for most of the island states fisheries will have to depend mainly on the inshore demersal and pelagic stocks associated with reefs or bays and on the offshore pelagic stocks.

Undoubtedly any group of scientists discussing the subject of fisheries productivity in the Caribbean area will generate a wide range of opinions. One view-point frequently expressed is that production can be increased significantly. This viewpoint is largely speculative for the simple reason that there has not yet been made any reliable stock assessment study, even in those countries which have fisheries departments. Putting it more bluntly,

the only way anyone will ever know what is possible will be by getting out there and trying to increase catches.

The sociological factors generally are of considerable importance. Although all of the islands of the Eastern Caribbean share a similar, if not common, history, the present situation has become incredibly complicated politically. At the southern end of the islands is the Republic of Trinidad and Tobago with an area of about 6000 sq. km. and with a population in excess of 1.2 million, while at the northern region is the crown colony of Montserrat with an area of 100 sq. km. and a population of 14 thousand people. In between there are fully independent states, some embracing more than one island, one an overseas department of France, and some states still in association with metropolitan countries. To complicate the picture three different languages are used. Clearly a country such as Trinidad and Tobago or Barbados, both with currently viable economies, can develop its own strategies for fisheries development in its respective spheres of influence. What, however, is the prospect for an island such as Montserrat with an agricultural economy dependent for services on the United Kingdom? Even in the larger states, such as Dominica, it would be extremely unlikely that on its own resource such a state could procure even a simple fish processing plant.

Fisheries in most of these island states have developed over the years from subsistence fishing in agricultural communities. Well organized and productive artisanal fisheries may be found in places, such as Barbados and Trinidad and Tobago, but even in these countries there is still a very strong relationship between fishing and agriculture. In Trinidad, for example, most artisanal fishermen operating along the north coast are also small scale farmers. One might therefore expect a considerable degree of conservatism amongst fishing folk. It goes without saying that if something is seen to be profitable people will continue to pursue that activity in that particular way. The core of any development program will not be a scientific study but rather a demonstration of operations which will put more money into the fisherman's pocket.

This author suggests that there are a number of strategies which might be employed in the region. One strategy which might be applicable to the smaller states from Anguilla to Grenada, and excluding Barbados and Trinidad and Tobago, would be to concentrate on refinement of artisanal fisheries for reef resources, coastal pelagic species and offshore pelagic species. Such a strategy would assume comparatively slight modification of fishing craft and gear, but some considerable modification of marketing and inter-island trade. Such a strategy would not necessitate heavy capital investment in offshore fishing craft gear.

Assuming that fisheries development in the Eastern Caribbean will be largely through development of artisanal fisheries, it is next necessary to identify the particular types of fisheries which could be developed. On the basis of available information the following prospects may be listed:

*Offshore Pelagic Fisheries particularly for Kingfish, Dolphin, Wahoo and Flying Fish.*—The development of fisheries for these resources could, in fact,

follow different paths. For example, in countries where there are already well developed tourist industries, emphasis could in part be in development of this resource for sport fisheries. This kind of activity has already proven to be economically viable in Barbados. At the same time in the absence of any demand for sports fisheries, there is no doubt that this resource could be exploited for fish for human consumption.

*Coastal Pelagic Fisheries.*—Carangids form a prominent element in shallow water throughout the Caribbean. In some countries, notably Grenada, small carangids form an important part of total catches and are much in demand. Moreover there are still unknown clupeid resources which are fished on a casual basis, in many instances employing cast nets. Surveys in the area over the past few years indicate some prospects for further exploitation. It must be emphasized that a resource insignificant to one community may in fact prove to be highly significant in another especially where there are major differences in size or in state of economic development. There is always the possibility of reducing mixed catches of coastal pelagics to a crude meal which might even be produced using solar energy. Most of the countries in the Eastern Caribbean continue to import fish meal for stock feeds.

*Demersal Fisheries.*—In all of the island states there appears to be some degree of overfishing of premium species, such as snappers. There are, however, potential resources for demersal fisheries on the offshore banks of Saba. Development of these resources would require fairly heavy capital inputs for craft capable of exploring the banks.

*Marine Invertebrates.*—The principal marine invertebrates used in the area include spiny lobsters, conchs and sea urchins. Generally these resources are over exploited but there is no reason why they should not be brought under some degree of management or culture.

*Mariculture of Fish and Invertebrates.*—Much discussion has taken place concerning the prospect for mariculture in coastal lagoons in the area. Undoubtedly mariculture should be made to pay in ideal conditions. Recognizing the state of technological development of the Eastern Caribbean countries, great care would have to be exercised in introduction of new techniques of food production. Possibly this might be achieved through a gradual transition, first from extensive cultivation of perhaps one species, such as *Strombus gigas*, under semi-wild conditions to more intensive methods in specially constructed ponds.

*Marine Algae.*—Gracilaria is an important part of the diet in the Eastern Caribbean. At present this resource is simply harvested from the wild. It should not prove too difficult to cultivate the various algal species.

Accepting the emphasis on refinement of artisanal activities and assuming that there are some prospects for increasing production, it is necessary to examine the possible administrative arrangements which might be made to stimulate the process of development. There are a number of possible approaches. Individual countries in the area might approach their fisheries development employing a single country program. Such an approach is not

likely to be effective in most cases simply because few countries in the area have the trained manpower that would be necessary. Assuming that it would be possible to obtain some co-operation between countries there would still be immense problems, especially in the smaller states at the northern end of the region.

Another approach which might be employed is to place regional fisheries development directly in the hands of an international organization, such as WECAFC. Already WECAFC has given some attention to this possibility and has proposed the establishment of a fisheries committee in the Eastern Caribbean. This approach may be useful in some respects but is not likely to have any major effect on fisheries development. International commissions are extremely costly and are principally regulatory bodies. While there may be instances where such activities have produced success, these have been few. Certainly in the Caribbean region one can hardly identify a single positive advance which may clearly be identified with the United Nations' special organizations. On the other hand, the development of the flying fish industry in Barbados and of shrimp trawling in Trinidad and Tobago, both of which have been notable successes, have had no inputs from these bodies. It must be emphasized that while these comments may appear unduly harsh this is not to say that the international organizations have no role to play. There is no doubt that they have a critical role to play in assisting indigenous organizations in the developmental procedures.

The approach favored by this author is to place certain aspects of the developmental process in the hands of a special fisheries unit which might be established for LDCs of the Eastern Caribbean. This unit would have as its first task to set up an actual demonstration of the use of improved techniques both of catching and marketing fish in an artisanal fishing community.

A unit of the type proposed should be managed through an advisory council, consisting mainly of the regional governments, the U.W.I. and the Caribbean Development Bank with UNDP and WECAFC representation. The unit should also have a board of management of somewhat smaller membership drawn from the regions which would be concerned essentially with the operation of the unit. Although at this stage it would be possible to draft extremely wide terms of references for such a unit, it would be far better to have fewer clearer objectives. It is suggested here that the unit should be concerned primarily with the following: (1) Establishment of developmental models for island fisheries, (2) Monitoring of trade in fish and marine products in the countries served, (3) Conducting resource assessment studies, and (4) Establishment of a fisheries statistical service for the Eastern Caribbean LDCs.

In addition to the basic functions outlined above the unit should be involved in a number of ad hoc activities including: (a) Organization of training programs for artisanal fishermen, (b) Advising regional bodies and commercial interests on fishing problems, (c) Conducting surveys for individual governments served, (d) Initiating problem-solving exercised for individual countries, and (e) Advising individual governments on fisheries development generally.

The fisheries unit, if it is to perform the minimal functions outlined above,

should have a professional establishment including a director, a fisheries technologist, a fisheries economist, a fisheries biologist, a master fisherman and a training officer. In addition, it should also have supporting administrative staff. Such an establishment will cost money and there is no doubt that aid foundations will hardly support permanent recurrent costs. It is suggested here that it is not the intention to seek aid to support the unit one hundred percent but that the regional governments must make some financial commitment to the unit for a substantial part of the recurrent costs. As will be shown later it may be possible to arrange this commitment. All of the states in the region have staff assigned to fisheries. In some instances the first university graduates have been appointed. It is absolutely essential that a formula be found which would permit fisheries officers or fisheries assistants of the various countries to spend extended periods on secondment to the fisheries unit.

Although it will be difficult to achieve, financial commitment from the regional governments is a possibility. A good example of what might be achieved may be found in the sub-regional body, the Caribbean Agricultural Research and Development Institute. This body services the English-speaking countries from Belize in the west to Guyana in the east. The Institute is funded from a core budget provided from the member countries and from special project funds. Donor agencies current funding CARDI projects include the United States Agency for International Development, the European Development Fund of the European Economic Community, International Development Research Centre, Caribbean Development Bank, Canadian International Development Agency, United Nations Development Programme, Food and Agriculture Organization of the United Nations, Overseas Development Administration (U.K.) and Barclay's Bank International. CARDI has a professional staff of about fifty and a technical support staff of about ninety. Although it is based in Trinidad and Tobago it has physical facilities and human resources present in each member country. Among its objectives CARDI provides a research and development service to the agricultural sector of the member countries and provides and extends the application of new technologies in production, processing, storage and distribution of new agricultural products for member countries.

Given the political complexity of the Eastern Caribbean, siting of such a unit may present intractable but not necessarily insoluble problems. It is the view of this author that a fisheries unit might be sited with a main base in Antigua with sub-units in the southern part of the Caribbean, possibly in St. Lucia. The argument for basing the unit in Antigua is partly on the basis of ease of communication and because of its closeness to the potential demersal resources of the Saba bank. The unit would not require very extensive laboratory facilities but would require staff offices and good work-shop/gear-handling facilities. It would also require full-time use of an inshore multiple-purpose vessel which could be moved from country to country if necessary. Any offshore work which might be necessary could be done employing ship time from bilateral arrangements with countries, such as Cuba, Mexico, Venezuela and the United States. In essence, what is being proposed is a fisheries equivalent of a CARDI demonstration unit.