

The Fisheries of the OECS Member States: Some Management Considerations

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ABSTRACT

The fisheries of the Organization of Eastern Caribbean States (OECS) members exploit an extremely diverse resource base using a wide variety of fishing vessels. While some species are considered to be fully- or over-exploited, there may be scope for expansion of the fisheries for others. Fishing has contributed an average of 1.89% to national Gross Domestic Products between 1977 and 1988, with landings being on average 972.7 metric tonnes per country per year. Average total catches for those countries was at least 4837 metric tonnes per year from 1986 to 1990. Among OECS Member States, the OECS Secretariat and Fisheries Unit provide appropriate mechanisms for co-operative management of these fisheries resources. The degree of complexity of assessment approaches depends on the management regime(s) agreed upon by the countries involved.

THE RESOURCES

The fisheries of the Organisation of Eastern Caribbean States (OECS) exploit many species having a variety of life histories, distributions, abundances, etc. This extremely diverse resource base is exploited by a wide variety of fishing vessels and gear ranging from small-scale canoes to (more recently) larger commercial-type vessels. Mahon (1990) has noted that the fisheries of greatest importance to this region are for lobster, conch, reef fish, deep slope and bank fishes, and offshore (large) pelagics, with coastal pelagics, sea turtles, sea urchins, whales and porpoises, and seaweeds being of lesser importance.

Lobster is a high priced resource distributed on the island shelves. Most are either exported or sold to hotels and restaurants for tourist consumption. Rough estimates of potential yield (Mahon, 1990) indicate values of over US \$2 million for export and over US \$10 million for restaurant retail. Lobster are considered to be fully-or over-exploited throughout the region, with areas of severe local depletion. Conch are fished on island shelves and, owing to their high value, are either exported or sold to hotels and restaurants for tourist consumption. Estimates of potential yield suggest values of over US \$3 million and US \$30 million for exports and restaurant retail respectively. Like the lobster, the conch resource is considered to be fully- or over-exploited within the region (Mahon, 1990). Growth overfishing has probably occurred in most areas and, also like the

lobster, young conch inhabit inshore habitats which are subject to human destruction and degradation.

Trap and handline fisheries for reef and shallow shelf fish are among the most socio-economically important among OECS Member States. Reef fisheries resources are considered to be over-exploited throughout the region, with the possible exception of a few islands with large shelves. The evidence for this is low catch per trap, small size of fish and the scarcity of the larger, more valuable species (Mahon, 1990; Murray, 1985). Deep slope and bank fishes are harvested primarily with traps and handlines. While there are suggestions of local depletion in the region, there is no reliable information on the state of exploitation of these resources. There may be scope for expansion of these fisheries (Murray and Charles, 1991).

Offshore pelagics have been considered to hold the greatest potential for fishery development in the region, as well as being the target of one of the fastest growing fisheries in the Caribbean (Hunte, 1985). Most OECS Member States appear to be intent on increasing their effort in these fisheries. A number of these species (e.g. tunas, billfishes, dolphinfish, wahoo, king mackerel, sharks) are exploited on the same pelagic trips, often together with flying fish. Landings and catch-per-unit effort for these pelagics in the eastern Caribbean are highly variable from one season to another (Mahon *et al.*, 1990). This variability is characteristic of the fisheries and must be taken into account in any management strategy. In most of the southern Member States of the OECS flyingfish, *Hirundichthys affinis*, is an important component of the catch. Northern islands have given consideration to the possibility of starting fisheries for this species. A common stock is probably shared by the southern OECS Member States, Barbados and Tobago (Oxenford, 1992). If a common stock is in fact the case, the fate of the resource and the extension of the fishery could depend largely on management measures implemented on a regional basis. It is being suggested that there is potential for development of the flyingfish fishery to target species other than *H. affinis* (Oxenford *et al.*, Hunte and Mahon, 1992). Fisheries for coastal pelagics vary considerably in importance among the islands. Although several islands report declining catches of these species, the extent of the decline has not been documented (Mahon, 1990).

Four species of marine sea turtles are commonly encountered in the Eastern Caribbean. All are long lived and late maturing, and must return to the beach to lay their eggs. Adults are captured at sea and on the beach while nesting, whereas eggs are known to be harvested from nests. These characteristics make sea turtle populations particularly susceptible to overexploitation. It is in fact believed that all species are already severely overexploited, or impacted by nesting beach degradation, throughout the wider Western Central Atlantic region (Mahon, 1990).

Sharks are susceptible to overexploitation at relatively low fishing mortalities. The fact that shark is not a preferred fish among consumers in the region, has deterred investment in fisheries specifically for these species (*ibid.*).

Sea urchins support small-scale fisheries in the OECS Member States where the gonads are a consumer delicacy. As sea urchin fisheries develop in other islands the pattern of exploitation seen in, for example Barbados and St. Lucia, is likely to be repeated. It is thus risky to develop fisheries for export markets without mechanisms for controlling exploitation. St. Lucia has recently had reasonable success with a method based on the active participation of the harvesters in the management decision-making process. On the average across OECS Member States, fishing has contributed $1.89 + 0.21\%$, ranging from 0.2% in Montserrat in 1979 to 5.1% in Antigua/Barbuda in 1978, to overall national Gross Domestic Products between 1977 and 1988. Landings data from six of the eight OECS States suggest that these States landed an average of 972.7 metric tonnes per country per year between 1978 and 1991 with an average total catch among the six States of at least 4837 metric tonnes per year from 1986 to 1990 (Figures 2 to 7; note that absent data means unavailable data rather than zero catch/exports/imports).

Management Considerations

Rothschild (1973) has noted that

“if management is to be developed from a rationale that includes inter alia biological, political, social and economic considerations, then management must appreciate biological, political, social and economic objectives. Optimizing any one of these may produce advice that is totally unrealistic... Additional problems are generated when we remember that the questions of interrelationships among objectives must extend among states that are at different stages of development as well as those with differing economic ideologies... Economic objectives involve questions of economic efficiency, the relation between marginal cost and marginal value, and the fact that the return on investment should be favourable when compared with alternative investments... The biological objectives (involve) related questions of stock and recruitment, yield per recruit, and the relation between catch and effort.”

Patterson (1991) points out that

“the real management goal in most fisheries is a complex minimization: the point of least political pressure on the fisheries manager. In most situations, this is achieved by maximizing access at the expense of profitability for the

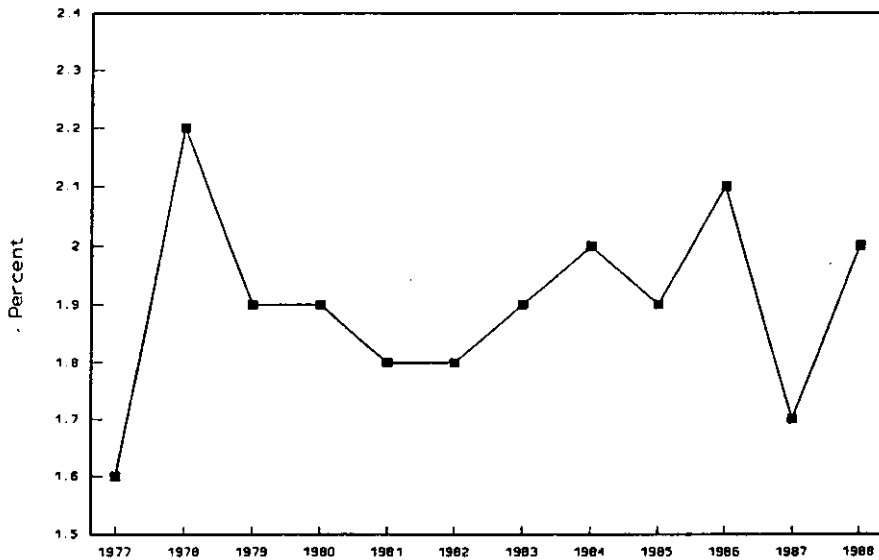


Figure 1. Average GDP as a percentage of national total for OECS Member States.

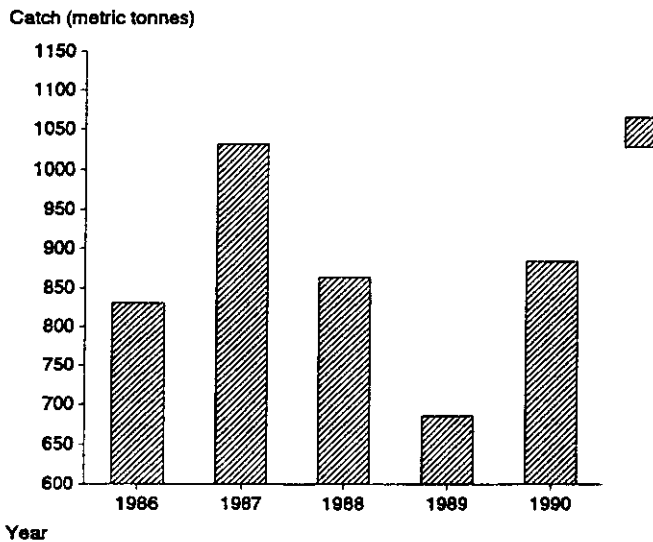


Figure 2. Estimated catch for Antigua / Barbuda, 1986-1990.

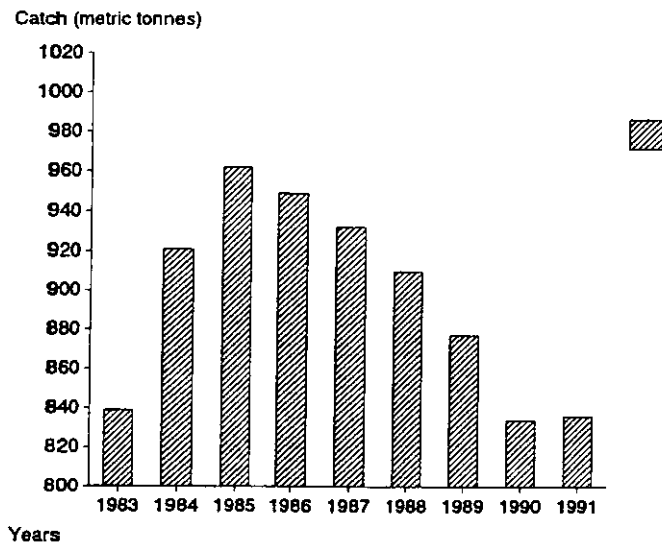


Figure 3. Estimated catch for the British Virgin Islands, 1981-1991. (note: catch based on estimated catch rates).

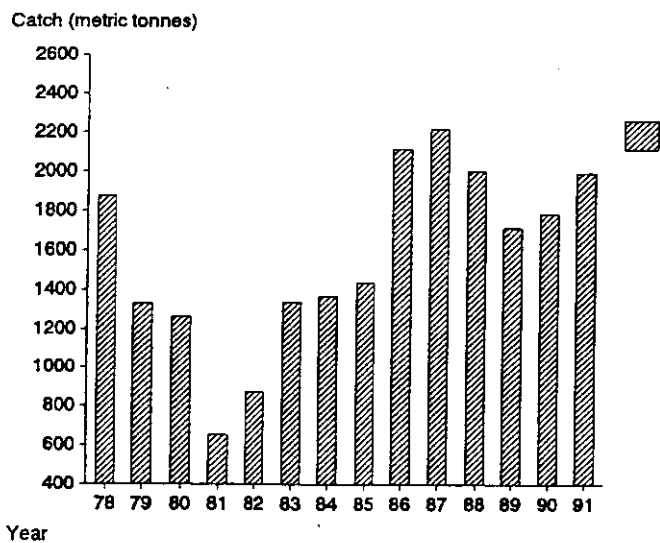


Figure 4. Estimated catch for Grenada, 1978-1991.

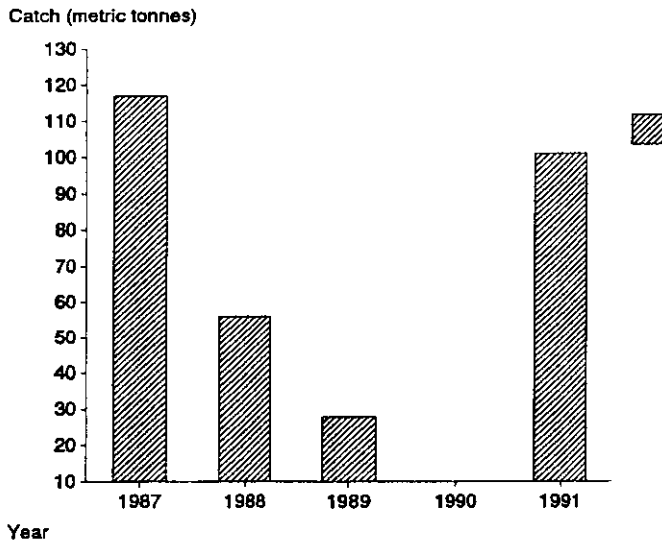


Figure 5. Estimated catch for Monserrat, 1987-1992. (note: catch based on estimated catch rates).

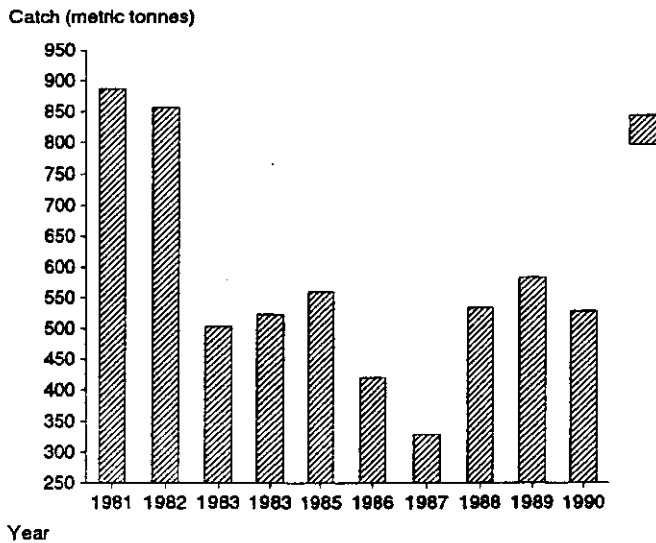


Figure 6. Estimated catch for St. Lucia, 1981-1990.

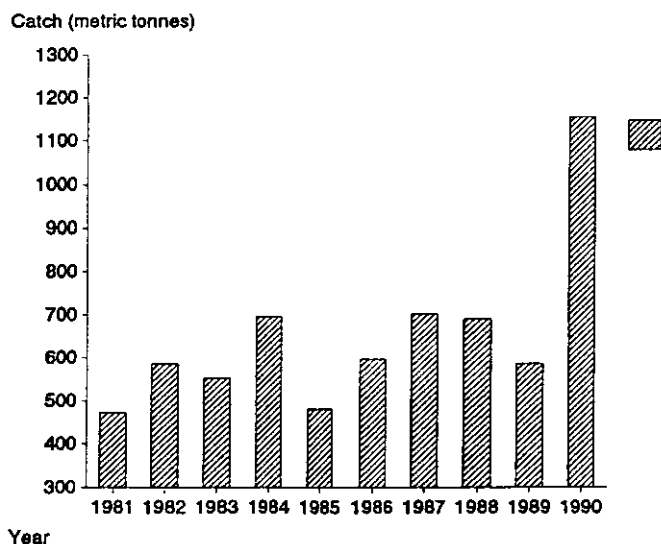


Figure 7. Estimated catch for St. Vincent and the Grenadines, 1981-1991.

participants. Conversely, maximizing profitability at the expense of access is likely to generate increased political unease, generated by the potential fishermen who see a profitable fishery from which they are excluded. This seems to be why fisheries management objectives are determined principally by biological limitations of the resource and by political pressures..."

Following on this then, the regulation of fisheries generally proceeds along one or both of two major avenues. The first is the limitation of the amount or the size of fish caught (directly or indirectly) in order to protect the resources, or maintain it at some level of abundance which is best suited to the stated management objectives. The second is to regulate the way in which the catch is taken, in order to prevent overcapitalisation or to direct the development of the fishing along a path which is most likely to produce the stated objectives. Regional management strategies have to be considered in terms of short, medium and long term action. The specific forms, schemes and development programmes taken should, of course, depend on the specific case under study, with their content and form being sensitive to the context and the available alternatives (Panayotou, 1982). While there is a tendency to delay action

pending the availability of "better" information, in most instances there are immediate "common sense" actions which can be implemented on the basis of existing information. Given the uncertainty and variability associated with resource assessment, even long term management of certain resources may be most effectively achieved by the application of "common sense" measures and monitoring. This is indeed the case for the small-scale, multi-species fisheries which, although important as sources of food and employment, may not generate as much revenue relative to other sectors. In this way, the best available scientific information is utilised in determining appropriate management strategies.

The socio-economic aspects of large pelagic fisheries must also be considered. Two significant implications of their variability with regard to fishery development are of note. Encouraging investment in vessels and gear can, by making loans available, commit the fishermen to servicing loans regardless of the levels of catch (Mahon *et al.*, 1990). This, however, brings to mind Pauly's (1988) concept of "Malthusian overfishing", whereby fishermen who are faced with declining catches and who lack any other alternative, initiate wholesale resource destruction in their efforts to maintain their incomes and meet their financial commitments. Caution must always be taken to ensure that the investments encouraged do not give rise to this type of situation. With minimal commitment of finances, periods of low income can be weathered in a subsistence mode, but investment in boats and gear tends to commit the fishermen to fishing full-time in order to pay off their loans. At the same time, encouraging increased specialisation in one or two species as a developmental strategy, in increasing the dependence on catches from fewer species, would increase the variability in landings by individual fishing units. Mahon *et al.* (1992) have suggested for flyingfish that "if there is considerable interannual variability and yield cannot be predicted in any year, then the only appropriate approach to estimating levels of harvesting may be to simulate the risk of various levels, using the available information, and to determine an acceptable risk". This situation may very well have to be considered for the offshore pelagics in general.

The impact of converting fishermen from part-time, low-investment employment to full-time, high(er)-investment employment, must be evaluated as part of the fishery development planning process. However, in OPCS Member States, Fisheries "Divisions" are responsible for all aspects of fishery research, development and management at the local level. The responsibility for these activities is, however, usually vested in a very few individuals. Given the day to day priorities for the running of the fisheries there is very little time and manpower available for research related activities. Among OPCS Member States, the OPCS Secretariat and Fisheries Unit provide appropriate mechanisms for co-operative management of fisheries resources. This should go a long way

toward fulfilling the countries' responsibilities under the United Nations Convention on the Law of the Sea (UNCLOS). This convention, it must be remembered, gives coastal states sovereign rights over the resources of the Exclusive Economic Zone (EEZ: article 56) and it is the sole prerogative of that coastal state to determine the allowable catch of the living resources of the EEZ and to determine its own capacity to harvest these resources (article 62). In addition, one of the main duties of the coastal state is to ensure that the maintenance of the living resources in the EEZ is not endangered by overexploitation, and in this regard, the state has to adopt proper conservation and management measures (article 61). The Convention provides for states to take measures in order to co-ordinate and ensure the conservation and development of stocks where the same stock or stocks of associated species occur within the EEZs of two or more states, with the states utilising appropriate sub-regional or regional organisations in seeking to agree upon measures to be taken.

There are four main types of activity which would have to be a part of the strategy for managing fisheries stocks within the OECS region (cf. Mahon, 1987), namely: 1) definition of stocks, 2) stock assessment, 3) allocation or co-operative regulation, and 4) surveillance and enforcement. Given the problems inherent in defining regional stocks, it would be necessary to try several methods simultaneously. Notwithstanding this, in practical terms, it is necessary to have some agreed-upon units for management. In the absence of – and perhaps even in spite of – good biological information on stock structure, other criteria may be used in defining management units, for example fisheries or surveillance zones. The full range of stock assessment approaches used in managing national stocks can/may come into play in managing regional stocks. The degree of complexity required depends on the management approach agreed upon by the countries involved. If we assume a linear relationship between catch and effort, the two can be interconverted and allocations based on either. Effort allocation would simply involve limiting the number of boats allowed to each regional country. While this is a much cruder method than catch allocation, it would be considerably easier to monitor and enforce. The problem, however, would be the derivation of conversion coefficients between the catch rates of the different types of vessels and/or gear in the fisheries. As a result of this, allocation of catch is the much more commonly used approach (Mahon, 1987). The problem with this is that in order for it to work, it must be possible to monitor catches continuously, and to close the fishery when the allocation has been taken. The data and information systems of the OECS Fisheries Unit could provide the necessary focus for this. The primary limitation is that with the manpower shortage in regional fisheries divisions, there is no guarantee that the necessary data can/will be made available. When one considers that, for

example, the OECS treaty has no compliance clause, this constraint becomes even more likely to be valid.

In conclusion, without adequate surveillance and enforcement capability, none of the aforementioned approaches to regional fishery management will succeed. The efforts of the OECS Fisheries Unit with regard to the harmonization of the legal basis, the regulations, as well as the harmonization and sharing of surveillance activities may provide the required environment.

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