

Information and Data Needs for Marine Recreational Fisheries Development in the Caribbean

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This paper will (1) define marine recreational fisheries (MRF) development, (2) discuss its objectives and (3) enumerate data and information needs for achieving these objectives in a systematic fashion in the Caribbean. In addition to an integrated knowledge of technical information, a case will be made for a catalyst or "middleman" to stimulate MRF development activities. This MRF catalyst should have a good understanding of how government works if information and data are to be used in support of public and private MRF development efforts.

Fisheries development programs are generally designed to strengthen a nation's fishing industry and to increase the supply of domestically produced nutritious fish and fish products. The term fisheries development has traditionally been used only in reference to the commercial fishing industry. However, in the United States for example, the National Marine Fisheries Service (NMFS) adopted a marine recreational fisheries policy which has broadened fisheries development into the recreational fisheries arena as well (NMFS, 1981). Consequently Saltonstall-Kennedy funds are available for research and development projects addressed to any aspect of the U.S. fishery involving the U.S. fishing industry (recreational and commercial) (U.S. Department of Commerce, 1979).

Some of the objectives of the NMFS fisheries development policy are useful for understanding MRF development as it might be carried out in the Caribbean. Specifically, the NMFS aims to: "Encourage development and growth of the domestic fishing industry in order to provide increased employment opportunities, improve the economic well-being of fisheries dependent communities and increase the supply of economically priced fish and fish products to U.S. consumers" (U.S. Department of Commerce, 1979, p. 65807). By strengthening the MRF industry in the Caribbean in support of the overall tourism industry, these same kind of benefits can be produced as well. The MRF-tourism linkages have been addressed previously by Ditton (1978). Gunn (1979) refers to public resources like fishery resources as attractions which provide the necessary "energizing power" for the variety of other tourism components. As Gunn suggests, tourism should be viewed as a functional system rather than a series of mutually exclusive and unrelated units (Fig. 1). The relationships between attractions (in this case, fishery resources and the resultant sport fishing experiences), communities of service and transportation—access linkages need to be recognized and built upon if tourism is to be successful. Additional tourists can be attracted to visit the Caribbean if fishing opportunities are more widely publicized. The economic impacts of recreational fishing activity are well documented (Ditton et al., 1980; Bell et al., 1982) and therefore, coastal communities and their residents can expect to reap economic benefits from this increased activity. Because of the difficulty involved in taking fish home, tourists will likely leave their fish and this will provide an additional source of protein for local residents.

In addition, fisheries development is concerned with lowering foreign trade deficits and providing consumers with a better quality of nutritious fish products. Both of these objectives can be accomplished through MRF development in the Carib-

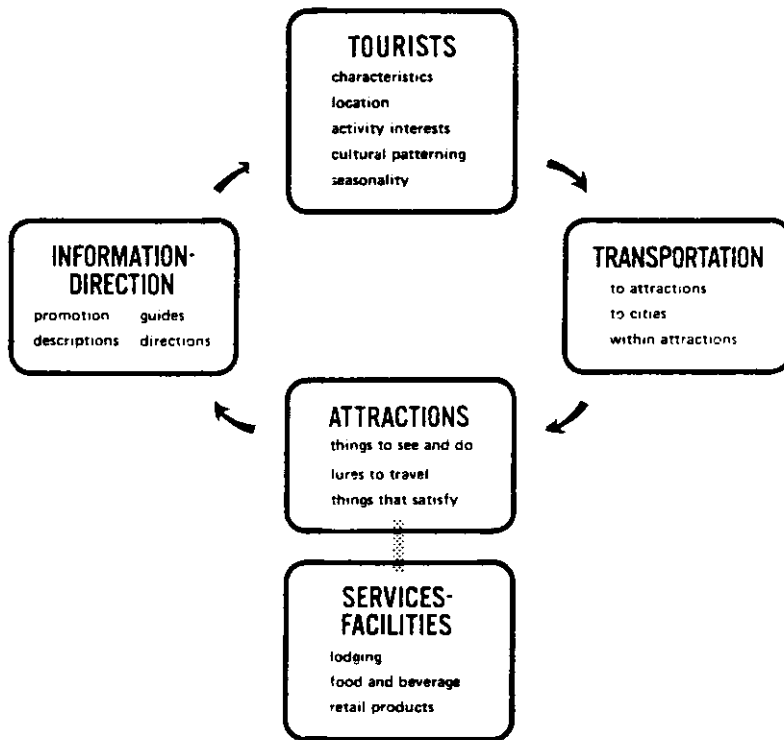


Figure 1. The tourism functional system. Source: Clare A. Gunn, *Tourism planning*, 1979, p. 36, by permission of the author.

bean. As MRF opportunities are enhanced so too is the nation's tourism industry; as more people visit, more money is spent in the nation and the overall economy is enhanced. Tourism expenditures can play a major role in enhancing the balance of payments situation between nations (Burkart and Medlik, 1974).

Fisheries development in the U.S. also seeks to: Encourage the development of non-traditional fish resources, strengthen the long term viability of the industry and reduce reliance on traditional fish resources already harvested at optimum yield. MRF development requires a careful determination of target fisheries so as to produce a sustained yield of fishing opportunities and continuing support for the marine recreational fishing industry and infrastructure that might develop. Fish stocks need to be carefully evaluated and targeted if meaningful MRF development is to take place.

SOME PRELIMINARY OBSERVATIONS AND ASSUMPTIONS

1. It is widely recognized that MRF is an important source of food and stimulus to local and regional economies (Atlantic States Marine Fisheries Commission et al, 1977; Centaur Management Consultants, Inc, 1977).

2. In this paper we assumed that research and data collection funds were limited in the Caribbean (as they are everywhere) and therefore only essential information needs were stressed.

3. There are good reasons for taking a comprehensive view of one's fishing industry (commercial and recreational). Instead of focusing on the conflicts between the two sectors it may be useful to focus on commonalities if development efforts are to

be optimized. For example, many sport fishermen would find it difficult to go fishing without the services of the commercial bait fisherman. The commercial party boat and charter boat operator often serves as a first-handler for the fishermen who do not want to take their fish home. Other services like ice, repairs and equipment sales often support both the commercial and recreational fishing sectors. This symbiotic relationship, or the potential for one, needs to be considered fully in fisheries development efforts.

4. Economists have helped us to understand that there are significant differences in output between the commercial and recreational fishing sectors (Clawson and Knetsch, 1966; Crutchfield and MacFarlane, 1968). In the former case, the desired product is fish; in the latter case the output is recreational fishing activity. The latter requires some coordination between a variety of public and private interests to ensure that recreational fishing experiences are satisfying and well regarded by participants. Clearly, the output of MRF development is a more complex phenomenon than its commercial fishing counterpart.

5. Likewise, the recreational fishing industry is more fragmented than the commercial sector. Often, those businessmen that might be considered part of the recreational fishing or tourism industries might not consider themselves a part of these industries. Again there is a need for coordination and a systems perspective if MRF are to be developed and satisfying recreational fishing experiences produced.

6. There are appropriate public and private sector roles in MRF development. Neither sector can provide all that is needed to optimize MRF development; there needs to be a well-considered public/private partnership of effort and resources in order to develop MRF in the Caribbean. Each sector needs to be carefully evaluated in terms of its strengths and weaknesses and an action plan formulated for MRF development. Some matters are best accomplished through existing fisheries management and tourism development agencies; other matters are best left to private sector interests who with access to public and private information can participate effectively in MRF development efforts.

7. In this paper we make the assumption that MRF are being developed as an attraction for tourists and other visitors as part of ongoing tourism and economic development activities. This is not to diminish the importance of recreational and subsistence fishing by a nation's residents. Presumably, these interests are well cared for by the fisheries management agency.

TECHNICAL INFORMATION NEEDS

Four components of technical information and understanding will be discussed: information about fishery resources, MRF and tourism infrastructure support, fishing participation by residents and tourists and the public policy framework within which MRF development takes place.

Fishery Information and Data Needs

What kinds of information are required to decide which fisheries should and should not be developed? Initially, it must be determined which fishery resources hold an attraction for visiting fishermen. Next, a body of knowledge is required concerning the dynamics of these fish populations: "This includes an understanding of the mechanisms by which fish stocks are produced and how their numbers are regulated; also of the effects of fishing on a stock, and the kinds, qualities and sizes of fish that can be taken on a continuing basis by different amounts or kinds of fish-

ing" (Ricker, 1977, p. 2). The relevant biological statistics of a fish population according to Ricker (1975) include (1) the abundance of the population, (2) the total mortality rate at successive stages, (3) the fraction of total mortality attributable to fishing and natural causes, (4) the rate of growth of individual fish, (5) the rate of reproduction and (6) the overall rate of surplus production of the stock. Estimates of growth and mortality of the stocks are basic information for a determination of whether there is a sufficient supply of animals to support MRF development efforts. Normally, commercial landings information is used to determine trends in the fishery. Such information is relatively cheap to collect and readily available. This information is not without problems as trends in the data may reflect changes in gear, technique and effort and not actual trends in the stocks. Also, the fishery targeted for MRF development may not have been previously exploited by commercials. As a consequence, there may be no commercial landings data available for the fishery selected for MRF development. Instead of using commercial landings data, a series of independent assessments of growth and mortality are recommended to determine whether stocks are sufficient to support MRF.

Which fishery resources are already being targeted by commercial and local subsistence fishermen? Is there room in these fisheries for MRF development and/or are there other fisheries that may appeal to tourists? Other speakers participating in this program are more capable of identifying abundant and under-utilized fishery resources that may appeal to sportsmen visiting the Caribbean. An effort should be made to understand which species presently attract tourists and which would be attractive if the necessary infrastructure was in place.

MRF and Tourism Infrastructure Support and Information

Before the MRF industry and the overall tourism system can be enhanced, each individual component should be described and understood. For example, when tourists are attracted to an area for its particular fishery resources, services and facilities need to be provided for a viable tourism system. In addition to the normal tourism infrastructure (hotels, motels, restaurants, campgrounds, gasoline stations, food stores, retail shops and the like), there needs to be a sufficient supply of sport fishing support facilities and services (marinas, charter and party boats, bait and tackle shops, fishing guides, boat rental and launch ramps fishing piers and artificial reefs). Figure 2 shows some of the business channels involved in serving recreational fishermen. Studies of expenditures made by recreational fishermen (Ditton et al., 1980, Texas Department of Water Resources, 1979) provide some insight into the importance of major business sectors that support this group. For example, offshore fishing expenditures in the Houston-Galveston area by expenditure category (in descending order of expenditure) were for: gas and oil for boat, land-based transportation, snack foods and beverages, bait, restaurants, tackle and equipment, ice, boat slip fees and lodging (Ditton et al., 1980). Without this business base, sport fishing, regardless of the availability of fish stocks, will be negligible.

Once the systems approach is recognized, it is necessary to inventory the extent of sport fishing-related services and facilities mentioned previously. If MRF have not been developed to any great extent previously, this will not be a major task. It is nevertheless important if government and business are to understand the voids in facilities and services and plan to overcome them. Those sport fishing services and facilities, in close proximity to the rest of the tourism infrastructure and with good transportation access, should be identified and basic information reported in a consistent format. Information can be gathered, first, through secondary materials and, second, through field inspection. Appropriate information categories for a marina

inventory might include: type of marina (public agency marina, commercial marina or private facility); number of boat slips; availability of marine fuel sales, boat storage, repair services and the like; presence of a restaurant; hotel accommodations available nearby; name of owner/operator; location and address of marina; telephone number and number of people employed by the marina. Similarly, for a charter and party boat inventory, the appropriate information categories might be: name of the vessel; registration or documentation number; name of captain or owner; port of operation; whether it is a charter or party boat; mailing address and telephone number.

An effort also needs to be made to collect copies of the materials used to publicize MRF facilities and opportunities. In this way an assessment can be made of which fisheries are being promoted, whether there are sufficient materials and whether they are being targeted appropriately. And finally, with inventory and publicity materials in hand, the general locations of MRF facilities need to be evaluated in light

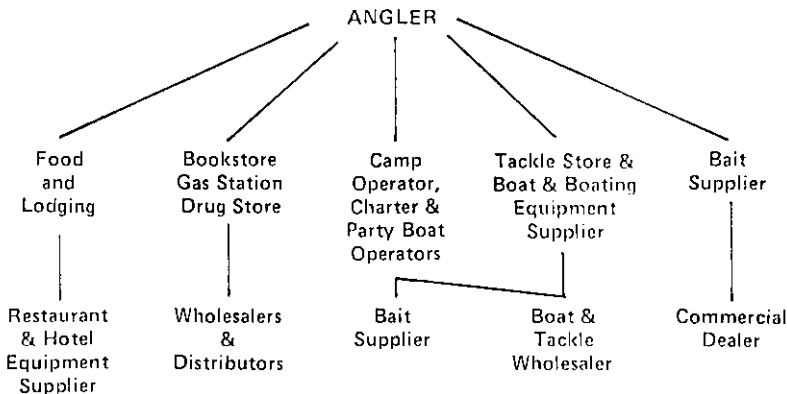


Figure 2. Various business channels involved in serving the angler. Source: Ellis et. al., 1958.

of where tourism infrastructure is generally located (are there major discrepancies?) and how accessible the area is in light of current and proposed transportation access. This effort will require an inventory of tourism infrastructure and transportation alternatives relative to existing or proposed centers of MRF activity.

Once these kinds of information have been collected through a consortium of effort by the appropriate fisheries or tourism agencies, it can be used by private investors to find "holes in the market" or opportunities for development and by public officials to assist private investors in their efforts. Also, those areas with strong infrastructure support can be promoted while technical assistance can be focused on other areas.

FISHING PARTICIPATION INFORMATION

Currently, in the United States, the NMFS is conducting a survey of resident salt-water fishermen that provides reliable estimates of recreational fishing participation, catch and effort. This information is to be used in various fishery management plans as support for resource allocation decisions. However, we have no information on those individuals who traveled to the United States who wanted to or who went fishing during their visit.¹ The NMFS recently awarded a Saltonstall-Kennedy grant

¹The U.S. Travel and Tourism Administration conducts a survey of international air travelers who have visited the United States. It is impossible to determine from this survey those who went fishing. In addition to a battery of standard socio-economic questions, respondents are asked which national parks they might have visited but there is no way to know which activities they participated in or what their vacation/recreation motivations were.

to the Sport Fishing Institute in Washington, D.C. to package materials about fishing opportunities in the U.S. for dissemination to visitors and potential visitors interested in fishing. Once this information is packaged, how will it be distributed to promote our fishing opportunities? Currently, at the national level it can be argued that we have insufficient information to know where our fishing visitors are coming from or are likely to come from. Our foreign recreational fishing markets are not very well understood.

Elsewhere, particularly in the Caribbean and Latin America, Departments of Tourism are particularly effective at the national level. As a result, information about visitors is collected routinely by those tourism authorities. In fact, detailed information about visitors has been collected routinely by these authorities for some time. If it is not already done so, an effort should be made to identify those tourists who plan to fish or who have been fishing on their visit to the Caribbean. Descriptive information on the who, what, when, where and how of tourist fishing can be particularly useful to developmental planning efforts. Further information relative to state and/or community of residence, age, occupation, nature of their social group, family income category and the reasons for their visit will be useful in segmenting foreign populations and targeting descriptive materials. Tourists with a potential interest in fishing in the Caribbean are not evenly distributed in the United States, for example, but rather are found in concentrations better understood with available social and economic information. If the data reveal that professional and business persons are attracted to fishing in the Caribbean, for example, efforts need to be made to target descriptive tourism and fishing-related materials to professional groups, associations and publications. Clearly, we are not just dealing with passive data acquisition efforts but rather the active targeting of information about available fisheries and infrastructures to potential fishing tourists by both government authorities and private interests. This will require coordination between fishery and tourism authorities and those in the private business community.

PUTTING IT ALL TOGETHER TO DEVELOP MRF

How is all this technical information tied together to achieve action and who does it? Clearly, MRF development requires a mix of public and private efforts. There needs to be action on all fronts. Hopefully, it will be in concert! There is a role here for an informed public catalyst or “middleman” who can bring the necessary partners together and help them to achieve results in meeting MRF development objectives.

Defining this role depends on the extent that MRF is recognized by the fisheries agency. For example, the task force that drafted the NMFS policy statement stated that it believed that “NMFS will be required to play three principal roles in dealing with MRF — that of a doer, a partner or a catalyst — depending on whether NMFS, under its authorities and mandates, has primary responsibility, shared responsibility or an undefined responsibility” (NMFS, 1981). The NMFS has responsibilities for data acquisition in pursuit of its management responsibilities. Individuals within the agency can be involved in collecting data and information that can be used in support of MRF development activities. Also, they can work as partners with representatives of other political subdivisions and with businesses where there is a rationale for federal involvement. More often, since state, local and private sector jurisdictions are involved, there is the need for the catalytic role where a key individual works with others to help them develop or enhance elements of the MRF-tourism system. The Recreational Development Services Branch of the NMFS Southeast Regional Of-

office is a shining example of this catalytic role in support of MRF development within a tourism context.

In addition to having an integrated knowledge of the technical expertise reviewed previously, the MRF catalyst should have a thorough understanding of how government works, in particular, permitting information and funding opportunities, and an ability to work within the government structure if public and private MRF development efforts are to be successful. Each nation and its various political subdivisions have a plethora of laws, regulations and administrative policies which affect MRF development activities and which need to be understood and mastered. MRF development efforts need to be outward rather than only focused within the agency. The MRF catalyst should have a thorough grounding in fisheries science at the undergraduate level. Further, this individual should have graduate level training which emphasizes an integrated knowledge of political science, management and finance, sociology, recreation resources development, tourism planning and development, statistics and computer science. An individual with this kind of training and experience can be effective in MRF development. As long as MRF development is pursued on a disciplinary, single agency or public sector basis, it is probably doomed to failure. MRF development activities require an integration of knowledge within and without government. MRF development requires an understanding of fishery resources, fishermen, the marine recreation fishing industry as well as the larger tourism industry and the political system that surrounds the development of common property fishery resources.

In the United States we have had limited experience in the MRF development arena. The recently approved Marine Recreational Fisheries Policy Statement (NMFS, 1981) is a positive step forward. We are beginning to acquire the information, inclination, personnel and will to develop our fisheries from a recreation and tourism perspective. Because tourism is a major national level concern in most Caribbean countries, it may be possible to develop the MRF-tourism linkage more effectively than in the United States. Where there is a will and an understanding of MRF development, there is a way.

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