

# **The Socio-economic Characterization of Tournament Anglers in Barbados**

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## **ABSTRACT**

Information on social and economic characteristics of eighty tournament anglers in Barbados was obtained by interviews covering social and economic profiles of anglers; fishing patterns and angler expectations; attitudes towards commercial fisheries and interactions with them; and attitudes towards fisheries management and management measures. Tournament anglers are mostly white males who seek large pelagic fish, especially dolphinfish and billfish, which are also targeted by commercial fishermen. Dolphin are prized for consumption, and billfish particularly for the sporting challenge. Anglers sell their fish at local markets, and report both catch and non-catch motives for fishing. The importance of non-catch reasons, such as relaxation, was greater and catch motives. Anglers supported the introduction of fisheries management measures such as size/length limits, catch and release, closed areas, and fishery closures. Due to the multi-species nature of the fisheries, and reasons for targeting these fish, anglers did not support bag limits or catch and release for the more marketable species. There are few conflicts between tournament anglers and commercial fishermen, but a major concern is the dwindling numbers of billfish caught. This is blamed on commercial longlining in Caribbean waters. Fisheries management planning in Barbados has ignored tournament anglers. This study facilitates their inclusion in management planning.

**KEY WORDS:** Anglers, Barbados, socio-economics

## **INTRODUCTION**

Most fisheries development efforts in the Caribbean, and efforts to acquire information for marine fisheries management, have focused on commercial fishing. Less attention has been paid to Marine Recreational Fishing (MRF), also called game-fishing or sport-fishing. This includes the tournament angling about which this paper is concerned.

In Barbados most sport fishermen report that fisheries managers lack an appreciation for the importance of MRF. This perception is strengthened by the fact

that the Barbados 1997-2000 Fisheries Management Plan (FMP) pays little attention to MRF, even though the 1993 Fisheries Act makes provision for the inclusion of sports fishing in fisheries management and development.

The tournament aspect of MRF in Barbados is believed by some anglers to be still at an early stage of development, but with potential to grow. An indicator of this growth has been the increase in the popularity of sport-fishing among locals and visitors, as reflected in an increase in the number of charter boat operators who provide recreational fishing experiences, mainly for tourists.

As MRF grows, there is concern that the harvest pressure applied, in addition to that of the commercial fishery, could lead to over exploitation of valuable target species. If the development of the fisheries sector is to be managed effectively, the MRF component needs to be incorporated into the whole planning process. The planning process requires knowledge not only of the biological status of the fisheries concerned, but also the social and economic components of the fishery. In Barbados, according to fisheries officers, information on the human element involved in MRF is scarce, and this has made it difficult to formulate policies and programs needed to guide its development.

In anticipation of the further development of MRF in Barbados, information on the human dimensions of the fishery is important. This entails assessing the attitudes, beliefs, motives, and preferences of people involved in MRF. Such information could help fisheries managers understand the variety of stakes that people have within the fishery in order to guide coordinated management and development of fisheries policies and plans in Barbados.

Furthermore, an understanding of MRF could be vital in regional planning for recreational fishing if, for example, coordinated and joint marketing of the fisheries were attempted in the context of conventional tourism or eco-tourism. Especially intriguing are the prospects of recreational fisheries that are structured and marketed in such fashion that angler satisfaction is not measured by catch rate or size of fish, and that fish caught are released with a high rate of survival. It is the human dimension that may determine whether or not such responsible recreational fisheries are feasible. This paper describes tournament anglers in Barbados in relation to:

- i) Social and economic profiles of individuals and their activities,
- ii) Fishing participation patterns and angler behavior,
- iii) Attitudes towards the commercial fisheries and interactions with them, and
- iv) Attitudes towards fisheries management and management measures.

## METHODS

A sample of 80 tournament anglers resident in Barbados was obtained from the membership list of 150 current members of the Barbados Game Fishing Association (BGFA). This is the principle body that organizes and regulates all game fishing competitions on the island. Most local tournament anglers are members of this association.

Since very little literature existed on tournament angling in Barbados, the researcher conducted two separate sets of interviews. In-depth interviews with key informants (7 male, 2 female) provided the background on tournament angling and for the second round of shorter interviews. Surveys were conducted between November 1999 and January 2000 as a graduate research project.

## RESULTS

### **Social and Economic Profile of Anglers**

Tournament anglers in Barbados comprise four ethnic groups, the largest of which is white (73.8% of the sample). The other anglers were of mixed race (16.3%), black (7.5%), and Indian (2.5%). The anglers in the sample were all male, and 63.8% were married. Anglers in the age group 26-35 years dominated the sample. The mean age was 33 years old. All the anglers interviewed had received formal education with just over half (58.5%) having attained secondary school or post-secondary school training. The majority (97%) of the anglers are employed within the private sector.

The modal annual income before taxes of the anglers ranges US\$20,000-\$30,000 and the annual income before taxes ranged between US\$10,000-\$40,000 for the entire sample. The modal (33.8%) annual expenditure of anglers on fishing was US\$500-\$2,500. Of the monies spent on fishing, about 75.1% of the anglers spend half or greater locally. On further analysis, comparing annual income earned with ethnicity and age, results showed that more than half of the white anglers earned between US\$20,000-\$45,000. Black anglers were clustered at both extremes of the income spectrum.

Relating age to income, and income spent on gamefishing, most anglers in the dominant age group (26-35 years) earn between US\$20,000- \$30,000, and spend less than \$2,500 annually on fishing. Most (75%) of the anglers who are 36-45 years old earn over \$15,000 annually, and close to a third (28%) spend over \$8,000 annually on fishing. All anglers 46-55 years old earn over \$30,000, and the majority (87%) of them spend \$3,000-\$7,500 annually on fishing.

### **Fishing Participation Patterns**

The majority (71.3%) of the tournament anglers fished regularly for sport 37 days per year, with an average of 10 days spent participating in organized competitions. Close to half of the anglers (48.8%) are involved in the sale of their catch and spend an average of 16 days fishing commercially (Table 1).

When anglers listed their three favorite target fish species in order of decreasing preference, dolphin was indicated as first choice (41.3%), wahoo as second choice (35%), with billfish third (23.8%). Pelagic fish are preferred over demersal species. As reasons for targeting dolphin, 47.5% of fishermen cited the challenge of catching the fish, others (28.8%) mentioned the palatability of the fish, while 7.5% associated

with sale of their catch. All anglers who indicated marlin as a first choice (28.8%) gave reasons to do with the challenge of the catch.

**Table 1.** Fishing days per year by type of fishing activity.

<b>Types of fishing activity</b>	<b>Mean no. of days fishing</b>
Game-fishing (in general)	40
Occasional (once in a while for fun)	3
Regular (often for fun)	37
Tournament (organised competition)	10
Charter boat (hired fishing tour)	6
Commercial (sale for income)	16
Others*	3
No. of respondents = 80	

\*Other types of fishing include; spin fishing, spear fishing, and pot fishing.

Those that sold their catch did so due to the need for income to offset the cost of maintenance and replacement of fishing paraphernalia, such as rods, reels, lures, hooks and maintenance of the fishing boat. Most of the fish sold is disposed of at dockside, at local fish markets, or sold from home. Most anglers who sell fish have regular customers. Dolphin, wahoo, and marlin, which dominate as fishes of choice, are also important to commercial fishing in Barbados.

For the majority (85%) of the anglers, their fishing activity started generally before the age of 15 years old. The mode of introduction into game fishing was mainly by family (55%) and friends (43%). Just over half (58%) of the anglers own a fishing vessel. Of these, 21% own a moses (dinghy), 20% own a pirogue, and 16% own cabin cruisers. The experience of going fishing in other parts of the world is important amongst Barbadian tournament anglers, as a majority (81%) have gone fishing in other countries. Of this group 76% have fished elsewhere in the eastern Caribbean, while 21% have also fished in the northern Caribbean.

### **Anglers' Motives and Attitudes**

Anglers were asked to rank nine motives for fishing according to their degree of importance. Three of these reasons were related to non-catch aspects of fishing while the other six were catch related. Overall, two non-catch related motives were rated most important. These were "relaxing with family and friends", which was rated slightly to extremely important by 98.5%, and "getting away from their daily routine" rated by 95.8% as slightly to extremely important.

The two most important catch related motives for fishing were, "to catch fish big or small" and "catching fish to eat" (Table 2).

Anglers were asked the extent to which they agreed or disagreed with statements on attitudes towards fish exploitation (Table 3). Most anglers agreed (either agreed or strongly agreed) to "the more I go fishing, the happier I am" (75%) and "a fishing trip can be successful even though no fish are caught" (87.6%). Fish

size and retention were important to about half of the sample. However while anglers were happy to release species such as marlin, they prefer to keep dolphin and wahoo.

Most anglers disagreed (disagreed or strongly disagreed) with the statements, "I want to keep all the fish I catch", "if I thought I would not catch anything, I would not go fishing", and "when I go fishing, I am not satisfied unless I catch something".

**Table 2.** Tournament anglers' reasons for fishing

Reasons for fishing	Extent of agreement/ disagreement (%) <sup>a</sup>					Total	
	1	2	3	4	5		
To catch fish big or small		6	13	24	25	33	100
Relaxing with family		1	4	8	21	66	100
Obtaining a trophy or prize fish		4	6	15	25	50	100
To get away from the daily routine		5	7	9	23	57	100
Challenge or sport		3	9	13	43	34	100
Seeking the thrill of fishing		0	0	19	44	38	100
To develop skill		1	23	24	16	19	100
		9					
Catching fish to eat		5	21	19	31	24	100
Catching fish to sell		2	26	19	16	11	100
		8					
To catch fish big or small		6	13	24	25	33	100

No. of respondents = 80

<sup>a</sup>1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important

### Attitudes Towards Commercial Fisheries and Interactions with Them

When anglers were asked about the ways in which game fishermen and commercial fishermen cooperated, 58.8% indicated assisting each other in times of distress. Other responses included providing each other bait (43.8%), informing each other about fishing area locations (41.3%), and informing each other about currents and tides (10%). About conflict with commercial fishermen, 72.5% indicated hostility while fishing around debris that aggregates fish, locally called riffles.

Other cases of friction between game and commercial fishermen include the destruction of unmarked or inadequately marked fishing gear, such as fish traps and fishing lines, by the game fishing boats and competition for sale of fish. Some anglers were also concerned about the impacts of commercial fishing, and foreign longlining in particular, on fish stocks.

Table 3. Tournament anglers attitudes towards fish exploitation

Attitude statements	Extent of agreement/ disagreement (%) <sup>a</sup>					Total
	1	2	3	4	5	
The more I fish the happier I am.	27.5	47.5	12.5	11.3	1.3	100
A fishing trip can be successful even though no fish is caught.	38.8	48.8	2.5	6.3	3.8	100
I would rather catch one or two big fish than ten small ones.	23.8	40.0	12.5	18.8	5.0	100
It does not matter to me the kind of fish I catch.	8.8	43.8	3.8	32.5	11.3	100
The bigger the fish I catch the better the fishing trip.	20.0	33.8	12.5	32.5	1.3	100
I am happy if I don't keep the fish I catch.	16.3	37.5	21.3	16.3	8.8	100
I want to keep all the fish I catch.	6.3	5.0	7.5	70.0	11.3	100
If I thought that I would not catch any fish I will not go fishing.	7.5	22.5	1.3	43.8	25.0	100
When I go fishing I am not satisfied unless I catch something.	5.0	6.3	3.8	58	27.5	100

No. of respondents = 80

\*1 = Strongly agree, 2 = Agree, 3 = Uncertain, 4 = Disagree, 5 = Strongly disagree

### Attitudes Towards Fisheries Management and Management Measures

Anglers were asked to indicate the extent of support or opposition for the use of four management tools for MRF. The majority of the anglers indicated support for the use of all management tools, with the exception of bag limits. For the latter 52.5% opposed use while 36.3% supported bag limits.

Comparing responses on bag limits with the responses on "catching fish to eat", 75% of those who considered eating their catch unimportant supported the use of bag limits, while much less (75%) opposed its use. Of the anglers that considered "catching fish to eat" important for going fishing, 53.94% opposed the use of bag limits, while 36.25% supported its use. When "catching fish to sell" was compared with opinions on the use of bag limits 53.45% of the anglers who considered the sale of fish important opposed the use of bag limits, while 34.48% supported it. Relating bag limits to fish of first choice, of those who chose marlin as a first choice, 52.1% supported use of bag limits. For those that chose dolphin 60.6% opposed the use of bag limits while only 21.2% supported the use of this tool.

## DISCUSSION

### **Social and Economic Profiles**

Tournament angling, like commercial fishing in Barbados and fishing generally, is primarily a male activity. Specific reasons for the low level of female involvement in tournament angling were not pursued, but some women have been champion anglers and held executive positions in the Barbados Gamefish Association.

The social and economic results partially support the popular stereotyping of game fishing as a recreational pastime for rich white Barbadians. Sections of the white community in Barbados, though in minority, are affluent and have a higher probability of participation in gamefishing on the basis of income alone since deep-sea tournament fishing is expensive. Income, however, may not be a major barrier to wider participation in tournaments, especially if boat ownership is excluded, since the level of incomes reported by anglers are earned by a wide ethnic cross-section of Barbadians. Low cost participation is possible in several of the local tournaments.

The process of socialization amongst family and friends, occurring in the context of colour and class groups, is also likely to be important. This is supported by the results showing that family introduced 55% of the tournament anglers to fishing while friends introduced 43%, but is only one perspective on a complex socioeconomic situation.

When sports fishing becomes better integrated into the fisheries management plan, fisheries authorities must deal with a greater diversity of clientele than they presently do now. However, the present relative lack of interaction between the BGFA and Fisheries Division suggests that these new clients may be more independent and need less assistance than those in commercial fisheries.

### **Fishing Activity and Expectations**

Tournament anglers in Barbados mostly target large oceanic pelagic fish of commercial importance, such as billfish, dolphin, and wahoo. Dolphin is the fish of choice for challenge and because it is rated high as a food fish that sells easily. Billfish, the prize game fish in other parts of the world, is rated second.

The sale of fish is a common practice amongst the Barbadian tournament anglers. Sales subsidize the cost of fishing, especially of fuel, which is the main expense. The sale of tournament fish does not usually impact on the commercial fishery because the quantities sold are small due to the limited size of the MRF fleet and number of days deep-sea fishing. However, an implication for fisheries management is that such practices have the potential to produce conflict between the fisheries, particularly in times of heavy landings from both sources which may leave markets in glut. Mike and Cowx (1996) report that, in Trinidad and Tobago, on several occasions sales from MRF have caused commercial fishers to dump their catch when some markets become locally saturated.

On the other hand many of the local game fishers hold the view that selling fish caught by MRF serves to meet part of the public demand for fish and lessens

dependency on fish importation into Barbados. It is important that the Fisheries Division obtain information on the quantity, composition and disposal of tournament landings. The Fisheries Act of 1993 makes provision for regulations to address these management requirements.

### **Motive and Attitudes Towards Fishing**

Motives for fishing are related to the satisfaction derived from catch and non-catch aspects of angling and its related activities (Knopf et al. 1973, Driver and Knopf 1976, Fedler 1984, Holland and Ditton 1992). The dimensions considered most important are the non-catch aspects of fishing related to relaxation, reflection-nostalgia and enjoying nature (Knopf et al. 1973, Buchanan 1983). However, Graefe and Fedler (1986), suggest that catch related motives are often more important in determining satisfaction and dissatisfaction amongst anglers. Results of this study show that, overall, anglers rate the non-catch reasons more important than the catch-related motives for fishing. However, when the reasons for fishing were grouped with species of first choice in Barbados, those who chose billfish were motivated more by the challenge aspect, while those who chose dolphin and wahoo were oriented towards consumption and sale of fish.

In studies conducted by Fedler and Ditton (1994) in the United States, when anglers were grouped by mode of fishing or target species, the relative importance of catch-related motives increased dramatically. In looking at the attitudes that anglers have towards exploitation, the majority of anglers were more interested in catching a few big fish than several small ones. This should be positive for management in that juvenile dolphin or wahoo are less likely to be sought after if the fishing is selective, but it emphasises the possibilities of interactions with the commercial fishery.

### **Attitudes towards commercial fishing**

Presently, the conflicts between tournament anglers and commercial fishers are minimal. Most of the friction occurs while fishing around debris where the target species are concentrated. However, despite the minimal conflict, there is need to resolve and manage for the existing situation before it escalates to broader conflict, especially if there is an increase in either tournament anglers or commercial fishermen. The Fisheries Division should encourage the BGFA and fisherfolk organisations to establish a process for conflict management. The Division could then facilitate or mediate rather than arbitrate unless there was no alternative.

Anglers were unhappy and concerned with their dwindling catches of billfish. They attribute the decline to the by-catch of longlining, and especially foreign tuna and swordfish longliners. To address this issue, a collaborative effort is needed in fisheries management and research among Caribbean countries to investigate these observations and perceptions with the aim of maintaining or improving the quality of angling experience. The matter of measuring the impacts of foreign fishing is an interest likely to be shared with the commercial fishery, and collaboration or information exchanges between the fisheries could serve to establish more common



ground. Another consideration is the trade-off between promoting an unregulated local longline fishery, as at present, and regulating billfish harvesting so as to enhance the recreational fishery, which could be steered more towards catch and release. These options should be considered in the Fisheries Management Plan.

### **Attitudes Towards Fisheries Management**

As the marine fisheries in Barbados continue to grow, tournament anglers appreciate that increasing pressure is exerted on the fishery resources, and therefore, precautionary management strategies and measures may be required via the implementation of various angling rules and regulations. They have witnessed the incorporation of more IGFA rules in their own tournaments and have instituted minimum retention weights.

With respect to catch and release, a large proportion of the anglers were uncertain about support for this because of the different reasons for targeting each species, a problem encountered more with multi-species than single-species fisheries. Anglers who agreed to the release of fish preferred to catch marlin. Those that preferred dolphin mostly disagreed with catch and release.

Similarly with bag limits, which received least support, the rationale for opposition relates to the consumption of fish as an important reason for fishing. Those that considered the sale of fish important or had dolphin as first choice were most opposed to the use of bag limits. These relationships point to consumption and sale as important elements to be considered in the management of MRF in Barbados for some species especially.

By examining motives and attitudes together with various management options for resource conservation, fisheries managers can devise comprehensive management and development programs to meet the anglers' and government's objectives for responsible fisheries. For example, for those who prefer to target billfish high emphasis should be placed on catch rates but low emphasis on retention. Such conservation practices may facilitate an ecotourism perspective (Holland et al. 1998). For fisheries managers to provide programs best suited for anglers, information is required on the different components of a fishing experience that contribute to angler satisfaction (Ditton 1996).

Caution should be exercised when generalizing results from motivation studies to provide programs for anglers because aggregate profiles may be misleading and obscure the diverse interests of anglers. As Shafer (1969) reminds, there is no such thing as an average angler. We should expect diversity in motivations and attitudes, and hence, there is a need to prioritise and compromise amongst angler and management objectives. In conclusion, this paper illustrates for fisheries management the importance of human dimension information about tournament anglers.

## LITERATURE CITED

- Buchanan, T. 1983. Towards an understanding of variability in satisfactions within activities. *Journal of Leisure Research*. 15:39-51.
- Ditton, R.B. 1996. Understanding the diversity among largemouth bass anglers; implications for managers. Pages 135-144 in: L.E. Miranda and D. R. Devries (eds.) *Multidimensional Approaches to Reservoir Fisheries Management*. American Fisheries Society, Symposium 16, Bethesda, Maryland USA.
- Driver, B.L and R.C. Knopf 1976. Temporary escape; one product of sports fishing management. *Fisheries* 1(2):24-29.
- Fedler, A.J. 1984. Elements of motivation and satisfaction in the marine recreational fishing experience. *Marine Recreational Fisheries* 9:75-84.
- Fedler, A.J, and R.B. Ditton. 1994. Understanding motivation in fisheries management. *Fisheries* 19(4):6-13.
- Fisheries Division. 1997. *Barbados Fisheries Management Plan*. Ministry of Agriculture and Rural Development, Government of Barbados. 68 pp.
- Graefe, A.R. and A.J. Fedler. 1986. Situational and subjective determinants of satisfaction in marine recreational angling. *Leisure Science* 8:275-295.
- Holland, S.M. and R.B. Ditton. 1992. Fishing satisfaction: A typology of anglers. *North American Journal of Fisheries Management* 12:28-33.
- Holland, S.M., R.B. Ditton and A.R. Graefe. 1998. An ecotourism perspective on billfish fisheries. *Journal of Sustainable Tourism* 6(2):97-116.
- Knopf, R.C., B.L. Driver and J.R. Bassett. 1973. Motivations for fishing. *Transactions North American Wildlife and Natural Resource Conference* 38: 191-204.
- Mike, A. and I.G. Cowx. 1996. A preliminary appraisal of the contribution of recreational fishing to the fisheries sector in north-west Trinidad. *Fisheries Management and Ecology* 3:219-228.
- Shafer, E.J. 1969. The average camper who does not exist. Research Paper NE-142. Upper Darby, Pennsylvania: USDA Forest Service, Northeast Forest Experiment Station.