

BILLFISH ANGLERS IN PUERTO RICO AND ON THE U.S. MAINLAND: UNDERSTANDING CULTURAL DIFFERENCES

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ABSTRACT

Social science has made advances in understanding variability in recreation behavior. While there has been a tendency to focus on the psychology of recreation behavior (Iso-Ahola 1980, Jackson 1973), the importance of culture or ethnicity and the role of the social group are also important (Williams and St. Peters 1977). Cheek and Burch (1976) present theory and empirical evidence to demonstrate that one of the fundamental characteristics of leisure is 'social' participation, usually with a primary group. They conclude that social participation is a fundamental element that distinguishes leisure from work. Most of us travel to and from work alone, or in the company of strangers. At work, we have limited ability to select those we work with. Neither is true in leisure activities where we have greater latitude in choosing who to participate with and often maintain a long term association, for example, as in the case of fishing 'buddies'.

INTRODUCTION

Empirically, social scientists have observed that rarely do people participate in leisure activities alone, even though they are potentially free to do so. Almost all recreational activities occur in the presence of a primary reference group and many occur in social settings where other people are present. In addition to this social milieu (Unruh 1979), the recreation participant has a choice of the type of social group to share the experience with, depending on their 'specialization' level. Specialization theory (Bryan 1977, Ditton, Loomis and Choi 1992) suggests that less experienced anglers will participate with family or unspecialized friends, while more experienced anglers will be very selective about who they fish with, choosing the company of other experienced anglers.

The effect of this tendency to socialize while engaging in recreation clearly is exhibited in recreational fishing. Fishing piers, recreational boats, charter/party boats and tournaments all involve social participation in fishing. Tournaments add a more overt form of competition. The presence of other people insures that social norms have an effect on behavior. These norms are rooted in the cultural origin of individual anglers.

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Cross cultural studies of anglers are rare (Carr and Williams 1993, Hutchinson 1988). Most studies report differences in participation based on race, which is a poor substitute for ethnicity, and participation frequencies which add little to our understanding of the reasons for or gradations of behavior. Given the importance of ethnicity in determining normative behavior and the influence of social organization on recreational fishing, this study was conducted to test for differences between billfish anglers from Puerto Rico and the mainland United States. Differences in culture and norms lead to a hypothesis that differences in fishing attitudes and behaviors are likely. However, due to a lack of understanding of specific culturally determined actions in leisure behaviors, distinctive hypotheses for recreational fishing behaviors are difficult to propose. This study was an exploratory attempt to identify differences in angling attitudes and behaviors between anglers of two distinct cultures.

METHODS

This study was based on secondary data analysis of survey results of two recent studies of billfish anglers (Fisher and Ditton 1992, Ditton and Clark 1994). Since there were no existing lists of billfish anglers, lists of registrants in 27 billfish tournaments hosted along the Atlantic coast in the United States (between Maine and Texas) during 1991 and participants in 14 Puerto Rican billfish tournaments in 1992 formed the sample frame. A random sample from each list formed the mailing list for the mail survey. A response rate of 46% (n=326) was achieved from the Puerto Rican sample, and 61% (n=985) from the United States sample. Each sample was further segmented such that it contained only 'resident' anglers. That is, residents of Puerto Rico and the U.S. Virgin Islands were removed from the U.S. Atlantic survey sample so this sample contained only anglers residing in the mainland U.S. Likewise, anglers from the U.S. mainland who were sampled in the Puerto Rican tournament study were deleted so that sample contained only those with permanent residences in Puerto Rico. Sampled anglers were sent a 10 page self-administered questionnaire which included questions on reasons for fishing (motivations), attitudes toward the catch, opinions on management options, fishing and billfishing behavior patterns and angler characteristics. Comparisons between the two samples were made using t-tests and chi-square analyses.

RESULTS

Fishing Participation and Behavior Patterns

While there were some slight variations in rates of participation in different types of fishing, the total annual days spent fishing did not differ

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significantly between U.S. resident billfish anglers and Puerto Rico billfish anglers (Table A). Both groups are composed of avid anglers who report fishing about twice as frequently as the general population of saltwater anglers (Ditton et al. 1994). Both groups also showed similar levels of experience in billfishing (13.15 years and 13.99 years for Puerto Rico and U.S. anglers, respectively), although U.S. mainland anglers were more experienced in saltwater fishing generally (25.88 years) than the Puerto Rico anglers (18.97 years).

The Puerto Rico anglers reported more trips specifically targeting billfish (18.2) than their U.S. mainland counterparts (13.02), as well as more trips in which billfish were caught as a side catch that was not specifically targeted (5.69 for Puerto Rico anglers versus 1.71 for U.S. Atlantic). There were no significant differences, however, in the mean number of trips during the past year in which the respondent brought a billfish to the boat (5.39 for Puerto Rico and 5.18 for U.S. Atlantic) and the number of days it usually took to boat a billfish (6.16 Puerto Rico and 5.36 U.S. Atlantic). Both groups reported spending the same amount of time per day with lines in the water (7.97 hours and 7.73 hours for Puerto Rico and U.S. Atlantic, respectively). The U.S. Atlantic anglers, however, reported using more lines in the water each day (4.80) than the Puerto Rico resident anglers (3.63).

One of the most notable differences between the two groups involved the number of billfish that were actually brought back to the dock. Two-thirds of the Puerto Rico anglers kept at least one billfish that they had caught during the past 12 months (their mean was 1.90 fish kept) versus only 26 percent of the U.S. Atlantic anglers (whose mean number of billfish kept was 0.50).

Personal Characteristics

Resident Puerto Rico billfish anglers differed from resident U.S. Atlantic billfish anglers in terms of several personal characteristics (Table B). While both groups showed relatively high levels of education, the Puerto Rico anglers included a slightly higher proportion reporting some post graduate education beyond a college degree (31.0% versus 24.7% of U.S. anglers). In contrast, U.S. Atlantic billfish anglers reported higher income levels, with 50.3% reporting annual household incomes of \$120,000 or more compared to 22% of the Puerto Rico anglers.

Echoing the data presented earlier regarding saltwater fishing experience levels, U.S. Atlantic billfish anglers were more likely to perceive themselves as more skilled than other anglers. Likewise, the U.S. anglers were more likely to report that someone in their household owned a boat (91.9% versus 73.6% of Puerto Rico anglers) and that they subscribe to fishing or boating related magazines (88.8% compared to 72.1% of Puerto Rican resident anglers).

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Fishing Motivations

Ditton et al. (1994) previously showed that resident Puerto Rico billfish anglers rated a broad assortment of motivations as very or extremely important, with only the motives 'to obtain fish for eating' and 'to win a tournament trophy/prize money' receiving scores of not at all to slightly important. Overall, billfish anglers attached the most importance to opportunities for 'relaxation' and the 'experience of the catch' or 'challenge'. Based on examination of standard deviation scores, Ditton et al. (1994) further concluded that there was much less agreement among general saltwater anglers than among Puerto Rico billfish anglers regarding the importance of the full set of fishing motivations. Billfish anglers tended to rate the motives 'to experience new and different things' 'to be with friends,' 'to develop my skills,' and 'to obtain a trophy fish' as more important than general saltwater anglers. The general anglers, on the other hand, attached more importance to 'getting away from the demands of other people' than the Puerto Rico billfish anglers.

In comparing the two sets of billfish anglers (Puerto Rico versus mainland U.S.), several noteworthy differences were found. The U.S. anglers rated several motives (including 'to experience adventure and excitement,' 'to be close to the sea,' 'to be outdoors,' 'to be with friends,' 'to get away from the demands of other people,' and 'to win a tournament trophy/prize money') as more important than their Puerto Rican counterparts. In contrast, the Puerto Rico anglers attached greater importance than their mainland U.S. counterparts to 'the experience of the catch,' 'to develop my skills,' 'to experience new and different things,' 'for family recreation,' 'to obtain a trophy fish,' and 'to test my equipment.' Motives showing no significant difference between the Puerto Rico and U.S. mainland anglers included, 'for relaxation,' 'for the challenge or sport,' 'to get away from the regular routine,' 'to experience unpolluted natural surroundings,' and 'to obtain fish for eating.' One of the interesting differences between the two groups was that the Puerto Rican anglers attached greater value to billfishing as family recreation, while the U.S. anglers placed more importance on being with friends. Another interesting contrast is that the U.S. anglers were more motivated to win a tournament trophy or prize money, while the Puerto Rico anglers placed more importance on catching a trophy fish. The U.S. anglers seemed slightly more motivated simply to be outdoors and close to the sea, while the Puerto Rico anglers were more involved in developing skills, experiencing something new, and testing their equipment. The greatest difference between the two groups, however, involved the motive, 'to get away from the demands of other people.' U.S. billfish anglers attached more importance to this motive than the Puerto Rico resident billfish anglers.

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Orientation Towards Catch

While most billfish anglers from both Puerto Rico and the U.S. mainland agreed that they would rather catch ‘one or two big fish than ten small fish,’ the responses to the other eight attitude statements regarding catching fish differed significantly across groups. The only statement with which U.S. Atlantic anglers agreed more strongly was, ‘I’m just as happy if I don’t keep the fish I catch.’ For the remaining seven items, the Puerto Rican sample was more likely to agree. Consistent with the previously observed difference, Puerto Ricans were more likely to agree that they usually eat the fish they catch. They also felt more strongly that ‘the more fish I catch the happier I am,’ and that ‘it doesn’t matter to me what type of fish I catch.’ All of these differences suggest a greater orientation towards consumption than was reflected by the U.S. mainland anglers. On the other hand, the Puerto Rican anglers also were more likely to define fishing success in terms other than merely catching fish. They agreed more strongly with both the statements that ‘a fishing trip can be successful even if no fish are caught,’ and ‘a successful fishing trip is one in which many fish are caught,’ suggesting that they are more flexible in evaluating the benefits of a fishing trip. The largest difference between the two groups was for the statement, ‘when I go fishing, I’m just as happy if I don’t catch a fish.’ Again, the greater endorsement of this item by the Puerto Rico billfishermen reflects their more open and flexible outlook about the outcomes of the fishing experience.

Management Preferences

Overall, the two management options receiving the strongest endorsement from both groups of tournament anglers were mandatory ‘no-kill’ tournaments and increased minimum sizes. In both cases, however, the mainland U.S. anglers expressed stronger support for these practices. Likewise, the U.S. anglers more strongly supported the notion of catch and release (zero bag limit) for billfishing in general. This option showed the greatest difference between the two samples of anglers, and was among the most strongly supported options for the U.S. anglers and the least supported options for the Puerto Rico anglers. The only other management option receiving more support by U.S. Atlantic anglers was area closures for billfish anglers, although this was generally opposed by both groups. Two management options were supported more by Puerto Rico billfish anglers. Both of these options, ‘no double hooks on lures,’ and ‘no live baiting,’ involved restrictions on allowable fishing tackle and bait. Although the Puerto Rican anglers

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expressed slightly more support for these practices, it is noteworthy that the mean values for these options for both angler samples were below the neutral point of 3.

The three remaining management options, 'no stainless steel hooks,' 'seasonal closures for billfish anglers,' and 'allow handlining and harpooning for recreational purposes,' showed no significant differences across the two samples of anglers. The former two items tended to receive a neutral response (near the mid-point of 3.0 on the five-point scale) from both groups. The latter item on handlining for recreational purposes elicited the strongest opposition among all the options listed and was responded to in an identical manner by both the Puerto Rico and mainland U.S. anglers.

DISCUSSION

The empirical evidence from the comparison of these two studies of tournament anglers from different cultures verifies that were differences in attitudes toward fishing. Non-catch reasons for fishing such as testing equipment, to be with family, to be outdoors and to get away from demands; as well as, catch-related factors such as obtaining trophy fish or keeping the caught fish were significantly different between Puerto Rican and U.S. tournament billfish anglers. Both samples rated reasons such as 'for the experience of the catch,' 'the challenge of the sport,' 'relaxation' and 'to experience adventure' most highly but Puerto Rican anglers rated statements such as 'a fishing trip can be successful even if no fish are caught' and 'I'm just as happy if I don't catch a fish' higher than their U.S. counterparts. They also reported differences between management options such as preferences for increased minimum size and catch and release only. Differences were noted on characteristics of anglers such as higher income levels for U.S. anglers and higher educational levels for Puerto Rican anglers.

This exploratory study confirmed that differences in culture translate into differences in attitudes and behavior between billfish anglers. Given the multi-jurisdictional and multi-cultural variety of anglers that target billfish, this suggests that perception and possibly compliance with management actions may differ across cultures. Given these differences, studies of other Hispanic cultures such as Cuban, Mexican and Venezuelan may yield additional significant cross-cultural findings.

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Table 1. Comparison of fishing behavior patterns between resident Puerto Rico billfish anglers and U.S. Atlantic billfish anglers.

Fishing Behavior	Puerto Rico Anglers		U.S. Atlantic Anglers		t Value
	Mean	St. Deviation	Mean	St. Deviation	
Annual days: freshwater angling	1.50	6.23	2.59	6.69	2.65**
Annual days: saltwater from boat	33.19	33.98	38.32	35.85	2.30*
Annual days: saltwater from shore	4.68	13.23	3.09	11.16	1.98*
Annual days: Total fishing	39.93	37.81	44.47	39.25	1.84
Number of years saltwater fishing	18.97	16.53	25.88	13.13	6.93**
Number of years billfish fishing	13.15	9.86	13.99	10.06	1.32
Annual trips targetting billfish	18.20	19.87	13.02	18.17	4.15**
Trips with side catch of billfish	5.69	26.50	1.71	5.60	2.61**
Trips where billfish brought to boat	5.39	6.41	5.18	10.29	0.43
Number of days to boat a billfish	6.16	8.65	5.36	8.37	1.41
Hours per day billfish angling	7.97	1.89	7.73	2.85	1.78
Lines in the water while billfishing	3.63	0.90	4.80	1.58	16.51**
Number of billfish kept	1.90	2.68	0.50	1.45	9.01**
n=326		n=985			

* Difference between groups significant at .05 level.

** Difference between groups significant at .01 level.

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Table 2. Comparison of characteristics between resident Puerto Rico billfish anglers and U.S. Atlantic billfish anglers.

Angler Characteristic	Puerto Rico Anglers	U.S. Atlantic Anglers	Chi Square
Education Level			
Less than high school graduate	5.1%	2.2%	28.12**
High school graduate	8.4	16.9	
1-3 years of college	22.7	23.5	
College graduate	32.8	32.7	
Post graduate study	31.0	24.7	
Annual Household Income Level			
Less than \$30,000	22.9%	3.6%	159.68**
\$30,000 to \$59,999	22.0	16.2	
\$60,000 to \$89,999	19.9	15.9	
\$90,000 to \$119,999	13.1	14.0	
\$120,000 or more	22.0	50.3	
Fishing Ability Compared to Other Anglers			
less skilled	11.6%	8.2%	59.78**
equally skilled	70.8	51.0	
more skilled	17.6	40.8	
Boat Ownership in Household			
Yes	73.6%	91.9%	73.70**
No	26.4	8.1	
Subscribe to Fishing/Boating Magazine			
Yes	72.1%	88.8%	51.85**
No	27.8	11.2	
	n=326	n=985	

* Difference between groups significant at .05 level.

** Difference between groups significant at .01 level.

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Table 3. Comparison of reasons for fishing (motives) between resident Puerto Rico billfish anglers and U.S. Atlantic billfish anglers.

Motive	Puerto Rico Anglers		U.S. Atlantic Anglers		t Value
	Mean	St. Deviation	Mean	St. Deviation	
To be outdoors	3.52 ^a	1.14	4.01	0.84	7.24**
For family recreation	3.34	1.24	3.18	1.17	2.12*
To experience new/different things	3.48	1.16	3.32	1.17	2.05*
For relaxation	4.24	0.92	4.13	0.98	1.84
To be close to the sea	3.88	1.08	4.01	0.98	1.98*
To obtain fish for eating	2.38	1.18	2.34	1.04	0.54
To get away from demands	2.70	1.40	3.54	1.30	9.87**
For the experience of the catch	4.24	0.94	4.11	0.93	2.24*
To test my equipment	2.82	1.25	2.37	1.13	5.62**
To be with friends	3.40	1.03	3.68	0.98	4.32**
To experience natural surroundings	3.87	1.09	3.90	1.05	0.57
To win a tournament trophy	1.98	1.20	2.63	1.35	8.12**
To develop my skills	3.64	1.13	3.40	1.15	3.25**
To get away from regular routine	3.96	0.98	3.87	1.08	1.46
To obtain a trophy fish	3.21	1.35	2.82	1.38	4.40**
For the challenge of sport	4.16	0.90	4.16	0.94	0.05
To experience adventure	3.90	1.00	4.09	0.9	3.10**
	n=326		n=985		

* Difference between groups significant at .05 level.
 ** Difference between groups significant at .01 level.

^a 1= not at all important, 2=slightly important, 3=moderately important, 4=very important, 5=extremely important.

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Table 4. Comparison of responses to statements about saltwater sport fishing between resident Puerto Rico billfish anglers and U.S. Atlantic billfish anglers.

Statement	Puerto Rico Anglers		U.S. Atlantic Anglers		t Value
	Mean	St. Deviation	Mean	St. Deviation	
The more fish I catch, the happier I am	3.76 ^a	1.08	3.15	1.13	8.61**
A fishing trip can be successful even if no fish are caught	4.16	0.91	3.74	1.03	6.92**
I usually eat the fish I catch	4.03	1.01	3.51	1.13	7.72**
A successful fishing trip is one in which many fish are caught	3.16	1.18	2.90	1.07	3.51**
I would rather catch one or two big fish than ten smaller fish	3.79	1.09	3.83	1.07	0.62
When I go fishing I'm just as happy if I don't catch a fish	3.56	1.15	2.66	1.10	12.78**
It doesn't matter to me what type of fish I catch	3.06	1.21	2.56	1.06	6.50**
The bigger the fish I catch, the better the fishing trip	3.71	1.13	3.48	1.08	3.28**
I'm just as happy if I don't keep the fish I catch	4.11	0.97	4.35	0.86	4.05**
	n=326		n=985		

* Difference between groups significant at .05 level.

** Difference between groups significant at .01 level.

^a 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

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Table 5. Comparison of responses to various options for managing the recreational billfish fishery between resident Puerto Rico billfish anglers and U.S. Atlantic billfish anglers.

Management Option	Puerto Rico Anglers		U.S. Atlantic Anglers		t Value
	Mean	St. Deviation	Mean	St. Deviation	
Increased minimum sizes [for blue marlin]	3.10 ^a	1.31	3.73	1.16	7.80**
No double hooks on lures	2.90	1.27	2.46	1.16	5.62**
No stainless steel hooks	3.06	1.30	3.09	1.33	0.42
Allow handling and harpooning for recreational purposes	1.59	0.96	1.59	0.98	0.10
Mandatory "no kill" tournaments	3.32	1.29	3.61	1.31	3.41**
No "live baiting"	2.84	1.22	2.67	1.24	2.24*
Seasonal closure for billfish anglers	2.88	1.39	2.95	1.35	0.79
Area closure for billfish anglers	2.22	1.20	2.88	1.32	8.33**
Catch and release only (zero bag limit)	2.64	1.31	3.63	1.34	11.66**
	n=326		n=985		

* Difference between groups significant at .05 level.

** Difference between groups significant at .01 level.

^a 1=strongly oppose, 2=oppose, 3=neutral, 4=support, 5=strongly support.