

*New light is shed on
shark anglers and the
sport of shark fishing.*

Recreational Shark Fishing on the Texas Gulf Coast: An Exploratory Study of Behavior and Attitudes

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ABSTRACT—Today there is little literature on shark fishing participation, less on its participants, and none to explain shark fishing motivations. Members of the Corpus Christi (Texas) Shark Association were interviewed in October 1974 to collect data regarding their socioeconomic characteristics, fishing participation patterns, harvest records, attitudes, and motivations. The shark fishermen studied were found to be avid fishermen who participated in many other forms of fishing besides shark fishing. Most fished from shore where catching a "keeper" (shark over 6 feet) was rare. A few individuals, however, were very successful fishing for sharks off shore. Anglers studied were found to perceive sharks with a sense of respect and admiration or in relation to the challenge of the shark fishing experience. Few shark fishermen expressed a fear or hatred of sharks. The aspect of shark fishing cited most often as the most important motivator was the challenge or sport of fishing. Other important aspects of the fishing experience cited were "being outdoors," "being with friends," "getting away from the regular routine," and "relaxation." The number and size of fish caught were reported as being less important than the other reasons cited. Shark fishermen therefore cannot be characterized as being highly motivated by harvest-related factors. Instead, they appear to derive satisfaction from the entire shark fishing experience. When shark fishermen were compared to two other samples of fishermen (Wyoming trout fishermen and New York lake and stream fishermen), all three groups showed similar motivations for fishing. This suggests that shark fishermen are not a specialty group of predator or "meat" fishermen as might be hypothesized, but rather fish for many of the same reasons as other fishermen. Implications of this exploratory effort for further research are discussed.

INTRODUCTION

Many authors in the popular literature have written about man's feelings about sharks in posing the ultimate question of why we can't rid our waters of the shark menace. Most conclude that men fear and hate sharks. Benedict (1962) asserts that most fishermen consider the shark a predaceous brute. Wiles (1962) labels the shark as one of

the most diabolical inhabitants of the sea. Mackerodt (1974) seeks to reason why man fears sharks. He notes that the shark is unique in its desire to hunt man and that man is helpless in the shark's environment. The shark is perceived as an unseen threat and this triggers fear. Sugar (1974) feels there is more fascination than fear. Sharks are unknown quantities in that no one knows their population size and distribution, how long they live, nor how they die.

While it is probably true that most people fear sharks, this paper explores an aspect of the man-shark relationship that has received little attention previously in the technical literature: shark fishing. Man has long fished for sharks but only recently has the everyday sportsman turned to shark fishing. Today shark fishing is often referred to as "poor man's big game fishing," and surf fishing for sharks is becoming one of the fastest growing forms of fishing along the coast (Sand, 1972). However, there is little literature on shark fishing participation, less on its participants, and none to explain the motivations for shark fishing.

It can be reasoned that when sharks are viewed as game, the often discussed emotions of fear and hatred directed toward them are replaced by emotions like respect, challenge, and enjoyment of danger and beauty. Coran (1974), for example, views the shark as one of the few creatures whose consummate skill as a killer transports him beyond the range of evil into a special beauty. Their unpredictable nature is a part of their mystique. Benchley (1967) suggests that the shark fisherman is motivated by the dangers involved. Slaughter (Stephens and Slaughter, 1962) believes sharks are kings of the undersea jungle, and he likes to put them on the defensive and to outwit and defeat them. Hunting sharks in scuba gear and with explosive devices, Slaughter kills every shark possible. He considers shark hunting akin to big game hunting.

In addition to meeting informational needs about shark fishing and why man fishes for sharks, this research provides greater insight into the relationship between the fisherman and the fish in the environmental system. Counter to popular literature, it is hypothesized in this paper that fishermen pursue sharks for sport, rather than out of hatred, and that they enjoy the shark fishing experience whether they harvest a shark or not. The implications of these notions

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A lemon shark, 7' 8" long. Photo courtesy of the Corpus Christi Shark Association.

for fishery resource management alone are enormous. This paper further probes the hypothesis that the number of fish caught actually represents a small part of the fishing satisfaction derived (Field, 1974).

Traditionally, fishery management has focused on harvest, based largely on the assumption that harvest is the principle source of satisfaction to the sportsman. A rival hypothesis would be that fishermen are not particularly concerned with harvest but instead fish primarily for other reasons. There is considerable evidence in the literature to support this hypothesis.

Historically, fishing has been portrayed as primarily contemplative and solitary. An early article on angling (1739) placed great emphasis on its diversion capabilities (U.S. Outdoor Recreation Resources Review Commission, 1962). Also, from a limited nationwide sample of fishermen (Anonymous, 1967), *Field and Stream* concluded that the representative angler believes there is more to fishing

than catching fish. Frequently mentioned attributes of fishing were liking the fresh air, getting out of the city, using homemade lures, being on the open seas, and change in routine. In a study of Ohio fishermen, 57 percent indicated their satisfaction with their fishing experiences even if they caught no fish (Addis and Erickson, 1969). Similarly, a majority of a sample of Idaho anglers indicated their preference for fewer, but larger, trout (Gordon, Chapman, and Bjornn, 1969). Moeller and Engelken (1972) suggest that elements of the natural environment—water quality, natural beauty, privacy while fishing—are more important (than harvest) to the overall enjoyment of fishing. Knopf, Driver, and Bassett (1973) suggest that fishermen are strongly motivated by four unmet needs: temporary escape, achievement, exploration, and experiencing natural settings.

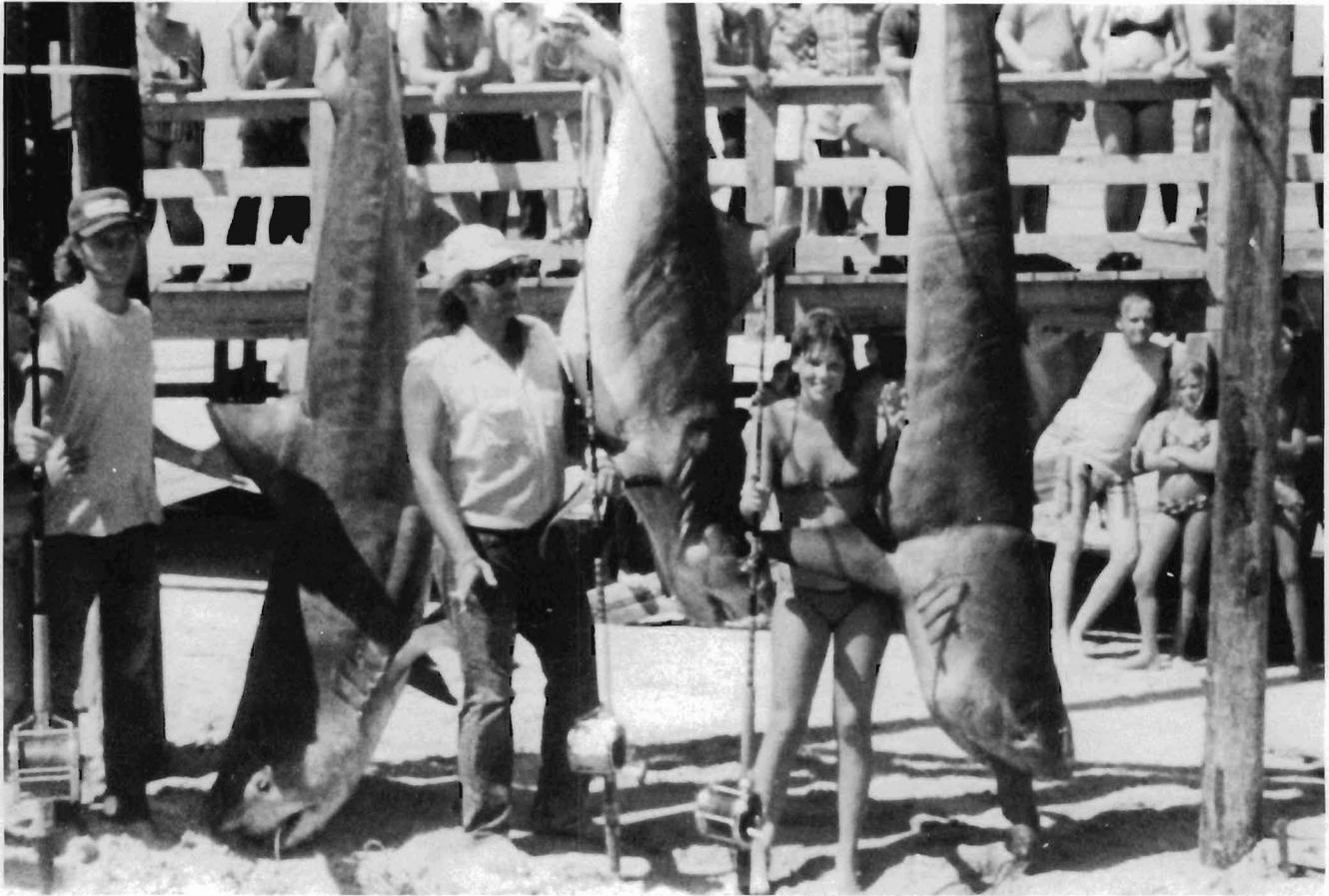
This paper likewise probes fishing motivation and enjoyment and does so with what might be hypothesized as an

extremely harvest-oriented group of fishermen—shark fishermen. Two particular aspects of fishermen's attitudes will be emphasized. First, how do shark fishermen perceive sharks as animals and as resources? And second, how important are the consumptive aspects of fishing, such as size and number of fish harvested in relation to the enjoyment of the fishing experience?

This study aims to provide basic data to further understanding of the sport of shark fishing. In addition to being the first systematic study of shark fishing and its devotees, the findings will enable comparisons with other types of fishermen.

OBJECTIVES

- 1) To identify socio-economic characteristics and attitudes of members of the Corpus Christi (Texas) Shark Association.
- 2) To gain insight into shark fishing on the Texas coast and to identify types of shark fishing that take place.
- 3) To serve as a preliminary study to



Tiger sharks, 11' 3", 10' 4", and 11' 3" in length. Photo courtesy of the Corpus Christi Shark Association.

test and generate new hypotheses about shark fishermen as well as to lay the foundation for a more generalizable study of shark fishermen.

4) To compare findings with existing data on other fishermen to determine whether shark fishermen differ substantially from other types of fishermen in their behavior, attitudes, and motivations.

HYPOTHESES

1) Members of the Corpus Christi Shark Association view sharks as big game. Thus, they fish for them primarily for the challenge or sport involved. In spite of this, though, they are not obsessed with catching sharks, and enjoy the fishing experience whether they catch a shark or not.

2) Members of the Corpus Christi Shark Association do not indicate that they hate sharks and are afraid of them, as most popular literature concerning sharks indicates. Rather, they respect sharks as magnificent creatures and sport fish.

STUDY POPULATION

The population studied was the entire membership of the Corpus Christi Shark Association ($n = 35$), a club whose members are shark fishermen. Because of the small membership size, it was determined that all association members would be interviewed if possible.

The lack of wide generalizability of study findings is recognized but it should be remembered that this was an exploratory study. This group of shark fishermen was selected primarily because it was accessible and cooperative. Neither the group nor study findings are intended to represent all shark fishermen.

METHODS

Data for this study were obtained through personal interviews in October 1974. After the structured interview schedule was prepared and pretested, interviews were conducted on two consecutive 4-day weekends with all club

members available. Since the study took place after the shark fishing season (April-September) interviews were conducted individually at a time and place convenient to the respondent, generally at home. The leadership of the Shark Fishing Association was familiar with the study and encouraged the membership to cooperate fully with the interviewer.

The interview schedule included structured questions in the following general categories: basic personal information; socioeconomic characteristics, participation and catch record; techniques, equipment, and expenses; and motivations and attitudes. A few open-ended questions were put to cross-validate structured question categories.

Twenty-nine of the 35 active association members were interviewed. The remainder were unavailable on the two survey weekends. At least three call backs were attempted for each member who was not interviewed. No one refused to be interviewed.

FINDINGS AND ANALYSIS

Fishermen Characteristics

The socioeconomic characteristics of the shark fishermen summarized in Table 1 allow comparison with two other studies of fishermen. Shark fishermen are generally younger and less experienced than the other fishermen. They are typically male, and

Table 1.—Comparison of socioeconomic characteristics of 29 shark fishermen, a random sample of licensed fishermen in six northeastern states, and a sample of 100 New York fishermen.

	Shark fishermen	Six N.E. states ¹	New York ²
Average age	27	40	40
Years experience	19	26	24
Male (%)	89.7	90	87
Married (%)	65.5	79	87
High school graduates (%)	83	63	

¹Data from Bevins et al. (1968).

²Data from Moeller and Engelken (1972).

about 65 percent are married. The shark fishermen studied were better educated than the northeastern U.S. sample (83 percent high school graduates as compared with 63 percent). This, as well as the fact that fewer are married, may be related to the younger average age of the shark fishermen. All shark fishermen in the study group became interested in fishing for sharks after they had been active in other forms of angling.

Shark Fishing Patterns

The shark fishermen studied can be divided into two groups based on the location of their activity, onshore and offshore. Approximately 75 percent of the study group fished most often from shore (beach, 45 percent; pier, 10 percent; and jetties, 20 percent). The remaining quarter of the population fished most often from boats offshore.

Shark fishermen indicated that they almost always fished with friends, although 14 percent of the study group had gone fishing alone. Thirty-eight percent had gone fishing with their spouse and 24 percent with members of their family, but in all instances, friends were also included in the fishing party. The average number of fishing occasions during the past 12 months for club members was 14.6 times. Since shark fishing trips sometimes involve entire weekends, and at other times take place

Table 2.—Shark fishermen fishing participation records for the past 12 months from 29 shark fishermen.

Area	Percent participating	Mean no. of experiences	Range
Freshwater			
Streams, brooks, creeks	6.9	0.6	0-12
Rivers	31.0	1.9	0-15
Lakes	44.8	4.9	0-35
Reservoirs	20.7	0.6	0-10
		Total	8.0
Saltwater			
Surf, bank, jetty	72.4	10.2	0-85
Pier	72.4	13.0	0-125
Bay (party boat)	10.3	0.2	0-3
Bay (private boat)	75.9	7.0	0-50
Gulf (charter boat)	24.1	0.6	0-7
Gulf (private boat)	51.7	2.0	0-15
		Total	33.0
		Shark fishing total	14.6
		Total fishing participation	55.6

in a day, 14.6 times probably underestimates the actual number of days spent shark fishing.

Table 2 summarizes the study group's total fishing participation record for the past 12 months. It is clear that, in addition to shark fishing, club members participate in a variety of fishing activities. They averaged 8 times at freshwater locations and 33 at saltwater locations, excluding shark fishing. Thus, the average total fishing participation is 55.6 times during the past 12 months.

It is useful to compare this participation data with information concerning the fishing behavior of the national population. In 1970, for example, 29.4 percent of the total population went fishing an average of 11.4 days (U.S. Department of the Interior, 1972). Therefore, it appears that the present study group is composed of extremely avid fishermen.

Table 3 reports the shark catch record for club members. It is immediately striking that slightly over one-half of the

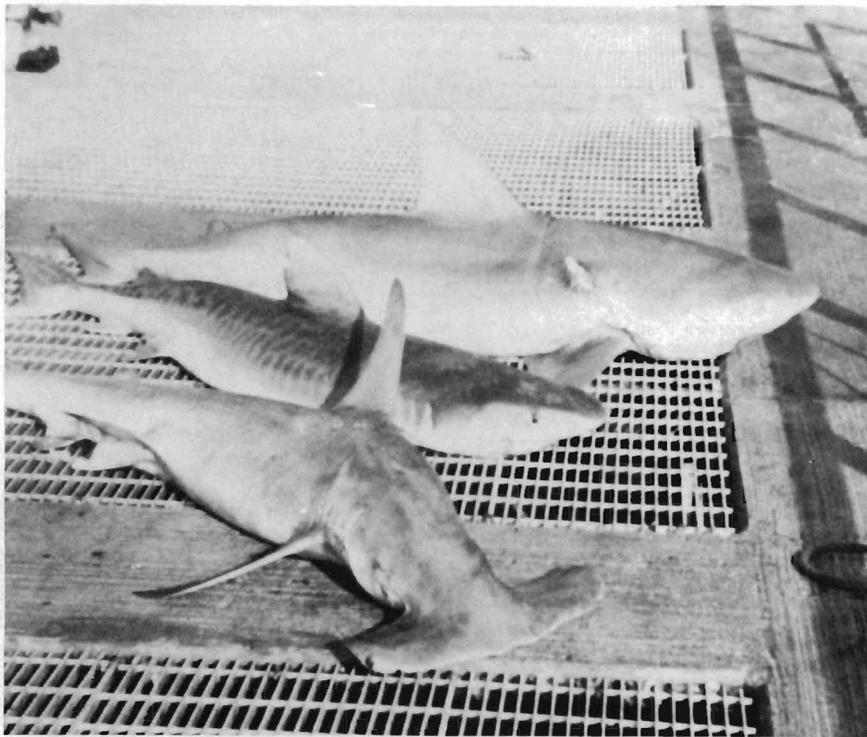
study group harvested no sharks last season and also that three individuals caught more than half of the total number of sharks harvested. A few words of explanation are in order concerning the recording of harvest. First, only sharks over 6 feet in length are considered "keepers" and are recorded. This explains why so few sharks are indicated. When sharks under 6 feet are caught they are either killed or released, depending on their condition after the fight and the angler involved. These sharks are not recorded and, thus, not included in the harvest tabulation in Table 3. Second, onshore and offshore shark fishing vary considerably with respect to fishing success. It is well established that offshore fishing yields a greater rate of harvest. In this study, the three individuals who caught the large number of sharks (13, 18, and 19, respectively) are all offshore fishermen, while those who caught few or no sharks are generally onshore anglers.

Table 3.—Shark harvest record for the past 12 months from 29 shark fishermen.

Number of shark fishermen	Sharks caught	
	No.	Total
15	0	0
2	1	2
1	2	2
4	3	12
1	4	4
1	5	5
0	6	0
2	7	14
1	13	13
1	18	18
1	19	19
Total 29		89

Attitudes And Motivations of Shark Fishermen

To assess shark species preferences of shark fishermen, each was asked the open-ended question, "What type of shark do you hope to catch?" The responses "big" or "any" were given twice as often as any particular species was named (Table 4). It appears from this that these fishermen in general are interested in catching sharks and are not particularly concerned with what species they catch.



Three sport-caught sharks: Top, bull shark, 9' 2" long; middle, tiger shark, 8' long; bottom, hammerhead, 8' 6" long. Photo courtesy of the Corpus Christi Shark Association.

Table 4.—Responses from 29 shark fishermen to, "What type of shark do you hope to catch?"

Response	Frequency ¹
Any	10
Tiger	9
Hammerhead	9
Big	8
Aspiration: Great white	4
Depends on time of year	3
Bull	2

¹Column not totalled as respondents were able to indicate more than one response.

Responses shown in Table 4 correspond roughly to the more common shark species found in Gulf coastal waters. The bull shark, perhaps the most abundant close to shore, is probably the least highly prized. Tiger and hammerhead sharks grow to larger sizes and are harvested less frequently. Respondents who mentioned a particular species usually indicated the species

which they had not yet harvested or which they had caught least frequently. It is interesting to note that four anglers spontaneously indicated that their fishing aspiration was to catch a great white shark (or maneater). None realistically expected to ever catch a member of this relatively rare species (especially in the Gulf), but all expressed a great sense of fascination. Perhaps this preoccupation is a function of several recent popular works devoted to the great white.

How the study group perceives sharks was probed in two ways. First, an open-ended question asked, "In as few words as possible, how would you describe the way you feel about sharks?" Deliberately vague, the question was intended to elicit initial reactions of perceptions of sharks. It was asked at the beginning of the interview. Responses have been grouped into categories based on similarity of ideas expressed and are presented in Table 5.

The first group of 36 responses (a majority of all responses) form a category which can be best described as feelings of respect and admiration for the creatures. Many related descriptive terms, from colloquial (neat) to technical (well adapted) to philosophical (compare to self), were offered. They all have in common a sense of praise and thus support our second hypothesis, that shark fishermen respect sharks as magnificent creatures and sport fish.

The second group of 15 responses imply feelings associated with the shark

Table 5.—Responses from 29 shark fishermen to the following question: "In as few words as possible, how would you describe the way you feel about sharks?"

Response	Frequency	Response	Frequency	Response	Frequency
<i>Category: Feelings of Respect and Admiration</i>		<i>Category: Feelings Associated with Fishing Experience</i>		<i>Category: Feelings of No Fear</i>	
Respect	9	Challenge	5	Not dangerous	1
Compare to self	1	Game fish	3	No fear	1
Strength	2	Compare to self	1		
Powerful	1	Sport	1	Total	12
Intelligence	1	Love to fish for	3		
Elusive	1	Equal competitor	2	<i>Category: Miscellaneous Feelings</i>	
Neat	1	Total	15	There to catch	2
All right	1			Scavenger	2
Beautiful	1	<i>Category: Feelings of Fear and Danger</i>		Poor man's marlin	2
Great creature	1	Afraid of	5	Misinterpreted	1
Fascinating	3	Vicious	1	Total	17
Unknown	1	Dangerous	2		
Pretty	1	They will attack	1		
Streamlined	1	Total	19		
Here to stay	1				
Well adapted	1				
Perfect	1				
Love for	1				
Intriguing	3				
Interesting	1				
Misinterpreted	1				
Equal competitor	2				
Total	36				

¹Totals indicate the number of times each response was offered. Since respondents often gave more than one descriptive term, totals are not addable.

fishing experience. These respondents immediately thought of sharks as prey, even though fishing was not mentioned in putting the question. Responses here complement those in the first category (some overlap enough to be appropriate for both groups) in supporting our hypothesis.

The remaining responses express fear, lack of fear, and some miscellaneous ideas. Combined they represent approximately 25 percent of all responses, a surprisingly low percentage in view of the open-ended nature of the question.

Secondly, respondents were asked at the close of the interview to identify the characteristic which best describes the way they feel about sharks. Six forced-choice alternatives were provided. Results are presented in Table 6.

Table 6.—Responses to, "Which of the following best characterizes the way you feel about sharks?"

Response	Number	Percent
A challenge to catch	21	72.4
Menace to people, they should be eliminated		0.0
Lords of the sea, they should be respected	5	17.2
Good food to eat, a product of the sea		0.0
Dangerous opponents	3	10.3
Other, please specify	—	0.0
Total	29	

n = 29 shark fishermen.

The three alternatives which were selected in Table 6 correspond roughly to the three major categories formed in Table 5. However, the emphasis is reversed for the two tables. The majority of spontaneous responses in Table 5 imply respect for sharks, while the second category involves the challenge to catch. In Table 6, on the other hand, a strong majority selected "a challenge to catch" over "lords of the sea, they should be respected." Apparently, providing the "challenge to catch" alternative induced more people to respond accordingly than would have responded spontaneously. In addition, this question was asked after several fishing participation and motivation questions which may have influenced the respondents to think in terms of the fishing experience. At any rate, it is reasonable to conclude that a vast ma-

majority of the study group perceives sharks either with a sense of respect for the creature or in relation to the fishing experience. Few of them indicated fear and none indicated hatred for sharks.

Several questions in the interview dealt with fishing motivation. One probed the most important reasons the respondents fished for shark and provided 10 response categories. Table 7 reports the percentages of fishermen which selected each aspect of fishing motivation.

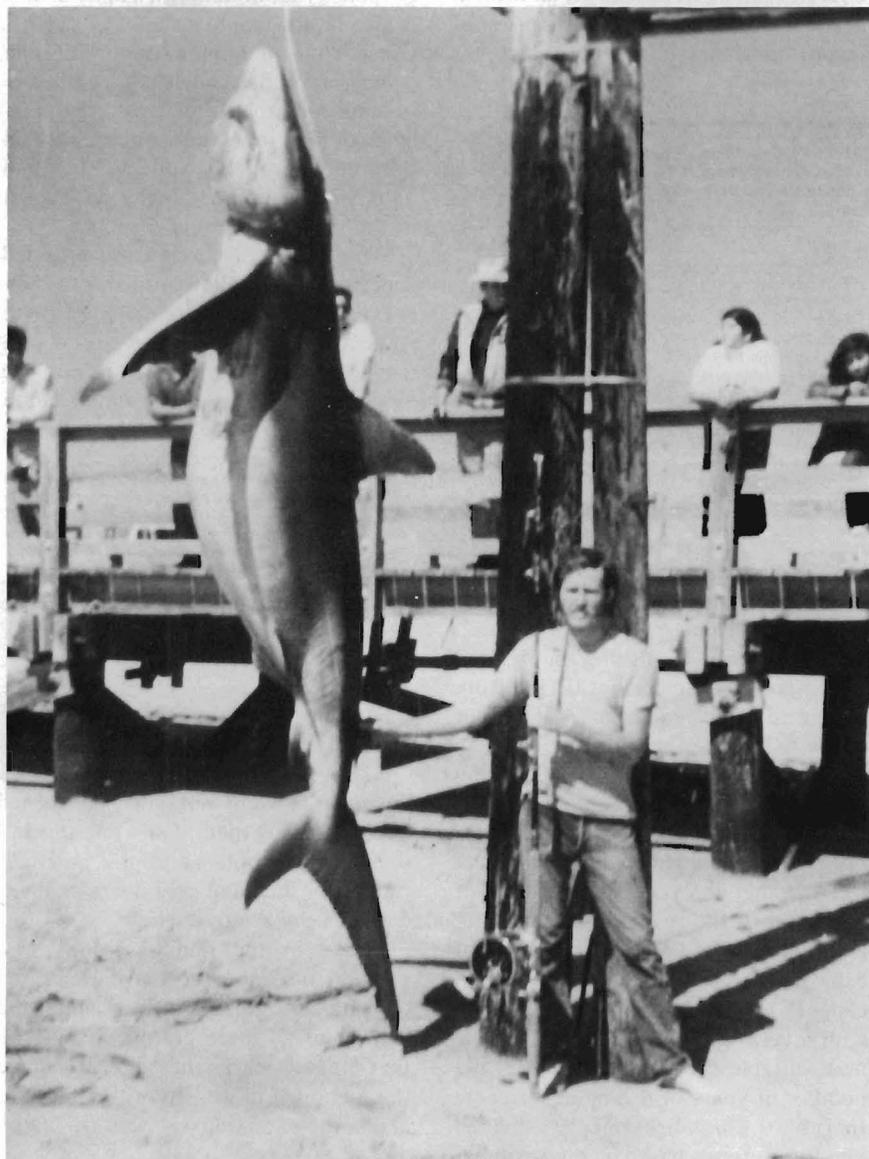
The most popular response categories describe the fishing experience, not the catching of fish. Shark fishermen appear to enjoy most the challenge of fishing and being outdoors. Slightly less important are the aspects of

Table 7.—Responses¹ from 29 shark fishermen to the following question: "What are the most important reasons you fish for shark? Please check only those items that are most important to you."

Alternative	Percent
For the challenge or sport	96
To be outdoors	90
To be with my friends	83
To get away from the regular routine	79
For relaxation	62
To obtain a trophy	45
To obtain fish for eating	28
For physical exercise	24
For family recreation	21
Other	10

¹Respondents were instructed to indicate those items most important to them. Multiple responses prevent percentages from being addable.

being with friends, getting away from the regular routine, and relaxation. None of these factors are harvest related or dependent.



A 10' 9" dusky shark. Photo courtesy of the Corpus Christi Shark Association.

The selection rate drops below 50 percent for the response categories "to obtain a trophy" and "to obtain fish for eating." The relatively low importance of these two harvest related responses lends support to the notion that shark fishing is a complex behavioral phenomenon in which harvest accounts for only a small part of the total satisfaction derived.

In another effort to probe fishing motivation each respondent was provided with a list of factors and asked to indicate on a three point scale, the relative importance of each factor influencing his enjoyment of a typical shark fishing trip. While this artificial rating device does not provide precise measurement, it is useful in establishing overall ranking of factors on an ordinal scale. Table 8 reports the rank order of mean importance values for the factors.

Table 8.—Responses from 29 shark fishermen to the following request: "Please indicate the relative importance of each of the following factors which influence your enjoyment of a typical shark fishing trip."

Factor	Mean Importance Value ¹
Fight put up by fish	2.79
Pleasant companions	2.69
Ease of access to water	2.45
Water quality	2.41
Privacy while fishing	2.31
Weather conditions	2.28
Size of fish caught	2.24
Natural beauty of the area	2.10
Number of fish caught	1.86
Facilities available	1.69

¹Scale =

1	2	3
low		high

Responses here are consistent with reasons for fishing reported in Table 7. Those aspects of fishing motivation which are most important derive from the entire fishing experience—fight put up by fish, pleasant companions, easy access, water quality, privacy, and weather conditions. The consumptive factors, size and number of fish caught, both receive low values of importance.

To further analyze the importance of fish harvest, the responses for "to obtain a trophy" (Table 7), "number of fish caught" (Table 8), and "size of fish caught" (Table 8) were cross tabulated with several other fishing variables. The first variable cross tabulated was the number of years of fishing experience. In Table 9, shark fishermen are divided into three groups based on their number of years fishing experience to probe the

Table 9.—Years of fishing experience by the consumptive aspects of the fishing experience.

Years experience	Percent fishing to get trophy	Importance of no. of fish caught	Importance of size of fish caught
0-5 (n = 15)	40	2.07	2.47
6-10 (n = 9)	44	1.44	1.88
>10 (n = 5)	60	2.0	2.2

notion that, as the fishermen get older, they become less preoccupied with the fish they catch. The results do not bear this out. They imply that the least experienced and the most experienced fishermen are more concerned with the number and size of fish caught than the middle group. Surprisingly, the most experienced fishermen show the highest propensity for obtaining a trophy fish. It is also interesting to note that "size" is consistently rated more important than "number" of fish caught. Since the size of shark is directly related to the challenge or fight involved in the catch, this difference probably reflects the high value placed on the "challenge" aspect of the fishing experience.

When shark fishermen are grouped according to the number of sharks they harvested and cross tabulated with some of the consumptive aspects of fishing (Table 10), several trends are evident. First, those who didn't catch

Table 10.—Number of sharks caught last year by the consumptive aspects of the fishing experience.

No. caught	Percent fishing to get trophy	Importance of no. of fish caught	Importance of size of fish caught
0 (n = 15)	33	1.71	2.07
1-7 (n = 11)	54	2.18	2.54
13, 18, 19 (n = 3)	67	1.67	2.0

any sharks were not very concerned about catching them. Only one-third of them fished to obtain a trophy, and their ratings for the number and size of shark caught were relatively low.

Those in the middle group, who caught from one to seven sharks, rated the number and size of fish caught the highest of all three groups. It may be that the few sharks they did catch gave them enough of a taste of the battle to make them anxiously want to catch more.

Those who caught the most sharks

showed the lowest concern for the number and size of fish caught, but the greatest concern for obtaining a trophy. Perhaps for these few very successful shark fishermen, the real challenge lies in catching the trophy fish.

When these same consumptive factors are cross tabulated with the extent of fishing participation (Table 11), it is apparent that those who fished most often were the most interested in catching a trophy and the most concerned with the number and size of the fish caught. The differences between the

Table 11.—Extent of participation by the consumptive aspects of the fishing experience.

No. fishing experiences in previous 12 mo	Percent fishing to get trophy	Importance of no. of fish caught	Importance of size of fish caught
0-10 (n = 13)	23	1.58	1.92
>10 (n = 16)	62	2.06	2.5

casual (0-10 fishing experiences during the previous 12 months) and the avid (greater than 10 fishing experiences during the previous 12 months) fishermen are substantial. The data suggest that the avid group is much more highly motivated by catch-related aspects of shark fishing.

Several general observations can be made to summarize the fishing motivations of the study group:

1) The challenge or sport of fishing is the most important aspect of fishing motivation for the shark fishermen.

2) Many other factors contribute to the enjoyment of the total shark fishing experience. These include being outdoors, being with friends, getting away from the regular routine, relaxation, water quality, privacy, and weather conditions.

3) The consumptive aspects of fishing are of relatively low importance to respondents. Shark fishermen are generally more concerned with the size of shark caught than with the number caught. Those who fished often are considerably more interested in the size and number of fish caught and with catching a trophy than are those who fished only occasionally. Those who caught no sharks or many sharks are less concerned with the size and number of fish caught than those who caught a few sharks, but those who caught the most are also the most interested in catching a trophy shark. While these intra-group

comparisons are interesting. It is important to remember that the consumptive factors, "size of fish caught," "number of fish caught," and "to obtain a trophy," are all rated lower in importance by the entire group than all of the other aspects of fishing motivation discussed in 1) and 2) above. It is apparent that shark fishing involves far more for its participants than catching sharks.

COMPARISON OF SHARK FISHERMEN AND OTHER FISHERMEN

Two other fishing motivation studies will be considered here, for they provide the basis for comparisons between shark fishermen and other groups of fishermen. A study of Wyoming trout anglers was selected to represent another specialized group of fishermen, and a study of New York lake and stream fishermen was selected to account for less specialized anglers.

Ballas et al. (1974) surveyed trout fishermen in Gallatin Canyon, Wyo. As in this study of shark fishermen, trout anglers were asked, "What are the most important reasons you fish?" The same alternative responses were provided in both studies.

There are several similarities in findings. First, "to be outdoors," "for the challenge or sport," and "to get away from the regular routine" are rated highly by fishermen in both studies. Likewise, "to obtain a trophy," "to obtain fish for eating," and "for physical exercise" all receive low rankings in both studies. It appears that in both studies consumptive aspects of fishing are not predominant among fishermen.

Some differences between the shark fishermen and the trout fishermen are also noteworthy. Shark fishermen indicated "to obtain a trophy" considerably more than "to catch fish for eating," while the reverse was true for the trout fishermen. This is due likely to a functional difference between trout and shark fishing. Trout are caught more frequently and are generally prized as good-eating fish. In comparison, catching a large shark is a rare event, and only small ones of certain species are kept for eating. Another complicating factor is that shark fishermen almost always fish for other types of fish while they are



A 9' 5" lemon shark. Photo courtesy of the Corpus Christi Shark Association.

shark fishing. Those who checked, "to obtain fish for eating," as an important factor may well have been referring to the fish they catch on their lighter rigs, rather than the sharks they catch.

The higher ranking of, "to obtain a trophy," by the shark fishermen is consistent with their higher ranking of, "for the challenge or sport." These two alternatives are related in that they both imply a sense of achievement. The discrepancy between the two study groups might suggest that shark fishermen are more highly motivated by achievement while trout fishermen are most strongly motivated by temporary escape and experiencing natural settings.

A significant difference between the two groups is their reaction to the factor, "to be with my friends." Shark fishermen rated this highly while trout fishermen generally did not. This again is probably due to differences between the two angling activities. While trout fishing is often an individual, solitary activity, shark fishing almost invariably involves a small group, and often doubles as a camping trip or social outing among friends.

Moeller and Engelken (1972) probed "what fishermen look for in a fishing experience" with a survey of one hundred New York lake and stream fishermen. Their study utilized the



A 9' 2" sand tiger shark. Photo courtesy of the Corpus Christi Shark Association.

artificial factor-ranking device discussed earlier (Table 8).

Two factors were added to the question put to shark fishermen because of their direct applicability to shark fishing. These two factors, "fight put up by the fish" and "pleasant companions," received the highest overall rankings for shark fishermen. This is consistent with the responses to why they fish: "for the challenge or sport" and "to be with my friends."

For both groups, "privacy while

fishing" and "water quality" received high rankings. Conversely, the "number" and "size" of fish caught were relatively low in importance in both studies. "Ease of access to water" and "facilities available" are not really appropriate factors for Gulf shark fishing because access is not a problem and facilities are unnecessary.

One notable difference is that "natural beauty of the area" was ranked highly by the New York fishermen group and was relatively low

in importance for shark fishermen. Here again, a direct comparison is not appropriate, for it is possible that the difference reflects different perceptions by the two groups of what "natural beauty" is, rather than a true motivational difference between the two groups. The coastal environment of Texas is very different from the lake and stream environment of New York State. As a result, it is likely that environmental values and perceptions also vary for recreationists in the two areas. For example, many shark fishermen respondents indicated that they did not feel the Gulf coast is an area of "natural beauty" and gave this factor a low ranking. On the other hand, it would be useful to probe how New York fishermen perceive "natural beauty." Based on their strong attraction to this as a motivational factor, it can be hypothesized that New York anglers do indeed regard their lake and stream fishing environment as "naturally beautiful."

In general, the observation that can be made from this analysis is that, once again, non-consumptive aspects of the fishing experience are the most important factors affecting the enjoyment of fishing for both groups.

CONCLUSIONS AND IMPLICATIONS

Two general conclusions are possible in this paper, and they are in support of the hypotheses stated earlier. First, shark fishermen do not indicate a hatred for sharks. They do not indicate a fear of them. Shark fishermen tend, for the most part, to perceive sharks either as magnificent animals to be respected or in relation to the fishing experience they provide.

An interesting sidelight here is that shark fishermen in this study group are quite knowledgeable about sharks. Besides knowing how to fish for them, many understand a great deal about shark taxonomy, physiology, and behavior. Perhaps the adage, "familiarity breeds respect, unfamiliarity breeds contempt," is directly applicable. Results of this study certainly demonstrate that shark fishermen have a different relationship with sharks than is popularly portrayed in the literature for the rest of mankind. While the public is

often preoccupied with the sensationalism of sharks, shark fishermen appear to understand the shark species and enjoy a comfortable relationship with sharks based on respect and admiration.

Secondly, like other groups of fishermen studied previously, shark fishermen fish primarily for non-consumptive reasons. Their top interest is the challenge or sport of fishing; yet the size and number of fish caught are of relatively little importance to them. What is more important to these fishermen is that they be outdoors, with their friends, and away from their regular routine.

Comparison of fishing motivations of shark fishermen and other fishermen groups previously studied demonstrates that shark fishermen are not a group of specialty predator or meat fishermen, but rather have attitudes and motivations similar to those of other fishermen.

FURTHER RESEARCH

Following this exploratory effort, the next logical research step should be to study a representative sample of shark fishermen. A basic question to fishery managers is just how important is shark fishing? Determination of this can suggest to fishery managers what type of effort should be devoted to a possibly sizeable and growing constituency. Indications of preferences and motivations of shark fishermen in this study group might be useful in helping to design further attitudinal inquiries. It would be interesting to see if the same factors that contribute to a quality fishing experience for this study group will also be important to a representative sample of shark anglers elsewhere. What is learned can be used by fishery managers to identify specific expectations and determine management alternatives aimed at providing satisfactory fishing experiences.

It would also be interesting to compare characteristics and attitudes of shark fishermen to those of other big game anglers, such as billfishermen. Because of the different nature of the two activities, a study of marlin and sailfish anglers might reveal that they do comprise a group of specialty predator fishermen with attitudes and motiva-



A 12' 2¼" tiger shark. Photo courtesy of the Corpus Christi Shark Association.

tions very different from shark fishermen and fishermen in general.

Perhaps the most important implication of this study is that it is a beginning step towards a better understanding of the sport of shark fishing and its participants. Currently, there are many other surveys of fishermen's attitudes, preferences, and motivations underway in different areas of the country. The findings of these user surveys will collectively provide more insight into what fishermen do seek in their fishing experiences.

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LITERATURE CITED

- Addis, J. T., and J. Erickson. 1969. The Ohio fishermen. Ohio Dep. Nat. Resour. Div. Wildl., Publ. 140, 31 p.
- Anonymous. 1967. 28,340,000 fishermen can't be wrong. Field and Stream 71(10):60-2.
- Ballas, J. A., K. K. Dick, C. J. Gilchrist, and A. S. Williams. 1974. Trout fishermen in the Gallatin Canyon: motives and perspectives on quality. Ann. Meet. Am. Fish. Soc., Sept. 8-11, 1974, Honolulu.
- Benchley, P. 1967. Shark! Holiday 42(5):68-9, 96.
- Benedict, N. 1962. Shark menace: Can science end it? Field and Stream 67(4):32-5, 50-1.
- Bevins, M. I., R. S. Bond, T. J. Corcora, K. D. McIntosh, and R. J. McNeil. 1968. Characteristics of hunters and fishermen in six Northeastern states. Univ. Vermont, Agric. Exp. Stn., Bull. 656, 76 p.
- Coran, R. 1974. Shark fishing. Argosy 380 (September):24-5, 40-1.
- Field, D. R. 1974. Patterns of participation, characteristics, and preferences of Puget Sound saltwater sportfishermen. Research Proposal to the State of Washington, Water Research Center, Seattle, Wash.
- Gordon, C. D., D. W. Chapman, and T. C. Bjornn. 1969. The preferences, opinions, and behavior of Idaho anglers as related to quality in salmonid fisheries. Proc. 49th Ann. Conf. West. Assoc. State Game Fish Comm., June 1969, p. 98-114.
- Knopf, R. C., B. L. Driver, and J. R. Bassett. 1973. Motivations for fishing. 38th North Am. Wildl. Nat. Resour. Conf., Wash., D.C., March 19, 1973.
- Mackerodt, F. 1974. Silent death. Argosy 380 (September):44A-44B.
- Moeller, G. H., and J. H. Engelken. 1972. What fishermen look for in a fishing experience. J. Wildl. Manage. 36:1253-1257.
- Sand, G. X. 1972. Shark off the beach. Field and Stream 77(3):52-3, 88-91.
- Stephens, W. M., and S. G. Slaughter. 1962. My war with sharks. Saturday Evening Post 235(26):20-1, 56-7.
- Sugar, B. 1974. The horror of sharks. Argosy 380 (September):44C-44E.
- Wiles, J. 1962. Wanted: Shark hunters. Motor Boating 110 (September):62-4.
- U.S. Department of the Interior, Bureau of Outdoor Recreation. 1972. The 1970 survey of outdoor recreation activities. U.S. Gov. Print. Off., 105 p.
- U.S. Outdoor Recreation Resources Review Commission. 1962. Sport fishing - today and tomorrow. ORRRC Study Report 7, U.S. Gov. Print. Off., Wash., D.C., 127 p.

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