

**MARKET SEGMENTATION OF POTENTIAL  
FEE-FISHING PARTICIPANTS IN MISSISSIPPI  
AND THEIR WILLINGNESS TO PAY FOR  
FISHING ON PRIVATE WATERS**



**PREPARED FOR THE  
U.S. FISH & WILDLIFE SERVICE  
NATURAL RESOURCES  
ECONOMIC ENTERPRISES PROGRAM  
MISSISSIPPI STATE UNIVERSITY**

***Market Segmentation of Potential Fee-Fishing Participants in Mississippi and their Willingness to Pay for Fishing on Private Waters***

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***USDI Fish and Wildlife Service's Natural Resources Economic Enterprises Program***

*Suggested Citation:*

*Hunt, K.M., C.P. Hutt, S.C. Grado, J.W. Neal, and C.C. Mischke. 2010. Market Segmentation of Potential Fee-Fishing Participants in Mississippi and their Willingness to Pay for Fishing on Private Waters. Human Dimension & Conservation Law Enforcement Laboratory Technical Document #145, Forest & Wildlife Research Center, Mississippi State University.*

## Introduction

According to the most recent National Survey of Fishing, Hunting, and Wildlife-associated recreation nearly 30 million individuals participated in recreational fishing in the United States in 2006 (USDI and USDOC 2006). Comparatively, wildlife-watching “away from home” had nearly 23 million participants and recreational hunters only totaled 12.5 million. Despite more Americans participating in recreational fishing, most natural resources economic enterprises have neglected to focus their efforts at attracting recreational anglers. The focus on consumptive and non-consumptive wildlife-related opportunities vis-à-vis fishing opportunities for natural resources economic enterprises has been fueled by the perception that there is an abundance of public fishing opportunities available to U.S. citizens to meet the demand (Whitney 1992). Nevertheless, despite decreases in recreational fishing participation over the past several years, U.S. waterways are increasingly becoming more developed, crowded, and used by a variety of stakeholder groups. Make a visit to a local waterway on a weekend and you will find recreational anglers, tournament anglers, recreational boaters, sailboat enthusiasts, personal watercraft users, canoe and kayak users, float tubers, campers, and recreational swimmers. Concerns for national security have also prevented many public fishing lakes from being used freely and use is increasingly being segmented into area and time slots; “no fishing in certain areas” and “no fishing after dark” are typical postings at many boat ramps across the country nowadays. Gone are the days when one could go recreational fishing at a public water body “to get away from it all” and have the solitude to spend time alone or with close friends or family.

This frustration with today’s public fishing opportunities is evident when one looks at the expenditure trends in recreational fishing from 2001 to 2006. In 2001, trip-related private land use fees paid by U.S. anglers totaled \$50.4 million compared to \$114.8 million for trip-related public use fees. However, in 2006, trip-related private use fees increased nearly three-fold to \$143.5 million and rivaled that of trip-related public use fees which were \$176 million (USDI and USDOC 2006). Additionally, in 2006 U.S. anglers spent a staggering \$3.3 billion in land purchased or leased for the purpose of recreational fishing. Furthermore, today’s participants in recreational fishing are changing. According to a recent report prepared for the American Sportfishing Association and Association of Fish & Wildlife Agencies (Southwick Associates 2007), the typical recreational angler no longer lives in a rural area or small town, holds a blue collar job, and earns an average or below average income. Most come from the urban or suburban periphery, and nearly one-fourth of all recreational anglers today are considered as coming from upscale urban areas and considered “High Society” in the marketing literature. Recognizing this, many market research firms who have traditionally focused their advertising to the “golf” crowd to capture high-end customers, are now turning some advertising dollars to the recreational fishing crowd (Southwick Associates 2007). Clearly, there is a large and increasing demand for fishing on private waters, and a changing clientele that can afford such opportunities.

Fee-fishing includes any form of fishing where anglers pay for the privilege to fish in private waters. There are three basic types of fee-fishing businesses: fish-out

ponds, pay lakes, and membership fishing primarily for trophy-sized fish (Whitney 1992). Fish out ponds are primarily provided by aquaculture producers who use them to dispense of over-sized fish that are not suitable for the consumer market, or for public relations. Pay lakes are primarily recreational enterprises that charge a daily use permit, or longer term lease opportunities (seasonal or yearly) similar to hunting lease opportunities. Trophy fisheries can either be day-use enterprises, often on a limited entry basis, or “country club” type enterprises where members pay annual membership fees and must schedule visits to the location. Some of these latter group enterprises, such as the Lakes of Danbury near Houston, Texas have the potential to be quite lucrative in terms of revenue generation based on their membership fee structure (Table 1).

Table 1. Family and corporate membership fees for Lakes of Danbury (Houston, TX) recreational fishing opportunities.

**FAMILY MEMBERSHIPS**

Membership Type	Benefit Summary	Membership Fee	Monthly Membership Dues	Daily Usage Fee	Guest Fee
<i>Family</i>	- Full Services & Benefits - Extended Family Benefits	\$795	\$189	-\$0-	\$50

**CORPORATE MEMBERSHIPS**

Member Type	Benefit Summary	Yearly Membership Fee	Monthly Membership Dues	Daily Usage Fee	Guest Fee
<i>Principal Corporate Member</i>	- Full Services & Benefits - Extended Family Benefits	\$795	\$189	-\$0-	\$50
<i>Family Corporate Member</i>	- Full Services & Benefits - Extended Family Benefits	\$795	\$189	-\$0-	\$50
<i>Individual Corporate Member</i>	- Full Services & Benefits - Extended Family Benefits	\$795	\$189	-\$0-	\$50
<i>Limited Use Corporate Member</i>	- Full Services & Benefits - No Family Benefits	\$1000	-\$0-	\$75	\$75

Whereas the Lakes of Danbury may not be your typical fishing-related natural resources enterprise today, private fishing opportunities may be the wave of the future as the U.S. population isn’t expected to peak until 2080 and anglers are expected to increase substantially by then based on current participation patterns (Murdock et al. 1996). This will only exacerbate crowding issues on public waters.

With the variety of fee-fishing enterprises available and the large amount of money currently being spent in private land use fees and land purchases, one would think that there would be a large amount of research conducted that has investigated the market segments using them or likely to use them, and their willingness-to-pay (WTP) for such opportunities. Unfortunately, there is a paucity of research in the literature that would

enable a landowner to determine whether the costs and benefits of a recreational fishing venture is worthwhile, who their likely clientele would be, and their demands and preferences for species, experiences, and associated amenities. This is likely because most of the research funding on recreational fishing comes from Sport Fish Restoration monies which traditionally funds research on public waters and its users. Unlike wildlife management and associated Wildlife Restoration monies, the importance of private lands and landowner cooperation has not been recognized or even valued. That is evident in the scientific literature which contains a lot on private land hunters, and almost nothing on private land anglers. Most of the critical marketing information needed about potential recreational fishing clientele likely rests with the successful entrepreneurs who are reaping the rewards of catering to disgruntled public water anglers.

Although fee-fishing received a lot of attention from extension programs in the mid to late 1980s as a business opportunity (Cremer et al. 1984; Cichra and Carpenter 1989, Higginbotham 1988), the resultant publications treated anglers as a homogenous group and are of limited use for understanding the diversity of individuals willing to participate in such ventures today, and the value they place on these opportunities. Most state extension services have “how to” manuals on how to develop private fisheries, manage their waters, and develop lease agreements. Whereas these publications are in-depth and useful, they all have one thing in common: they tell the landowner they must find their customers anyway they can and rely on word of mouth to sell their available opportunities or increase their business. That is no way to market a recreational enterprise in today’s world, especially one that seeks to attract high paying clientele seeking a specific recreational experience. Rather, to be successful, landowners should know who their potential clientele groups are beforehand and what they are willing to pay so they can decide what type of experience they want to provide to attract a specific clientele. Further, they need to develop a marketing plan that targets the clientele group they are interested in attracting. For some, that may be family groups from a nearby city, for others an upscale clientele from around the country. Regardless, different management strategies, marketing strategies, and products and services offered are likely to change based on the desired clientele.

One method that has been utilized to answer such questions related to recreational fisheries is a stated choice model (SCM) (Aas et al. 2000; Gillis and Ditton 2002; Oh et al. 2005). SCM involves presenting individuals with a series of paired hypothetical multi-attribute scenarios representing two products (i.e., fishing trips) that the individual must either choose between or choose neither (Louviere and Timmermans 1990). Each scenario consists of multiple attributes which make up the primary characteristics of the fishing trip, and are varied along several levels which are varied from one scenario to the next. The individual is asked to examine the hypothetical scenarios presented in each pair, and to indicate which of the two fishing trips they would be most likely to take. SCM operate under the assumptions of random utility theory which holds that individuals make choices between alternatives based on a rational desire to maximize their personal utility (Louviere and Timmermans 1990). To come to this conclusion the individual must consider all the attributes within the scenarios simultaneously, determine what trade-offs they are willing to make, and make a decision that best suits their needs and preferences

and thus maximizes their utility (Louviere and Timmermans 1990). With individual choice serving as the dependent variable, and the scenario attributes serving as the independent variables the researcher is able to determine how much each attribute influences trip choice and individual utility. Additionally, when price is included as an attribute the SCM can be used to estimate WTP for individual trip attributes and trip scenarios because the coefficient for trip cost is equivalent to the marginal utility of income (Gillis et al. 2002; Oh et al. 2005).

Several studies have used SCM to examine the effect of fishing regulations (i.e., length limits, creel limits, equipment restrictions, etc.), angler expectations (i.e., size and number of fish caught), and travel costs (i.e., distance and price) on trip choice and preferences. Aas, Haider, and Hunt (2000) used an SCM to examine the effect of three regulations, and expectations of average fish size and number of fish caught on trip choice by trout anglers in Norway. They found that an angler's probability of choosing a given trip decreased as regulations became stricter, and increased as angler expectations of size and number of fish caught increased. In particular, they found that restrictions on bait fishing had the greatest negative affect on angler choice while expectations of average fish size had the most positive affect on choice. Gillis and Ditton (2002) used an SCM to examine the preferences of Atlantic billfish anglers, and found strong support for the establishment of no kill tournaments and hook restrictions. They were also able to rank 64 hypothetical trip scenarios from most to least preferred. Oh, Ditton, Gentner, and Riechers (2005) used an SCM to study the effect of four regulations, average fish size, catch probability, and trip cost on fishing trip choices and the willingness-to-pay of Texas red drum anglers. Oh et al. (2005) found that higher bag limits, maximum size limits, average number of fish caught, and catch probabilities positively influenced trip choice, while choice was negatively affected by higher minimum length limits, regulations that allowed for the annual retention of more fish over the maximum length limit, and increased trip costs. In this study, SCMs were used to evaluate angler preferences for different attributes of private fee-fishing opportunities, and determine angler WTP for select private fee-fishing scenarios.

### **Project Goal and Objectives**

The goal of this project was to identify market segments interested in participating in various types of private fee-fishing enterprises and their willingness to pay for these opportunities in Mississippi. Specific objectives were to:

- 1) Determine the proportion of Mississippi licensed anglers who would be willing to pay for the opportunity to fish 1) fish out-ponds, 2) pay per-day lakes, 3) annual per-season lease lakes,
- 2) Develop a profile of potential users in each of the three opportunities listed in #1 in terms of their demographic characteristics, place of residence (down to census blocks and tracts), participation patterns, species preferences, level of investment in recreational fishing, and experience preferences using stated choice models (Aas et

al. 2000; Gillis and Ditton 2002).

- 3) Estimate angler WTP for each of the three opportunities listed in #1 based on varying scenarios (featured species, fishing quality, level of access, and services and amenities provided) using stated choice models

## **Methods**

### ***Questionnaire Design and Implementation***

This study utilized SCMs to evaluate angler preferences and WTP for three types of private fee-fishing opportunities: 1) daily-fee lakes, 2) annual lease lakes, and 3) fish-out ponds. Due to distinct differences in the attributes and prices with these fee-fishing opportunities it was necessary to develop separate stated choice models, and accompanying questionnaires to evaluate each of the three types of fee-fishing opportunities. Thus, three 10-page questionnaires were developed to collect the necessary data (Appendix A). The first 4 pages of each of the three questionnaires were identical and collected data on general angling behavior (i.e., years of fishing experience, frequency of fishing trips on different types of waters, who they fished with most, subscriptions to fishing magazines, and investment in fishing equipment), catch-related attitudes, their opinions on what constituted trophy sizes of fish commonly found in private fee-fishing waters (i.e., largemouth bass, crappie, bluegill, and catfish), their level of interest in private fee-fishing opportunities, and whether they had fished private fee-fishing waters in the last year. The next 5 pages of the questionnaires were composed of the questions needed for each of the three SCMs and their associated instructions. The questions used to collect the data needed to estimate the SCMs consisted of 8 paired hypothetical choice scenarios that were varied over seven attributes of the fishing trip related to fishing quality, provided site amenities, distance traveled from home, and price (Figure 1). While the structure of these questions was consistent across the three questionnaires they differed in terms of the attributes and levels presented within the paired hypothetical choice scenarios (Table D1-D3; Appendix D). Respondents were asked to examine each pair of trip scenarios and indicate which of the two fishing trips they would most prefer to take or whether they would choose to take neither. Finally, the last page of the three questionnaires consisted of several demographic questions.

An initial random sample of 3,600 freshwater anglers was selected from the license files of the Mississippi Department of Wildlife, Fisheries, and Parks. Individuals within this sample were then randomly divided into three sub-samples of 1,200 individuals which would receive one of the three designed questionnaires. Survey execution followed Dillman's Tailored Design Method (2007). Individuals were sent a pre-letter explaining the purpose of the study and how they were selected for the study in September 2009 (Appendix B). On the eighth day following the pre-letter individuals were sent a copy of one of the 3 questionnaires along with a pre-paid return envelope, and a cover letter providing instructions for completing and returning the questionnaire.

In order to increase response rate individuals that did not initially respond to the first questionnaire mailing were sent a thank you/reminder postcard on day 18, a second questionnaire of day 39, and a third questionnaire on day 60.

We identified the attributes and levels used in the SCMs based on discussions with experts at the Mississippi Department of Tourism and an examination of the fishing opportunities and amenities provided at existing private fee-fishing locations already established in Mississippi (Table D1-D3; Appendix D). SCMs examining daily fee and annual lease lakes utilized the same set of attributes, but attribute levels differed on two of the attributes (Access and Price). However, the fish-out pond SCM utilized a wholly unique set of attributes due to the distinct nature of these fishing sites. Attributes utilized for the daily fee and annual lease SCMs included measurements of fisheries management and quality (i.e., features species and intensity of management), site amenities (i.e., shoreline development, provision of boats, and level of access), and cost related attributes (i.e., distance traveled to site and price of admission). Attributes utilized to fit the fish-out pond SCM included measurements of fishing quality (i.e., average size of stocked catfish), amenities (i.e., provision of bait, rental equipment, and fish cleaning and shoreline development), and cost related attributes (i.e., distance traveled to site and price per pound of catfish harvested). The number of levels per attribute was limited to three to reduce the number of choice sets that would have to be generated to fit the models so as to reduce respondent burden and minimize costs (Oh et al. 2005). We chose attributes and levels that we felt were within the control of the site manager and likely to influence customer utility as the goal of this study was to identify scenarios a site manager could provide to maximize customer utility. While distance traveled may appear to be out of the site manager's control, knowledge of how it influences customer utility may be helpful in determining the optimal location of a fee-fishing site in relation to potential customer bases. Price was included to enable the calculation of WTP.

### ***Experimental design and model***

A fractional factorial design was used to develop a tractable number of choice sets for fitting the SCMs. While the use of a full factorial design would insure perfect orthogonality of the choice set design by providing every possible combination of attribute levels, it would also generate far too many choice sets to be feasibly executed in study (Louviere 1988). However, a fractional factorial design will generate a reasonable number of chose sets while still maximizing orthogonality in a way that will allow the researcher to fit the necessary models (Bennett and Adamowicz 2001). However, even when using a fractional factorial design the number of choice sets is still usually too many to present all of them to a single individual without placing undue burden on the individual. This necessitates the need for blocking the choice sets into uncorrelated groups, or blocks; thus, reducing the number of choice sets presented to any one individual while allowing for the collection of the needed data (Bennett and Adamowicz, 2001). We used the SAS procedures Factex and Optex to generate a fractional factorial design of 80 choice sets divided into 10 blocks of 8 paired trip comparisons (Kuhfeld 2005). Separate versions of the three questionnaires were then designed for each block of paired trip comparisons, and 120 individuals were assigned to receive each version.



Once data collection was completed, the SCMs were fitted in SAS using the Transreg and Phreg procedures (Kuhfeld 2005). To ensure that the results of the models were reflective of individuals that would actually be interested in private fee-fishing opportunities individuals that indicated they had no interest in a given type of fee-fishing opportunity were excluded from analysis of the respected model. The Transreg procedure was used to code the attribute data using effects coding. In effects coding the attribute level that serves as the status quo level is assigned a code of -1 while the level hypothesized to be the most preferred level is given a code of 1. The level between these two levels is assigned a code of 0. Following coding of the attribute levels, the choice model was fitted using the Phreg procedure which fits a conditional logit model. In a conditional logit model the dependent variable, in this case choice, is binary coded depending on whether the given scenario was chosen or not, and the independent variables are the coded scenario attributes. Coefficients are calculated for attribute levels coded as either a 0 or 1, and represent the change in utility over the status quo level. The coefficient for price, which is treated as a continuous variable, represents the marginal utility of income. As such, WTP for an individual attribute level can be calculated by dividing that attribute levels coefficient by the coefficient for price. These WTP values represent the part-worth utilities of the individual attribute levels. WTP for a given trip scenario can thus be calculated by summing the WTP values for the scenarios individual attribute levels. The greater the WTP for a given scenario, the greater utility that scenario represents to the individuals sampled, and thus the population they represent. Finally, choice probabilities were calculated using the equations described by Blamey, Gordon, and Chapman (1990).

### *Non-response analysis*

Logistic regression was used to analyses the effects of age, gender, and race on survey non-response with the PROBIT procedure in SAS (SAS 1995) following methods outlined by Fisher (1996). The Probit procedure was then used to calculate non-response probabilities for each individual in the sample. Non-response probabilities were then reflected to calculate response probabilities, and response weights were calculated by taking the inverse of the response probabilities. Response weights were then used to adjust the data for non-response bias when calculating sample means and frequencies. Response weights were not employed in the analysis of the SCMs.

### *Market segmentation*

We use a market segmentation approach to divide respondents into groups with similar interests in regards to private fee-fishing opportunities. Market segmentation is the process of dividing potential clients into groups with similar characteristics, interests, or behaviors (Backman 1994; Aas and Arlinghaus 2009). In this study, we divided survey respondents into market segments based on their expressed interest in different fee-fishing opportunities. We asked respondents to indicate their level of interest in daily fee lakes, annual lease lakes, and fish-out ponds using 5-point Likert-type scale questions

(1 = not at all interested, 2 = slightly interested, 3 = moderately interested, 4 = very interested, and 5 = extremely interested). Any respondent indicating that they were interested in a given fee-fishing opportunity was considered to be within the market segment for that given fee-fishing opportunity. As such, respondents could be placed into multiple market segments if they indicated interest in more than one type of fee-fishing opportunity. Profiles were generated for each market segment in terms of their angling behavior and demographics. Additionally, stated choice data collected from respondents indicating interest in a given type of fee-fishing opportunity was used to fit the SCM for that type of fee-fishing opportunity. Those respondents that indicated no interest in a given type of fee-fishing opportunity were excluded from analysis of the respective SCM. This was done so that SCM results would reflect the preferences of those that would actually consider taking advantage of them.

## Results

### *Response rate*

A total of 1,095 individuals responded to the mail survey with 417 surveys returned non-deliverable and 198 being non-eligible (i.e., did not fish, deceased, or refusal). This resulted in an overall response rate of 39.9% when adjusting for non-deliverables and non-eligible surveys. However, response rates varied between the three SCM survey versions with adjusted response rates of 37.2% for the daily fee version, 41.8% for the annual lease version, and 40.8% for the fish-out pond version (Table 1).

Table 1. Adjusted response rates reported by survey version and all three combined.

	Survey version			Combined
	Daily fee	Annual lease	Fish-out	
Sample (N)	1,200	1,200	1,200	3,600
Respondents	336	375	384	1,095
Did not fish	59	57	44	160
Non-eligible	73	71	54	198
Deceased	1	3	0	4
Refusals	13	11	10	34
Non-deliverable	123	152	142	417
Response rate (%) <sup>a</sup>	37.2	41.8	40.8	39.9

<sup>a</sup> Adjusted response rate was calculated by dividing the number of eligible returns (respondents and 'did not fish') by the sample size minus the number of non-eligible surveys.

An analysis of non-response bias using logistic regression was used to identify significant differences between respondents and non-respondents for three demographic variables: age, gender, and race (Fisher 1996). Logistic regression indicated that non-respondents (mean age = 40) were significantly younger than respondents (mean age = 47), and were significantly more likely to be non-white than respondents (25% versus 23% non-white, respectively) (Table 2). No significant difference in gender was found between the two groups. This analysis was used to calculate response probabilities for each individual in the sample, the inverse of which were used as weights to adjust reported variable means and frequencies for non-response bias throughout the rest of this report.

Table 2. Results of non-response bias analysis using logistic regression to model the probability of a non-response. The results of the model were used to calculate non-response weights for each individual in the sample to be used to adjust survey means and frequencies for non-response bias.

Variable	df	Coefficient	SE	$\chi^2$	p-value
Intercept	1	3.0433	0.1863	266.75	< .001
Age (years)	1	-0.0397	0.0029	183.03	< .001
Race (White) <sup>a</sup>	1	-0.6676	0.0991	45.36	< .001
Gender (Male) <sup>b</sup>	1	-0.1444	0.0971	2.21	.137

	Respondents	Non-respondents
Mean age	46.6 (0.37)	40.0 (0.27)
Race (%)		
White	77.4	74.7
Non-white	22.6	25.3
Gender (%)		
Male	75.4	78.1
Female	16.0	18.7
Unknown	8.6	3.2

<sup>a</sup> Sampled individuals' race were coded as either White (0) or Non-white (1). The logistic model calculated the probability of a White individual being a non-respondent as compared to a Non-white individual.

<sup>b</sup> Sampled individuals' gender were coded as either Male (0) or Female (1). The logistic model calculated the probability of a Male being a non-respondent as compared to a Female individual.

## ***Market segmentation***

Sixty-eight percent (N = 676) of respondents indicated that they were interested in at least one of the three types of fee-fishing opportunities. Fifty-nine percent (N = 633) indicated they were interested in daily fee lakes, 49% (N = 518) in annual lease lakes, and 32% (N = 346) in fish-out ponds. The following is an overview of the characteristics, angling behavior, and catch-related attitudes of those anglers interested in each type of fee-fishing opportunity. All tables for data presented in this section can be found in Appendix C.

### ***Daily fee lakes (59% of anglers indicated interest)***

- Most (73%) anglers interested in daily fee lakes were white males. Their average age was 41 years, and their median household income was \$60,000 to \$79,999.
- Anglers interested in daily fee lakes indicated they had been fishing an average of 30 years. They also reported fishing an average of 25 days in the previous year with 8.8 of those days being on private ponds and lakes with no fee followed by public reservoirs (7.5), rivers and streams (4.3), saltwater (2.3), and fee-fishing waters (2.0).
- Thirty-six percent indicated that fishing was their most important outdoor activity with 41% indicating it was their second most important. Only 11% indicated that they were “more skilled” than other anglers, 26% said they were “less skilled”, and 63% said they were “equally skilled.”
- Most (58%) indicated that they fished most often with family members, 35% indicated they fished most often with friends, and 8% said they fished alone most often. Sixty-seven percent reported taking a child under age 18 fishing in the previous year for an average of 8.4 fishing trips.
- Just over 41% indicated they most preferred to get information about fishing from word-of-mouth followed by magazines (21%), television (18%), websites (10%), newspapers (8%), and radio (2%). Sixteen percent reported current subscriptions to fishing magazines with the three most popular being Field and Stream (16%), Bassmaster (15%), and Mississippi Game & Fish (10%).
- Overall, anglers interested in daily fee lakes had an average of \$6,265 invested in fishing rods, reels, tackle, electronics, and their boat, motor, and trailer.
- Anglers interested in daily fee lakes indicated that they felt the minimum size for a trophy largemouth bass was 8.4 pounds, 2.9 pounds for a trophy crappie, 1.9 pounds for a trophy bluegill, and 17 pounds for a trophy channel catfish.
- Most anglers interested in daily fee lakes agreed with the statements: “I usually eat the fish I catch” (73%), “The more fish I catch, the happier I am” (71%), “A fishing trip can be successful even if no fish are caught” (70%), “I’m happiest with a fishing

trip if I catch a challenging game fish” (59%), “I’m just as happy if I don’t keep the fish I catch” (58%), “I’m just as happy if I release the fish I catch” (56%), and “I like to fish where I know I have a chance to catch a “trophy” fish” (53%). Anglers interested in daily fee lakes scored highest on the “Catching Large Fish” construct.

Annual lease lakes (49% of anglers indicated interest)

- Most (73%) anglers interested in annual lease lakes were white males. Their average age was 40 years, and their median household income was \$60,000 to \$79,999.
- Anglers interested in annual lease lakes indicated they had been fishing an average of 30 years. They also reported fishing an average of 26 days in the previous year with 9.2 of those days being on private ponds and lakes with no fee followed by public reservoirs (8.0), rivers and streams (4.3), saltwater (2.3), and fee-fishing waters (2.1).
- Thirty-six percent indicated that fishing was their most important outdoor activity with 43% indicating it was their second most important. Only 14% indicated that they were “more skilled” than other anglers, 23% said they were “less skilled”, and 63% said they were “equally skilled.”
- Most (57%) indicated that they fished most often with family members, 35% indicated they fished most often with friends, and 8% said they fished alone most often. Sixty-six percent reported taking a child under age 18 fishing in the previous year for an average of 8.9 fishing trips.
- About 39% indicated they most preferred to get information about fishing from word-of-mouth followed by magazines (25%), television (17%), websites (11%), newspapers (8%), and radio (1%). Seventeen percent reported current subscriptions to fishing magazines with the three most popular being Bassmaster (18%), Field and Stream (13%), and BASS (10%).
- Overall, anglers interested in annual lease lakes had an average of \$6,653 invested in fishing rods, reels, tackle, electronics, and their boat, motor, and trailer.
- Anglers interested in annual lease lakes indicated that they felt the minimum size for a trophy largemouth bass was 8.4 pounds, 2.8 pounds for a trophy crappie, 1.9 pounds for a trophy bluegill, and 18 pounds for a trophy channel catfish.
- Most anglers interested in annual lease lakes agreed with the statements: “A fishing trip can be successful even if no fish are caught” (73%), “I usually eat the fish I catch” (72%), “The more fish I catch, the happier I am” (72%), “I’m just as happy if I don’t keep the fish I catch” (61%), “I’m happiest with a fishing trip if I catch a challenging game fish” (60%), “I’m just as happy if I release the fish I catch” (58%), “I like to fish where I know I have a chance to catch a “trophy” fish” (57%), and “The bigger the fish I catch, the better the fishing trip” (53%). Anglers interested in annual lease lakes scored highest on the “Catching Large Fish” construct.

*Fish-out ponds (32% of anglers indicated interest)*

- Most (65%) anglers interested in fish-out ponds were white males; however, fish-out ponds were the most likely type of fee-fishing opportunity to receive interest from non-white anglers (21%). The average age of anglers interested in fish-out ponds was 42 years, and their median household income was \$40,000 to \$59,999.
- Anglers interested in fish-out ponds indicated they had been fishing an average of 30 years. They also reported fishing an average of 21 days in the previous year with 7.2 of those days being on private ponds and lakes with no fee followed by public reservoirs (6.1), rivers and streams (3.8), saltwater (2.1), and fee-fishing waters (1.6).
- Thirty-six percent indicated that fishing was their most important outdoor activity with 39% indicating it was their second most important. Only 8% indicated that they were “more skilled” than other anglers, 31% said they were “less skilled”, and 61% said they were “equally skilled.”
- Most (61%) indicated that they fished most often with family members, 33% indicated they fishing most often with friends, and 6% said they fished alone most often. Sixty-seven percent reported taking a child under age 18 fishing in the previous year for an average of 8.9 fishing trips.
- About 36% indicated they most preferred to get information about fishing from word-of-mouth followed by magazines (25%), television (20%), websites (10%), newspapers (8%), and radio (2%). Fifteen percent reported current subscriptions to fishing magazines with the three most popular being Field and Stream (18%), BASS (13%), Bassmaster (11%), and North American Fisherman (11%).
- Overall, anglers interested in fish-out ponds had an average of \$4,879 invested in fishing rods, reels, tackle, electronics, and their boat, motor, and trailer.
- Anglers interested in fish-out ponds indicated that they felt the minimum size for a trophy largemouth bass was 8.3 pounds, 2.8 pounds for a trophy crappie, 2.0 pounds for a trophy bluegill, and 17 pounds for a trophy channel catfish.
- Most anglers interested in fish-out ponds agreed with the statements: “I usually eat the fish I catch” (77%), “The more fish I catch, the happier I am” (76%), “A fishing trip can be successful even if no fish are caught” (71%), “I’m happiest with a fishing trip if I catch a challenging game fish” (59%), “I’m just as happy if I don’t keep the fish I catch” (53%), and “The bigger the fish I catch, the better the fishing trip”(50%). Anglers interested in fish-out ponds scored highest on the “Catching Numbers” construct.

### *Fee-fishing activity*

In addition to constructing market segments based on individuals expressing interest in fee-fishing opportunities, we identified individuals that had utilized fee-fishing operation in the previous year. Approximately 19% (n = 192) of survey respondents reported fishing on fee-fishing ponds and lakes in the previous year (Table 3). This number, and the rest of the data reported in this section, represents un-weighted data. Of these 192 individuals, 64% (n = 123) reported paying a flat daily fee, 16% (n = 30) reported paying an annual lease, and 11% (n = 21) reported paying a per pound fee on fish caught. The distributions of the fees reported for all three types of fee-fishing opportunities were heavily skewed. Individuals utilizing daily fee fisheries reported a median daily fee of \$5, and an average daily fee of \$21. Individuals that purchased an annual lease reported a median lease price of \$175, and an average lease price of \$382. Finally, individuals that paid per pound of fish caught reported a median per pound cost of \$1.50, and a mean cost of \$5. The median number of days fished on fee-fisheries in the previous year was 5 for daily fee fisheries, 15 for annual lease fisheries, and 3 for pay per pound fisheries. Individuals fishing fee-fisheries primarily targeted bass (48%) followed by crappie (18%), catfish (17%), and other sunfish species (13%). Eighty-four percent of trips to fee-fishing destinations were spent with family members, and 50% of trips occurred at fee-fisheries within 20 miles of home.

Table 3. Reported activity on fee-fisheries by Mississippi anglers in the previous year.

Variable	N	Statistic
Fished in the previous year (%)		
Any fee-fishery	192	19.1
Daily fee fishery	123	11.2
Annual lease fishery	30	2.7
Pay per pound fishery	21	1.9
Average (SE) cost		
Daily fee fishery		20.9 (8.5)
Annual lease fishery		381.7 (111.9)
Pay per pound fishery		5.0 (2.3)
Average (SE) number of trips		
Daily fee fishery		10.7 (1.4)
Annual lease fishery		20.8 (3.4)
Pay per pound fishery		5.1 (1.6)
Average (SE) miles traveled one-way		33.7 (4.2)
Fished with most (%)		
Family	920	84.0
Friends	146	13.3
Alone	29	2.7

## *Stated Choice Models*

### *Daily fee lakes*

Of the 336 individuals that responded to the 'Daily fee' survey version, 184 indicated that they were interested in daily fee lake opportunities. The responses of these 184 individuals to the stated choice scenarios were used to fit the 'Daily fee' SCM (Table 3). For analysis purposes we classified the status quo scenario on daily fee lakes to be a lake stocked with catfish with minimal management effort, minimal shoreline access if any, anglers having to bring their own boats, unlimited access, and located up to 150 miles from the angler's place of residence (Table D1; Appendix D). All other attribute levels were compared to the status quo levels to determine if they provided a level of utility significantly different from that offered by the status quo level.

Respondents choose one of the two hypothetical daily fee lake trip scenarios over the neither option in 55% of the choice scenarios for which data was collected. This is reflected in the positive sign for both of the ASC coefficients in the model (Table 4). Based on the SCM the daily fee lake scenario that would offer anglers the greatest utility would be a lake intensively managed for trophy largemouth bass fishing with developed shoreline access featuring trails and fishing piers, boats provided by the lake owner free of charge, limited access guaranteeing that only a few groups would fish on the lake any given day, and located within 50 miles of the anglers home (Table 5). Mean willingness-to-pay (WTP) for this scenario was \$196 for a day of fishing. Based on the SCM price was the greatest predictor of angler choice ( $\chi^2 = 146.44$ ;  $p < .001$ ). Anglers received significantly greater utility for lakes featuring bass ( $\chi^2 = 20.54$ ;  $p < .001$ ), and their estimated part-worth utility for lakes featuring bass was approximately \$56 (Table 3). Anglers were indifferent between lakes managed for catfish or panfish ( $\chi^2 = 0.50$ ;  $p = .481$ ) indicating that anglers received the same level of utility from these species. Anglers received significantly greater utility from lakes with either highly-intensive ( $\chi^2 = 11.29$ ;  $p < .001$ ), or semi-intensive management ( $\chi^2 = 3.95$ ;  $p = .047$ ), and their marginal WTP for these two management levels was \$40 and \$23, respectively.

Generally, attributes involving site amenities had less affect on angler utility than did the featured species and management level attributes. Estimated angler utility was greater for sites with developed shorelines ( $\chi^2 = 7.01$ ;  $p = .008$ ), but anglers were indifferent between shorelines with rustic access and no access ( $\chi^2 = 0.20$ ;  $p = .656$ ) (Table 4). Estimated angler utility was also significantly greater for sites that provided boats for use free of charge ( $\chi^2 = 6.80$ ;  $p = .009$ ) as opposed to sites where anglers had to bring their own boats, but significantly lower for sites that rented boats ( $\chi^2 = 14.36$ ;  $p < .001$ ). Estimated angler utility was also significantly greater for sites located within 50 miles of their homes ( $\chi^2 = 4.28$ ;  $p = .039$ ), but anglers were indifferent between sites located within 100 miles and 150 miles of home ( $\chi^2 = 0.00$ ;  $p = .955$ ). Finally, anglers were indifferent about the level of access at the site (Table 4).



Table 4. Results of conditional logit model fit to the daily fee lakes stated choice model.

Attributes	Coefficient	SE	$\chi^2$	p-value	Odds ratio	WTP (\$)
ASC*						
Trip A	0.7385	0.098	56.38	<.001	2.093	
Trip B	0.5721	0.100	32.93	<.001	1.772	
Price (daily fee)	-0.0058	0.000	146.64	<.001	0.994	
Featured species						
Bass	0.3222	0.071	20.58	<.001	1.380	55.74
Panfish	0.0460	0.065	0.50	.481	1.047	7.95
Management level						
Highly intensive	0.2298	0.068	11.29	<.001	1.258	39.75
Semi-intensive	0.1313	0.066	3.95	.047	1.140	22.71
Shoreline fishing						
Developed	0.1966	0.074	7.01	.008	1.217	34.02
Rustic	0.0349	0.078	0.20	.656	1.036	6.04
Boat availability						
Provided free	0.1804	0.069	6.80	.009	1.198	31.21
For rent	-0.2517	0.066	14.36	<.001	0.777	-43.54
Access						
Exclusive	-0.0493	0.067	0.54	.464	0.952	-8.53
Limited	0.0559	0.066	0.71	.399	1.057	9.67
Distance						
Within 50 mi	0.1480	0.071	4.28	.039	1.159	25.60
Within 100 mi	0.0035	0.062	0.00	.955	1.004	0.61
Model Statistics						
No. of observations	4,610					
-2 Log L	3,373.32					

\* ASC stands for alternative specific constant and represents individuals selection of one of the hypothetical fishing trips over the neither option.

Table 5. The predicted choice probabilities ( $P_{ih}$ ) and WTP of 9 daily fee lakes scenarios based on the SCM model presented in Table 4.

Scenario	Species	Mgmt	Shore	Boat	Access	Distance	WTP (\$)	$P_{ih}$
1	bass	high	develop	free	limited	50	195.97	0.144
2	bass	high	develop	free	unlimited	50	186.31	0.136
3	bass	medium	develop	free	limited	50	178.94	0.130
4	panfish	high	develop	free	limited	50	148.19	0.109
5	catfish	high	develop	free	limited	50	140.24	0.104
6	panfish	medium	develop	free	limited	50	131.15	0.099
7	catfish	medium	develop	free	limited	50	123.20	0.095
8	panfish	high	rustic	free	limited	50	120.22	0.093
9	catfish	medium	develop	free	unlimited	50	113.54	0.089

### Annual lease lakes

Of the 375 individuals that responded to the 'Annual lease' survey version, 160 indicated that they were interested in annual lease lake opportunities. The responses of these 160 individuals to the stated choice scenarios were used to fit the 'Annual lease' SCM (Table 6). For analysis purposes we classified the status quo scenario on annual lease lakes to be a lake stocked with catfish with minimal management effort, minimal shoreline access if any, anglers having to bring their own boats, unlimited access, and located up to 150 miles from the angler's place of residence (Table D2; Appendix D). All other attribute levels were compared to the status quo levels to determine if they provided a level of utility significantly different from that offered by the status quo level.

Respondents choose one of the two hypothetical annual lease scenarios over the neither option in 59% of the choice scenarios for which data was collected. This is reflected in the positive sign for both of the ASC coefficients in the model (Table 6). Based on the SCM the daily fee lake scenario that would offer anglers the greatest utility would be a lake intensively managed for trophy largemouth bass fishing with developed shoreline access featuring trails and fishing piers, boats provided by the lake owner free of charge, limited access guaranteeing that only lease members would be allowed to fish on the lake, and located within 50 miles of the anglers home (Table 7). Mean WTP for this scenario was \$500 for an annual membership.

Based on the SCM price was the greatest predictor of angler choice ( $\chi^2 = 116.86$ ;  $p < .001$ ) (Table 6). Anglers received significantly greater utility for lakes featuring bass ( $\chi^2 = 15.70$ ;  $p < .001$ ), and their estimated part-worth utility for lakes featuring bass was approximately \$132 (Table 6). Anglers were indifferent between lakes managed for catfish or panfish ( $\chi^2 = 2.20$ ;  $p = .138$ ) indicating that anglers received approximately the same level of utility from these species. Anglers received significantly greater utility from lakes that with highly-intensive management for trophy fishing ( $\chi^2 = 12.24$ ;  $p < .001$ ), but were indifferent between lakes with semi-intensive or minimal management ( $\chi^2 = 2.91$ ;  $p = .088$ ). Angler marginal WTP for highly-intensive management on annual lease lakes was \$107.

Generally, attributes involving site amenities had less affect on angler utility then did the featured species and management level attributes. Estimated angler utility was significantly greater for sites that provided boats for use free of charge ( $\chi^2 = 7.12$ ;  $p = .008$ ) as opposed to sites where anglers had to bring their own boats, but significantly lower for sites that rented boats ( $\chi^2 = 9.06$ ;  $p = .003$ ) (Table 6). Estimated angler utility was also significantly greater for sites located within 50 miles of their homes ( $\chi^2 = 11.61$ ;  $p = .001$ ), but anglers were indifferent between sites located within 100 miles and 150 miles of home ( $\chi^2 = 2.16$ ;  $p = .142$ ). Finally, anglers were indifferent about the level of shoreline access on annual lease lakes, and the level of membership access at the site (Table 6).

Table 6. Results of conditional logit model fit to the annual lease lake stated choice model.

Attributes	Coefficient	SE	$\chi^2$	p-value	Odds ratio	WTP (\$)
ASC*						
Trip A	0.8380	0.100	70.84	<.001	2.312	
Trip B	0.8546	0.100	72.63	<.001	2.350	
Price (daily fee)	-0.0022	0.000	116.86	<.001	0.998	
Featured species						
Bass	0.2900	0.073	15.70	<.001	1.336	131.82
Panfish	0.0979	0.066	2.20	.138	1.103	44.50
Management level						
Highly intensive	0.2358	0.067	12.24	.001	1.266	107.19
Semi-intensive	0.1111	0.065	2.91	.088	1.117	50.48
Shoreline fishing						
Developed	0.1302	0.074	3.06	.080	1.139	59.19
Rustic	0.1121	0.078	2.08	.149	1.119	50.96
Boat availability						
Provided free	0.1895	0.071	7.12	.008	1.209	86.12
For rent	-0.2004	0.067	9.06	.003	0.818	-91.10
Access						
Exclusive	-0.0548	0.068	0.65	.420	0.947	-24.91
Limited	0.0095	0.066	0.02	.886	1.010	4.31
Distance						
Within 50 mi	0.2451	0.072	11.61	.001	1.278	111.41
Within 100 mi	-0.0929	0.063	2.16	.142	0.911	-42.25
Model Statistics						
No. of observations	4,344					
-2 Log L	3,164.00					

\* ASC stands for alternative specific constant and represents individuals selection of one of the hypothetical fishing trips over the neither option.

Table 7. The predicted choice probabilities ( $P_{ih}$ ) and WTP of 9 annual lease lakes scenarios based on the SCM model presented in Table 6.

Scenario	Species	Mgmt	Shore	Boat	Access	Distance	WTP (\$)	$P_{ih}$
1	bass	high	develop	free	limited	50	500.04	0.134
2	bass	high	develop	free	unlimited	50	495.73	0.132
3	bass	high	rustic	free	limited	50	491.81	0.118
4	panfish	high	develop	free	limited	50	412.72	0.094
5	panfish	high	rustic	free	limited	50	404.49	0.111
6	panfish	high	rustic	free	unlimited	50	400.18	0.106
7	catfish	high	develop	free	limited	50	368.22	0.110
8	catfish	high	rustic	free	limited	50	359.99	0.098
9	catfish	high	rustic	free	unlimited	50	355.68	0.097

### Fish-out ponds

Of the 384 individuals that responded to the 'Fish-out' survey version, 119 indicated that they were interested in fish-out pond opportunities. The responses of these 160 individuals to the stated choice scenarios were used to fit the 'Fish-out' SCM (Table 8). For analysis purposes we classified the status quo scenario on fish-out ponds as being ponds stocked with one pound channel catfish, no provision of bait or equipment, mowed shorelines without benches, anglers left to clean their own fish at provided cleaning stations, and located within 50 miles of the angler's place of residence (Table D3; Appendix D). All other attribute levels were compared to the status quo levels to determine if they provided a level of utility significantly different from that offered by the status quo level.

Respondents choose one of the two hypothetical fish-out pond trip scenarios over the neither option in 61% of the choice scenarios for which data was collected. This is reflected in the positive sign for both of the ASC coefficients in the model (Table 8). Based on the SCM the daily fee lake scenario that would offer anglers the greatest utility would be a pond stocked with catfish weighing an average of five pounds, bait and fishing equipment provided free of charge, mowed shorelines with benches and fishing piers, fish cleaning free of charge, and located within 10 miles of the angler's residence (Table 9). Mean WTP for this scenario was \$3.87 per pound of catfish caught.

Based on the SCM price was the greatest predictor of angler choice ( $\chi^2 = 100.29$ ;  $p < .001$ ) (Table 8). Anglers received significantly greater utility from ponds stocked with catfish averaging 3 lbs. ( $\chi^2 = 5.66$ ;  $p = .017$ ), or 5 lbs. ( $\chi^2 = 7.80$ ;  $p = .005$ ) compared to ponds stocked with catfish averaging 1 lb. Estimated angler utility significantly increased when the scenario called for bait provided on-site free of charge ( $\chi^2 = 6.74$ ;  $p = .009$ ) compared to having to provide their own, but were indifferent between bringing their own and having the option to purchase it on-site ( $\chi^2 = 2.87$ ;  $p = .090$ ). Anglers were indifferent between bringing their own fishing equipment and having it provided free of charge on-site ( $\chi^2 = 1.45$ ;  $p = .229$ ), but estimated utility was negatively affected in scenarios involving fish-out ponds that rented equipment on-site ( $\chi^2 = 9.27$ ;  $p = .002$ ). Anglers received greater estimated utility from scenarios where the fish-out ponds shoreline featured both benches and fishing piers ( $\chi^2 = 8.31$ ;  $p = .004$ ); however, angler utility was negatively affected when the scenario called for the provision of benches only ( $\chi^2 = 9.27$ ;  $p = .002$ ) compared to a mowed shoreline with no benches. This suggests that the inclusion of piers is particularly attractive to shoreline anglers. Estimated angler utility was significantly increased in scenarios where fish cleaning was provided free of charge ( $\chi^2 = 4.14$ ;  $p = .042$ ), and resulted in an increase in WTP of \$0.46 per pound of catfish harvested (Table 8). However, providing fish cleaning for an added fee negatively affected angler utility ( $\chi^2 = 6.22$ ;  $p = .013$ ), and resulted in a decrease in WTP of \$0.54 per pound of catfish harvested (Table 8). Finally, angler utility was positively affected when the fish-out pond was located within 10 miles of home ( $\chi^2 = 22.24$ ;  $p < .001$ ) compared to a fish-out pond within 50 miles of the individuals residence, and provided the largest (\$1.18) increase in WTP of any of the varied attributes (Table 8). However, anglers were indifferent between fish-out ponds located 25 or 50 miles away.

Table 8. Results of conditional logit model fit to the catfish fish-out pond stated choice model.

Attributes	Coefficient	SE	$\chi^2$	p-value	Odds ratio	WTP (\$)
ASC*						
Trip A	2.3874	0.201	141.29	<.001	10.885	
Trip B	2.2003	0.207	112.69	<.001	9.028	
Price (daily fee)	-0.3815	0.038	100.29	<.001	0.683	
Catfish size						
5 lbs	0.2535	0.091	7.80	.005	1.288	0.66
3 lbs	0.2040	0.086	5.66	.017	1.226	0.53
Bait provision						
No charge	0.2324	0.090	6.74	.009	1.262	0.61
For sale	-0.1350	0.080	2.87	.090	0.874	-0.35
Equipment						
Free for use	0.1144	0.095	1.45	.229	1.121	0.30
For rent	-0.3185	0.103	9.54	.002	0.727	-0.83
Shoreline						
Benches & piers	0.2520	0.087	8.31	.004	1.287	0.66
Benches only	-0.2563	0.084	9.27	.002	0.774	-0.67
Fish cleaning						
No charge	0.1750	0.086	4.14	.042	1.191	0.46
Extra fee	-0.2053	0.082	6.22	.013	0.814	-0.54
Distance						
Within 10 mi	0.4498	0.095	22.24	<.001	1.568	1.18
Within 25 mi	0.1112	0.081	1.89	.169	1.118	0.29
Model Statistics						
No. of observations	2,813					
-2 Log L	2,058.80					

\* ASC stands for alternative specific constant and represents individuals selection of one of the hypothetical fishing trips over the neither option.

Table 9. The predicted choice probabilities ( $P_{ih}$ ) and WTP of 9 catfish fish-out pond scenarios based on the SCM model presented in Table 8. WTP is on a per pound of fish caught basis.

Scenario	Size	Bait	Equip	Shore	Clean	Distance	WTP (\$)	$P_{ih}$
1	5lb	free	free	develop	free	10	3.87	0.136
2	5lb	free	free	develop	own	10	3.41	0.114
3	5lb	free	free	low	free	10	3.21	0.105
4	5lb	free	own	develop	own	11	3.11	0.102
5	5lb	free	free	develop	free	25	2.98	0.097
6	5lb	sale	free	develop	free	10	2.91	0.094
7	5lb	free	free	develop	pay	10	2.88	0.093
8	5lb	own	free	develop	own	10	2.80	0.090
9	3lb	free	free	develop	pay	10	2.75	0.088

## Discussion

The findings of this study indicate that there is a substantial untapped market for private fee-fishing enterprises in Mississippi. While only one-fifth of respondents reported fishing private fee-fishing waters in the previous year, nearly 60% indicated interest in fishing some type of fee-fishing water in the future. This is not surprising given increasing crowding and fishing pressure on public waters throughout Mississippi and the rest of the country. Furthermore, interest in private fee-fishing opportunities is not limited to up-scale anglers. Socio-demographic data collected in by study indicates that most anglers interested in these opportunities are from the middle class. Fishing and hunting have long been considered blue collar, middle-class pastimes, and while interest among higher income groups is growing (Southwick Associates 2007), middle class individuals still make up the bulk of the market. Given the abundance of public waters in the South it would be reasonable to doubt that most anglers would be willing to pay for access to private fishing waters; however, anglers in the South already spend significant amounts of money on fishing as evidenced by the anglers surveyed for this study. Furthermore, many anglers in the South also hunt, and the practice of purchasing hunting leases on private property has been firmly established throughout the South (Pope, Arden, and Stoll 1985; Hussain, Zhang, and Armstrong 2004). One thing that is for certain is that private fee-fishing opportunities are primarily a family attraction. The majority of anglers interested in all three types of fee-fishing opportunities indicated that they fished primarily with family, and 84% of those that had visited a fee-fishery in the previous year had done so with family.

Based on the SCMs, angler preferences for daily fee and annual lease lakes are very similar. In both cases interested anglers are looking primarily for trophy largemouth bass fishing opportunities. Trophy bass fishing scenarios clearly draw the greatest attention, and anglers have the highest WTP for these scenarios. Even so, trophy panfish (crappie and bluegill) scenarios still draw an impressive WTP from Mississippi anglers, and those landowners that can produce such fisheries should not neglect their potential as a source of income. Those landowners interested in providing daily fee lakes should also realize that while intensively managed trophy fisheries are preferred, estimated angler WTP for semi-intensively managed, quality fisheries is only \$17 less per day than it is for trophy fisheries. Landowners that would find the consistent production of trophy largemouth bass a daunting task should consider that anglers are still willing to pay to fish on lakes were they stand a chance of catching bass in the 3 to 6 pound range.

Aside from the featured species and level of management, the next greatest determinate of angler choice of annual lease lake scenarios was the distance to be travelled. This was also an important consideration for daily fee lake scenarios, but to a much lesser extent. This is likely because daily fee lakes represent a one time purchase of access. Such trips can be made by those who are only interested in utilizing the resource once or twice a year making a longer trip seem less of a deterrent to the angler. Conversely, an annual lease represents the purchase of access for a full year allowing the angler to utilize the resource as many times as they want. In such a situation it is easy to see why the angler would want the lake to be as close to home as possible. While a one

time trip of 100 to 150 miles compared to 50 miles may not be an issue, the difference could easily be the difference between using an annual lease lake a few times a month versus making the trip only a few times a year.

After distance traveled, the next issue of concern to daily fee and annual lease anglers was the provision of boats on-site. In both cases the provision of boats free of charge significantly increased anglers overall WTP. This is not surprising because it relieves the angler of the added cost of providing and towing their own boat to the fishing site. While most anglers interested in daily fee and annual lease lakes have boats of their own, towing a boat to the fishing site is still a hassle and will incur increased gasoline costs to the angler. Conversely, providing boats for rent had a negative effect on angler WTP for daily fee and annual lease lakes. This is in keeping with economic theory as the added rental fee would mean an added cost to the angler, and would thus result in a decline in their WTP for the base fee. This does not mean that the provision of rental boats by fee-fishing vendors is not a viable option, only that fee-fishing providers will have to adjust their base fees accordingly if they intend to charge for rental boats.

The final two site attributes considered by anglers interested in daily fee and annual lease lakes were the provision of shoreline fishing access and overall access to the fishery. Anglers interested in daily fee lakes preferred sites with developed shoreline access entailing trails and piers over sites with no shoreline access or rustic shoreline access while anglers interested in annual lease lakes were indifferent towards the level of shoreline access. It is possible that anglers interested in annual lease lakes are either more prone to fish from boats, or are more interested in fishing a site with a more natural aesthetics. Either way, the data collected does not adequately answer the question. Future studies on this subject should make an effort to measure the importance of site aesthetics as escape from the urban environment, and being in a natural setting are often highly rated motivations for fishing (Knopf, Driver, and Bassett 1973; Fedler and Ditton 1994). Anglers interested in both daily fee and annual lease fee-fishing opportunities were largely indifferent about the level of individual access to the fishing sites meaning angler utility was not significantly altered whether the site scenario involved allowing anyone who shows up to fish or whether the site operator places some kind of limit on the number of people that utilize the lake in a given day. There are three possible explanations for this result. First, anglers may feel confident that given the cost of access to a private lake the likelihood of crowding is low so other attributes are of greater concern. Second, anglers may be leery of access limits that may prevent themselves from utilizing a lake on a given day. Third, the attribute levels used in the SCM may not have been specific enough for the anglers to make an informed decision based on them. In both models the limited access level indicated that access per day or year would be limited to a few groups or members but did not specify a specific number of individuals.

Compared to daily fee and annual lease fee-fishing opportunities, fish-out ponds are a different product and market all together. Anglers interested in fish-out ponds stocked with catfish had lower median incomes than anglers interested in the other fee-fishing opportunities. Also, while a majority of those interested in fish-out ponds were still white this group included by far the largest proportion of non-white anglers with one

out of five being non-white. However, fee-fishing did garner the least interest among Mississippi anglers with only 32% of respondents, or nearly half of as many as indicated interest in daily fee lakes, indicating interest in fish-out ponds. That said one in three anglers expressing interest is still indicative of a significant market, and the market for non-white anglers is only going to increase in the coming decades (Murdock et al. 1996).

Concerning fish-out ponds, the site attributes of greatest importance to anglers are the distance of the site from their home, and the average size of stocked catfish. Anglers interested in fish-out ponds received the most utility from sites located within ten miles of home, and those stocked with catfish averaging five pounds in size, although three pound catfish were preferred to one pound catfish. Given the importance of having fish-out ponds so close to home, the greater proportion of non-whites interested in these opportunities, and the nature of these operations (i.e., the use of stocked catfish) it is reasonable to conclude that these ventures would be particularly successful near major towns and cities in Mississippi. The successful sighting of a daily fee and annual lease lake is very dependent on finding a lake of adequate size that can produce quality trophy largemouth bass fishing. However, fish-out pond vendors will find much more flexibility in locating adequate sites for their operations. Smaller ponds will actually be preferred in order to ensure that shore anglers can cast to any part of the pond, and the production of fish off-site before stocking means that the quality of the pond's habitat will be less of a limiting factor.

Other attributes of importance to anglers interested in fish-out ponds were the provision of shoreline benches and piers, free fish cleaning services, and free bait. The estimated utility of anglers interested in fish-out ponds was significantly higher for sites providing both benches and piers compared to sites providing neither, and anglers were thus willing to pay an additional \$0.66 per pound harvested on average if these amenities were provided. Whether this additional money is enough to make the provision of benches and piers profitable will need to be considered by individual vendors. The SCM also found that the provision of bait and tackle for free or for rent had the same affect on angler utility as did the provision of boats on daily fee and annual lease lakes. The provision of bait and equipment at no charge represented a reduced cost to the angler and thus increased their WTP while charging for these items added an additional cost and thus reduced overall WTP. However, the sale of bait on-site did not have as great a negative affect on angler utility as anglers would otherwise need to purchase their own bait off-site.



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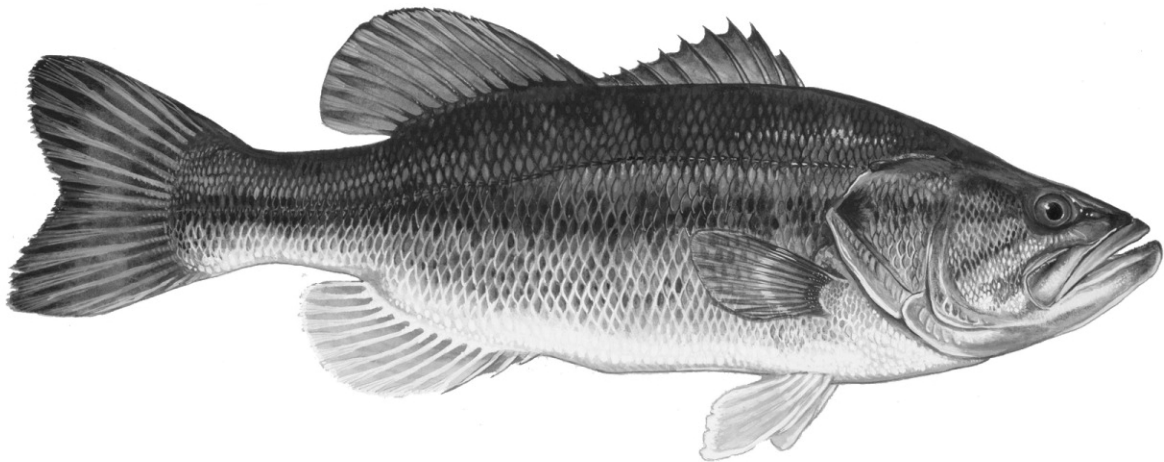
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## APPENDIX A

### 2009 SURVEY OF MISSISSIPPI ANGLERS AND INTEREST IN FISHING PRIVATE WATERS

*Survey of Mississippi Anglers and  
Interest in Fishing Private Waters*



*Conducted for the*  
**U.S. Fish and Wildlife Service's Natural Resources Economic Enterprises Program**  
*by the*  
**Human Dimensions & Conservation Law Enforcement Laboratory**  
**Forest & Wildlife Research Center**  
**Mississippi State University**

**SECTION I. FISHING EXPERIENCE AND ATTITUDES**

*In the following questions, please tell us about your fishing activity and experience. The information you provide will remain strictly confidential and you will not be identified with your answers.*

1. How many years have you been fishing? \_\_\_\_\_ YEARS
  
2. Which species of fish do you fish for most often in Mississippi?
  - \_\_\_\_\_ FIRST CHOICE
  - \_\_\_\_\_ SECOND CHOICE
  - \_\_\_\_\_ THIRD CHOICE
  
3. How many days have you gone fishing since this time last year on the following types of water:
  - \_\_\_\_\_ PUBLIC LAKES AND RESERVOIRS
  - \_\_\_\_\_ RIVERS AND STREAMS
  - \_\_\_\_\_ PRIVATE PONDS AND LAKES (NO FEE)
  - \_\_\_\_\_ FEE-FISHING PONDS AND LAKES (DAILY FEE OR ANNUAL LEASE)
  - \_\_\_\_\_ SALTWATER
  - \_\_\_\_\_ OTHER, please specify: \_\_\_\_\_
  
4. How do you compare your fishing ability to that of other freshwater anglers in general?
  - 1 LESS SKILLED
  - 2 EQUALLY SKILLED
  - 3 MORE SKILLED
  
5. Compared to your other outdoor recreation activities (such as hunting, camping, golfing, etc...) would you rate fishing as: *(Please circle only one answer)*
  - 1 YOUR MOST IMPORTANT OUTDOOR ACTIVITY
  - 2 YOUR SECOND MOST IMPORTANT OUTDOOR ACTIVITY
  - 3 YOUR THIRD MOST IMPORTANT OUTDOOR ACTIVITY
  - 4 NONE OF THE ABOVE

6. Who do you fish with most often? *(Please circle only one)*

- |  |                       |
|--|-----------------------|
| 1 GRANDPARENT(S)                           | 6 FRIEND(S)           |
| 2 PARENTS(S)                               | 7 FISHING CLUB        |
| 3 SIBLING(S)                               | 8 ALONE               |
| 4 CHILDREN                                 | 9 BUSINESS ASSOCIATES |
| 5 OTHER RELATIVE(S), please specify: _____ |                       |

7. Have you taken a child under age 18 fishing in the last year?

- 1 YES --- *(If YES, how many times? \_\_\_\_\_ )*  
 2 NO

8. Are you a member of a fishing club or organization?

- 1 YES  
 2 NO

9. Do you participate in fishing tournaments?

- 1 YES  
 2 NO – *(If NO, please skip ahead to Question #9 on Page 2)*

If YES, how many tournaments did you participate in since this time last year?

- FRESHWATER \_\_\_\_\_ NUMBER OF TOURNAMENTS  
 SALTWATER \_\_\_\_\_ NUMBER OF TOURNAMENTS

10. Do you subscribe to any fishing magazines?

- 1 YES --- *(If YES, how many? \_\_\_\_\_ ); Which is your favorite? \_\_\_\_\_*  
 2 NO

11. How do you **most** prefer to receive information about fishing? *(Please circle only one)*

- |             |                 |
|-------------|-----------------|
| 1 RADIO     | 4 NEWSPAPERS    |
| 2 MAGAZINES | 5 TELEVISION    |
| 3 WEBSITES  | 6 WORD OF MOUTH |

12. If you had to replace all the fishing equipment you own with similar equipment, how much would it cost you to replace the following items?

- a) Rods and reels .....\$ \_\_\_\_\_
- b) Tackle (hooks, lures, line, and other hardware) .....\$ \_\_\_\_\_
- c) Electronic equipment (depth finder, GPS, etc.).....\$ \_\_\_\_\_
- d) Boat, motor, and trailer .....\$ \_\_\_\_\_

13. For the species of fish listed below, what minimum length and weight must they reach before you consider them to be a “trophy” fish?

<u>Species</u>	<u>Length (inches)</u>	<u>Weight (pounds)</u>
a) Largemouth bass	_____	_____
b) Crappie	_____	_____
c) Bluegill	_____	_____
d) Channel Catfish	_____	_____

14. Please indicate the extent to which you agree or disagree with each of the following statements about fishing and catching fish.

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
a) The more fish I catch, the happier I am.....1	2	3	4	5	
b) A fishing trip can be successful even if no fish are caught.....1	2	3	4	5	
c) I usually eat the fish I catch.....1	2	3	4	5	
d) A successful fishing trip is one in which many fish are caught.....1	2	3	4	5	
e) I would rather catch one or two big fish than ten smaller fish.....1	2	3	4	5	
f) When I go fishing, I'm just as happy if I don't catch a fish.....1	2	3	4	5	
g) If I thought I wouldn't catch any fish, I wouldn't go fishing .....1	2	3	4	5	
h) The bigger the fish I catch, the better the fishing trip.....1	2	3	4	5	
i) I'm just as happy if I don't keep the fish I catch .....1	2	3	4	5	
j) A full stringer is the best indicator of a good fishing trip.....1	2	3	4	5	
k) I want to keep all the fish I catch.....1	2	3	4	5	
l) I'm happiest with a fishing trip if I at least catch the daily bag limit .....1	2	3	4	5	
m) I'm just as happy if I release the fish I catch.....1	2	3	4	5	
n) I'm happiest with a fishing trip if I catch a challenging game fish....1	2	3	4	5	
o) I like to fish where I know I have a chance to catch a "trophy fish" .1	2	3	4	5	
p) When I go fishing, I'm not satisfied unless I catch something .....1	2	3	4	5	

15. Please indicate your level of interest in private fee-fishing opportunities in Mississippi

	Not at all interested	Slightly interested	Moderately interested	Very interested	Extremely interested
a) Fish out ponds where you pay per pound of fish caught .....	1	2	3	4	5
b) Daily fee ponds and lakes.....	1	2	3	4	5
c) Annual lease or membership lakes .....	1	2	3	4	5

16. Since this time last year, have you fished on private waters that required you to pay a fee?

- 1 YES
- 2 NO – (If NO, please skip ahead to Section II on Page 5)

If YES to Question 16, did you.....

- a) Pay per pound of fish caught      NO YES..... If yes, how much did you pay per pound? \$ \_\_\_\_\_
- b) Pay a flat fee to fish for the day      NO YES..... If yes, how much did you pay for the day? \$ \_\_\_\_\_
- c) Pay an annual lease      NO YES..... If yes, how much did you pay for the year? \$ \_\_\_\_\_

17. How many days have you gone fishing since this time last year on the following types of fee-fishing waters:

- \_\_\_\_\_ FISH-OUT PONDS (PAY PER POUND OF FISH CAUGHT)
- \_\_\_\_\_ DAILY FEE PONDS OR LAKES
- \_\_\_\_\_ ANNUAL LEASE OR MEMBERSHIP PONDS OR LAKES
- \_\_\_\_\_ OTHER, please specify: \_\_\_\_\_

18. What type of fish did you pursue **most** frequently on fee-fishing waters in the last year?

\_\_\_\_\_ FISH PURSUED MOST FREQUENTLY



19. How many miles (one-way) did you travel to get to the fee-fishing pond or lake you fished most often?

\_\_\_\_\_ ONE-WAY MILES

20. In what county was it located? \_\_\_\_\_ COUNTY

21. Who did you fish with most often on fee-fishing waters? (*Please circle only one*)

- |  |                       |
|--|-----------------------|
| 1 GRANDPARENT(S)                           | 6 FRIEND(S)           |
| 2 PARENTS(S)                               | 7 FISHING CLUB        |
| 3 SIBLING(S)                               | 8 ALONE               |
| 4 CHILDREN                                 | 9 BUSINESS ASSOCIATES |
| 5 OTHER RELATIVE(S), please specify: _____ |                       |

**SECTION II. YOUR SELECTION OF PREFERRED FISHING TRIPS**

The purpose of this section of the questionnaire is to determine your interest in and preferences regarding private daily fee fishing opportunities in Mississippi. This section includes eight sets of hypothetical fishing trips on private waters that differ from each other with regard to the following fishing site attributes:

- Featured species (bass, panfish, or catfish)
  - May not be the only species present, but it is the one targeted for management.
- Management level (minimal, semi-intensive, or highly intensive trophy management)
- Shoreline fishing access (rustic, with trails, or with trails and piers)
- Boat availability (bring your own, rent, or provided free of charge)
- Level of access (unlimited access to exclusive access by reservation)
- Distance from residence (miles from your home)
- Price (\$ per day per person to fish on the fee-fishing lake per person)

Closely examine each set of hypothetical fishing trips, and indicate which trip you would prefer to take by selecting the option that suits you best. If you find neither option appealing, please indicate that you would choose neither trip. Assume that all the hypothetical trips take place on private lakes ranging in size from 75-300 acres.

22. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Panfish (Bluegill & Crappie)	Bass	
Management	Semi-intensive management of fishery producing quality fishing	Highly intensive management of fishery producing trophy fishing	
Shoreline fishing	Rustic shoreline access available along most of the lake	Rustic shoreline access available along most of the lake	
Boat availability	Must bring your own boat	Boats available for no extra charge	
Access (Daily)	Unlimited access; anyone who pays can fish at any time	Limited access; only a few groups are allowed to fish at a given time	
Distance	Within 100 miles of your home	Within 100 miles of your home	
Price (Daily fee)	\$50/day	\$150/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

23. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Catfish	Bass	
Management	Semi-intensive management of fishery producing quality fishing	Minimal management of fishery. Fishing typical of public waters	
Shoreline fishing	No or minimal shoreline access	Shoreline access available with trails and fishing piers	
Boat availability	Boats available for no extra charge	Boats available for rent	
Access (Daily)	Limited access; only a few groups are allowed to fish at a given time	Limited access; only a few groups are allowed to fish at a given time	
Distance	Within 50 miles of your home	Within 100 miles of your home	
Price (Daily fee)	\$300/day	\$300/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

24. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Panfish (Bluegill & Crappie)	Catfish	
Management	Minimal management of fishery. Fishing typical of public waters	Minimal management of fishery. Fishing typical of public waters	
Shoreline fishing	Rustic shoreline access available along most of the lake	No or minimal shoreline access	
Boat availability	Must bring your own boat	Must bring your own boat	
Access (Daily)	Unlimited access; anyone who pays can fish at any time	Limited access; only a few groups are allowed to fish at a given time	
Distance	Within 50 miles of your home	Within 50 miles of your home	
Price (Daily fee)	\$50/day	\$150/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

25. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Bass	Panfish (Bluegill & Crappie)	
Management	Minimal management of fishery. Fishing typical of public waters	Highly intensive management of fishery producing trophy fishing	
Shoreline fishing	Shoreline access available with trails and fishing piers	Shoreline access available with trails and fishing piers	
Boat availability	Boats available for no extra charge	Boats available for rent	
Access (Daily)	Unlimited access; anyone who pays can fish at any time	Exclusive access; lake can be reserved for a full or half day	
Distance	Within 100 miles of your home	Within 150 miles of your home	
Price (Daily fee)	\$50/day	\$50/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

26. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Panfish (Bluegill & Crappie)	Panfish (Bluegill & Crappie)	
Management	Semi-intensive management of fishery producing quality fishing	Minimal management of fishery. Fishing typical of public waters	
Shoreline fishing	Shoreline access available with trails and fishing piers	No or minimal shoreline access	
Boat availability	Boats available for no extra charge	Boats available for no extra charge	
Access (Daily)	Limited access; only a few groups are allowed to fish at a given time	Limited access; only a few groups are allowed to fish at a given time	
Distance	Within 150 miles of your home	Within 100 miles of your home	
Price (Daily fee)	\$50/day	\$150/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

27. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Panfish (Bluegill & Crappie)	Bass	
Management	Highly intensive management of fishery producing trophy fishing	Minimal management of fishery. Fishing typical of public waters	
Shoreline fishing	Shoreline access available with trails and fishing piers	Shoreline access available with trails and fishing piers	
Boat availability	Must bring your own boat	Boats available for no extra charge	
Access (Daily)	Exclusive access; lake can be reserved for a full or half day	Unlimited access; anyone who pays can fish at any time	
Distance	Within 100 miles of your home	Within 50 miles of your home	
Price (Daily fee)	\$150/day	\$50/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

28. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Panfish (Bluegill & Crappie)	Panfish (Bluegill & Crappie)	
Management	Highly intensive management of fishery producing trophy fishing	Semi-intensive management of fishery producing quality fishing	
Shoreline fishing	Rustic shoreline access available along most of the lake	Shoreline access available with trails and fishing piers	
Boat availability	Must bring your own boat	Must bring your own boat	
Access (Daily)	Limited access; only a few groups are allowed to fish at a given time	Unlimited access; anyone who pays can fish at any time	
Distance	Within 50 miles of your home	Within 100 miles of your home	
Price (Daily fee)	\$50/day	\$50/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

29. If Trip A and B were available to you, which would you prefer to take?

<b>Attribute</b>	<b>Trip A</b>	<b>Trip B</b>	
Featured species	Bass	Panfish (Bluegill & Crappie)	
Management	Highly intensive management of fishery producing trophy fishing	Semi-intensive management of fishery producing quality fishing	
Shoreline fishing	Rustic shoreline access available along most of the lake	Rustic shoreline access available along most of the lake	
Boat availability	Boats available for no extra charge	Boats available for no extra charge	
Access (Daily)	Unlimited access; anyone who pays can fish at any time	Limited access; only a few groups are allowed to fish at a given time	
Distance	Within 50 miles of your home	Within 100 miles of your home	
Price (Daily fee)	\$300/day	\$300/day	
Which trip do you <i>MOST</i> prefer? (Circle only one)	<b>TRIP A</b>	<b>TRIP B</b>	<b>NEITHER</b>

*The following questions will help us to know more about anglers. The information you provide will remain strictly confidential and you will not be identified with your answers.*

30. What is your age? \_\_\_\_\_ YEARS

31. Are you?    1    MALE  
                   2    FEMALE

32. Are there any children under age 18 living in your household?

1    YES --- (If YES, how many? \_\_\_\_\_ )  
 2    NO

33. In what county do you reside? \_\_\_\_\_ COUNTY

34. What is your approximate annual household income before taxes?

1	UNDER \$20,000	7	\$120,000 - \$139,999
2	\$20,000 - \$39,999	8	\$140,000 - \$159,999
3	\$40,000 - \$59,999	9	\$160,000 - \$179,999
4	\$60,000 - \$79,999	10	\$180,000 - \$199,999
5	\$80,000 - \$99,999	11	\$200,000 and ABOVE
6	\$100,000 - \$119,999		

35. What was the last **year** of school you completed? (*Please circle only one number*)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22+</u>
ELEMENTARY				HIGH SCHOOL				COLLEGE				GRADUATE SCHOOL									

36. Would you best describe yourself as:

1    WHITE OR ANGLO  
 2    BLACK OR AFRICAN AMERICAN  
 3    LATINO OR HISPANIC  
 4    NATIVE AMERICAN OR ALASKAN NATIVE  
 5    ASIAN OR PACIFIC ISLANDER  
 6    OTHER (*Please Specify:* \_\_\_\_\_)

37. Was this survey completed by the person to whom it was addressed?

- 1 YES
- 2 NO

*Is there anything else you would like to share with us about fishing in Mississippi?*

*Your contribution of time to this study is greatly appreciated. Please return your completed questionnaire in the postage paid business reply envelope as soon as possible. Thank You.*

Mississippi State University  
Department of Wildlife and Fisheries  
Mississippi State, MS 39762-9690  
9/09

Version A1

## APPENDIX B

### SURVEY CORRESPONDENCE WITH ANGLERS



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Mississippi State  
UNIVERSITY

Human Dimensions & Conservation Law  
Enforcement Laboratory  
Forest & Wildlife Research Center  
Box 9690  
Mississippi State, MS 39762-9690

September 23, 2009

Joe B Bass  
123 Catfish Ln  
Flathead, MS 39762

Dear Joe:

In about a week, you will receive a request in the mail to fill out a questionnaire for an important research project about recreational fishing on private waters in Mississippi. We are conducting this study to determine angler interest in fishing opportunities on private waters, and their preferences regarding such fisheries.

You were randomly selected to participate in this study because you purchased a Mississippi resident fishing or sportsman's license last year. The survey is completely voluntary and we hope that you will take the 15-30 minutes necessary to provide your input and be a part of the fisheries management process. This research project is being funded by the Human Dimensions and Conservation Law Enforcement Laboratory at Mississippi State University. Your responses will be strictly confidential and your answers will be grouped with other respondents in a non-identifiable manner. We will destroy the name and address list at the end of the study.

It's only through helpful people like you that our research can be successful. If you have any questions about this research project, please feel free to contact us at Mississippi State University at (662) 325-4153.

Thank you in advance for your cooperation.

Sincerely,

A handwritten signature in black ink that reads "Kevin M. Hunt".

Dr. Kevin M. Hunt  
Associate Professor and Director

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Mississippi State  
UNIVERSITY

Human Dimensions & Conservation Law  
Enforcement Laboratory  
Forest & Wildlife Research Center  
Box 9690  
Mississippi State, MS 39762-9690

September 30, 2009

Joe B Angler  
123 Bass Ln  
Flathead, MS 39762

Dear Joe:

We are writing to ask for your help in a study of recreational anglers, and their regarding their interest in and preferences for private fee-fishing opportunities. You were randomly selected to participate in this study because you purchased either a fishing or sportsman license last year. We are conducting this study to determine the characteristics of Mississippi anglers, their participation patterns, their attitudes and preferences regarding fishing, and their interest in private fee-fishing opportunities.

You are one of a small number of license holders selected to participate in this study. It is important that you and no one else complete the questionnaire. Your response is vital to insuring the information we collect is representative of all Mississippi anglers, and we want to hear from you whether you fish often or just occasionally. All responses will be strictly confidential, and you will not be identified with your answers. Your answers will be grouped with other respondents in a non-identifiable manner. The survey has an identification number for mailing purposes only. This is so we can remove your name from the mailing list once we receive it.

After you complete the questionnaire, please return it in the postage-paid, business reply envelope as soon as possible. For additional information regarding human participation in research, please feel free to contact the Regulatory Compliance Office at (662) 325-5220, refer to IRB docket number (##-###). If you should have any questions about this research project, please call us at Mississippi State University at (662) 325-0999.

Thank you in advance for your cooperation. We hope you have enjoyed your summer thus far and that your future fishing year will be a safe and successful one.

Sincerely,

A handwritten signature in black ink that reads "Kevin M. Hunt".

Dr. Kevin M. Hunt  
Associate Professor and Director

**Postcard reminder text:**

Recently, I mailed you a questionnaire about recreational fishing on private waters. If you have already completed and returned the questionnaire to Mississippi State University, please accept our thanks. If not, please do so today.

If by chance you did not receive the questionnaire, or perhaps misplaced it, please call me at (662) 325-0999 and I will get another one in the mail to you today.

Thank you for your assistance.

A handwritten signature in black ink, appearing to read "Kevin M. Hunt". The signature is written in a cursive style with a large, stylized initial "K".

Dr. Kevin M. Hunt, Associate Professor and Director  
Human Dimensions & Conservation Law Enforcement Laboratory

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Mississippi State  
UNIVERSITY

Human Dimensions & Conservation Law  
Enforcement Laboratory  
Forest & Wildlife Research Center  
Box 9690  
Mississippi State, MS 39762-9690

October 21, 2009

Joe B Angler  
123 Bass Ln  
Flathead, MS 39762

Dear Joe:

Three weeks ago, we sent you a survey about recreational fishing on private fee-fishing waters. As of today, we have not yet received your completed questionnaire. The comments of people who have already returned their questionnaires included a wide variety of answers. However, the success and accuracy of our study depends on you and the others who have not yet responded. We ask for your help in making sure our results are representative of all anglers in Mississippi.

In case you misplaced your survey, we've enclosed another. We are conducting this study to determine the characteristics of Mississippi anglers, their participation patterns, and attitudes and preferences about fishing and their interest in private fee-fishing opportunities. Although the survey is completely voluntary, we hope that you will take the 15-30 minutes necessary to provide your input and be a part of the fisheries management process. If you did not fish in the last year, please write "DID NOT FISH" on the cover of the survey and send it back to us. If you have recently returned your survey, please accept our thanks.

All responses will be strictly confidential, and you will not be identified with your answers. Your answers will be grouped with other respondents in a non-identifiable manner. The survey has an identification number for mailing purposes only. This is so we can remove your name from the mailing list once it is received. After you complete the questionnaire, please return it to Mississippi State University in the postage-paid, business reply envelope as soon as possible. For additional information regarding human participation in research, please feel free to contact the Regulatory Compliance Office at (662) 325-5220, refer to IRB docket number (09-150). If you should have any questions about this research project, please feel free to contact us at Mississippi State University at (662) 325-0999. Thank you in advance for your cooperation and good luck fishing during the upcoming year.

Sincerely,

A handwritten signature in black ink that reads "Kevin M. Hunt".

Dr. Kevin M. Hunt  
Associate Professor and Director

Clifford P. Hutt  
Graduate Research Assistant

10000



Mississippi State  
UNIVERSITY

Human Dimensions & Conservation Law  
Enforcement Laboratory  
Forest & Wildlife Research Center  
Box 9690  
Mississippi State, MS 39762-9690

November 11, 2009

Joe B Angler  
123 Bass Ln  
Flathead, MS 39762

Dear Joe:

During the last two months, we have sent you several mailings involving recreational fishing on private fee-fishing waters. As of today, we have not yet received your completed questionnaire. If you have recently returned your survey, please accept our thanks.

We are conducting this study to determine the characteristics of Mississippi anglers, their participation patterns, and attitudes and preferences about fishing and their interest in private fee-fishing opportunities. The success and accuracy of our study depends on you and the others who have not yet responded. If for some reason you prefer not to respond, please let us know by returning the blank questionnaire in the enclosed business reply envelope. Or, if you did not fish in the last year, please write **DID NOT FISH** on the front of the questionnaire and mail it back to us so we can take your name off the mailing list.

If you choose to respond, the survey should take you no longer than 15-30 minutes to complete. Your responses will be strictly confidential, and you will not be identified with your answers. The survey has an identification number for mailing purposes only. Your answers will be grouped with other respondents in a non-identifiable manner, and there is no way for anyone outside of my laboratory to determine your identity. We will destroy the name and address list at the end of the study.

After you complete the questionnaire, please return it to Mississippi State University in the postage-paid, business reply envelope as soon as possible. If you did not hunt, please write that on the front cover and send it back to me so we can take your name off of the list. For additional information regarding human participation in research, please feel free to contact the MSU Regulatory Compliance Office at (662) 325-5220. If you should have any questions about this research project, please feel free to contact us at Mississippi State University at (662) 325-0999. Thank you in advance for your cooperation and good luck fishing during the upcoming year.

Thank you for your assistance.

Sincerely,

A handwritten signature in cursive script that reads "Kevin M. Hunt".

Dr. Kevin M. Hunt  
Associate Professor and Director

Clifford P. Hutt  
Graduate Research Assistant

## APPENDIX C

### FREQUENCY TABLES FOR QUESTIONS USED IN THE MARKET SEGMENTATION OF ANGLERS INTERESTED IN PRIVATE FEE-FISHING OPPORTUNITIES

Table C1. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by age; adjusted for nonresponse bias.

Age (Years)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
18	26	4.2	20	3.8	11	3.1
19	8	1.4	7	1.3	2	0.5
20	12	1.9	12	2.3	7	2.1
21	17	2.8	11	2.1	8	2.2
22	11	1.8	11	2.1	3	1.0
23	11	1.7	16	3.1	8	2.4
24	13	2.1	10	1.8	8	2.4
25	10	1.6	8	1.6	4	1.2
26	16	2.5	14	2.8	9	2.6
27	8	1.3	8	1.6	6	1.7
28	5	0.9	4	0.8	4	1.1
29	10	1.6	10	1.8	5	1.4
30	14	2.3	13	2.4	4	1.3
31	13	2.1	6	1.1	7	2.0
32	16	2.6	19	3.6	10	2.9
33	8	1.3	8	1.6	5	1.3
34	18	2.9	18	3.3	11	3.2
35	10	1.6	12	2.3	6	1.7
36	18	2.9	13	2.4	9	2.7
37	17	2.7	14	2.6	9	2.5
38	9	1.4	7	1.3	4	1.1
39	14	2.2	13	2.4	8	2.3
40	17	2.8	13	2.4	11	3.1
41	14	2.2	11	2.1	9	2.5
42	18	2.9	15	2.8	13	3.7
43	13	2.0	9	1.7	6	1.6
44	12	1.9	10	1.8	9	2.5
45	16	2.6	13	2.5	7	2.1
46	12	1.9	11	2.0	7	2.1
47	14	2.2	15	2.9	8	2.4
48	16	2.6	18	3.4	12	3.3
49	18	2.9	13	2.5	13	3.6
50	22	3.5	17	3.2	11	3.1
51	11	1.7	9	1.7	7	1.9
52	9	1.5	8	1.6	5	1.5
53	12	1.9	8	1.6	8	2.2
54	15	2.4	9	1.8	8	2.3
55	14	2.3	9	1.7	9	2.5
56	12	1.9	10	1.8	9	2.5
57	15	2.3	12	2.2	8	2.4
58	15	2.3	12	2.4	5	1.6
59	13	2.0	7	1.4	6	1.8
60	15	2.3	13	2.5	7	1.9
61	10	1.5	7	1.3	5	1.4

Table C1. Continued.

62	11	1.7	9	1.7	6	1.8
63	5	0.9	2	0.5	3	0.9
64	2	0.3	3	0.6	1	0.3
65+	14	2.2	11	2.03	9	2.6
Mean age (SD)	40.9	(23.7)	40.3	(23.8)	41.6	(23.2)



Table C2. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by gender, whether they have children under age 18 living in their household, and if yes, the number of children they have under age 18 living in their household; adjusted for nonresponse bias.

Variable	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Gender						
Male	528	84.0	448	85.1	283	80.6
Female	101	16.0	78	14.9	68	19.4
Children under 18						
Yes	304	48.6	260	49.5	183	52.1
No	321	51.4	265	50.5	168	47.9
No. children under 18						
1	119	43.8	97	42.7	70	43.9
2	101	37.3	85	37.3	62	38.5
3	32	11.7	28	12.1	16	9.9
4	6	2.2	7	2.9	4	2.8
5+	14	5.1	11	5.1	8	5.0

Table C3. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by income level; adjusted for nonresponse bias.

Income (\$)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Under \$20,000	81	13.8	59	11.9	49	15.0
\$20,000-39,999	107	18.1	83	16.9	60	18.3
\$40,000-59,999	100	16.9	92	18.6	64	19.5
\$60,000-79,999	98	16.6	81	16.5	53	16.1
\$80,000-99,999	68	11.5	60	12.2	36	10.8
\$100,000-119,999	64	10.9	47	9.5	30	9.2
\$120,000-139,999	32	5.4	30	6.1	17	5.1
\$140,000-159,999	14	2.4	15	3.1	7	2.0
\$160,000-179,999	7	1.1	7	1.4	5	1.4
\$180,000-199,999	5	0.8	7	1.4	5	1.6
\$200,000 & Above	15	2.5	13	2.6	3	0.9

Table C4. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by years of education; adjusted for nonresponse bias.

Education (years)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
6	1	0.2	0	0.0	0	0.0
7	4	0.7	3	0.6	3	0.8
8	7	1.2	4	0.7	8	2.2
9	17	2.9	11	2.2	13	3.8
10	22	3.6	19	3.7	17	5.0
11	31	5.1	25	4.9	14	4.1
12	188	31.1	154	30.3	113	33.6
13	68	11.2	56	11.1	37	11.1
14	101	16.7	88	17.3	49	14.6
15	41	6.8	29	5.8	16	4.9
16	87	14.4	86	17.0	44	12.9
17	10	1.6	11	2.1	4	1.2
18	11	1.9	11	2.1	7	2.2
19	10	1.6	8	1.7	6	1.9
20	4	0.7	2	0.4	4	1.3
21	2	0.3	1	0.3	1	0.4
Mean (SD)	13.3	(4.1)	13.5	(4.0)	13.1	(4.4)

Table C5. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by race; adjusted for nonresponse bias.

Race	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
White	536	85.9	444	85.1	273	78.8
Black	78	12.4	72	13.7	66	19.2
Latino or Hispanic	2	0.4	1	0.1	4	1.1
Native American	3	0.5	2	0.4	0	0.0
Asian or Pacific Islander	2	0.3	1	0.1	1	0.2
Other	3	0.6	2	0.5	2	0.7

Table C6. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by years of angling experience; adjusted for nonresponse bias.

Years fishing	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	2	0.3	1	0.1	1	0.2
1	4	0.7	4	0.8	2	0.7
2	8	1.3	6	1.2	5	1.6
3	4	0.7	1	0.2	3	0.9
4	1	0.2	1	0.2	1	0.3
5	3	0.5	3	0.6	3	0.9
6	6	1.0	4	0.8	6	1.8
7	2	0.3	2	0.4	2	0.6
8	2	0.3	2	0.3	1	0.3
9	3	0.5	3	0.6	2	0.5
10	16	2.5	14	2.7	8	2.3
11	1	0.2	1	0.2	1	0.3
12	6	1.0	10	1.9	4	1.1
13	10	1.7	8	1.6	5	1.6
14	5	0.8	5	1.0	2	0.5
15	33	5.3	31	5.9	16	4.5
16	5	0.8	4	0.7	1	0.4
17	9	1.4	8	1.6	7	2.0
18	8	1.3	8	1.5	2	0.6
19	8	1.3	6	1.2	6	1.8
20	50	8.0	44	8.5	28	7.9
21	4	0.7	3	0.5	3	0.8
22	7	1.1	5	1.0	1	0.4
23	8	1.3	8	1.5	2	0.7
24	2	0.4	2	0.5	1	0.3
25	37	6.0	27	5.1	17	4.9
26	4	0.7	4	0.8	0	0.0
27	12	2.0	11	2.2	10	2.9
28	5	0.7	4	0.8	2	0.6
29	3	0.4	2	0.3	2	0.5
30	78	12.5	66	12.7	42	12.0
31	0	0.0	0	0.0	0	0.0
32	3	0.6	2	0.4	32	32
33	4	0.6	1	0.2	2	0.6
34	3	0.5	4	0.7	2	0.6
35	40	6.4	38	7.3	26	7.4
36	4	0.6	3	0.7	3	0.8
37	7	1.1	6	1.2	5	1.5
38	12	1.8	5	1.0	7	2.0
39	5	0.8	6	1.1	3	0.9
40	70	11.1	52	9.9	38	11.0
41	2	0.3	1	0.1	1	0.4
42	2	0.3	3	0.5	1	0.2

Table C6. Continued

43	3	0.5	4	0.7	2	0.4
44	1	0.1	0	0.0	0	0.0
45	33	5.3	26	5.0	23	6.6
46	5	0.8	7	1.3	1	0.4
47	6	0.9	3	0.6	1	0.4
48	7	1.2	4	0.8	5	1.5
49	2	0.3	2	0.4	1	0.3
50	38	6.1	27	5.3	21	6.0
51	1	0.2	1	0.3	1	0.2
52	4	0.6	3	0.6	2	0.4
53	1	0.2	0	0.0	1	0.2
54	3	0.5	2	0.4	2	0.7
55	24	3.8	23	4.5	11	3.3
Mean (SD)	30.4	(23.8)	30.0	(24.1)	30.2	(24.3)

Table C7. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by preferred fish species; adjusted for nonresponse bias.

Preferred species	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
First choice						
Bass	269	43.3	238	46.0	135	39.2
Crappie	89	14.4	73	14.0	36	10.6
Other sunfish	60	9.7	53	10.3	32	9.4
Catfish	122	19.6	81	15.6	86	25.0
Other	82	13.2	73	14.2	54	15.8
Second choice						
Bass	143	23.7	116	23.0	83	25.2
Crappie	111	18.4	103	20.4	56	17.1
Other sunfish	136	22.5	111	22.0	71	21.5
Catfish	132	21.9	108	21.5	66	19.9
Other	82	13.5	66	13.2	54	16.2
Third choice						
Bass	88	15.6	70	15.0	52	16.7
Crappie	93	16.3	77	16.5	54	17.3
Other sunfish	133	23.5	108	23.1	67	21.3
Catfish	162	28.6	141	30.1	85	27.1
Other	90	15.9	72	15.4	55	17.6

Table C8. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on public lakes and reservoirs; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	200	31.6	159	30.1	137	38.7
1	32	5.0	22	4.2	12	3.3
2	63	9.9	59	11.2	31	8.7
3	47	7.3	33	6.2	25	7.1
4	31	4.9	27	5.1	19	5.4
5	50	7.9	36	6.8	28	7.8
6	24	3.8	24	4.5	11	3.0
7	6	1.0	4	0.7	5	1.4
8	3	0.6	4	0.8	3	0.8
9	0	0.0	0	0.0	0	0.0
10	43	6.8	42	8.0	30	8.5
11	0	0.0	0	0.0	0	0.0
12	7	1.2	5	1.0	5	1.5
13	0	0.0	0	0.0	0	0.0
14	2	0.4	1	0.1	1	0.2
15	23	3.6	19	3.6	7	1.9
16	4	0.6	3	0.5	1	0.4
17	0	0.0	0	0.0	0	0.0
18	1	0.1	0	0.0	0	0.0
19	0	0.0	0	0.0	0	0.0
20	30	4.7	25	4.7	8	2.3
21	0	0.0	0	0.0	0	0.0
22	1	0.2	1	0.2	0	0.0
23	0	0.0	0	0.0	0	0.0
24	1	0.1	1	0.2	0	0.0
25	7	1.0	7	1.3	2	0.4
26	0	0.0	0	0.0	0	0.0
27	0	0.0	0	0.0	0	0.0
28	0	0.0	0	0.0	0	0.0
29	0	0.0	0	0.0	0	0.0
30	13	2.1	14	2.6	5	1.5
31	0	0.0	0	0.0	0	0.0
32	0	0.0	0	0.0	0	0.0
33	0	0.0	0	0.0	0	0.0
34	0	0.0	0	0.0	0	0.0
35	1	0.1	1	0.1	0	0.0
36	1	0.2	1	0.2	1	0.3
37	0	0.0	0	0.0	0	0.0
38	0	0.0	0	0.0	0	0.0
39	0	0.0	0	0.0	0	0.0
40	11	1.7	10	1.9	2	0.7
41	0	0.0	0	0.0	0	0.0
42	0	0.0	0	0.0	0	0.0



Table C8. Continued

43	0	0.0	0	0.0	0	0.0
44	0	0.0	0	0.0	0	0.0
45	3	0.5	3	0.6	3	0.8
46	0	0.0	0	0.0	0	0.0
47	0	0.0	0	0.0	0	0.0
48	1	0.2	1	0.2	0	0.0
49	0	0.0	0	0.0	0	0.0
50	30	4.7	28	5.3	18	5.1
Mean (SD)	8.3	(22.5)	9.0	(23.8)	7.1	(22.0)

Table C9. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on rivers and streams; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	292	46.1	244	46.2	171	48.3
1	47	7.4	34	6.5	24	6.9
2	62	9.8	54	10.2	34	9.7
3	26	4.1	23	4.5	18	5.1
4	19	3.1	17	3.3	11	3.1
5	32	5.0	25	4.8	16	4.6
6	11	1.8	7	1.4	6	1.8
7	6	1.0	6	1.1	3	1.0
8	5	0.8	4	0.7	3	0.8
9	2	0.4	1	0.2	0	0.0
10	48	7.6	41	7.8	21	6.0
11	0	0.0	0	0.0	0	0.0
12	10	1.6	9	1.7	4	1.1
13	1	0.1	1	0.1	1	0.2
14	2	0.3	2	0.4	1	0.2
15	11	1.8	7	1.4	7	1.9
16	0	0.0	1	0.1	0	0.0
17	0	0.0	0	0.0	0	0.0
18	0	0.0	0	0.0	0	0.0
19	0	0.0	0	0.0	0	0.0
20	18	2.9	15	2.8	12	3.3
21	0	0.0	0	0.0	0	0.0
22	0	0.0	0	0.0	0	0.0
23	2	0.4	2	0.4	2	0.7
24	1	0.2	1	0.3	1	0.4
25	7	1.1	8	1.5	2	0.5
26	0	0.0	0	0.0	0	0.0
27	0	0.0	0	0.0	0	0.0
28	0	0.0	0	0.0	0	0.0
29	0	0.0	0	0.0	0	0.0
30	29	4.5	25	4.7	16	4.6
Mean (SD)	4.7	(13.5)	4.8	(14.0)	4.5	(13.7)

Table C10. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on private ponds and lakes with no fee; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	190	30.0	146	27.6	119	33.6
1	34	5.4	25	4.7	20	5.6
2	50	7.9	34	6.4	22	6.2
3	34	5.4	25	4.7	25	7.0
4	19	3.0	14	2.7	13	3.6
5	38	6.0	37	7.0	21	6.0
6	17	2.7	13	2.5	7	1.9
7	4	0.7	4	0.8	4	1.0
8	7	1.1	5	1.0	4	1.3
9	1	0.2	2	0.4	0	0.0
10	67	10.6	63	12.0	40	11.4
11	0	0.0	1	0.1	0	0.0
12	11	1.7	9	1.8	6	1.8
13	1	0.2	1	0.3	1	0.4
14	3	0.5	3	0.6	3	0.9
15	25	4.0	25	4.7	9	2.4
16	1	0.1	1	0.1	0	0.0
17	0	0.0	0	0.0	0	0.0
18	0	0.0	0	0.0	0	0.0
19	0	0.0	0	0.0	0	0.0
20	43	6.9	51	9.6	19	5.3
21	0	0.0	0	0.0	0	0.0
22	0	0.0	0	0.0	0	0.0
23	0	0.0	0	0.0	0	0.0
24	0	0.0	0	0.0	0	0.0
25	16	2.5	12	2.3	6	1.7
26	0	0.0	0	0.0	0	0.0
27	1	0.1	1	0.1	1	0.2
28	0	0.0	0	0.0	0	0.0
29	0	0.0	0	0.0	1	0.4
30	30	4.7	23	4.4	16	4.5
31	0	0.0	0	0.0	0	0.0
32	0	0.0	0	0.0	0	0.0
33	0	0.0	0	0.0	0	0.0
34	0	0.0	0	0.0	0	0.0
35	0	0.0	0	0.0	0	0.0
36	0	0.0	0	0.0	0	0.0
37	0	0.0	0	0.0	0	0.0
38	0	0.0	0	0.0	0	0.0
39	0	0.0	0	0.0	0	0.0
40	6	0.9	4	0.7	2	0.5
41	0	0.0	0	0.0	0	0.0
42	0	0.0	0	0.0	0	0.0

Table C10. Continued

43	0	0.0	0	0.0	0	0.0
44	0	0.0	0	0.0	0	0.0
45	0	0.0	1	0.1	0	0.0
46	0	0.0	0	0.0	0	0.0
47	0	0.0	0	0.0	0	0.0
48	0	0.0	0	0.0	0	0.0
49	0	0.0	0	0.0	0	0.0
50	34	5.4	29	5.4	16	4.5
Mean (SD)	9.6	(23.0)	10.3	(23.1)	8.4	(21.7)

Table C11. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on private fee-fishing ponds and lakes; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	461	72.8	378	71.6	263	74.1
1	18	2.8	14	2.6	7	2.0
2	44	6.9	35	6.7	28	8.0
3	11	1.7	10	1.8	6	1.6
4	14	2.2	12	2.2	9	2.5
5	13	2.1	9	1.8	9	2.5
6	9	1.4	10	1.9	3	0.7
7	0	0.0	0	0.0	0	0.0
8	2	0.3	2	0.3	1	0.2
9	0	0.0	0	0.0	0	0.0
10	19	2.9	19	3.5	10	2.7
11	0	0.0	0	0.0	0	0.0
12	1	0.2	1	0.2	0	0.0
13	0	0.0	0	0.0	0	0.0
14	0	0.0	0	0.0	0	0.0
15	7	1.1	6	1.2	2	0.4
16	1	0.1	1	0.1	1	0.2
17	0	0.0	0	0.0	0	0.0
18	0	0.0	0	0.0	0	0.0
19	0	0.0	0	0.0	0	0.0
20	36	5.7	33	6.2	18	5.1
Mean (SD)	2.1	(8.9)	2.3	(9.4)	1.9	(8.4)

Table C12. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on saltwater; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	472	74.5	391	74.0	271	76.5
1	36	5.7	28	5.3	15	4.3
2	26	4.1	20	3.7	12	3.4
3	12	2.0	13	2.5	6	1.8
4	6	1.0	7	1.3	4	1.0
5	8	1.2	11	2.1	7	1.8
6	1	0.2	2	0.4	0	0.0
7	3	0.4	2	0.3	2	0.5
8	2	0.3	2	0.3	2	0.5
9	0	0.0	0	0.0	0	0.0
10	15	2.3	11	2.0	7	1.9
11	0	0.0	0	0.0	0	0.0
12	3	0.6	2	0.4	4	1.1
13	0	0.0	0	0.0	0	0.0
14	0	0.0	0	0.0	0	0.0
15	6	1.0	5	1.0	3	0.9
16	0	0.0	0	0.0	0	0.0
17	0	0.0	0	0.0	0	0.0
18	0	0.0	0	0.0	0	0.0
19	0	0.0	0	0.0	0	0.0
20	10	1.6	10	1.8	6	1.8
21	2	0.4	2	0.4	1	0.2
22	0	0.0	0	0.0	0	0.0
23	0	0.0	0	0.0	0	0.0
24	1	0.2	1	0.2	0	0.0
25	5	0.8	4	0.7	2	0.7
26	1	0.1	0	0.0	0	0.0
27	0	0.0	0	0.0	0	0.0
28	0	0.0	0	0.0	0	0.0
29	0	0.0	0	0.0	0	0.0
30	23	3.6	18	3.4	13	3.6
Mean (SD)	2.6	(12.0)	2.5	(12.0)	2.5	(11.9)

Table C13. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by days fished in the previous year on other\* waters; adjusted for nonresponse bias.

Days fished	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	620	97.9	515	97.6	348	98.2
1	3	0.5	3	0.6	1	0.2
2	1	0.2	1	0.2	1	0.3
3	1	0.2	1	0.3	0	0.0
4	1	0.1	1	0.1	0	0.0
5	1	0.1	0	0.0	0	0.0
6	0	0.0	0	0.0	1	0.2
7	0	0.0	0	0.0	0	0.0
8	0	0.0	0	0.0	0	0.0
9	0	0.0	0	0.0	0	0.0
10	1	0.2	1	0.3	1	0.4
11	0	0.0	0	0.0	0	0.0
12	0	0.0	0	0.0	0	0.0
13	0	0.0	0	0.0	0	0.0
14	0	0.0	0	0.0	0	0.0
15	5	0.8	6	1.1	3	0.9
Mean (SD)	0.2	(2.5)	0.2	(2.9)	0.2	(2.7)

\* Other waters included: private resorts, brackish marshes, state parks, creeks, channels, and piers.

Table C14. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by self-rated skill level and level of importance placed on fishing as an outdoor activity; adjusted for nonresponse bias.

Variable	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Skill level						
Less skilled	163	26.1	120	23.2	107	31.1
Equally skilled	393	63.0	326	63.0	209	60.5
More skilled	68	10.9	71	13.8	29	8.3
Importance of fishing						
Most	223	35.6	185	35.6	124	35.8
Second	255	40.8	225	43.2	134	38.5
Third	113	18.1	89	17.2	70	20.2
None of above	34	5.5	21	4.1	19	5.6



Table C15. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by the people they fish with most often; adjusted for nonresponse bias.

Variable	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Fishing most with:						
Grandparents	13	2.3	11	2.2	5	1.6
Parents	47	8.0	43	8.8	23	7.0
Siblings	27	4.6	21	4.4	18	5.4
Children	114	19.5	92	19.1	64	19.6
Other relatives	90	15.3	66	13.6	55	16.9
Friends	233	39.7	203	41.9	130	40.0
Fishing club	6	1.1	5	1.0	3	0.8
Alone	54	9.3	44	9.1	26	8.0
Business associates	1	0.2	0	0.0	2	0.5

Table C16. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by whether they fished with a child under age 18 in the previous year, and if yes, how many times; adjusted for nonresponse bias.

Variable	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Fish with child						
Yes	419	68.1	343	67.1	229	66.9
No	197	32.0	168	32.9	114	33.1
If yes, how many times						
1	36	8.6	26	7.5	17	7.7
2	48	11.5	37	10.6	24	10.8
3	43	10.3	33	9.5	22	9.6
4	33	7.9	33	9.7	20	9.0
5	61	14.8	46	13.5	27	11.9
6	22	5.4	18	5.3	12	5.3
7	5	1.1	5	1.3	4	1.6
8	17	4.2	12	3.4	8	3.7
9	5	1.2	2	0.5	6	2.5
10	66	16.0	57	16.6	36	16.0
11	0	0.0	0	0.0	0	0.0
12	8	1.9	8	2.4	4	1.6
13	2	0.6	2	0.7	2	1.1
14	0	0.0	0	0.0	0	0.0
15	6	1.4	7	2.0	5	2.4
16	2	0.6	2	0.7	2	1.1
17	0	0.0	0	0.0	0	0.0
18	2	0.5	0	0.0	1	0.5
19	0	0.0	0	0.0	0	0.0
20	25	6.2	23	6.8	13	5.8
21	1	0.2	2	0.5	1	0.4
22	0	0.0	0	0.0	0	0.0
23	0	0.0	0	0.0	0	0.0
24	0	0.0	0	0.0	0	0.0
25	4	1.0	4	1.3	2	1.1
26	0	0.0	0	0.0	0	0.0
27	0	0.0	0	0.0	0	0.0
28	0	0.0	0	0.0	0	0.0
29	0	0.0	0	0.0	0	0.0
30	28	6.7	26	7.6	18	8.0
Mean (SD)	8.4	(13.7)	8.9	(14.3)	8.9	(14.4)

Table C17. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by whether they are a member of a fishing club, participate in fishing tournaments, subscribe to fishing magazines and how many, and their preferred method of receiving fishing information; adjusted for nonresponse bias.

Variable	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Fishing club member						
Yes	38	6.0	40	7.7	19	5.3
No	591	94.0	483	92.3	331	94.7
Tournament participation						
Yes	67	10.8	65	12.5	25	7.3
No	553	89.3	452	87.5	320	92.7
Fishing magazine subscription						
Yes	96	15.9	87	17.1	50	14.7
No	511	84.1	421	82.9	289	85.3
Number of fishing magazine subscription						
1	46	52.0	39	46.9	21	47.3
2	27	30.9	28	33.7	16	35.8
3	6	6.8	8	10.2	3	6.0
4	5	6.0	4	4.7	4	8.7
5	3	3.1	3	3.2	1	2.3
6	1	1.2	1	1.2	0	0.0
Preferred method to receive fishing information						
Radio	10	1.7	7	1.4	6	1.8
Magazine	128	21.4	123	24.6	84	25.3
Website	59	9.8	52	10.4	32	9.7
Newspaper	48	8.0	39	7.9	26	7.7
Television	106	17.7	82	16.5	64	19.4
Word of mouth	249	41.5	197	39.3	120	36.1

Table C18. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their monetary investment in rods and reels; adjusted for nonresponse bias.

Investment (\$)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	21	3.4	16	3.0	18	4.9
1-100	97	15.3	70	13.2	73	20.6
101-200	104	16.3	88	16.6	55	16
201-300	116	18.4	85	16.1	65	18
301-400	36	5.7	31	5.9	17	5
401-500	66	10.4	64	12.1	38	11
501-600	26	4.1	20	3.8	13	3.8
601-700	16	2.5	17	3.1	7	2
701-800	14	2.2	13	2.4	4	1.3
801-900	1	0.1	2	0.4	0	0.0
901-1,000	41	6.5	36	6.8	17	5
1,001-1,100	0	0.0	0	0.0	0	0.0
1,101-1,200	12	1.9	12	2.3	9	2.5
1,201-1,300	0	0.0	0	0.0	0	0.0
1,301-1,400	0	0.0	0	0.0	0	0.0
1,401-1,500	25	4.0	23	4.5	13	3.7
1,501-1,600	0	0.0	0	0.0	0	0.0
1,601-1,700	1	0.1	1	0.1	0	0.0
1,701-1,800	2	0.4	1	0.2	0	0.0
1,801-1,900	0	0.0	0	0.0	0	0.0
1,901-2,000	23	3.6	23	4.3	12	3.4
2,001-2,100	0	0.0	0	0.0	0	0.0
2,100-2,200	0	0.0	0	0.0	0	0.0
2,201-2,300	1	0.1	1	0.2	0	0.0
2,301-2,400	0	0.0	1	0.1	0	0.0
2,401-2,500	32	5.0	25	4.8	10	2.9
Mean (SD)	582.5	(1,133.3)	615.8	(1,156.0)	490.7	(1,014.4)

Table C19. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their monetary investment in tackle (hooks, lures, line, and other hardware); adjusted for nonresponse bias.

Investment (\$)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	25	4.0	20	3.7	20	5.5
1-100	220	34.6	172	33	149	42
101-200	140	22.1	113	21.3	73	20.5
201-300	62	9.8	53	10.1	34	9.5
301-400	32	5.1	25	4.7	17	4.7
401-500	48	7.6	42	7.9	15	4.3
501-600	6	1.0	7	1.4	4	1.1
601-700	4	0.7	5	0.9	2	0.7
701-800	10	1.6	9	1.7	5	1.4
801-900	4	0.6	12	2.4	2	0.7
901-1,000	31	4.9	30	5.7	17	4.7
1,001-1,100	0	0.0	0	0.0	0	0.0
1,101-1,200	2	0.4	5	1.0	2	0.5
1,201-1,300	0	0.0	0	0.0	0	0.0
1,301-1,400	0	0.0	0	0.0	0	0.0
1,401-1,500	12	1.9	12	2.3	8	2.2
1,501-1,600	0	0.0	0	0.0	0	0.0
1,601-1,700	0	0.0	0	0.0	0	0.0
1,701-1,800	0	0.0	0	0.0	0	0.0
1,801-1,900	0	0.0	0	0.0	0	0.0
1,901-2,000	37	5.9	32	6.0	9	2.4
Mean (SD)	377.4	(882.8)	405.1	(917.1)	293.1	(722.4)

Table C20. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their monetary investment in electronic equipment (depth finders, GPS, etc.); adjusted for nonresponse bias.

Investment (\$)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	342	54.0	271	51.3	210	59.3
1-100	16	3	15	3	17	5
101-200	58	9.2	50	9.5	31	8.9
201-300	50	7.9	43	8.1	23	6.5
301-400	23	3.6	17	3.3	7	2.1
401-500	34	5.4	34	6.4	14	3.9
501-600	12	1.8	10	1.9	7	2.1
601-700	4	0.6	3	0.7	1	0.2
701-800	12	1.9	10	2.0	9	2.5
801-900	5	0.8	5	0.9	1	0.4
901-1,000	30	4.8	25	4.7	13	3.6
1,001-1,100	1	0.2	2	0.4	2	0.6
1,101-1,200	4	0.7	3	0.6	0	0.0
1,201-1,300	1	0.1	0	0.0	0	0.0
1,301-1,400	1	0.2	1	0.2	0	0.0
1,401-1,500	8	1.3	11	2.1	5	1.4
1,501-1,600	0	0.0	1	0.1	0	0.0
1,601-1,700	1	0.2	1	0.2	0	0.0
1,701-1,800	1	0.2	1	0.2	1	0.3
1,801-1,900	0	0.0	0	0.0	0	0.0
1,901-2,000	10	1.6	10	1.9	8	2.2
2,001-2,100	0	0.0	0	0.0	0	0.0
2,100-2,200	1	0.2	0	0.0	1	0.3
2,201-2,300	0	0.0	0	0.0	0	0.0
2,301-2,400	0	0.0	0	0.0	0	0.0
2,401-2,500	19	3.0	15	2.8	4	1.2
Mean (SD)	316.0	(986.3)	335.9	(1,007.1)	250.1	(867.7)

Table C21. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their monetary investment in boats, motors, and trailers; adjusted for nonresponse bias.

Investment (\$)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	231	36.4	181	34.3	147	41.5
1-1,000	66	10.4	55	10.4	38	10.7
1,001-2,000	48	7.6	41	7.8	31	8.8
2,001-3,000	45	7.1	36	6.7	23	6.5
3,001-4,000	20	3.2	20	3.9	14	4.0
4,001-5,000	31	4.9	25	4.7	15	4.1
5,001-6,000	16	2.6	12	2.3	7	2.1
6,001-7,000	12	1.9	9	1.7	6	1.6
7,001-8,000	23	3.6	20	3.8	10	2.8
8,001-9,000	3	0.5	5	1.0	1	0.3
9,001-10,000	18	2.8	14	2.7	12	3.3
10,001-11,000	3	0.5	3	0.6	1	0.3
11,001-12,000	22	3.4	18	3.4	6	1.8
12,001-13,000	3	0.5	3	0.6	3	0.9
13,001-14,000	5	0.7	5	0.9	2	0.5
14,001-15,000	20	3.2	19	3.5	6	1.8
15,001-16,000	4	0.6	3	0.6	1	0.2
16,001-17,000	1	0.1	0	0.0	0	0.0
17,001-18,000	1	0.1	1	0.1	1	0.2
18,001-19,000	1	0.1	1	0.1	1	0.3
19,001-20,000	15	2.4	15	2.8	9	2.5
20,001-21,000	0	0.0	0	0.0	0	0.0
21,000-22,000	1	0.1	0	0.0	1	0.3
22,001-23,000	1	0.2	1	0.2	0	0.0
23,001-24,000	0	0.0	1	0.2	0	0.0
24,001-25,000	7	1.2	8	1.4	4	1.2
25,001-26,000	1	0.1	0	0.0	0	0.0
26,001-27,000	0	0.0	0	0.0	0	0.0
27,001-28,000	1	0.2	1	0.2	0	0.0
28,001-29,000	0	0.0	0	0.0	0	0.0
29,001-30,000	8	1.2	10	1.8	3	0.9
30,001-31,000	0	0.0	0	0.0	0	0.0
31,001-32,000	0	0.0	0	0.0	0	0.0
32,001-33,000	0	0.0	0	0.0	0	0.0
33,001 or more	26	4.1	22	4.1	12	3.4
Mean (SD)	5,598.6	(15,097.0)	6,055.5	(15,847.0)	4,683.2	(14,151.5)

Table C22. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by what they consider to be a trophy size fish for four species common to private lakes and ponds; adjusted for nonresponse bias.

Trophy size (lbs)	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Largemouth bass						
5	58	11.7	44	10.2	35	13.3
6	34	6.8	30	7.0	19	7.1
7	52	10.5	49	11.3	30	11.3
8	116	23.3	98	22.8	61	23.1
9	29	5.9	32	7.4	16	6.1
10	157	31.5	134	31.3	76	28.6
11	9	1.9	7	1.7	3	1.3
12	42	8.5	36	8.4	24	9.3
LMB Mean (SD)	7.8	(4.0)	7.9	(4.0)	7.5	(4.1)
Crappie						
1	26	6.4	23	6.7	14	7.0
2	135	33.4	117	33.9	79	38.5
3	150	37.3	125	36.4	66	31.8
4	59	14.7	52	15.1	28	13.7
5	33	8.1	27	7.9	19	9.0
CRP Mean (SD)	2.1	(2.1)	2.2	(2.1)	2.0	(2.1)
Bluegill						
1	179	45.0	157	46.5	98	46.3
2	141	35.5	120	35.5	67	31.4
3	35	8.8	29	8.7	20	9.7
4	9	2.1	7	2.2	4	2.1
5	34	8.5	24	7.0	22	10.6
BLG Mean (SD)	1.6	(1.8)	1.6	(1.8)	1.6	(1.9)
Channel catfish						
5	32	9.0	28	9.7	22	10.6
6	11	3.0	8	2.9	9	4.4
7	2	0.4	1	0.3	2	0.8
8	17	4.7	13	4.3	11	5.5
9	2	0.6	1	0.4	2	1.0
10	63	17.5	47	16.3	27	13.1
11	0	0.0	0	0.0	0	0.0
12	25	6.9	16	5.4	15	7.1
13	2	0.6	2	0.7	2	1.0
14	5	1.3	4	1.5	3	1.5
15	45	12.7	36	12.3	29	14.1
16	1	0.4	0	0.0	1	0.7



Table C22. Continued

17	0	0.0	0	0.0	0	0.0
18	1	0.3	1	0.4	1	0.6
19	0	0.0	0	0.0	0	0.0
20	66	18.4	46	15.6	32	15.4
21	0	0.0	0	0.0	0	0.0
22	2	0.4	1	0.5	0	0.0
23	0	0.0	0	0.0	0	0.0
24	0	0.0	0	0.0	0	0.0
25+	85	23.8	87	29.7	50	24.3
CCF Mean (SD)	17.0	(17.3)	18.1	(19.1)	16.7	(17.7)

Table C23. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their level of agreement with four attitude statements related to ‘Catching Something’; adjusted for nonresponse bias.

Attitude item	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mean summated score (SD)	10.8	(5.8)	10.7	(5.7)	10.9	(6.0)
A fishing trip can be successful even if no fish are caught						
Strongly disagree	22	3.6	14	2.7	15	4.5
Disagree	54	8.7	34	6.6	28	8.3
Neutral	108	17.4	93	18.2	54	15.8
Agree	304	49.1	260	50.6	167	49.0
Strongly agree	131	21.2	113	22.0	76	22.4
When I go fishing, I’m just as happy if I don’t catch fish*						
Strongly disagree	45	7.3	26	5.0	27	7.9
Disagree	177	28.7	150	29.4	90	26.3
Neutral	179	29.1	154	30.1	101	29.7
Agree	150	24.3	120	23.5	84	24.5
Strongly agree	65	10.6	61	12.0	40	11.7
If I thought I wouldn’t catch any fish, I wouldn’t go fishing						
Strongly disagree	105	16.9	92	18.1	51	15.0
Disagree	212	34.3	170	33.2	111	32.8
Neutral	99	16.0	82	16.1	54	16.0
Agree	138	22.4	124	24.3	83	24.4
Strongly agree	64	10.3	43	8.4	40	11.9
When I go fishing, I’m just as happy if I don’t catch fish*						
Strongly disagree	59	9.5	54	10.5	38	11.2
Disagree	208	33.8	158	30.9	107	31.2
Neutral	168	27.3	146	28.4	88	25.8
Agree	136	22.0	115	22.5	75	21.9
Strongly agree	46	7.4	40	7.8	34	9.9

Table C24. Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their level of agreement with four attitude statements related to ‘Catching Numbers’; adjusted for nonresponse bias.

Attitude item	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mean summated score (SD)	13.3	(5.7)	13.3	(5.7)	13.7	(5.7)
The more fish I catch, the happier I am						
Strongly disagree	19	3.1	18	3.5	14	4.1
Disagree	62	10.0	45	8.7	25	7.3
Neutral	101	16.2	83	16.1	43	12.5
Agree	247	39.7	211	41.0	147	43.1
Strongly agree	192	31.0	159	30.8	113	33.1
A successful fishing trip is one in which many fish are caught						
Strongly disagree	18	2.9	16	3.2	12	3.6
Disagree	142	23.1	117	22.9	62	18.5
Neutral	179	29.1	147	28.9	99	29.5
Agree	187	30.4	161	31.5	112	33.1
Strongly agree	90	14.6	69	13.5	51	15.3
A full stringer is the best indicator of a good fishing trip						
Strongly disagree	33	5.4	28	5.4	19	5.6
Disagree	188	30.5	149	29.2	92	27.1
Neutral	164	26.6	142	27.8	84	24.9
Agree	159	25.9	130	25.5	94	27.8
Strongly agree	72	11.7	62	12.2	49	14.5
I’m happiest with a fishing trip if I catch at least the limit						
Strongly disagree	33	5.33	31	6.1	17	4.9
Disagree	172	27.87	133	25.9	83	24.4
Neutral	187	30.43	163	31.6	104	30.7
Agree	158	25.73	134	26.1	92	27.2
Strongly agree	66	10.64	53	10.3	44	12.9

Table C25 Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their level of agreement with four attitude statements related to ‘Catching Large Fish’; adjusted for nonresponse bias.

Attitude item	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mean summated score (SD)	13.9	(5.4)	14.0	(5.5)	13.6	(5.6)
I would rather catch 1 or 2 big fish than 10 smaller fish						
Strongly disagree	16	2.66	16	3.1	9	2.6
Disagree	144	23.27	106	20.7	84	24.6
Neutral	182	29.36	152	29.6	108	31.6
Agree	180	29.11	155	30.3	96	27.9
Strongly agree	97	15.6	84	16.3	45	13.1
The bigger the fish I catch, the better the fishing trip						
Strongly disagree	22	3.63	19	3.7	20	5.8
Disagree	117	18.92	81	15.9	62	18.1
Neutral	172	27.87	142	27.8	89	26.1
Agree	209	33.87	179	35.1	118	34.8
Strongly agree	97	15.7	89	17.4	52	15.2
I’m happiest with the fishing trip if I catch a challenging game fish						
Strongly disagree	10	1.59	9	1.7	10	2.9
Disagree	53	8.51	45	8.8	27	7.9
Neutral	192	30.91	153	29.6	103	30.0
Agree	236	38.02	194	37.6	133	38.8
Strongly agree	130	20.97	115	22.3	70	20.4
I like to fish where I know I have a chance of catching a “trophy” fish						
Strongly disagree	21	3.37	23	4.5	18	5.3
Disagree	110	17.66	76	14.7	63	18.3
Neutral	160	25.83	122	23.7	92	26.9
Agree	224	36.13	203	39.3	116	33.7
Strongly agree	106	17.01	92	17.8	54	15.8

Table C26 Frequency and percentage of anglers indicating interest in three categories of private fee-fishing opportunities by their level of agreement with four attitude statements related to ‘Retaining Fish’; adjusted for nonresponse bias.

Attitude item	Daily fee lakes		Annual lease lakes		Fish-out ponds	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Mean summated score (SD)	11.4	(5.7)	11.2	(5.5)	11.8	(5.8)
I usually eat the fish I catch						
Strongly disagree	20	3.28	20	3.9	14	4.17
Disagree	49	7.85	38	7.4	20	5.94
Neutral	98	15.7	87	16.9	44	12.96
Agree	219	35.21	177	34.4	139	40.61
Strongly agree	236	37.97	193	37.4	124	36.31
I’m just as happy if I don’t keep the fish I catch*						
Strongly disagree	34	5.53	27	5.1	17	5.09
Disagree	104	16.71	76	14.7	70	20.33
Neutral	123	19.85	101	19.6	72	21.14
Agree	242	38.98	203	39.4	118	34.38
Strongly agree	118	18.94	109	21.1	65	19.06
I want to keep all the fish I catch						
Strongly disagree	124	19.98	102	19.9	58	17.09
Disagree	273	43.98	237	45.95	140	40.86
Neutral	132	21.37	109	21.2	79	23.14
Agree	54	8.68	43	8.32	36	10.51
Strongly agree	37	5.99	24	4.63	29	8.4
I’m just as happy if I release the fish I catch*						
Strongly disagree	32	5.17	22	4.31	19	5.61
Disagree	97	15.65	81	15.65	69	20.18
Neutral	145	23.53	114	22.12	83	24.39
Agree	236	38.14	200	38.8	110	32.17
Strongly agree	108	17.52	98	19.12	60	17.66

## APPENDIX D

### TABLES OF ATTRIBUTE LEVELS USED IN THE THREE STATED CHOICE MODELS

Table 1. Proposed attributes and levels for stated choice experiment evaluating interest in daily fee private fisheries in Mississippi.

Attributes	Level 1	Level 2	Level 3
Featured Species	Catfish (-1)	Panfish (Bluegill & Crappie) (0)	Bass (1)
Management	Minimal management of fishery. Fishing quality typical of public waters (-1).	Semi-intensive management of fishery producing quality fishing (0).	Highly intensive management of fishery producing trophy fishing (1).
Shoreline fishing	No or minimal shoreline access. (-1)	Rustic shoreline access available along most of the lake (0).	Shoreline access available with well maintained trails and fishing piers (1).
Boat/equipment	Must bring your own boat (-1).	Fishing boats available for rent. (0)	Fishing boats available for no extra charge (1).
Access (Daily)	Unlimited access; anyone who pays can fish at any time (-1)	Limited access; only a few groups are allowed to fish at any given time (0)	Exclusive access; lake can be reserved by a single group for a full or half day (1)
Distance	Located within 50 miles of your home. (1)	Located within 100 miles of your home (0).	Located within 150 miles of your home (-1).
Price (Daily fee)	\$50/day (1)	\$150/day (0)	\$300/day (-1)

Table 2. Proposed attributes and levels for stated choice experiment evaluating interest in annual lease private fisheries in Mississippi.

Attributes	Level 1	Level 2	Level 3
Featured Species	Catfish (-1)	Panfish (Bluegill & Crappie) (0)	Bass (1)
Management	Minimal management of fishery. Fishing quality typical of public waters (-1).	Semi-intensive management of fishery producing quality fishing (0).	Highly intensive management of fishery producing trophy fishing (1).
Shoreline fishing	No or minimal shoreline access. (-1)	Rustic shoreline access available along most of the lake (0).	Shoreline access available with well maintained trails and fishing piers (1).
Boat/equipment	Must bring your own boat (-1).	Fishing boats available for rent. (0)	Fishing boats available for no extra charge (1).
Access (Annual)	Unlimited access; anyone who pays can fish at any time (-1)	Limited access; access limited to select membership (0)	Exclusive access; access limited to leasee (single or group) (1)
Distance	Located within 50 miles of your home (1).	Located within 100 miles of your home (0).	Located within 150 miles of your home (-1).
Price (Annual lease)	\$100/year (1)	\$300/year (0)	\$700/year (-1)



Table 3. Proposed attributes and levels for stated choice experiment evaluating interest in private channel catfish fish-out ponds in Mississippi.

Attributes	Level 1	Level 2	Level 3
Fish size	Catfish average 1 lb (-1)	Catfish average 3 lb (0)	Catfish average 5 lb (1)
Bait	Must bring your own bait (-1)	Bait for sale on-site (0)	Bait available on-site free of charge (1)
Equipment rental	Must bring your own equipment (-1)	Equipment available on-site for rent (0)	Equipment available on-site for free (1)
Shoreline	Shoreline mowed, but no benches provided (-1)	Shoreline mowed, and benches provided (0)	Shoreline mowed, and benches and piers provided (1)
Fish cleaning	Fish cleaning station on-site, but customers must clean their fish (-1)	Fish cleaning provided on-site for an extra fee (0)	Fishing cleaning provided on-site at no additional charge (1)
Distance	Within 10 miles of home (1)	Within 25 miles of home (0)	Within 50 miles of home (-1)
Price	\$3.00 per pound (1)	\$5.00 per pound (0)	\$7.00 per pound (-1)