Annual Economic Value of Tournament and Non-tournament Angling at Sam Rayburn Reservoir

by

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EXECUTIVE SUMMARY

Sam Rayburn Reservoir has consistently provided high quality angling opportunities for multiple fish species and is regarded as a premier fishing destination in Texas. It is among the largest reservoirs in the southeastern United States at 111,422 acres and is located in a relatively rural area along the Texas-Louisiana border. The cities of Jasper (population = 7,276) and Lufkin (population = 33,522), Texas are within a 30-minute drive of the reservoir; the Houston, Texas metropolitan area is 130 miles to the southwest. Unlike many central and west Texas reservoirs, Sam Rayburn has not experienced drought-induced low water levels, which can negatively affect fisheries.

Demand for water in Texas is increasing with the state's rapidly growing human population. Inter-basin transfers of water from East Texas, including Sam Rayburn Reservoir, have been proposed to alleviate water deficits projected elsewhere in the state (TWDB 2006). Water transfer from Sam Rayburn Reservoir could yield a lower water level, which would negatively impact the reservoir's fisheries. Therefore, it is vital to determine the economic value of angling at individual reservoirs such as Sam Rayburn so that angling interests are appropriately considered when compared to municipal, industrial, and agricultural water uses.

Largemouth bass tournaments comprise a substantial component of the reservoir's fishery. An estimated 52% of all Sam Rayburn Reservoir anglers participate in tournaments (Bohnsack and Ditton 1999). Tournaments at the reservoir vary greatly in magnitude, ranging from small, local club, single-day events with less than 50 participants to highly-publicized, multi-day events attracting thousands of anglers, including some from distant locations. Previous research concluded that tournaments have negligible effects on the largemouth bass population at Sam Rayburn Reservoir (Driscoll et al. 2007).

Angler expenditures for lodging, food, fuel, and tackle generate substantial revenue for communities located near popular waters and support angling-related businesses and jobs. The economic contribution of tournament anglers at Sam Rayburn Reservoir relative to non-tournament anglers is unknown, and the type and location of expenditures likely differ between the two angler types. Quantifying these differences would allow local communities to identify and prioritize funds and activities to improve infrastructure and promote economic development associated with recreational angling.

The Jasper County Development District #1 donated funds for this study, which was conducted by Texas Parks and Wildlife Department. From November 2007 to October 2008 a census of tournaments and a creel survey were conducted with Sam Rayburn Reservoir anglers completing questionnaires concerning their angling trips and expenditures. These data were used to

determine 1) the total annual angling expenditures, recreational value, and economic impact of recreational angling, 2) the annual number of black bass tournaments and associated participants at Sam Rayburn Reservoir, and 3) the annual direct expenditures, recreational value, and economic impact of black bass tournaments. Expenditures were examined by location of expense (Jasper County, five other counties surrounding Sam Rayburn Reservoir, other counties in Texas, or out-of-state) and angler residence (local, nonlocal, or out-of-state).

The main findings of this study were:

- Total economic value of the fishery was estimated at US$47.1 million.
- Angling expenditures totaled US$32.3 million for all angler types.
- Angling expenditures for tournament anglers totaled US$23.7 million (73% of all angler expenditures). The total economic value of tournament angling was US$31.0 million.
- Angling expenditures by tournament anglers resulted in US$39 million in output to the state of Texas from direct, indirect, and induced effects. These impacts include US$12.8 million in labor income, US$23.6 million of value added, and 486 full- or part-time jobs.
- Angling expenditures for non-tournament anglers totaled US$8.6 million. The total economic value of non-tournament angling was US$16.1 million.
- Angling expenditures by non-tournament anglers resulted in US$13 million in output to the state of Texas from direct, indirect, and induced effects. These impacts include US$4 million in labor income, US$8 million of value added, and 159 full- or part-time jobs.
- Annual angling days were 76,418 for tournament anglers and 119,856 for non-tournament anglers.
- 53% of tournament angling days were specifically to prepare (i.e., practice days) for tournament events scheduled to occur within 30 days.
- A total of 405 tournament events were held with 25,396 total participants. Of these, 304 were conducted by “bass clubs” (<50 participants), 82 by “lower open organizations” (>50 participants with entry fee $\leq$US$130), and 18 by “upper open organizations” (>50 participants with entry fee >US$130).
- On average, “bass club” tournament anglers spent US$120 and US$86, “lower open” tournament anglers spent US$165 and US$69, and “upper open” tournament anglers spent US$190 and US$88 per tournament and

practice day, respectively. On average, non-tournament anglers spent US$68 per fishing day.

- Of all tournaments, The Sealy Outdoors McDonald's Big Bass Splash 3-day event had the most participants at 3,892 and accounted for the largest angling expenditure for a single event at US$6.3 million. Total economic value of the event was estimated at US$8.0 million.

- Average overall expenditure per tournament event was US$306,593 for "upper opens", US$109,419 for "lower opens", and US$9,409 for "bass clubs".

- Tournament anglers spent US$12.3 million (52% of total) in Jasper County, US$7.1 million (30%) in the other five counties surrounding the reservoir, US$3.7 million (15%) elsewhere in Texas, and US$600,000 (2%) out-of-state.

- Including direct, indirect, and induced effects, expenditures by tournament anglers resulted in US$16 million in output to Jasper County (US$5 million in labor income, US$9.5 million of value added, and 294 full- or part-time jobs) and US$10 million in output to the five other counties surrounding Sam Rayburn Reservoir (US$3 million in labor income, US$6 million of value added, and 153 full- or part-time jobs).

- A total of 70% of tournament anglers resided outside the local six-county area and 13% were from out-of-state. These nonlocal tournament anglers accounted for 78% of the total tournament-related angling expenditures.

- Tournament anglers spent US$5.8 million for tournament entry fees, US$5.2 million for automobile operation, and US$3.9 million for boat operation. These were the three highest categorical expenses for tournament anglers and accounted for 63% of all expenses incurred by tournament anglers.

- Non-tournament anglers spent US$4.1 million (48% of total) in Jasper County, US$2.3 million (27%) in the other five counties surrounding the reservoir, US$1.7 million (20%) elsewhere in Texas, and US$400,000 (5%) out-of-state.

- Including direct, indirect, and induced effects, expenditures by non-tournament anglers resulted in US$5 million in output to Jasper County (US$1.5 million in labor income, US$3 million of value added, and 87 full- or part-time jobs) and US$3 million in output to the five other counties surrounding Sam Rayburn Reservoir (US$1 million in labor income, US$1.9 million of value added, and 48 full- or part-time jobs).

- Of the non-tournament anglers, 41% were local, 45% resided in Texas but outside the local 6-county area, and 14% were from out-of-state.

- Non-tournament anglers spent US$2.3 million for automobile operation, US$1.4 million for boat operation, and US$1.1 million for lodging. These three categories represented 56% of all non-tournament angler expenses.

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INTRODUCTION

Demand for water in Texas is rapidly increasing due to human population growth. The population of Texas is predicted to exceed 45 million people in 2060, more than double the 21 million present in 2000 (TWDB 2006). In 2060, the projected water demand of 21.6 million acre-feet will exceed the available supply of 14.6 million acre-feet (TWDB 2006). Based on input from 16 regional planning groups, the Texas Water Development Board prepares water use plans every five years that recommend water management strategies and projects to address projected deficits.

The East Texas region is projected to have sufficient supply to meet its water demands in 2060. However, the majority of regions are projected to have water deficits. Inter-basin water transfers have been proposed to alleviate deficits in some regions (TWDB 2006). As water demand surpasses supply in other areas of the state, there will be increased pressure to transfer water out of the East Texas region, including Sam Rayburn Reservoir.

Angling activities make a substantial contribution to the economies of most states. In 2006, 2.5 million anglers spent US$3.2 billion in Texas (USFWS 2006). Economic impact studies of angling at individual Texas reservoirs have been conducted to ensure that angling interests are appropriately considered when compared to municipal, industrial, and agricultural water uses (i.e., Schorr et al. 1995; Hunt et al. 1996; Thailing and Ditton 2000). Anderson et al. (2002a) estimated the annual economic value of recreational fishing at Sam Rayburn Reservoir to be US$15.1 million in 2001, but they concluded that value was underestimated because the study design inadequately represented contributions of black bass *Micropterus* spp. tournaments.

Black bass tournament angling is popular at Sam Rayburn Reservoir. Anderson et al. (2002a) estimated 52% of all anglers at Sam Rayburn Reservoir participate in black bass tournaments compared to only 14% of all Texas anglers (Bohnsack and Ditton 1999). In 2008, over 300 bass tournaments were conducted at the reservoir with tournament angling (including practice trips) comprising 45% of black bass angling effort (Texas Parks and Wildlife Department, unpublished data). In 2001, direct expenditures associated with the Bass N Bucks tournament and the Texas BASS Federation State Championship tournament were US$237,724 and US$235,928, respectively (Anderson et al. 2002b; Anderson et al. 2002c). If 37 similar tournaments were conducted annually, direct expenditures from tournaments alone would exceed the annual direct expenditures Anderson et al. (2002a) estimated for all anglers. Annual economic contributions of black bass tournaments are needed to estimate economic impacts of all recreational angling at Sam Rayburn Reservoir.

Knowledge of economic contributions of tournament and non-tournament anglers can improve local resource management. For example, when considering fisheries management activities that may decrease tournament frequency (e.g.,

restrictive length limits), the biological benefits to the fish population can be weighed against potential economic losses. Furthermore, local communities can use these estimates to better prioritize funds and activities that promote local economic development associated with recreational fishing.

We found only one study that estimated tournament anglers' annual expenditures at a reservoir (Dennis et al. 2006), and no studies have estimated the annual economic value and impact of tournaments. The significance of economic impact associated with tournaments is widely discussed at Sam Rayburn Reservoir but is unknown. Therefore, from November 2007 through October 2008 we estimated 1) the annual number of black bass tournaments and associated participants at Sam Rayburn Reservoir, 2) the annual direct expenditures, recreational value, and economic impact of black bass tournaments to local counties surrounding Sam Rayburn Reservoir and to Texas, and 3) the total annual direct expenditures, recreational value, and economic impact of recreational angling to local counties surrounding Sam Rayburn Reservoir and to Texas.

METHODS

Annual numbers of tournaments and participants

A census of bass tournaments at Sam Rayburn Reservoir quantified total number of tournament participants from November 2007 to October 2008. Because tournaments vary widely in terms of size, they were classified into two general types: bass club tournaments and open tournaments. Bass club tournaments were smaller ($\leq$ 50 participants), non-profit events requiring a club membership for participation. Bass clubs were identified via Texas Parks and Wildlife Department roving creel surveys, the tournament permit database maintained by the U.S. Army Corps of Engineers (controlling authority at Sam Rayburn Reservoir), and lists of statewide bass club affiliates (i.e., Texas Association of Bass Clubs, Texas B.A.S.S. Federation). Bass clubs were contacted by e-mail or telephone regarding annual tournament participation at Sam Rayburn Reservoir and asked to provide the number of tournaments hosted and the number of anglers participating in each tournament. The average number of events and participants per event from responding clubs was used to estimate corresponding values for non-responding bass clubs.

Open tournaments were large events (> 50 participants) with few restrictions on eligibility. These events were typically conducted by for-profit organizations that advertised event schedules and results to maximize participation. For most tournaments, event frequency and total number of anglers were retrieved from web sites and other publications (e.g., local newspapers and Lakecaster newsletter). Otherwise, tournament organizers were contacted and asked to report the number of anglers in each event.

Economic value of tournaments

Typically, economic value of recreational angling is defined as the value, above direct expenditures, that anglers are willing to pay (Steinback 1999). Direct expenditures and consumer surplus (CS, willingness to pay above trip costs) of black bass tournament anglers was estimated via mail-out questionnaires. Names and addresses were collected from tournament anglers encountered during roving creel surveys and supplemental surveys at boat ramps, and five tournaments at Sam Rayburn Reservoir (one bass club tournament, three upper open tournaments, and the Sealy Outdoors McDonald's Big Bass Splash [BBS]). Several lower open tournaments were asked to participate but declined.

Creel sampling consisted of stratified-random, non-uniform probability, roving surveys (Malvestuto et al. 1978; Malvestuto 1996). Surveys occurred on nine days per quarter for a total of 36 days during the study period. Sampling days were stratified by weekend (20 days sampled) and weekday (16 days sampled). Each survey day, approximately 33% of the reservoir (two of six creel sections) was randomly selected and sampled. To maximize angler contacts, creel sections were assigned seasonal, non-uniform probabilities derived from angler count data from 1999-2003. Only one name and address was recorded from each interviewed party. Supplemental surveys, at four of eight existing boat ramps, were conducted three days per quarter to obtain more angler names and addresses.

Each identified participant was mailed a questionnaire regarding expenditures and willingness-to-pay (Appendix A) and a postage-paid return envelope within one month of the tournament. Reminder or thank you postcards were sent to survey participants 10-14 days after the first mailing. A second copy of the questionnaire was sent to each non-respondent two weeks after the postcard mailing. In the case of the Bass Champs tournament and BBS, tournament organizers conducted the mailing of our questionnaires (using their internal mailing lists) and no reminder cards were mailed. A random selection of 984 of the total 3,892 participants in BBS received questionnaires.

Reported angler expenditures were classified according to whether they related to tournament practice trips (occurring $\leq$30 days prior to event) or to the tournament proper. Expenditures were further classified into 14 expense and four location categories. We assumed that direct expenditures for tournament angling parties would increase with tournament size, entry fees, and associated payback. Therefore, open tournaments were further classified by entry fee ($\leq$ US$130/person, "lower open"; > US$130/person, "upper open") and averages were calculated for bass club, lower open, and upper open anglers. Because BBS was a unique 3-day tournament with 3,892 participants, angler expenditures were estimated separately for this event. Total expenditures were estimated by tournament type and trip type (practice or tournament event) with the equation:

TCE = EXPD * PS * TL * TRIPS

where

TCE = total expenditures by category (for each of 14) or location (for each of 4)

EXPD = per person, per day average expenditure

PS = average party size (people per vehicle)

TL = average trip length (days)

TRIPS = total estimated number of angler trips

Total trips were estimated by:

TRIPS(Practice) = (TP * PPCT) – (TT/2)

or

TRIPS(Tournament) = TP – TT/2

where

TRIPS(Practice) = total practice trips

TRIPS(Tournament) = total event trips

TP = total estimated tournament participants

PPCT = percent of tournament anglers that practiced

TT = participants that traveled with another tournament angler

Total annual expenditures for each tournament type were estimated either as the sum of expenses in the 14 expense categories, plus out-of-state expenses:

TAEC = TCE1 + TCE2 +……TCE14 + OS

or as the sum of expenses for the four location categories:

TAEL = TCEJ + TCEL + TCES + OS

where

TAEC = total sum of the 14 categorical expenditures and OS

OS = out-of-state expenditures

TAEL = total sum of expenditures for all locations

TCEJ = Jasper County expenditures

TCEL = expenditures in other 5 local counties

TCES = expenditures elsewhere in Texas

Total expenditures for each tournament type were added together to obtain annual expenditures for all tournaments combined.

Similar to methods of Loomis (2006), CS was estimated by asking if anglers would be willing to pay a specific monetary amount (from a predetermined range of potential bid values) above their actual tournament event trip expenses. Again, we expected that CS would predictably increase with higher entry fees and higher potential payback. Potential bid values used were US$10, US$30, US$50, US$75, US$100, US$150, US$200, US$300, and US$400 for bass club anglers; US$20, US$40, US$60, US$100, US$150, US$200, US$300, US$400, and US$500 for lower open anglers; and US$40, US$70, US$100, US$150, US$200, US$300, US$450, US$600, and US$800 for upper open and BBS anglers. We did not specifically estimate CS for tournament practice trips. We assumed that CS for practice trips was equal to that from the actual event trip minus the average tournament entry fee for each tournament type. Logistic regression was used to estimate the average CS (per person, per trip) for each tournament type. The response variable was angler response (yes or no) to the surplus question. The logistic equation was used to determine the bid value that 50% of anglers would accept (i.e., average CS). Total CS for each tournament type was estimated by:

TCS = DCS * TP

where

TCS = total CS

DCS = average per person, per trip CS

TP = total participants for each tournament type.

Consumer surpluses from each tournament type were added together to obtain total tournament-related CS. Total tournament expenditures and total tournament-related CS were added to obtain total economic value of tournaments.

Economic value of non-tournament angling

Names and addresses of non-tournament anglers were collected during the roving creel surveys and surveys at boat ramps described earlier. All non-tournament anglers were sent a questionnaire (Appendix B); reminder postcards were sent if questionnaires were not returned within 10-14 days. A second

questionnaire was sent to non-respondents two weeks following the postcard mailing.

Categorical (14) and location (4) expenditures for non-tournament anglers were estimated for local anglers (residence located in Jasper, Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county), nonlocal anglers (residence elsewhere in Texas or out-of-state) and all anglers with the equation:

TCE = EXPD * TRIPS

where

TCE = expenditures by category (for each of 14) or location (for each of 4)

EXPD = per person, per day average expenditure

TRIPS = total estimated number of one person, one day trips derived from creel surveys

Total annual expenditures by residence location were estimated by:

TAEC = TCE1 + TCE2 +……TCE14 + OS

or

TAEL = TCEJ + TCEL + TCES + OS

where

TAEC = total sum of the 14 categorical expenditures and OS

OS = out-of-state expenditures

TAEL = total sum of the location expenditures

TCEJ = Jasper County expenditures

TCEL = expenditures in other 5 local counties

TCES = expenditures elsewhere in Texas

Total expenditures for each residence location were added together to obtain annual expenditures for all non-tournament anglers.

We expected CS would predictably increase with the distance between an angler's residence and Sam Rayburn Reservoir. Potential values were US$10, US$20, US$30, US$50, US$75, US$100, US$150, US$200, and US$250 for local anglers (residence within 60 miles of shoreline) and US$10, US$20, US$30, US$50, US$75, US$100, US$150, US$250, and US$350 for nonlocal anglers.

Logistic regression was used to estimate the average CS (per person, per trip) for each tournament type. Total CS by residence location was estimated by:

TCS = DCS/TL * TRIPS

where

TCS = total CS

DCS = average per person, per trip CS

TL = average trip length

TRIPS = total number of one person, one day trips

Consumer surpluses for local and nonlocal anglers were added together to obtain total non-tournament CS. Non-tournament expenditures and CS were added together to get total economic value of non-tournament angling.

Total economic value and economic impact of recreational angling

The total economic value of recreational angling at Sam Rayburn Reservoir was calculated as the sum of economic values of tournament and non-tournament angling. Total economic impact of fisheries exceeds expenditures due to circulation of expenditures in the local economy (Weithman 1999). Angler expenditures introduce a change in the output of goods and services and an economic multiplier is used to measure this change to regional economies. Angler expenditures ripple through the economy, increasing economic impact (Anderson et. al. 2002a). Direct impacts include the sales, income, and employment generated by initial purchases made by anglers; indirect impacts arise within industries supplying the directly-affected businesses (Steinback 1999). Induced impacts are economic activities generated by increased incomes as a result of angler expenditures (Anderson et al. 2002a). Total economic output at Sam Rayburn Reservoir (i.e, the sum of direct, indirect and induced impacts) was estimated using the input-output model developed by the Impact Analysis for Planning (IMPLAN) program (Olson and Lindall 1996).

The IMPLAN software describes the economic impact of fishing through changes in total economic output, income, value added, and employment. Total output is the dollar value of goods and services produced to satisfy final demand, and inter-industry transactions needed to produce those goods and services. Final demand is the dollar value of purchases for final consumption. Value added is equivalent to the gross regional product or the value of total economic output minus input purchases. Therefore, value added is always less than total output, but greater than income (Anderson et al. 2002a).

Input-output IMPLAN models were created to estimate the economic output of fishing at Sam Rayburn Reservoir. Separate models were created for tournament and non-tournament impacts: in Jasper County, in the surrounding five

counties, and in the state of Texas. Calculated impacts are considered conservative since 2004 IMPLAN data were used with survey data from 2007 and 2008. We assumed that dollar values in 2004, 2007, and 2008 were equal.

RESULTS

Survey response rate

In all, 3,107 questionnaires were mailed to tournament and non-tournament anglers. Of the 2,333 tournament mailings, 984 were for BBS, 862 for upper opens, 262 for lower opens, and 225 for club tournaments. Mailings for the BBS (*n* = 984) and Bass Champs (*n* = 537) tournaments were conducted by tournament organizers; no follow-up contact occurred and response rate was 15% for BBS and 22% for Bass Champs. The remainder of mailings (*n* = 1,586) included follow-up contact as necessary (i.e., reminder postcards or a second copy of the questionnaire) and the response rate was 56% (1,586 contacts, 48 undeliverable, 868 returned). The response rate of this set of mailings was similar among quarters (range, 53-60%), 53% for tournament anglers (812 mailings with follow-up contact as necessary, 26 undeliverable, 415 returned) and 60% for non-tournament anglers (774 mailings with follow-up contact as necessary, 22 undeliverable, 453 returned). These response rates, for mailings with follow-up contact, were within the range observed (46-72%) in four similar economic studies at other Texas reservoirs (Hunt et al. 1996; Dennis et al. 2006; Thailing and Ditton 2000; Anderson et al. 2002a).

Some anglers were confused by receipt of more than one questionnaire over the duration of this study. Our intent was for anglers to report activity and expenditures for specified trips each time they received a questionnaire. Comments on returned questionnaires and discussions with anglers at the reservoir indicated some anglers returned a questionnaire for one angling trip, but discarded subsequent questionnaires seeking information about later trips. Dennis et al. (2006) speculated that similar confusion over multiple mailings may have lowered the response rate (46%) in their study; it likely affected our response rate as well.

Tournament anglers

We identified 57 bass clubs conducting at least one event at Sam Rayburn Reservoir during the period November 2007 to October 2008 (Table 1). From 29 bass clubs reporting, average number of events was five (range 1-20) and average number of participants per event was 19 (range 8-48). Total estimated number of bass club events held during the period was 304 with 5,612 participants.

Twenty-one lower open organizations and seven upper open organizations conducted bass tournaments at Sam Rayburn Reservoir during the period (Table 2). The number of events held by each organization ranged from one to 25 for lower opens and from one to six for upper opens. The total number of participants

for the period, per organization, ranged from 31 to 2,500 for lower opens and 48 to 2,334 for upper opens. During the period, organizations held 82 lower open events with 10,130 total participants and 18 upper open events with 5,762 total participants. The BBS was a single, 3-day event with 3,892 participants (Table 2). Overall, we estimated that 405 tournaments were held with 25,396 total participants from November 2007 through October 2008.

Bass club angler response rate was 59% (132 questionnaires returned). Forty-one percent of club anglers made one or more trips for practice; average trip length was 2.6 days and the average party size was 1.8 anglers. For tournament trips, average trip length was 2.0 days and average party size was 1.9 people. The average expenditure per person, per day, was US$86 for a practice trip and US$120 for a tournament trip (Table 3). Of the 5,612 bass club participants, 41% practiced (2,301) and 43% of those traveled together to practice (989). We estimated there were 1,807 annual practice trips associated with bass club tournaments in the period. For tournament trips, 36% (2,020) indicated that they traveled with another tournament angler, and total estimated annual number of tournament trips for bass club anglers was 4,602. Direct expenditures associated with bass club practice and tournament trips were US$739,782 and US$2,120,493, respectively (Table 3). Total direct expenditures for bass club anglers were US$2,860,275 (Tables 7 and 9).

Lower open tournament angler response rate was 50% (130 questionnaires returned). Fifty-six percent of lower open anglers made one or more trips for practice; average trip length was 2.8 days and average party size was 1.8 anglers. For tournament trips, average trip length was 2.9 days and average party size was 2.0 people. The average expenditure per person, per day was US$69 for a practice trip and US$165 for a tournament trip (Table 4). Of the 10,130 lower open participants, 56% practiced (5,673) and 53% of those traveled together for practice (3,007) yielding an estimated 4,170 annual practice trips. For tournaments, 45% (4,559) indicated they traveled with another tournament angler, and total estimated annual number of tournament trips was 7,851. Direct expenditures associated with lower open practice and tournament trips were US$1,506,378 and US$7,465,938, respectively (Table 4). Total direct expenditures for lower open tournament anglers were US$8,972,317 (Tables 7 and 9).

The response rate for upper open tournament anglers was 47% (270 questionnaires returned). Sixty-seven percent of upper open anglers made one or more trips for practice, average trip length was 3.3 days and the average party size was 2.0 anglers. For tournament trips, average trip length was 2.5 days and average party size 2.0 people. The average expenditure per person, per day was US$88 for a practice trip and US$190 for a tournament trip (Table 5). Of the 5,762 upper open participants, 67% practiced (3,860) and 52% of those traveled together for practice (2,007), which resulted in a total of 2,857 annual practice trips. For tournament trips, 60% (3,457) indicated that they traveled with another tournament angler, and total estimated annual number of tournament trips was 4,034. Direct expenditures associated with upper open practice and tournament trips were

US$1,693,088 and US$3,825,578, respectively (Table 5). Total direct expenditures for upper open anglers were US$5,518,667 (Tables 7 and 9).

Forty percent of BBS anglers made one or more practice trips; average trip length was 3.4 days and average party size was 2.4 people. For tournament trips, average trip length was 4.3 days and average party size was 2.7 people. The average expenditure per person, per day was US$132 for a practice trip and US$141 for a tournament trip (Table 6). Of the 3,892 BBS participants, 40% practiced (1,557) and 51% of those traveled together for practice (794) yielding an estimate of 1,160 practice trips. For tournament trips, 40% (1,557) indicated that they traveled with another tournament angler, and total estimated number of tournament trips was 3,114. Direct expenditures associated with BBS practice and tournament trips were US$1,248,016 and US$5,075,030, respectively (Table 6). Total direct expenditures for BBS anglers were US$6,323,046 (Tables 7 and 9).

Expenses for automobile and boat operation were the most common ($\geq$84% of respondents) and largest ($\geq$18% of all expenses) of the expenses associated with practice trips for all four tournament types. For bass club anglers during tournament trips, automobile and boat operation expenses remained most common ($\geq$89% of respondents) and largest (US$561,237 on automobile operation and US$396,086 on boat operation) (Table 3). For the other three tournament types, tournament entry fees were the largest expense ($\geq$25% of all expenses; range of total expenditures on entry fees was US$1,290,093-US$2,635,814) and about as commonly-reported as automobile expenses (both $\geq$93% of respondents).

Summing across all four tournament types, practice trip expenditures were US$5,187,264 and tournament trip expenditures were US$18,487,039. For lower open tournaments, the amount spent in Jasper County was similar to the combined total expenditure in the other five counties surrounding Sam Rayburn Reservoir. For each of the other tournament types, and for both practice and tournament trips, more than 51% of the total expenditure was spent in Jasper County and more than 59% of respondents reported expenditures in Jasper County.

Tournament entry fees, automobile operation, and boat operation were the three largest expenditure categories for lower open, upper open, and BBS tournaments when expenses for practice and tournament trips were combined (Table 7). For bass club tournaments, the largest expenditure was for automobile operation. Jasper County expenditures were more than 51% of total expenditure for all but lower open tournaments (42% in Jasper County, 47% in the other 5 counties surrounding Sam Rayburn Reservoir).

Per event, the BBS had the greatest expenditures (US$6,323,046), followed by upper opens (US$306,593), lower opens (US$109,419), and bass clubs (US$9,409). For all tournaments combined, tournament entry fees (US$5,821,297), automobile operation (US$5,228,195), and boat operation (US$3,854,472) were the highest categorical expenses and collectively accounted for 63% of total expenses (Table 7). By location, Jasper County had the highest

expenditures (US$12,342,109; 52% of total expenses). Collectively, lower open tournaments had the greatest direct expenditures (US$8,972,317; N = 82), followed by the BBS (US$6,323,046; N = 1), upper opens (US$5,518,667; N = 18) and bass clubs (US$2,860,275; N = 304) (Tables 7 and 9).

Nonlocal anglers accounted for the majority of direct expenditures for all tournament types (range 56-61%) (Table 8). Overall, 78% of tournament-related direct expenditures were spent by anglers not residing in the local area. Logistic regression indicated that average angler tournament event trip values for CS were US$106 for bass club anglers (Wald X^2 = 15.5; df = 1; P < 0.0001; concordance = 0.76), US$293 for lower open anglers (Wald X^2 = 21.8; df = 1; P < 0.0001; concordance = 0.82), US$296 for upper open anglers (Wald X^2 = 20.8; df = 1; P < 0.0001; concordance = 0.73), and US$411 for BBS anglers (Wald X^2 = 10.2; df = 1; P = 0.0014; concordance = 0.72). Total estimated CS for tournament event trips was US$594,872 for bass clubs (5,612 participants), US$2,968,090 for lower opens (10,130 participants), US$1,705,552 for upper opens (5,762 participants), and US$1,599,612 for the BBS (3,892 participants) (Table 9). Assuming CS for practice trips was equal to CS of event trips minus the average entry fee, average angler CS for practice trips were US$52 for bass club anglers, US$33 for lower open anglers, US$21 for upper open anglers, and US$79 for BBS anglers. Total estimated CS for tournament practice trips was US$119,652 for bass clubs (2,301 anglers practiced), US$187,209 for lower opens (5,673 practiced), US$81,060 for upper opens (3,860 practiced), and US$123,003 for the BBS (1,557 practiced) (Table 9). Economic value ranged from US$3,574,799 (bass clubs) to US$12,127,616 (lower opens).

Overall, we estimated that 405 tournaments were held from November 2007 to October 2008 with a total of 25,396 participants. The average length of practice and tournament angling days was 6.9 and 8.1 hours, respectively. Total annual angling hours associated with tournaments was 570,377 hours (279,504 practice and 290,873 event hours). Overall, practice trip expenditures were US$5,187,264 and event trip expenditures were US$18,487,039. Total direct expenditure associated with tournaments was estimated at US$23,674,305 and total economic value was US$31,053,355.

Tournament-associated direct expenditures produced more than US$39 million in output to the state, US$12.8 million in labor income, US$23.6 million of value added, and 486 full- or part-time jobs in Texas. Direct expenditures in Jasper County produced more than US$16 million in output to the state, US$5 million in labor income, US$9.5 million of value added, and 294 full- or part-time jobs in the county. In the other five surrounding counties (Tyler, Angelina, Nacogdoches, San Augustine, and Sabine), direct expenditures produced almost US$10 million in output to the state, US$3 million in labor income, US$6 million of value added, and 153 full- or part-time jobs in the region. The majority of impacts were recognized in tourism-related sectors of gas stations, recreational industries such as amusement attractions, food services and drinking places, hotels and motels, food and beverage stores, and real estate.

Non-tournament anglers

Local angler response rate was 57% (241 questionnaires returned). Average party size was 2.3 people and average trip length was 1.9 days. The estimated total number of angler trips (one person, one day) was 49,381. Creel surveys estimated that 41% of non-tournament anglers were local residents. Local anglers spent the most money on automobile operation (95% of respondents; 28% of expenses; US$734,436), boat operation (87% of respondents; 24% of expenses; US$633,976), and fishing licenses (33% of respondents; 12% of expenses; US$310,492) (Table 10). Most anglers also reported expenditures for groceries (74% of respondents) and tackle (65% of respondents). By location, expenditures were similar for Jasper County (US$1,259,080, 48% of respondents) and the other five counties surrounding Sam Rayburn Reservoir (US$1,094,664, 42% of respondents). Average expenditure per person, per day was US$53 and total direct expenditure was US$2,637,517 (Tables 10 and 11). For each local angler, CS was estimated at US$100 per trip or US$43 per day (Wald $X^2 = 37.9$; df = 1; $P < 0.0001$; concordance = 0.76). Total CS for non-tournament anglers was US$2,612,733 (Table 11).

Response rate for nonlocal, Texas anglers was 58% (155 questionnaires returned). Average party size was 2.6 people and average trip length was 3.7 days. Nonlocal anglers made an estimated 53,695 angling trips (one person, one day). Creel surveys estimated that 45% of non-tournament anglers were nonlocal, Texas residents. Expenditures were highest for automobile operation (US$1,199,563 or 28% of all expenses; 97% of respondents), boat operation (US$622,995 or 15% of all expenses; 87% of respondents), and lodging (US$600,675 or 14% of all expenses; 54% of respondents) (Table 10). Approximately 90% of nonlocal anglers also reported grocery expenditures. Expenditures were highest in Jasper County (US$1,916,649; 45% of respondents). Average expenditure per person, per day was US$79 and total direct expenditures were US$4,244,442 (Tables 10 and 11). Consumer surplus was estimated at US$292 per angler trip or US$112 per day) (Wald $X^2 = 16.1$; df = 1; $P < 0.0001$; concordance = 0.76) and total CS was US$4,215,487 (Table 11).

Out-of-state anglers comprised 14% of non-tournament anglers and 68% of these were from Louisiana. Response rate for out-of-state anglers was 60% (52 questionnaires returned). Average party size was 2.2 people, average trip length was 5.6 days, and total number of trips (one person, one day) was 16,660. Lodging expenditures were highest (US$390,085 or 23% of all expenses; 65% of respondents), followed by automobile operation (US$357,274 or 21% of all expenses; 92% of respondents) and restaurant meals (US$183,093 or 11% of all expenses; 73% of respondents) (Table 10). Other frequently reported expenses included groceries (80% of respondents) and boat operation (75% of respondents). Expenditures were highest in Jasper County (US$964,353; 57% of respondents). Average per person, per day expenditure was US$102 and total direct expenditure was US$1,703,047 (Tables 10 and 11). For each out-of-state angler, CS was estimated at US$224 per trip or US$40 per day (Wald $X^2 = 9$; df = 1; $P = 0.0023$; concordance = 0.83). Total CS was US$662,848 (Table 11).

Overall, for non-tournament anglers, average party size was 2.4 people and average trip length was 3.0 days. Non-tournament anglers made 119,856 one-person, one-day trips to Sam Rayburn Reservoir. Given non-tournament angler average daily trip length was 6.1 hours, total annual non-tournament angling hours were 731,122. Expenses associated with automobile (US$2,183,691 or 28% of all expenses; 95% of respondents) and boat operation (US$1,418,201; or 18% of all expenses; 86% of respondents) were highest and most common, followed by lodging (US$902,932) and groceries (US$883,175) (Table 10). Expenditures in Jasper County were most common (58% of respondents) and higher (US$3,929,449 or 48% of expenses) than other locations. Average expenditure per person, per day was US$68 and total direct expenditure was US$8,204,883. Consumer surplus for all non-tournament anglers was US$166 per trip or US$56 per day (Wald X^2 = 52.5; df = 1; P < 0.0001; concordance = 0.75). Total estimated CS was US$7,491,069 (Table 13). The total economic value of non-tournament angling was US$15,695,952.

Direct expenditures of non-tournament anglers produced more than US$13 million in output to the state, US$4 million in labor income, US$8 million of value added, and 159 full- or part-time jobs in Texas. In Jasper County, expenditures produced US$5 million in output to the state, US$1.5 million in labor income, US$3 million of value added, and 87 full- or part-time jobs in Texas. In the other five local counties (Tyler, Angelina, Nacogdoches, San Augustine, and Sabine), expenditures produced more than US$3 million in output to the state, US$1 million in labor income, US$1.9 million of value added, and 48 full- or part-time jobs in Texas. The majority of these impacts were recognized in tourism-related sectors of gas stations, amusement attractions such as recreational industries, food services and drinking places, hotels and motels, and food and beverage stores.

Tournament/non-tournament comparison and overall

Tournament expenses exceeded non-tournament expenses for all categories except boat rental, fishing guide, and fishing license fees (Table 12). Tournament angler expenditures were higher than non-tournament angler expenditures for all four locations. Trends for both tournament and non-tournament expenditures were similar, with Jasper County expenditures highest, followed by expenditures in the other 5 counties surrounding Sam Rayburn Reservoir. Direct expenditures associated with tournaments (US$23,674,307) exceeded non-tournament expenditures (US$8,204,883) by a factor of 2.9, but CS for each group was similar (US$7,491,069 non-tournament; US$7,379,050 tournament) (Table 13). Economic value of tournament angling (US$31,053,357) was double that of non-tournament angling (US$15,695,952).

The largest expenditures, for tournament- and non-tournament anglers combined, were related to automobile operation (24% of total expenses; US$7,411,886), tournament entry fees (19% of total expenses; US$5,821,297) and boat operation (17% of total expenses; US$5,272,673) (Table 12). Approximately 50% of the total direct expenditures were in Jasper County (US$16,271,558). For all recreational angling combined, total direct expenditures were US$31,879,190,

total CS was US$14,870,119, and total economic value was US$46,749,309 (Table 13). A total of 76% of the direct expenditures were from residents outside of the local area (Table 14).

DISCUSSION

Black bass tournament angling was very popular at Sam Rayburn Reservoir, as 85 different tournament organizations conducted 405 annual tournaments with 25,396 associated participants (average, 7.8 events and 488 participants per weekend), and total annual angling hours were 570,377. High tournament frequency was expected, given that 45% of black bass and 36% of total angling effort were tournament-related (Texas Parks and Wildlife Department, unpublished data). We could find only one other peer-reviewed study that estimated the annual number of black bass tournaments and angling hours at a reservoir. Dennis et al. (2006) identified 147 annual black bass tournaments that contributed 27,348 angling hours at O.H. Ivie Reservoir, Texas, which accounted for 20% of black bass fishing effort and 15% of total angling effort.

Although the annual number of bass club events (304) was much higher than open tournaments (100), direct expenditures of bass club anglers were only 12% of the total tournament-related expenditures. Club events were much smaller (19 anglers/event) than open tournaments (159 anglers/event), which resulted in fewer total angling hours and less overall expenditure. However, individual club angler expenditures per day were similar to those of open tournament anglers, with the exception of tournament entry fees. Daily expenditures appeared to be independent of potential reward, as prize money at most bass club events was considerably lower than at open events. Conversely, total angling days associated with tournaments increased with higher entry fees and associated payback. The percent of anglers practicing as well as average length of practice increased from bass club to lower open to upper open anglers. A majority of tournament anglers at Sam Rayburn Reservoir seemed to prefer an intermediate level of event size, entry fee, and potential payback because the annual number of participants, expenditures, CS, and economic value were highest for lower open tournaments.

The three-day BBS tournament was unique in several ways. Although the entry fee was similar to that of other open tournaments, the overall purse was US$560,000. Nearly all other tournaments at Sam Rayburn Reservoir have an overall purse of <US$70,000. First place in the BBS paid US$125,000 in cash and prizes, whereas most other tournaments pay < US$20,000. The large BBS purse attracted 3,892 anglers from 37 states and two foreign countries and was likely the largest black bass tournament in the U.S. in 2008. The BBS anglers also had a higher average party size and practiced for more days and spent more each practice day than other tournament anglers. As a result, the BBS event contributed 15% of the annual tournament participants, 27% of the annual tournament expenditures, and 20% of the overall angling expenditures.

Automobile and boat operation expenditures accounted for 38% of total tournament expenditures. Although both are common expenses for anglers, these costs were likely exacerbated by the relatively high average price of regular grade gasoline in Texas during the study period (US$3.26/gallon) (http://www.eia.doe.gov). By location, expenditures in Jasper County were highest (52% of total) and likely a result of existing infrastructure needed to host tournaments (i.e., lodging, large parking lots, and tournament weigh-in pavilion). To better recruit tournament-related expenditures, other local counties, cities, and local parks must have facilities available to accommodate large tournament events.

Our results indicated that tournament angling had positive effects on the economy associated with the Sam Rayburn Reservoir fishery. Tournament angling contributed 73% of the annual direct expenditures and 66% of the economic value. Dennis et al. (2006) found that tournament anglers contributed only 14% of the annual expenditures at O.H. Ivie Reservoir, Texas. Tournament angling was responsible for 486 full- or part-time jobs in the state of Texas, with approximately 60% of those jobs in Jasper County. The majority of these jobs were in tourism-related sectors including hotels and motels, gasoline stations, and recreational industries. Local economic development groups can use this information to support increased funding and infrastructure to recruit tournaments (i.e., direct financial sponsorship, increased parking at boat ramps, additional motels and weigh-in pavilions). Consideration of economic impacts is essential to responsible fisheries management (Weithman 1999.) Coupled with biological information, high economic contributions of tournament angling can be incorporated into future management decisions regarding the largemouth bass fishery. In contrast to conclusions of Dennis et al. (2006), we suggest that potential benefits of more restrictive harvest regulations (e.g., increases in large fish abundance, fishing quality, and non-tournament angling effort and expenditures) may not be large enough to offset potential economic losses due to decreased tournament frequency, given the magnitude of tournament-related expenditures at Sam Rayburn reservoir.

Although the economic benefits of tournament angling were positive, biological (i.e., increases in total angling effort and associated fish mortality) and social impacts (i.e., crowding at access points, conflict with non-tournament anglers) of high tournament angling effort could be potentially negative (Schramm et al. 1991). But, Driscoll et al. (2007) concluded that population-level biological impacts of tournaments at Sam Rayburn Reservoir were low, as only 5% of the largemouth bass population of legal length was retained by tournament anglers in one year, resulting in just a 2% reduction in population size. Non-tournament angler perceptions regarding negative effects of tournament angling on fishing quality are also relatively low. Anderson et al. (2002a) determined that only 25% of non-tournament anglers at Sam Rayburn Reservoir thought that tournament angling negatively affected fishing quality, compared to 39% of Texas anglers in a statewide survey (Ditton and Hunt 1996). Social conflict between tournament and non-tournament anglers occurs at Sam Rayburn Reservoir and we suggest most is due to crowding at access points and parking lots during weekends, when the

number of both angler types is highest. Although the U.S. Army Corps of Engineers has a tournament permitting system in place to minimize crowding, congestion at access points is common during peaks in tournament activity. Additional parking space could alleviate these issues.

Party size and trip length were similar for non-tournament and tournament anglers, though annual angling hours totaled 28% more for non-tournament anglers. However, non-tournament anglers' average daily expenditure was considerably lower than that of tournament anglers, even when entry fees are excluded from calculations. As a result of lower daily expenses, direct expenditures of non-tournament angling comprised only 27% of total expenditures. Ditton et al. (1992) suggested that angler specialization follows a continuum from least-specialized beginners to experienced anglers for whom fishing is a central life interest and that frequency of participation and incurred costs increase with specialization. A comparison by Wilde et al. (1998) of tournament and non-tournament anglers in Texas determined that tournament anglers were more specialized than non-tournament anglers, as they fished more frequently and had different motives (e.g., "to win a trophy or prize"; "to obtain a trophy fish"; "to develop my skills"; "for the challenge or sport"). Tournament anglers at Sam Rayburn Reservoir also appear more specialized, as evidenced by greater daily expenditures. Conversely, non-tournament anglers were more willing to pay higher trip expenses, as average CS for non-tournament anglers was considerably higher in proportion to direct expenditures (87%) than for tournament anglers (31%).

Economically, it is important to distinguish between expenditures of local anglers and of nonlocal anglers. Expenditures by nonlocal anglers bring new money to the Sam Rayburn Reservoir area and have more economic impact than angling expenditures by local residents (Milon and Thunberg 1993). Angling at Sam Rayburn Reservoir had a regional attraction, apparently offering anglers opportunities not found at waters closer to their residence. Seventy percent of tournament anglers and 59% of non-tournament anglers resided outside the local six-county area; this included 13% of tournament anglers who were from out-of-state and 14% of non-tournament anglers who were from out-of-state. These nonresident anglers accounted for 76% of the overall direct expenditures (78% of tournament and 69% of non-tournament expenditures). Anglers were responsible for US$24,227,994 of new funds brought into the Sam Rayburn Reservoir area annually. These nonlocal expenditures were higher than those from other fisheries in East Texas (Toledo Bend Reservoir = US$16.2 million, Thailing and Ditton 2000; Lake Fork Reservoir = US$14.5 million, Chen et al. 2003).

We hoped to compare angling-related expenditures to other segments of the economy in the Sam Rayburn Reservoir area, but other expenditure estimates were not available. However, we were able to estimate the proportion of annual lodging-related expenditures contributed by anglers in the northern half of Jasper County via local hotel tax revenues. We assumed no angling-related lodging for Sam Rayburn Reservoir occurred in the southern half of Jasper County (i.e., south

of the City of Jasper). Annual hotel tax revenues were US$290,324 for the City of Jasper (6% tax rate) and US$86,910 for the Jasper County Development District (7% tax rate). Applying a 6.5% hotel tax rate to the annual lodging expenditures of anglers in Jasper County (US$1,955,598), total angling-related hotel taxes were US$127,114. Thus, anglers contributed 34% of the annual lodging expenditures in northern Jasper County, and 70% of the angling-related expenditures were tournament-related.

Including angling trips specifically for tournament-related practice was important to more accurately estimate both tournament-related and overall expenditures. Tournament practice trips accounted for 56% of all tournament-related trips, and tournament-related expenditures and overall expenditures would have been underestimated by 22% and 16%, respectively by excluding practice trips. To obtain accurate estimates, we suggest studies estimating specific contributions of tournament angling account for practice trips.

Anderson et al. (2002a) estimated the annual economic value of the recreational fishery at Sam Rayburn Reservoir was US$15.1 million in 2001. Using the adjustments for inflation provided by Sahr (2009), this estimate was US$18.3 million in 2008. However, Anderson et al. (2002a) concluded that their study design did not adequately include tournament angling and suggested that overall angler expenditures were likely much higher than their estimate. We estimated the economic value was US$46.7 million and our results confirm the conclusion of Anderson et al. (2002a) that their study undervalued the fishery. Our estimate for Sam Rayburn Reservoir was similar to that reported by Thailing and Ditton (2000) for Toledo Bend Reservoir after adjusting for inflation (US$38.1 million; 2008 inflation-adjusted value of US$49.2 million) though Toledo Bend Reservoir has 31% more surface area. However, our estimate was lower than that reported by Hunt and Ditton (1996) for Lake Fork Reservoir (US$38.2 million; 2008 inflation-adjusted value of US$54.0 million) even though Sam Rayburn Reservoir has 4.2 times more surface area.

Our economic value estimate was conservative for two reasons. Although we conducted a thorough census to estimate the total annual number of tournaments at Sam Rayburn Reservoir, we likely missed some bass club events that were not advertised. Similar to economic evaluations of other fisheries in Texas (Thailing et al. 2000; Anderson et al. 2002a; Chen et al. 2003), we did not include expenditures associated with the purchase of durable property (e.g., lakeside homes, vehicles, boats, and fishing equipment) because it is difficult to attribute these expenditures solely to the Sam Rayburn Reservoir fishery and to estimate associated depreciation of value.

The high economic value of the recreational fishery at Sam Rayburn Reservoir reflects the importance of recreational fishing to local businesses dependent on the expenditures and to the anglers who obviously value fishing as a hobby or form of leisure. As human population growth increases and water demand exceeds supply in other parts of Texas, the incentive to transfer Sam

Rayburn Reservoir water to other watersheds will increase. The economic values associated with water will likely factor into future prioritization of water use in Texas. Conveying information on the economic value of recreational angling at Sam Rayburn Reservoir to stakeholders (e.g., local businesses, local and state governmental entities, anglers, and water authorities) will facilitate appropriate comparisons among competing water uses. Ideally, economic contributions of all forms of water recreation at Sam Rayburn Reservoir (e.g., angling, boating, camping, birding) are needed to properly prioritize water use, and future research should quantify non-angling recreation expenditures.

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Table 1. Actual (bolded) or estimated number of black bass club events and participants for identified organizations at Sam Rayburn Reservoir, November 2007-October 2008.

Bass club	Annual events	Average number of participants/event	Total number of participants
All American Anglers	**1**	**11**	**11**
Angelina Fire Dept.	5	19	95
Backwoods Bass Club	**10**	**10**	**100**
Bayou Bassin' Buddies	5	19	95
Beaumont Bass Anglers	**6**	**20**	**120**
Big D Outdoors	**5**	**30**	**150**
BRC Bass Club	5	19	95
Bridge City Fire Dept.	5	19	95
Bryan Bass Club	**2**	**10**	**20**
CBI Annual	5	19	95
Chester ISD Benefit	5	19	95
Clear Creek Bass Club	5	19	95
Cleveland Bass Club	5	19	95
Deweyville Alumni Benefit	**1**	**32**	**32**
East Texas Anglers	**12**	**16**	**192**
East Texas Anglers Fishing Club	**12**	**12**	**144**
East Texas Bass Association	**1**	**20**	**20**
East Texas Bass Club	5	19	95
ERA	5	19	95
Fishin' Tradition	**4**	**14**	**56**
Get Reel Bass Club	**12**	**25**	**300**
Gulf States Bass Busters	**5**	**16**	**80**
Hardin County Hooksetters	**8**	**18**	**144**
Humble Bass Club	**2**	**8**	**16**
JBC	5	19	95
Lockjaw Bass Club	**1**	**10**	**10**
Longview Bass Club	**1**	**48**	**48**
Lufkin Saturday Bass Anglers	**11**	**22**	**242**
Lumberton Bass Club	**7**	**20**	**140**
Mossback Bass Club	**1**	**20**	**20**
Mr and Mrs Bass Club	5	19	95
Newton Co. Fair Benefit	5	19	95
No Name Bass Club	**5**	**21**	**105**
Onalaska Bass Club	**2**	**19**	**38**
Pigs and Hogs	**3**	**16**	**48**
Pine Grove Bass Club	5	19	95
Plum Ridge Bass Club	5	19	95
Polk County Bass Club	5	19	95
Poor Boys Bass Club	5	19	95
Port Arthur Refinery Bass Club	**4**	**30**	**120**
Print Pack Bass Club - Orange	5	19	95
Quality Contract Services	5	19	95
Reel Sportsman	**5**	**20**	**100**
Saturday Bass Anglers - LA	5	19	95
SFA Bass Club	5	19	95
Shirley Creek Bass Club	5	19	95
Sleanwater Bass Club	5	19	95
Southeast Texas Anglers	5	19	95

Table 1. Continued

Bass club	Annual events	Average number of participants/event	Total number of participants
Southern Boys Bass Club	5	19	95
Sportsman Bass Club	**5**	**20**	**100**
Temple Inland	5	19	95
Thursday Evening Public	**20**	**18**	**360**
Twin Lakes Bassmasters	**11**	**14**	**154**
WCBA	**5**	**12**	**60**
West Bass Club	5	19	95
Woodlands Bass Club	**2**	**11**	**22**
Woods and Waters	5	19	95
Total	304		5,612

Table 2. Number of open black bass tournaments and participants for identified organizations at Sam Rayburn Reservoir, November 2007-October 2008.

Open tournament organization	Annual events	Total number of participants
Lower opens		
American Bass Anglers	6	146
Anglers Quest	20	1,304
Bass Champs Dodge Mega Bass	1	1,500
BASS Junior Bassmasters	1	31
BP Oilmen	1	200
Coburn's Fish Fest	1	200
Couples Association of Sport Tournaments	2	96
Dawson Marine Big Bass	1	380
Fishers of Men	3	238
March of Dimes Benefit	1	200
Media Bass	6	1,058
SFA Collegiate Open	1	58
Shivers Benefit	1	88
Silsbee Fire Department	1	100
Texas BASS Federation	2	307
Texas Forest Country	3	502
Texas State Bass Tournament	1	237
The 2 of Us	3	248
Thursday Evening Monterray	25	2,500
Tracy Byrd Big Bass	1	537
Triple S Industrial	1	200
Total	82	10,130
Upper opens		
American Bass Anglers Grand Slam	1	48
Bass Champs	4	1,816
Bass N Bucks	6	2,334
FLW Bass Fishing League	2	446
FLW Stren	1	346
Rayburn Oilmen	1	300
BASS Weekend Series	3	472
Total	18	5,762
Sealy Outdoors McDonalds's Big Bass Splash	1	3,892
Overall	101	19,784

Table 3. Bass club angler expenditures by category and location for practice and tournament trips at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, Tyler.

Expense type	Average per person per day (US$)	Total expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Practice		
Automobile operation	24.34	210,534	90	29
Other transportation				
Boat rental	0.76	6,541	3	<1
Boat operation	19.27	166,709	90	23
Launch fees	1.54	13,300	77	2
Lodging	7.46	64,562	27	9
Restaurant meals	8.89	76,883	57	10
Groceries	6.48	56,012	64	8
Tackle	6.51	56,272	61	8
Fishing guide				
Fishing license	3.16	27,292	20	4
Tournament entry fees				
Other expenses	0.83	7,208	7	<1
Jasper County	44.08	381,315	59	52
Other 5 counties surrounding Sam Rayburn	20.11	173,969	37	24
Other counties in Texas	15.03	130,032	33	18
Out of state	6.30	54,464	13	8
Total practice	85.52	739,782		
		Tournament		
Automobile operation	31.69	561,237	96	26
Other transportation				
Boat rental	0.29	5,065	2	<1
Boat operation	22.36	396,086	89	19
Launch fees	1.88	33,273	83	2
Lodging	11.69	207,083	38	10
Restaurant meals	7.53	133,374	56	6
Groceries	9.18	162,641	81	8
Tackle	8.45	149,638	51	7
Fishing guide				
Fishing license	6.78	120,061	31	6
Tournament entry fees	17.20	304,642	88	14
Other expenses	1.24	21,877	6	1
Jasper County	61.37	1,086,833	65	51
Other 5 counties surrounding Sam Rayburn	25.78	456,608	36	22
Other counties in Texas	31.14	551,540	39	26
Out of state	1.44	25,511	7	1
Total tourney	119.73	2,120,493		

Table 4. Lower open tournament angler expenditures by category for practice and tournament trips at Sam Rayburn Reservoir, November 2007 – October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, Tyler.

Expense type	Average per person per day (US$)	Total expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Practice		
Automobile operation	23.01	501,761	93	33
Other transportation	0.41	8,963	1	<1
Boat rental	1.00	21,909	2	1
Boat operation	20.57	448,647	83	30
Launch fees	1.15	25,143	62	2
Lodging	2.85	62,276	15	4
Restaurant meals	7.39	161,140	56	11
Groceries	4.70	102,444	67	7
Tackle	6.15	134,122	58	9
Fishing guide				
Fishing license	0.38	8,348	6	<1
Tournament entry fees				
Other expenses	0.34	7,469	1	<1
Jasper County	26.84	585,301	42	39
Other 5 counties surrounding Sam Rayburn	34.72	757,364	64	50
Other counties in Texas	6.40	139,562	19	9
Out of state	1.11	24,150	5	2
Total practice	69.07	1,506,378		
		Tournament		
Automobile operation	33.10	1,493,895	96	20
Other transportation	0.77	34,718	<1	<1
Boat rental				
Boat operation	25.45	1,148,670	91	15
Launch fees	1.38	62,244	74	<1
Lodging	10.43	470,939	30	6
Restaurant meals	10.74	484,794	67	6
Groceries	6.24	281,724	70	4
Tackle	11.11	501,382	63	7
Fishing guide				
Fishing license	3.88	174,910	24	2
Tournament entry fees	58.40	2,635,814	95	35
Other expenses	2.48	112,086	10	2
Jasper County	70.60	3,186,671	52	43
Other 5 counties surrounding Sam Rayburn	76.08	3,433,642	66	46
Other counties in Texas	17.30	780,868	30	10
Out of state	1.43	64,756	6	1
Total tourney	165.41	7,465,938		

Table 5. Upper open tournament angler expenditures by category for practice and tournament trips at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, Tyler.

Expense type	Average per person per day (US$)	Total expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Practice		
Automobile operation	28.36	544,433	94	32
Other transportation				
Boat rental				
Boat operation	19.62	376,704	86	22
Launch fees	1.42	27,313	67	2
Lodging	9.30	178,538	26	11
Restaurant meals	10.89	209,162	71	12
Groceries	5.99	115,016	69	7
Tackle	6.85	131,526	53	8
Fishing guide	1.38	26,517	1	2
Fishing license	1.59	30,557	9	2
Tournament entry fees	0.26	4,949	0	<1
Other expenses	0.71	13,582	1	1
Jasper County	54.04	1,037,475	76	61
Other 5 counties surrounding Sam Rayburn	20.47	393,083	39	23
Other counties in Texas	11.86	227,744	33	13
Out of state	1.81	34,784	9	2
Total practice	88.18	1,693,088		
		Tournament		
Automobile operation	32.36	651,278	96	17
Other transportation	0.01	223	0	<1
Boat rental	0.15	3,006	0	<1
Boat operation	28.12	565,912	91	15
Launch fees	1.67	33,658	80	1
Lodging	10.08	202,840	34	5
Restaurant meals	13.36	268,865	76	7
Groceries	6.81	137,127	73	4
Tackle	10.44	210,123	60	5
Fishing guide	0.33	6,677	<1	<1
Fishing license	4.48	90,075	25	2
Tournament entry fees	78.76	1,585,104	93	41
Other expenses	1.29	25,917	5	1
Jasper County	130.90	2,634,369	84	69
Other 5 counties surrounding Sam Rayburn	32.16	647,308	37	17
Other counties in Texas	24.80	499,133	36	13
Out of state	2.22	44,767	8	1
Total tourney	190.08	3,825,578		

Table 6. Sealy Outdoors McDonald's Big Bass Splash angler expenditures by category for practice and tournament trips at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, Tyler.

Expense type	Average per person per day (US$)	Total expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Practice		
Automobile operation	29.10	275,621	84	22
Other transportation	8.77	83,080	1	7
Boat rental				
Boat operation	23.23	220,043	84	18
Launch fees	1.71	16,224	70	1
Lodging	15.84	150,032	33	12
Restaurant meals	12.92	122,399	68	10
Groceries	13.33	126,268	68	10
Tackle	8.40	79,579	56	6
Fishing guide	0.35	3,323	1	<1
Fishing license	4.05	38,404	22	3
Tournament entry fees	0.07	692	1	<1
Other expenses	2.97	28,136	7	2
Jasper County	69.51	658,361	61	53
Other 5 counties surrounding Sam Rayburn	30.05	284,612	43	23
Other counties in Texas	21.20	200,833	22	16
Out of state	11.00	104,209	12	8
Total practice	131.76	1,248,016		
		Tournament		
Automobile operation	27.42	989,432	95	19
Other transportation	3.38	121,969	3	2
Boat rental	0.05	1,682	0	<1
Boat operation	14.73	531,697	92	10
Launch fees	1.30	46,906	70	1
Lodging	15.57	561,790	61	11
Restaurant meals	10.01	361,221	76	7
Groceries	9.86	355,849	88	7
Tackle	7.91	285,377	68	6
Fishing guide	0.24	8,543	13	<1
Fishing license	4.87	175,693	48	3
Tournament entry fees	35.75	1,290,093	95	25
Other expenses	3.69	133,251	9	3
Jasper County	76.81	2,771,780	74	55
Other 5 counties surrounding Sam Rayburn	26.39	952,488	43	19
Other counties in Texas	31.57	1,139,239	54	22
Out of state	5.86	211,520	24	4
Total tourney	140.63	5,075,030		

Table 7. Total angler expenditures by category for bass club, lower open, upper open, Sealy Outdoors McDonald's Big Bass Splash (BBS) tournaments, and combined at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, and Tyler.

Expense type	Total Expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
	Bass club		
Automobile operation	771,771	97	27
Other transportation			
Boat rental	11,606	3	<1
Boat operation	562,795	90	20
Launch fees	46,574	84	2
Lodging	271,646	39	9
Restaurant meals	210,257	59	7
Groceries	218,654	82	8
Tackle	205,911	57	7
Fishing guide			
Fishing license	147,353	33	5
Tournament entry fees	304,642	88	11
Other expenses	29,086	8	1
Jasper County	1,468,148	66	51
Other 5 counties	630,578	36	22
Other counties in Texas	681,573	40	24
Out of state	79,975	9	3
Total	2,860,275		
	Lower open		
Automobile operation	1,995,657	96	22
Other transportation	43,681	1	<1
Boat rental	21,909	1	<1
Boat operation	1,597,318	91	18
Launch fees	487,388	81	5
Lodging	533,216	30	6
Restaurant meals	645,934	70	7
Groceries	384,169	71	4
Tackle	635,504	66	7
Fishing guide			
Fishing license	183,259	25	2
Tournament entry fees	2,635,814	95	29
Other expenses	119,556	11	1
Jasper County	3,771,972	54	42
Other 5 counties	4,191,007	68	47
Other counties in Texas	920,430	30	10
Out of state	88,906	7	1
Total	8,972,317		
	Upper open		
Automobile operation	1,195,711	97	22
Other transportation	4,223	<1	<1
Boat rental	3,006	<1	<1
Boat operation	942,617	93	17
Launch fees	60,972	87	1
Lodging	381,378	35	7
Restaurant meals	478,028	81	9

Table 7. Continued.

Expense type	Total expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
Groceries	252,143	78	5
Tackle	341,649	67	6
Fishing guide	33,194	1	<1
Fishing license	120,633	27	2
Tournament entry fees	1,590,054	93	29
Other expenses	39,500	6	<1
Jasper County	3,671,845	85	67
Other 5 counties	1,040,391	40	19
Other counties in Texas	726,877	39	13
Out of state	79,552	10	1
Total	5,518,667		
	BBS		
Automobile operation	1,265,054	96	20
Other transportation	205,050	3	3
Boat rental	1,682	1	<1
Boat operation	751,741	92	12
Launch fees	63,130	78	1
Lodging	711,823	61	11
Restaurant meals	483,620	79	8
Groceries	482,117	89	8
Tackle	364,956	70	6
Fishing guide	11,867	1	<1
Fishing license	214,098	48	3
Tournament entry fees	1,290,786	95	20
Other expenses	161,388	9	3
Jasper County	3,430,142	74	54
Other 5 counties	1,237,101	43	20
Other counties in Texas	1,340,073	56	21
Out of state	315,730	25	5
Total	6,323,046		
	Tournaments combined		
Automobile operation	5,228,195	97	22
Other transportation	248,955	1	1
Boat rental	38,204	1	<1
Boat operation	3,854,472	92	16
Launch fees	258,065	83	1
Lodging	1,898,064	42	8
Restaurant meals	1,817,841	74	8
Groceries	1,337,085	80	6
Tackle	1,548,022	66	7
Fishing guide	45,061	1	<1
Fishing license	665,345	33	3
Tournament entry fees	5,821,297	93	25
Other expenses	349,530	8	1
Jasper County	12,342,109	73	52
Other 5 counties	7,099,078	46	30
Other counties in Texas	3,668,955	42	15
Out of state	564,164	13	2
Total	23,674,307		

Table 8. Total direct expenditures for local (reside in Jasper, Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county), nonlocal (reside elsewhere in Texas), and out-of-state tournament anglers at Sam Rayburn Reservoir, November 2007-October 2008. Percent of totals are in parentheses.

Angler type	Local (US$)	Nonlocal (US$)	Out-of-state (US$)
Bass club	507,173 (18)	1,773,238 (61)	605,390 (21)
Lower open	2,914,185 (33)	4,948,063 (56)	939,613 (11)
Upper open	1,357,702 (25)	3,172,638 (59)	887,682 (16)
BBS	290,902 (5)	3,644,549 (58)	2,309,331 (37)
Total	5,069,962 (22)	13,538,488 (58)	4,742,016 (20)

Table 9. Direct expenditures, consumer surplus, and economic value for bass club, lower open, upper open, Sealy Outdoors McDonald's Big Bass Splash (BBS) tournaments, and all tournaments combined at Sam Rayburn Reservoir, November 2007-October 2008. Percent of totals are in parentheses.

Tourney type	Direct expenditures (US$)	Consumer surplus for event trips (US$)	Consumer surplus for practice trips (US$)	Economic value (US$)
Bass club	2,860,275 (12)	594,872 (9)	119,652 (23)	3,574,799 (12)
Lower open	8,972,317 (38)	2,968,090 (43)	187,209 (37)	12,127,616 (39)
Upper open	5,518,667 (23)	1,705,552 (25)	81,060 (16)	7,305,279 (24)
BBS	6,323,046 (27)	1,599,612 (23)	123,003 (24)	8,045,661 (26)
Total	23,674,305	6,868,126	510,924	31,053,355

Table 10. Non-tournament angler expenditures by category for local (reside in Jasper, Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county), nonlocal (reside elsewhere in Texas), out-of-state, and combined at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, Tyler.

Expense type	Average/ person/day (US$)	Total estimated expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Local		
Automobile operation	14.87	734,436	95	28
Other transportation	0.20	9,903	1	<1
Boat rental	0.10	4,917	1	<1
Boat operation	12.84	633,976	87	24
Launch fees	1.08	53,437	55	2
Lodging	1.76	86,775	10	3
Restaurant meals	3.90	192,472	33	7
Groceries	5.61	276,896	74	10
Tackle	5.10	251,706	65	10
Fishing guide	0.25	12,249	1	<1
Fishing license	6.29	310,492	33	12
Other expenses	0.48	23,519	4	1
Jasper County	25.50	1,259,080	49	48
Other 5 counties surrounding Sam Rayburn	22.17	1,094,664	51	42
Other counties in Texas	4.80	237,037	12	9
Out of state	0.94	46,734	2	2
Total	53.41	2,637,517		
		Nonlocal		
Automobile operation	22.34	1,199,563	97	28
Other transportation	0.19	10,392	1	<1
Boat rental	0.73	39,030	2	1
Boat operation	11.60	622,995	87	15
Launch fees	1.39	74,399	69	2
Lodging	11.19	600,675	54	14
Restaurant meals	7.14	383,275	63	9
Groceries	10.09	541,675	90	13
Tackle	5.19	278,835	63	7
Fishing guide	1.09	58,458	1	1
Fishing license	4.47	240,212	32	6
Other expenses	0.61	32,633	5	1
Jasper County	35.69	1,916,649	64	45
Other 5 counties surrounding Sam Rayburn	17.43	935,913	41	22
Other counties in Texas	22.90	1,229,585	56	29
Out of state	3.02	162,294	3	4
Total	79.05	4,244,442		

Table 10. Continued.

Expense type	Average/ person/day (US$)	Total estimated expenditures (US$)	Respondents with expense (%)	Proportion of total expense (%)
		Out-of-state		
Automobile operation	21.45	357,274	92	21
Other transportation	1.25	20,891	3	1
Boat rental	0.48	7,938	5	<1
Boat operation	7.86	130,881	75	8
Launch fees	1.53	25,634	82	2
Lodging	23.41	390,085	65	23
Restaurant meals	10.99	183,093	73	11
Groceries	7.43	123,713	80	7
Tackle	4.72	78,702	65	5
Fishing guide	1.07	17,811	5	1
Fishing license	7.91	131,747	67	8
Other expenses	0.15	2,536	3	<1
Jasper County	57.88	964,353	80	57
Other 5 counties surrounding Sam Rayburn	16.33	272,122	34	16
Other counties in Texas	14.04	233,834	42	14
Out of state	13.97	232,735	63	14
Total	102.22	1,703,047		
		Combined		
Automobile operation	18.22	2,183,691	95	28
Other transportation	0.32	38,403	1	<1
Boat rental	0.36	43,192	2	1
Boat operation	11.83	1,418,201	86	18
Launch fees	1.24	148,636	63	2
Lodging	7.53	902,932	32	12
Restaurant meals	5.84	700,199	48	9
Groceries	7.37	883,175	80	11
Tackle	5.09	609,712	65	8
Fishing guide	0.63	76,014	1	1
Fishing license	5.85	700,935	37	9
Other expenses	0.48	58,030	4	1
Jasper County	32.78	3,929,449	58	48
Other 5 counties surrounding Sam Rayburn	19.85	2,379,322	46	29
Other counties in Texas	12.13	1,454,348	31	18
Out of state	3.18	441,764	9	5
Total	67.94	8,204,883		

Table 11. Direct expenditures, consumer surplus, and economic value for local (reside in Jasper, Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county), nonlocal (reside elsewhere in Texas), and out-of-state non-tournament anglers at Sam Rayburn Reservoir, November 2007-October 2008. Percent of totals are in parentheses.

Non-tournament angler residence	Direct expenditures (US$)	Consumer surplus (US$)	Economic value (US$)
Local	2,637,517 (31)	2,612,733 (35)	5,250,251 (33)
Nonlocal	4,244,442 (49)	4,215,487 (56)	8,459,930 (53)
Out-of-state	1,703,047 (20)	662,848 (9)	2,365,895 (15)

Table 12. Angler expenditures by category for all anglers combined (tournament and non-tournament) at Sam Rayburn Reservoir, November 2007-October 2008. Other five counties are: Angelina, Nacogdoches, Sabine, San Augustine, and Tyler. Percent of totals are in parentheses.

Expense type	Tournament expenditures (US$)	Non-tournament expenditures (US$)	Total (US$)
Automobile operation	5,228,195 (22)	2,183,691 (28)	7,411,886 (24)
Other transportation	248,955 (1)	38,403 (<1)	287,358 (1)
Boat rental	38,204 (<1)	43,192 (1)	81,396 (<1)
Boat operation	3,854,472 (16)	1,418,201 (18)	5,272,673 (17)
Launch fees	258,065 (1)	148,636 (2)	406,701 (1)
Lodging	1,898,064 (8)	902,932 (12)	2,800,996 (9)
Restaurant meals	1,817,841 (8)	700,199 (9)	2,518,040 (8)
Groceries	1,337,085 (6)	883,175 (11)	2,220,260 (7)
Tackle	1,548,022 (7)	609,712 (8)	2,157,734 (7)
Fishing guide	45,061 (<1)	76,014 (1)	121,075 (<1)
Fishing license	665,345 (3)	700,935 (9)	1,366,280 (4)
Tournament entry fees	5,821,297 (25)		5,821,297 (19)
Other expenses	349,530 (1)	58,030 (1)	407,560 (1)
Jasper County	12,342,109 (52)	3,929,449 (48)	16,271,558 (51)
Other 5 counties surrounding Sam Rayburn	7,099,078 (30)	2,379,322 (29)	9,478,400 (30)
Other counties in Texas	3,668,955 (15)	1,454,348 (18)	5,123,303 (16)
Out of state	564,164 (2)	441,764 (5)	1,005,928 (3)
Total	23,674,307	8,204,883	31,879,190

Table 13. Total direct expenditures, consumer surplus, and economic value for non-tournament anglers, tournament anglers, and all anglers combined at Sam Rayburn Reservoir, November 2007-October 2008. Percent of totals are in parentheses.

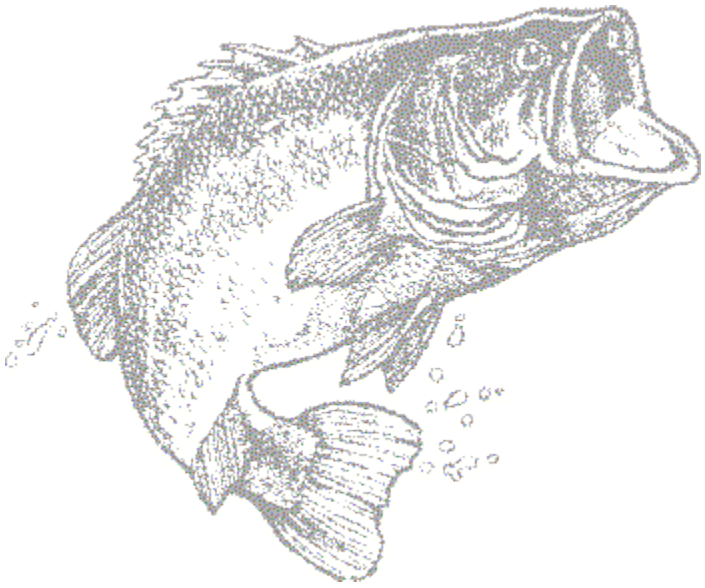
Angler type	Direct expenditures (US$)	Consumer surplus (US$)	Economic value (US$)
Non-tournament	8,204,883 (27)	7,491,069 (50)	15,695,952 (34)
Tournament	23,674,307 (73)	7,379,050 (50)	31,053,357 (66)
Total	31,879,190	14,870,119	46,749,309

Table 14. Total direct expenditures for local (reside in Jasper, Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county), nonlocal (reside elsewhere in Texas), and out-of-state anglers at Sam Rayburn Reservoir, November 2007-October 2008. Percent of totals are in parentheses.

Angler type	Total direct expenditures (US$)
Local	7,707,479 (24)
Nonlocal	17,782,930 (56)
Out-of-state	6,445,063 (20)

Appendix A. Tournament angler questionnaire.

Sam Rayburn Reservoir Tournament Angler Survey



Texas Parks and Wildlife Department

Funded By
Jasper County Development District #1

Dear Angler:

You recently participated in a bass tournament at Sam Rayburn. Enclosed is a questionnaire that is part of official research being conducted by Texas Parks and Wildlife concerning that tournament.

As you probably know, demand for water continues to increase as the population and economy in Texas grow. Water is used for many things such as power generation, municipal or commercial use, agriculture, and recreation. Every five years, regional planning groups update recommendations regarding how the water resources of Texas will be allocated in the future.

Information gained from this questionnaire will document the economic importance of tournaments at Sam Rayburn Reservoir and economic impacts to local communities. In the future, these values can be important information used by decision makers when addressing water allocation and fishery management issues.

Your cooperation is extremely important to the completion of this research. Your answers will not be connected with your name and all information you provide will remain strictly confidential.

Please take the time to complete this questionnaire and return it in the enclosed postage-paid envelope. If you should have any questions, please contact us by mail, e-mail or phone using information provided on the final page of the survey.

Sincerely,

Philip P. Durocher

Phil Durocher
Director, Inland Fisheries

You participated in the bass tournament indicated below at Sam Rayburn Reservoir. To ensure that we get the most accurate economic estimates, please answer questions 1-4 with this specific tournament in mind.

Tournament Organization or Bass Club Name: _____

Date: _____

1. How many total days did you spend on this trip to Sam Rayburn for this tournament? _____ Day(s)

2. Did the following people travel with you in the same vehicle to the Sam Rayburn tournament?

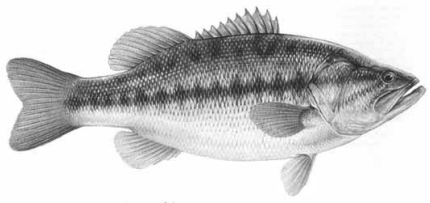
	(Circle one)		If "YES" how many people?
Spouse	Yes	No	_____
Children	Yes	No	_____
Friends/other family	Yes	No	_____
Other tournament anglers	Yes	No	_____

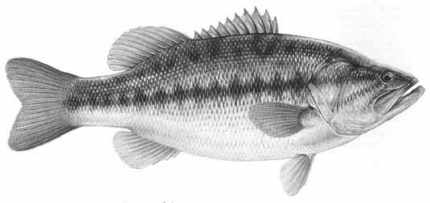
3. How much did your group (those traveling in your vehicle) spend on the following items on this specific Sam Rayburn tournament trip? Please include total expenses for your entire group, as reflected in your response to Question 2. Use the maps at the end of this questionnaire if necessary.

	Within Jasper County (See Map 1)	Within Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county (See Map 2)	Elsewhere in Texas
Automobile transportation (fuel, car rental, repairs, etc.)	US$	US$	US$
Other transportation (airplane, etc.)	US$	US$	US$
Boat rental	US$	US$	US$
Boat operation (fuel, oil, service, etc.)	US$	US$	US$
Boat launch fees	US$	US$	US$
Entrance or parking fees	US$	US$	US$
Lodging (hotel, camp site, resort rental, etc.)	US$	US$	US$
Restaurant meals	US$	US$	US$
Groceries (food, drink, ice, etc.)	US$	US$	US$
Bait and tackle (purchased during this trip)	US$	US$	US$
Fishing guide fees	US$	US$	US$
Fishing license	US$	US$	US$
Tournament entry fee	US$	US$	US$
Other expenses (please list below)	US$	US$	US$
	US$	US$	US$

If you traveled from another state, how much did you spend **outside** Texas?	US$

4. If the price of goods and services were to increase so this trip cost US$_____more than it did (sum of Question 3), would you have paid this additional cost rather than not have gone fishing on this trip?





Many anglers also spend considerable time practice fishing for tournaments. For study purposes, we are defining practice fishing as days spent specifically preparing for this tournament <u>on separate trip(s) prior to your actual tournament trip</u>. To ensure that we get the most accurate economic estimates, please answer questions 5-7 with days solely attributed to practice fishing for this specific tournament in mind. If no separate trips were taken, please skip to Question #8.

5. How many total days, **NOT** including the days you reported in Question 1, did you spend practice fishing at Sam Rayburn prior to the trip for this tournament? _____Day(s)

6. Did the following people travel with you in the same vehicle on the practice days you reported in Question 5?

	(Circle one)		If "YES" how many people?	If “YES” how many practice days
Spouse	Yes	No		
Children	Yes	No		
Friends/other family	Yes	No		
Other tournament anglers	Yes	No		

7. How much did your group (those traveling in your vehicle) spend on the following items on the practice days you reported in Question 5? Please include total expenses for your entire group, as reflected in your response to Question 6. Use the maps at the end of this questionnaire if necessary.

	Within Jasper County (See Map 1)	Within Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county (See Map 2)	Elsewhere in Texas
Automobile transportation (fuel, car rental, repairs, etc.)	US$	US$	US$
Other transportation (airplane, etc.)	US$	US$	US$
Boat rental	US$	US$	US$
Boat operation (fuel, oil, service, etc.)	US$	US$	US$
Boat launch fees	US$	US$	US$
Entrance or parking fees	US$	US$	US$
Lodging (hotel, camp site, resort rental, etc.)	US$	US$	US$
Restaurant meals	US$	US$	US$
Groceries (food, drink, ice, etc.)	US$	US$	US$
Bait and tackle (purchased during this trip)	US$	US$	US$
Fishing guide fees	US$	US$	US$
Fishing license	US$	US$	US$
Other expenses (please list below)	US$	US$	US$
	US$	US$	US$

If you traveled from another state, how much did you spend **outside** Texas?	US$

8. Overall, how satisfied are you with **tournament** fishing at Sam Rayburn? (Circle one)

Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5

9. If you selected NOT AT ALL SATISFIED with tournament fishing at Sam Rayburn in Question #8, please explain why.

_____

_____

_____

10. Do you have access to the Internet? (Circle one).

Yes

No

If YES, we are increasingly using the Internet as another way to communicate with anglers. Would you be willing to provide us with your e-mail address to receive a copy of the economic study results? (Circle one).

Yes (If Yes, what is your e-mail? _____)

No

11. Did the person to whom this survey was addressed complete the survey? (Circle one)

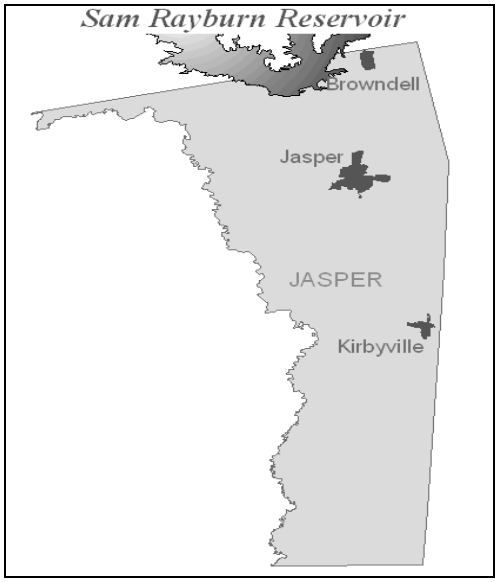
Yes

No

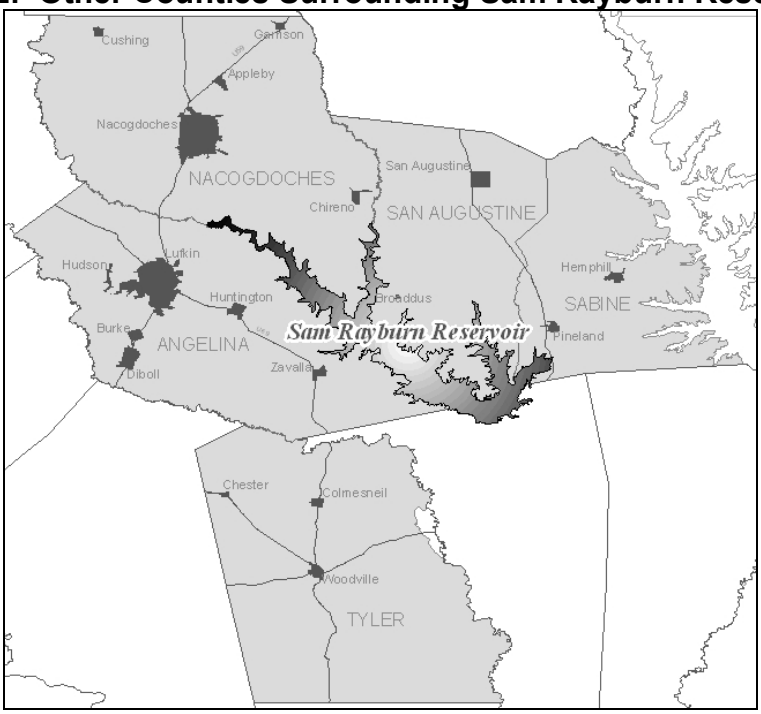
12. What is the zip code of your permanent residence_____

13. Please use this space to provide us with any comments you may have.

Map 1: Jasper County



Map 2: Other Counties Surrounding Sam Rayburn Reservoir

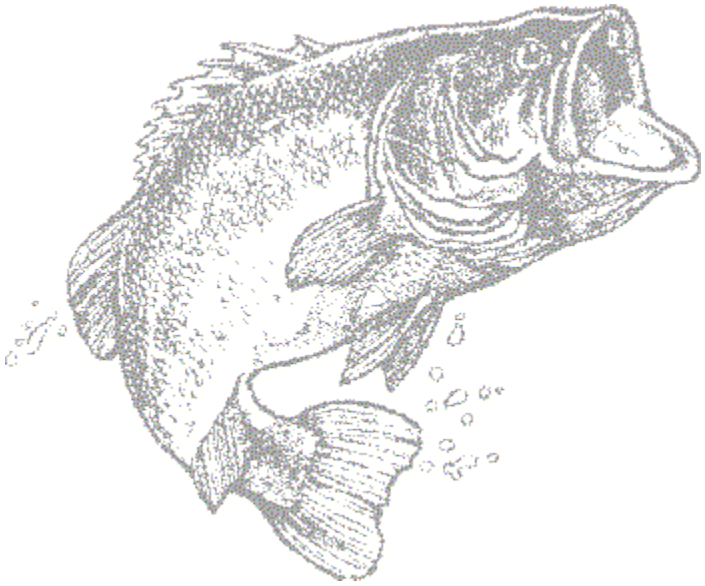


We sincerely appreciate you taking the time to complete this questionnaire. Please return the completed questionnaire in the enclosed postage-paid reply envelope.

Texas Parks and Wildlife
Attn: Todd Driscoll
Rt. 2 Box 535
Jasper, TX 75951
E-mail todd3d@jas.net (409) 384-9572

Appendix B. Non-tournament angler questionnaire.

Sam Rayburn Reservoir Angler Survey



Texas Parks and Wildlife Department

Funded By
Jasper County Development District #1

Dear Angler:

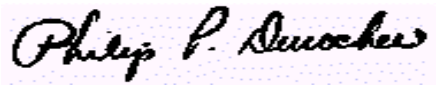
As you probably know, demand for water continues to increase as the population and economy of Texas grow. Water is used for many things such as power generation, municipal or commercial use, agriculture, and recreation. Every five years, regional planning groups update recommendations regarding how the water resources of Texas will be allocated in the future.

Information gained from this questionnaire will document the economic importance of recreational angling at Sam Rayburn Reservoir and economic impacts to local communities. In the future, these values can be important information used by decision makers when addressing water allocation and fishery management issues.

During a fishing trip you were asked by one of our Texas Parks and Wildlife Inland Fisheries staff to participate in the economic research we are conducting at Sam Rayburn Reservoir. Enclosed is a questionnaire that has only been issued to a sample of Sam Rayburn Reservoir anglers. Your cooperation is extremely important to the completion of this research. Your answers will not be connected with your name and all information you provide will remain strictly confidential.

Please take the time to complete this questionnaire and return it in the enclosed postage-paid envelope. If you should have any questions, please contact us by mail, e-mail or phone using information provided on the final page of the survey.

Sincerely,



Phil Durocher
Director, Inland Fisheries

During a trip to Sam Rayburn you were asked by one of our staff to participate in this survey. For questions 1-5 please tell us about that particular trip. Your answers to the questions in this survey will not be connected to your name and will remain confidential.

1. How many total days did you spend on this fishing trip to Sam Rayburn? _____ Day(s)

2. What specific fish species or group were you targeting on this fishing trip to Sam Rayburn? **Please circle just one.** If multiple species were targeted during the fishing trip, circle the one you spent most time targeting.

Black bass	Hybrid striped bass/white bass
Catfish	Sunfish
Crappie	Anything
Other (please list) _____	

3. Did the following people travel with you in the same vehicle on this trip to Sam Rayburn?

	(Circle one)		If "YES" how many people?
Spouse	Yes	No	_____
Children	Yes	No	_____
Friends/other family	Yes	No	_____

4. How much did your group (those traveling in your vehicle) spend on the following items on this fishing trip to Sam Rayburn? Please include total expenses for your entire group, as reflected in your response to Question 3. Use the map at the end of this questionnaire if necessary.

	Within Jasper County (see map)	Within Tyler, Angelina, Nacogdoches, San Augustine, or Sabine county (see map)	Elsewhere in Texas
Automobile transportation (fuel, car rental, repairs, etc.)	US$	US$	US$
Other transportation (airplane, etc.)	US$	US$	US$
Boat rental	US$	US$	US$
Boat operation (fuel, oil, service, etc.)	US$	US$	US$
Boat launch fees	US$	US$	US$
Entrance or parking fees	US$	US$	US$
Lodging (hotel, camp site, resort rental, etc.)	US$	US$	US$
Restaurant meals	US$	US$	US$
Groceries (food, drink, ice, etc.)	US$	US$	US$
Bait and tackle (purchased during this trip)	US$	US$	US$
Fishing guide fees	US$	US$	US$
Fishing license	US$	US$	US$
Tournament entry fee	US$	US$	US$
Other expenses (please list below)	US$	US$	US$
	US$	US$	US$

If you traveled from another state, how much did you spend **outside** Texas?	US$

5. If the price of goods and services were to increase so this trip cost US$_____more than it did (sum of Question 4), would you have paid this additional cost rather than not have gone fishing on this trip?

Yes

No

6. Overall, how satisfied are you with fishing in general at Sam Rayburn? (Circle one)

Not at all Satisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	Extremely Satisfied
1	2	3	4	5

7. If you selected NOT AT ALL SATISFIED with fishing at Sam Rayburn in Question #6, please explain why.

_____

_____

_____

_____

8. Do you have access to the Internet? (Circle one).

Yes

No

If YES, we are increasingly using the Internet as another way to communicate with anglers. Would you be willing to provide us with your e-mail address to receive a copy of the economic study results? (Circle one).

Yes (If Yes, what is your e-mail? _____)

No

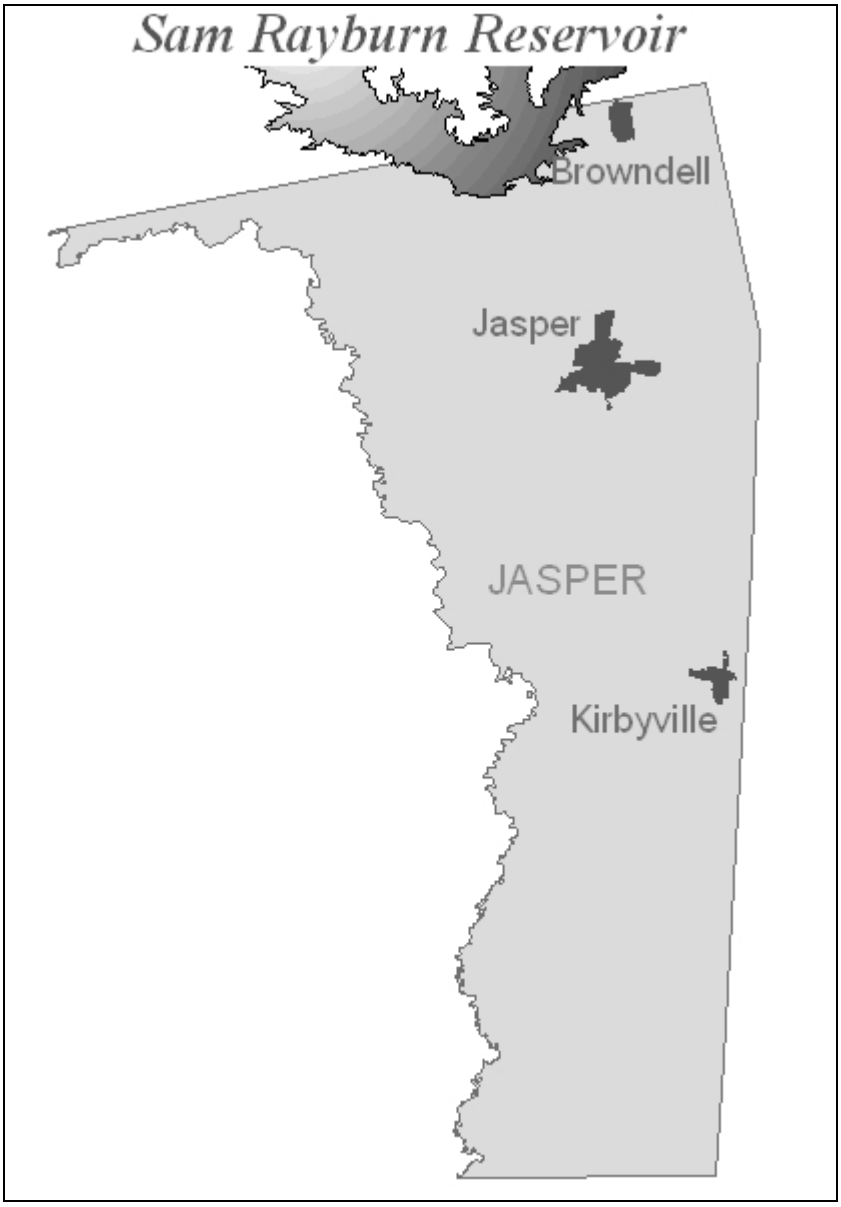
9. Did the person to whom this survey was addressed complete the survey? (Circle one)

Yes No

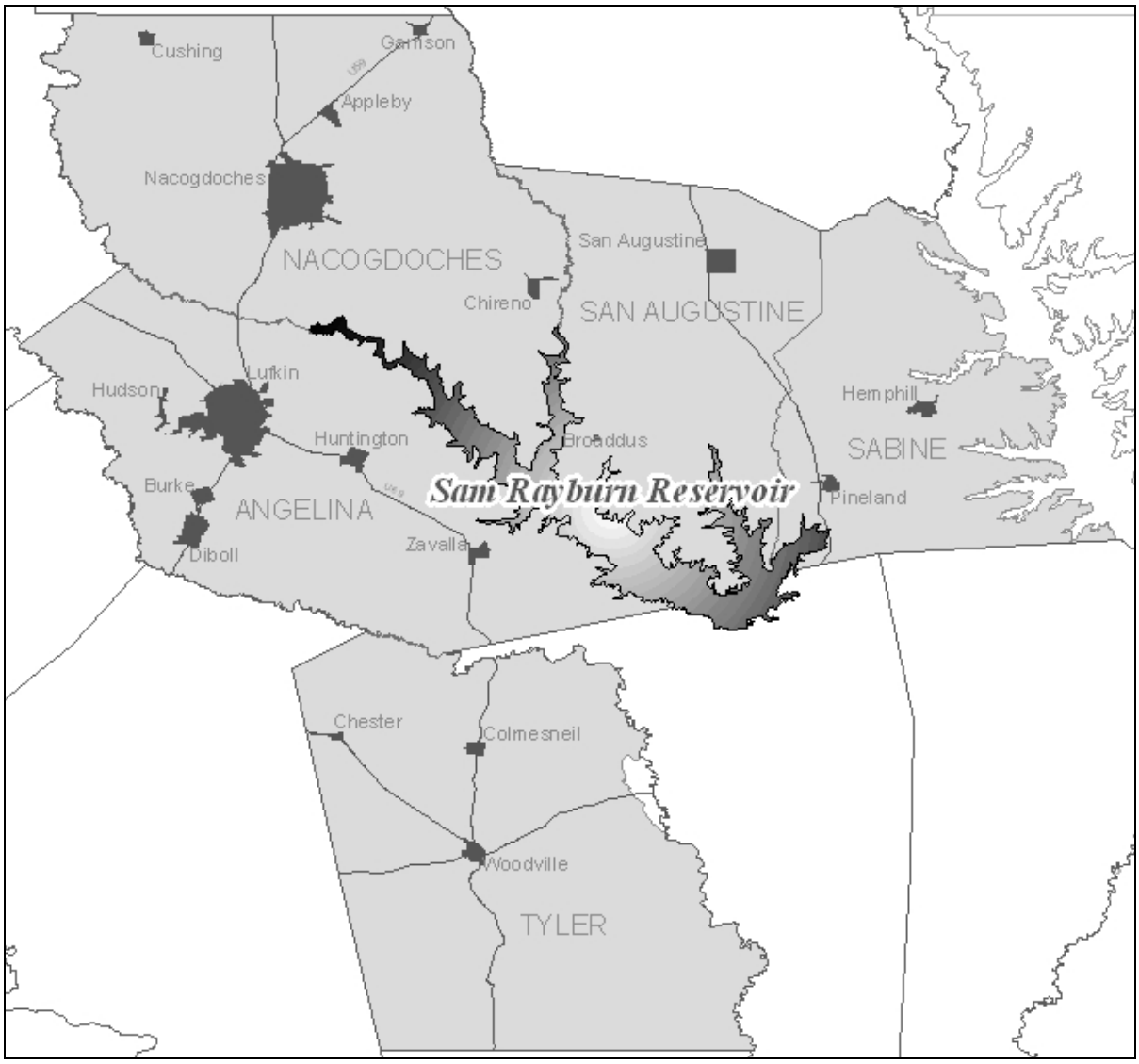
10. What is the zip code of your permanent residence?_____

11. Please use this space to provide us with any comments you may have.

Map 1: Jasper County



Map 2: Other Counties Surrounding Sam Rayburn Reservoir



We sincerely appreciate you taking the time to complete this questionnaire. Please return the completed questionnaire in the enclosed postage-paid reply envelope.

Texas Parks and Wildlife
Attn: Todd Driscoll
Rt. 2 Box 535
Jasper, TX 75951
E-mail todd3d@jas.net (409) 384-9572

Appendix C. Individual results for five specific tournaments at Sam Rayburn Reservoir.

Get Reel Bass Anglers
November 10, 2007

Questionnaires were mailed to all 16 participants and 10 were returned (63% response rate). A total of 60% of anglers made one or more separate trips for practice (average = 3.5 days) and the average party size (people per vehicle) was 1.3. Average party size and average trip length for tournament trips were 1.6 people and 1.8 days, respectively. Direct economic expenditures for all 16 participants are reported by type and location below.

Expenditures by type (US$)		**% of respondents with expense**
Automobile operation	1,588	90
Boat operation	1,210	90
Launch fees	147	100
Lodging	350	20
Restaurant meals	290	20
Groceries	924	90
Tackle	224	50
Fishing license	354	60
Tournament entry fees	492	90
Expenditures by location		
Jasper County	1,414	30
Other 5 counties surrounding Sam Rayburn	3,709	70
Other counties in Texas	456	20
Out of state	144	10
Total direct expenditures	**5,724**	

Total consumer surplus = US$1,184

Total economic value = US$6,908

Texas Forest Country
Jackson Hill Marina
November 10, 2007

Questionnaires were mailed to all 194 participants and 71 were returned (41% response rate). A total of 76% of anglers made one or more separate trips for practice (average = 2.9 days) and the average party size (people per vehicle) was 1.9. Average party size and average trip length for tournament trips were 1.9 people and 2.6 days, respectively. Direct economic expenditures for all 194 participants are reported by type and location below.

Expenditures by type (US$)		% of respondents with expense
Automobile operation	28,176	98
Other transportation	436	1
Boat rental	800	2
Boat operation	26,327	94
Launch fees	1,266	87
Lodging	4,516	18
Restaurant meals	10,613	66
Groceries	5,767	71
Tackle	11,576	63
Fishing license	1,947	21
Tournament entry fees	34,575	95
Other expenses	898	7
Expenditures by location		
Jasper County	52,316	47
Other 5 counties surrounding Sam Rayburn	63,543	73
Other counties in Texas	11,042	21
Out of state	735	5
Total direct expenditures	**127,637**	

Total consumer surplus = US$64,020

Total economic value = US$191,657

Bass N Bucks
Umphrey Family Pavilion
December 2, 2007

Addresses were obtained for 322 of the 416 participants. Questionnaires were mailed to 322 participants and 153 were returned (48% response rate). A total of 59% of anglers made one or more separate trips for practice (average = 3.4 days) and the average party size (people per vehicle) was 2.0. Average party size and average trip length for tournament trips were 1.8 people and 2.8 days, respectively. Direct economic expenditures for all 194 participants are reported by type and location below.

Expenditures by type (US$)		% of respondents with expense
Automobile operation	63,829	95
Other transportation	10	<1
Boat rental	64	<1
Boat operation	57,397	93
Launch fees	3,742	81
Lodging	24,174	31
Restaurant meals	28,513	78
Groceries	14,767	78
Tackle	20,136	64
Fishing guide	630	1
Fishing license	6,824	29
Tournament entry fees	87,928	93
Other expenses	1,250	5
Expenditures by location		
Jasper County	227,129	83
Other 5 counties surrounding Sam Rayburn	43,351	35
Other counties in Texas	38,789	38
Out of state	4,498	9
Total direct expenditures	**313,769**	

Total consumer surplus = US$126,880

Total economic value = US$440,649

Bass Champs
Umphrey Family Pavilion
January 19, 2008

Questionnaires were mailed to all 537 participants and 117 were returned (22% response rate). A total of 79% of anglers made one or more separate trips for practice (average = 3.2 days) and the average party size (people per vehicle) was 2.0 people. Average party size and average trip length for tournament trips were 2.2 people and 2.0 days, respectively. Direct economic expenditures for all 537 participants are reported by type and location below.

Expenditures by type (US$)		% of respondents with expense
Automobile operation	99,952	98
Boat rental	214	1
Boat operation	67,496	90
Launch fees	4,672	93
Lodging	39,368	42
Restaurant meals	41,478	83
Groceries	20,442	77
Tackle	38,697	68
Fishing guide	3,298	3
Fishing license	6,111	24
Tournament entry fees	91,977	92
Other expenses	3,887	8
Expenditures by location		
Jasper County	272,154	85
Other 5 counties surrounding Sam Rayburn	85,769	47
Other counties in Texas	59,675	41
Out of state	7,905	11
Total direct expenditures	**425,505**	

Total consumer surplus = US$131,028

Total economic value = US$556,533

McDonald's Big Bass Splash
Umphrey Family Pavilion
April 18-20, 2008

Questionnaires were mailed to 984 (randomly selected) of the 3,892 participants; 48 (4.9%) were not deliverable. A total of 144 were returned (15% response rate). A total of 40% of anglers made one or more separate trips for practice (average = 3.4 days) and the average party size (people per vehicle) was 2.4 people. Average party size and average trip length for tournament trips were 2.7 people and 4.3 days, respectively. Direct economic expenditures for all 3,892 participants are reported by type and location below.

Expenditures by type (US$)		% of respondents with expense
Automobile operation	1,265,054	96
Other transportation	205,050	3
Boat rental	1,682	1
Boat operation	751,741	92
Launch fees	63,130	78
Lodging	711,823	61
Restaurant meals	483,620	79
Groceries	482,117	89
Tackle	364,956	70
Fishing guide	11,867	1
Fishing license	214,098	48
Tournament entry fees	1,290,786	95
Other expenses	161,388	9
Expenditures by location		
Jasper County	3,430,142	74
Other 5 counties surrounding Sam Rayburn	1,237,101	43
Other counties in Texas	1,340,073	56
Out of state	315,730	25
Total direct expenditures	**6,323,046**	

Total consumer surplus = US$1,722,615

Total economic value = US$8,045,661

PWD RP T3200-1561 (4/10)

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