

## FINAL REPORT

State: Oklahoma

Grant Number: F-50-R

Grant Title: Fish Research for Oklahoma Waters

Project Number: 6

Project Title: Angler Opinion Surveys

Period Covered: From: January 1, 2006 To: December 31, 2008

### **I. Project Objectives:**

To select and interview by telephone and/or website 1,200 Oklahoma fishing license holders to determine their motivation, opinions, attitudes and preferences and evaluate changes in these parameters to provide direction not only to the states fisheries management programs but to future participatory marketing strategies as well.

### **II. Background:**

In recent years, conflict over the use and development of natural resources have made it necessary for administrators and managers to determine and define the scope of recreational fishing. In determining the value of fishing in Oklahoma, the people who participate in this leisure-time activity are an important aspect, both ecologically and economically. Because the fishing public bear the majority of the cost of maintaining and enhancing fishing, their needs are important to the Oklahoma Department of Wildlife Conservation. Additionally, the aquatic resources of Oklahoma are important to the state's economy. Therefore, the economic impacts are a function of these public needs.

Recently, many states have observed stagnation, and in many cases a decline in fishing participation. Although the amount of leisure time has increased for many Americans, the amount of demand on this leisure time has apparently increased as well. It is imperative that resource management agencies, primarily funded by user groups such as anglers, investigate reasons for fishing motivation, other competing recreational opportunities, and reasons why fishing participation is waning.

A questionnaire or interview survey can be a useful tool for fishery resource managers. Since the late 1960's angler opinion surveys have been conducted in Oklahoma. Previous Oklahoma surveys consisted of both mail questionnaire

(Moser 1975, Mense 1977 and Summers 1986) and telephone interviews (Summers 1990, 1996 and 2002; Summers and Crews 2002). Although the advantages of conducting mail surveys include range and economy, it has been suggested that telephone interviews obtain more complete and accurate information (Duttweiler 1974). However, public displeasure with the amount of telemarketing seen in the past 5 years, suggests that web-based surveys may provide a more accepted, and therefore reliable, method to access public opinion.

The number of Oklahomans who purchase fishing license and their attitudes have changed over the decades. State license holders increased from 245,429 in 1969 to over 720,000 in 1999. However since 1999, there has been a steady decline in the number of fishing license sold. Angler attitudes toward the ODWC's direction of management activity have also changed (Summers 1990). Additionally, unpublished reports by the ODWC suggest that annual renewal rates of anglers buying license is less than 60%. Marketing strategies that deal not only with recruitment of new anglers but retention of these participants is needed. Assessing motivation as well as opinions and needs becomes the first logical step in developing such a marketing plan.

### **III. Procedures:**

After consultation with survey literature, Division personnel, ODWC administration and human dimensions colleagues, an angler telephone questionnaire (survey instrument) was developed (Appendix 1) using QPL (Questionnaire Programming Language) computer software. All anglers selected for the survey were mailed a copy of the survey so they could either return it completed or have it available when the telephone interview was conducted. Additionally, the mailing included a website where, alternatively, the survey could be completed.

It was predetermined that the entire sample would consist of 75% annual license holders, 20% lifetime license holders and 5% senior license holders. These percentages represented the relative number of license holders in the population. It was further estimated that a 50% response rate was expected for all three response methods combined. Therefore in order to achieve 1200 completed interviews, a sample of 2500 was needed. This sample was randomly pulled from the year 2006 annual license file, the existing lifetime license file and the existing senior license file using the relative percentages above.

Because the relative number of completed surveys from the different license holder types may not conform exactly to the percentages in the population, responses for all license types combined could be weighted. Differences in responses percentages were compared using a standard chi-squared test of

proportions. Significance levels (p) are presented but generally probabilities less than 0.05 are considered significant.

Anglers were asked their first second and third choice of species most preferred. Overall species preference was calculated by giving first choice species 5 points, second choice species 3 points and third choice species one point for each angler and then summing total points by species This calculation was the same used in all previous surveys back to 1985.

Analysis was performed on the entire dataset along with stratification by license type, angler type (species sought), and avidity. Avidity (Table 1) was determined by the number of times out of the five years (2001-2005) an angler purchasing a 2006 annual license had purchased a fishing license in the past. A “recruit” had not purchased a license in the previous five years. An “occasional” angler had purchased a license one or two time in the past five years. A “somewhat avid” angler had purchased a license three or four times in the past five years and an “very avid” angler had purchased a license all five of the past five years. The analyses by avidity presented here do not take into account avidity in other license types, e.g. lifetime and seniors therefore was performed only on annual license holders

**Table 1.** Classification of 2006 annual fishing license holder avidity based on purchase of an Oklahoma fishing license in the past five years.

<b>Avidity</b>	<b>Frequency</b>	<b>Percent</b>
Recruit (purchased none of the past five years)	117	20.42
Occasional angler (purchased one or two years)	151	26.38
Somewhat avid angler (purchased three or four years)	185	32.29
Very avid angler (purchased all five years)	120	20.94

#### **IV. Findings and Analysis**

A total of 1,292 usable survey responses were received. Of these 721 (55.8%) interviews were completed by phone, 235 (18.1%) were completed online and 336 (26.1%) were returned by mail. Since the cost of hosting the survey online was negligible and some type of mailing notification was deemed necessary, the additional two options for completing the survey appear cost effective and reduced the cost of telephone interviews. In the future if there were increases in mailing cost and significant costs were accrued with website hosting, these two alternative methods would have to be reevaluated for cost effectiveness.

The final sample of 1292 interviews was comprised of 43.6% annual license holders, 23% lifetime license holders and 33.4% senior license holders. This differed from the respective sample of 75%, 25%, and 5% that represented our original sample size, therefore analyses that included combining all three license groups were weighted accordingly.

As a general demographic, 52.9% of the respondents indicated on the survey that they lived in “town” and 46.6% indicated that they lived in the “country”. This is about a 3% shift away from urban area when compared to the 2000 survey results (Summers and Crews 2002). This doesn’t mean that anglers are moving to rural area, but that a smaller percentage of anglers are coming from urban areas. A significantly larger portion of the lifetime license holders live in the country (56.6%,  $p=0.042$ ) while occasional anglers (60.9%,  $p=0.044$ ) tended to live more in towns. No other license type or avidity group showed any significant deviation from the overall demographic.

Anglers interviewed indicated that, overall, 73.6% of them fished in 2006. This is down considerably from the rate of 83.5% found in 2000. Of those in 2006, 86.0% of the annual licenses holders fished, 84.5% of the lifetime license holders fished and only 44.0% of the senior license holders fished in 2006. Lack of time (29.4%) was listed as the major reason for not fishing in all three license types who indicated they did not fish.

The top three species preferred by Oklahoma anglers changed for the first time in 21 years (Table 1). Crappie replaced largemouth bass as the most preferred species, followed by largemouth bass and channel catfish. However in 2001 blue catfish had moved up replacing white bass as the fourth most popular species in Oklahoma and remained there in this survey.

**Table 2.** Species preference by Oklahoma anglers in 2006.

	<b>1st Choice</b>	<b>2nd Choice</b>	<b>3rd Choice</b>	<b>Total</b>	<b>Rank</b>	<b>Rank</b>	<b>Rank Change</b>	<b>Rank</b>	<b>Rank</b>	<b>Rank</b>
	<b><u>Points</u></b>	<b><u>Points</u></b>	<b><u>Points</u></b>	<b><u>Points</u></b>	<b><u>2007</u></b>	<b><u>2001</u></b>	<b><u>2001 to 2006</u></b>	<b><u>1996</u></b>	<b><u>1990</u></b>	<b><u>1985</u></b>
Crappie	1131.17	1112.16	776.66	3019.99	1	2	+1	2	2	2
Largemouth bass	1547.42	680.12	440.84	2668.38	2	1	-1	1	1	1
Channel catfish	591.42	758.19	697.54	2047.15	3	3	0	3	3	3
Blue catfish	284.68	453.44	336.84	1074.96	4	4	0	5	5	9
White bass	171.08	344.43	445.81	961.32	5	5	0	4	4	4
Flathead catfish	166.63	208.46	394.12	769.21	6	6	0	6	7	5
Smallmouth bass	220.22	332.25	179.9	732.37	7	9	+2	9	6	10
Sunfish	94.83	108.2	294.51	497.54	8	7	-1	7	10	12
Striped bass	173.94	162.04	149.47	485.45	9	10	+1	8	8	6
Rainbow trout	116.29	110.95	124.28	351.52	10	8	-2	10*	11	8
Hybrid striped bass	77.545	115.72	132.82	326.085	11	13	+2	12	12	11
Walleye	68.05	98.51	116.12	282.68	12	11	-1	10*	10	7
Spotted bass	0	65.8	98.67	164.47	13	12	-1	16	13	13
Saugeye	31.85	17.34	41.25	90.44	14	15	+1	18	14	n/a
Brown trout	18.17	25.45	25.06	68.68	15	14	-1	13	n/a	n/a
Paddlefish	16.61	4.54	41.33	62.48	16	17	+1	15	18*	17
Carp	6.16	6.16	26.42	38.74	17	16	-1	14	18*	15
Gar	6.16	0	12.31	18.47	18	18	0	17	20	18

Rod and reel angling continues to be the fishing method used most often (Table 2). There was little difference between the fishing method preference for all anglers and annual license holders and seniors. However lifetime license holders preferred rod and reel with artificial bait at a significantly higher rate (40.1%,  $p=0.032$ ) and seniors tended to prefer juglines more than other license types. There was no difference in fishing method preference comparing avidity groups and all anglers combined.

**Table 3.** Fishing method used most often, by licensed Oklahoma anglers. These data were only collected from anglers who responded over the phone or online.

<b>“Which of the following fishing methods did you use most often last year?”</b>	<b>Frequency</b>	<b>Percent</b>
Rod and reel with artificial bait	245	30.34
Rod and reel with natural bait	210	29.96
Trotlining	7	0.84
Flyfishing	11	1.29
Gigging	3	0.42
Limblining	1	0.11
Bowfishing	0	0.00
Throwlining	1	0.15
Juglining	10	1.2
Noodling	2	0.3
Yo-yo	0	0.0
Missing	319	39.43

No significant change was seen in mean number of days fishing for all license types of anglers (Table 4a) over the past 29 years ( $p=0.637$ ). Oklahoma anglers typically fish more days annually than indicated in national surveys averages (Dept. of Interior et al, 2007; 17 days/year). Lifetime license holders fished slightly fewer days than the average (31.8/days/year). As suspected, avid anglers had a significantly higher number of days fished (44.6,  $p=0.039$ ) and drove significantly farther (50.6 miles,  $p=0.048$ ). No other avidity group showed differences in number of days fished or miles traveled when compared to the average Oklahoman. With no overall difference in days fished or distance traveled since 1977 (Table 4a), this suggests that while economic and cultural changes may have taken place in Oklahoma, these changes have had little affect in an angler's amount of fishing or willingness/need to travel to fishing destinations.

**Table 4a.** Average days fishing and one-way distance traveled to go fishing, 1977-2006, by all Oklahoma anglers.

	<b>2006</b>	<b>2000</b>	<b>1996</b>	<b>1990</b>	<b>1985</b>	<b>1977</b>
<b>Average days of fishing</b>	36.0	33.0	38.0	39.2	36.0	33.0
<b>One-way distance traveled (mi)</b>	39.3	37.8	34.6	37.1	36.0	40.1

When asked if the price of fuel had an impact on their number of days fished in 2006, over 57% of all respondents indicated that it had no effect Table 4b. About ¼ said they fished a little less and only about 15% said that it had a significant impact on their amount of fishing. This same behavior was seen in different license types and avidity groups. This is apparently a perception issues since the average number of days fish has changed little over the past several decades (Table 4a).

**Table 4b.** Perceived effects of fuel cost on number of days fished in 2006 by all anglers

<b>“How did the price of fuel impact the number of days you fished in 2006?”</b>	<b>Frequency</b>	<b>Percent</b>
No effect	553	57.2
Fished a little less	271	28.0
Fished a lot less	141	14.6
Don't know/no answer	2	0.2

Surveyed anglers were also asked if the drought over the previous two years had affected their amount of fishing (Table 4c). More than 55% indicated that the drought had reduced their number of days fished. Similar findings were seen in different license types and avidity groups. It is interesting to note that Oklahoma anglers seem to perceive that they are able to overcome economic issues to continue to fish but also believe that drought problems have significant consequence to their amount fishing.

**Table 4c.** Perceived impacts of drought on number of days fished in 2006.

<b>“How did the drought impact the number of days you fished in 2006?”</b>	<b>Frequency</b>	<b>Percent</b>
No effect	553	57.2
Fished a little less	271	28.0
Fished a lot less	141	14.6
Don’t know/no answer	2	0.2

With the abundance of impounded water in Oklahoma, reservoirs and lakes continue to be the preferred destination for Oklahoma anglers (Table 5). Little change was seen between these values and those found in 2001 other than ODWC lakes and tailwaters gained slightly in popularity. However, it is important to note that the relative values of the most preferred destination presented here do not necessarily reflect relative fishing pressure between different types of water bodies although they could indicate rank in fishing pressure, all other things the same. Except for lifetime license holders preferring farm ponds slightly more than the other two license types and occasional anglers preferring smaller lakes over reservoirs, no other deviations from this pattern were seen among the various strata.

**Table 5.** Type of water fished most often during 2006, by licensed Oklahoma anglers.

<b>“What type of water did you fish most often in Oklahoma last year?”</b>	<b>Frequency</b>	<b>Percent</b>
Reservoirs	285	30.7
Small lakes	282	30.4
Below reservoir dams (tailwaters, stilling basins, etc.)	39	4.2
Farm ponds	182	19.6
Wildlife Department lakes	45	4.8
Rivers, streams or creeks	95	10.2



Boat fishing was the fishing platform used most often (Table 6) as indicated by all license types of anglers. This is a change from previous years where bank fishing had historically been the most popular. Fishing platforms for all three license types showed the same relative use as in Table 6. Interestingly, recruits also showed the same preference for boat angling. This suggests that new anglers may have been mentored by boat anglers, since it is unlikely that these new anglers purchased a boat with their first year of fishing experience. Very avid anglers had a significantly higher preference for boat angling (66.1%:  $p=0.010$ ) while occasional and somewhat avid anglers fished most often from the bank.

**Table 6.** Fishing platform used most often during 2006, by licensed Oklahoma anglers

<b>“From where did you do most of your fishing in Oklahoma last year?”</b>	<b>Frequency</b>	<b>Percent</b>
Bank	413	42.72
Boat	467	48.30
Wading or float tube	27	2.84
Dock	56	5.76
Missing	4	0.38

Table 7 summarizes the findings regarding satisfaction among license types and Table 8 among avidity groups for 10 different questions posed to anglers. Generally speaking, satisfaction was less for all categories than in previous years. Overall, 2006 anglers were most satisfied with their relaxation and least satisfied with the number of times they were able to go fishing. Seniors were least satisfied with the number of fish caught. Bank fishing access was least satisfying to annual license holders and most satisfying to seniors.

The goal of the Fisheries Division has most recently been a 90% overall approval rating. With the decline in satisfaction among different license holders and various avidity groups, it appears that the Division is losing ground in achieving this goal. Where most of the overall ratings were in the 80%+ range in 2000 (Summers and Crews 2002) most are in the 75%+ range in this survey. Once again the lifetime license holders had the highest overall satisfaction rating in 2006.

Angler's dissatisfaction with bank fishing (Table 7) was mostly explained by angler's perception of poor quality of fishing associated with bank fishing areas.

**Table 7.** Percentage of Oklahoma anglers either very satisfied or satisfied with various aspects of fishing, by **license type** in 2006. Bold indicates high and low values in each stratum.

<b>ANGLER SATISFACTION</b>				
	All*(%)	Annual(%)	Lifetime(%)	Senior(%)
Number of Fish Caught (satisfied)	49.8	49.1	55.2	<b>44.0</b>
Enjoying nature/outdoors (satisfied)	87.4	88.2	85.2	87.7
Type of fish caught (satisfied)	69.5	68.7	82.9	67.2
Time spent w/family/friends (satisfied)	86.8	86.3	88.4	85.0
Size of fish caught (satisfied)	51.9	50.6	55.4	52.2
Relaxation of fishing (satisfied)	<b>90.6</b>	<b>91.1</b>	<b>89.6</b>	<b>88.8</b>
Number of times fishing (satisfied)	<b>45.4</b>	<b>44.2</b>	<b>43.8</b>	51.3
Overall fishing experience (satisfied)	79.0	77.1	84.1	75.9
<b>ODWC improving fishing in Oklahoma (satisfied)</b>	65.3	63.25	68.9	67.7
Bank fishing in Oklahoma (satisfied)	60.8	58.5	61.3	67.1
* weighted by license type				

**Table 8.** Percentage of Oklahoma anglers either very satisfied or satisfied with various aspects of fishing, by **avidity group** in 2006. Bold indicates high and low values in each strata.

<b>ANGLER SATISFACTION</b>	Recruit	Occasional	Somewhat	Very
	%	(%)	avid(%)	avid(%)
Number of Fish Caught (satisfied)	54.7	50.8	45.5	47.7
Enjoying nature/outdoors (satisfied)	93.7	86.7	87.0	85.3
Type of fish caught (satisfied)	69.5	65.6	72.1	66.1
Time spent w/family/friends (satisfied)	91.6	85.2	85.6	82.6
Size of fish caught (satisfied)	51.6	57.8	50.9	52.3
Relaxation of fishing (satisfied)	<b>94.7</b>	<b>89.1</b>	<b>89.4</b>	<b>92.6</b>
Number of times fishing (satisfied)	<b>49.5</b>	<b>47.7</b>	<b>45.3</b>	<b>40.7</b>
Overall fishing experience (satisfied)	82.0	71.1	76.4	80.7
<b>ODWC improving fishing in Oklahoma (satisfied)</b>	76.8	61.4	65.2	50.5

\* weighted by license type

Intent of purchasing a fishing license has historically been high (Summers and Crews, 2002). In this survey (Table 9) this intent for annual license buyers was 94.5%. However, it should be noted that intent to buy a license and actual purchase is typically different. As a rule annual license buyers renew at a rate of about 50%-55% (ODWC, unpublished data). The high rate of intent seen in each survey does indicate that most anglers are receptive to the idea of buying a future fishing license and that targeted marketing efforts, with the right message, might make a substantial contribution to participation and revenues.

**Table 9.** Intent to buy a fishing license in 2006 by annual fishing license holders.

<b>“Do you intend to purchase a fishing license in 2006?”</b>	Frequency	Percent
Yes	447	94.5
No	7	1.5
Don't know	19	4.0

Determining the reasons for fishing by Oklahoma anglers is a new issue explored for the first time in this survey. Survey respondents were asked to rank their reasons for fishing from 1 to 5, where 1 is not a reason and 5 is a big reason. Table 10 summarizes the responses where the reason was ranked either a 4 or 5. Enjoying the outdoors and nature were the most popular reasons for fishing across all strata. Not surprisingly, aesthetics were a little less important overall to more avid anglers. Catching a lot of fish was the least important reason to fish for all groups except very avid angler.

**Table 10.** Reasons for fishing for all anglers, by license type and avidity group. Reasons were ranked 1 to 5 with 1 being not a reason and 5 being a big reason. Values shown are percentages for ranks 4 and 5 combined. High and low values in bold.

<b>“When fishing, how important are the following: ?”</b>	All* %	Annual %	Lifetime %	Seniors %	Recruits %	Occasional angler %	Somewhat avid anglers %	Very avid anglers %
Catching fish to eat	45.0	45.7	44.2	44.2	44.8	48.43	45.7	<b>42.2</b>
Being with family and friends	76.3	76.4	80.5	69.7	81.1	80.1	74.1	68.8
Catching a lot of fish	<b>37.1</b>	<b>40.0</b>	<b>32.3</b>	<b>35.1</b>	<b>40.0</b>	<b>34.4</b>	<b>40.1</b>	45.0
Enjoying outdoors and nature	<b>92.0</b>	<b>93.8</b>	<b>92.4</b>	<b>85.6</b>	<b>96.8</b>	<b>93.0</b>	<b>94.4</b>	<b>91.7</b>
Catching large fish	45.0	47.9	45.0	37.6	44.2	43.8	54.9	52.3
Fishing for relaxation	87.0	87.6	87.3	84.5	87.4	87.5	87.0	89.9
Fishing for sport	64.4	62.8	69.3	65.4	60.0	59.4	62.4	70.7

The degree of importance (Table 11) of all the categories for all angling types was less than the previous survey (Summers and Crews 2002). In this survey improving fish habitat was ranked as the most important and children's aquatic education was the least important. Of the various license types, lifetime license holders thought that monitoring the fish population had the greatest importance. Seniors revealed that they thought improving urban fishing opportunities was the least important and annual license holders thought that providing fishing access was the most important activity of our agency

**Table 11.** Perceived importance of eight ODWC activities by Oklahoma anglers for **all anglers** and by **license type**. Bold indicates most and least important.

<b>IMPORTANCE (either extremely, very or somewhat important)</b>				
	All*(%)	Lifetime(%)	Senior(%)	Annual(%)
Importance of teaching children fishing/conservation	<b>73.2</b>	<b>72.1</b>	80.2	<b>73.6</b>
Enforcing fishing regulations	78.3	78.1	80.3	77.9
Improving fish habitat	<b>92.1</b>	80.9	<b>88.3</b>	80.0
Promoting sound water quality practices	78.6	78.5	83.0	77.7
Monitoring fish populations	83.2	<b>81.6</b>	87.8	82.4
Improving fishing access	81.9	77.7	85.1	<b>82.9</b>
Providing fishing information to the public	78.7	75.3	81.3	78.9
Helping private landowners building ponds or controlling erosion on their land	74.8	72.9	78.2	74.8
Improving urban fishing opportunities	74.5	74.9	<b>74.3</b>	74.8
Building fish attractors	77.3	80.9	78.7	75.2
Increasing aquatic vegetation in lakes/reservoirs	79.1	78.0	80.0	79.5
<i>* Weighted by license type</i>				

Assessing importance of ODWC activities by different avidity groups (Table 12) shows improving fish habitat a less popular choice, even though habitat manipulation is one of the most accepted management strategies by natural resource agency's in improving fish populations. It should be noted that this doesn't mean that a majority of anglers did not support any of these activities. All 11 had support from a majority of survey respondents (>50%). Some were just thought of as more important than others. The percentage of survey respondents who thought any of these activities were not important was typically less than 20%.

The most popular ODWC activity for occasional anglers was improving urban fishing opportunities. This is not surprising since occasional anglers had the highest percentage of urban residents (60.9%) of all the avidity groups. The very avid anglers thought that providing fishing information should be the highest priority of the ODWC.

**Table 12.** Perceived importance of eight ODWC activities by Oklahoma anglers by fishing **avidity group**. Bold indicates most and least important.

<b>IMPORTANCE (either extremely, very or somewhat important)</b>	Recruit (%)	Occasional (%)	Somewhat Avid (%)	Very Avid (%)
Importance of teaching children fishing/conservation	68.4	53.9	54.3	57.8
Enforcing fishing regulations	71.6	63.3	62.4	58.7
Improving fish habitat	<b>56.8</b>	<b>53.1</b>	58.0	<b>56.0</b>
Promoting sound water quality practices	67.4	57.8	<b>52.5</b>	<b>56.0</b>
Monitoring fish populations	<b>76.8</b>	61.7	62.4	57.8
Improving fishing access	68.4	68.0	63.6	71.6
Providing fishing information to the public	71.6	69.5	67.9	<b>72.5</b>
Helping private landowners building ponds or controlling erosion on their land	73.7	66.4	63.0	65.1
Improving urban fishing opportunities	67.4	<b>73.4</b>	69.8	67.0
Building fish attractors	74.7	68.0	<b>74.7</b>	71.6
Increasing aquatic vegetation in	76.1	66.1	72.9	65.4
<i>* Weighted by license type</i>				

In this survey anglers were asked about their support or opposition for several potential regulation changes proposed to enhance sportfish populations. When asked what would constitute a preferred catfishing experience under different scenarios, a majority of all anglers indicated that catching five, 3-pound catfish was the most preferred (Table 13).

**Table 13.** Preference for catfishing experience, by licensed Oklahoma anglers.

<b>“Which of the following experiences would you prefer to have while fishing for catfish?”</b>	<b>Frequency</b>	<b>Percent</b>
Catching fifteen small (1½-pound) catfish	148	15.38
Catching five medium (3-pound) catfish	526	54.55
Catching one large (15-pound) catfish	169	17.50
Don’t know/No opinion	38	3.90
I never fish for catfish	66	6.81
Missing	18	1.86

When this same set of scenarios was presented to only catfish anglers (based on survey response; Table 2) results were similar to all anglers (Table 13). In fact this preference for several medium sized catfish was seen across all types of catfish anglers (channel catfish anglers, 58.8%; and blue catfish anglers, 55.1%) as well as catfish angling methods (rod and reel with artificial bait, 62.7%; rod and reel with natural bait, 62.5%; and jug lines 69.5%). No significant differences were seen between license types or avidity groups.

**Table 14.** Preference for catfishing experience, by catfish anglers only.

<b>“Which of the following experiences would you prefer to have while fishing for catfish?”</b>	<b>Frequency</b>	<b>Percent</b>
Catching fifteen small (1½-pound) catfish	91	16.77
Catching five medium (3-pound) catfish	339	58.80
Catching one large (15-pound) catfish	122	18.56
Don’t know/No opinion	19	3.24
Missing	9	1.62

Consequently, when asked about their support for a regulation that would mean returning a ten pound catfish with the hope of catching more 20 pound catfish, the majority of anglers opposed such a regulation (Table 15). Opposition was essentially the same for catfish anglers (51.0%, strongly and moderately opposed), channel catfish anglers (54.3%), blue catfish and flathead catfish anglers (50.0%), and artificial bait anglers (59.6%). Blue catfish and flathead catfish anglers who fished with jugs showed the least amount of opposition a regulation change and was supported by 68.8% percent of these anglers. While these data tend to indicate lack of support for future regulations on catfish, fishing pressure, species selectivity and other social factors may necessitate consideration of more restrictive rule changes. The value of these data then becomes identifying where opposition is most likely to occur and where education/marketing might benefit.

**Table 15.** Support and opposition for a length limit on catfish, by all anglers

<b>“Would you support or oppose a size limit on catfish that would require you to return a 10 lb catfish if it meant that you had a greater chance of catching a 20 lb catfish?”</b>	<b>Frequency</b>	<b>Percent</b>
Strongly oppose	231	23.9
Moderately oppose	223	23.1
Moderately support	212	21.9
Strongly support	117	12.1
I never fish for catfish	53	5.5
Don’t know/no opinion	108	11.2
missing	22	2.3



There was more support for a size limit regulation on hybrid striped bass (Table 16). Support (moderately and strongly supported) by hybrid anglers (50.2%) and striped bass and hybrid anglers combined (52.2%) was slightly higher when compared to all anglers (44.4%).

**Table 16.** Support and opposition for a length limit on hybrid striped bass, by all anglers

<b>“Would you support or oppose a size limit on hybrid striped bass that would require you to return a 5 lb hybrid if it meant that you had a greater chance of catching a 10 lb hybrid?”</b>	<b>Frequency</b>	<b>Percent</b>
Strongly oppose	161	16.7
Moderately oppose	171	17.7
Moderately support	247	25.6
Strongly support	178	18.8
I never fish for hybrids	99	10.2
Don't know/no opinion	89	9.2
missing	20	2.1

At the time of this survey the ODWC was considering beginning a program whereby the agency would process paddlefish for anglers during the spring in return for obtaining population data and paddlefish roe which could eventually be sold as caviar. Selling paddlefish eggs by the ODWC to fund management, research and law enforcement activities showed little opposition, only 13%, in this survey (Table 17).

**Table 17.** Support and opposition for ODWC selling paddlefish eggs

<b>“Would you support or oppose the ODWC operating a program that sold paddlefish eggs to fund management, research and law enforcement activities?”</b>	<b>Frequency</b>	<b>Percent</b>
Strongly oppose	76	7.8
Moderately oppose	51	5.3
Moderately support	316	32.6
Strongly support	306	31.8
Don't know/no opinion	194	20.1
missing	22	2.3

In 2001 the ODWC discontinued printing its hunting atlas of wildlife management areas (WMAs) and began placing this information on the web in the form of an interactive internet mapping service (IMS). Information on fishing (lakes, rivers, streams, fish attractors, et al.) was also placed on this Digital Fish and Wildlife Atlas (<http://129.15.97.32/odwcims>) . When asked about their familiarity of this internet mapping tool, a vast majority of anglers indicated that that had never heard of it (Table 18). Less than 12% of anglers had used the IMS. However, those surveyed anglers that had familiarity with the IMS ( $\approx 110$  respondents), found it useful (Table 19).

**Table 18.** Use of the ODWC Digital Fish and Wildlife Atlas by all anglers

<b>“The ODWC has a digital atlas on the internet. Have you used the new internet map tool?”</b>	<b>Frequency</b>	<b>Percent</b>
Never heard of the atlas	717	74.3
No, but have heard of the atlas	117	12.1
Yes	110	11.4
Missing	21	2.2

**Table 19.** IMS users rating the internet map tool.

<b>“How would you rate the ODWC internet map tool?” For only those that used it.</b>	<b>Frequency</b>	<b>Percent</b>
1—Not useful at all	6	5.3
2	8	6.8
3	33	29.7
4	34	31.1
5—Very useful	30	27.3

Fifty four percent of annual license holders thought that fishing license should cost less (Table 20). This comes after a 2003 license increase of 100% (\$12.50 to \$25.00 with Legacy Permit). If these anglers who had purchased a license thought that the fees for fishing privileges were too much, then it is logical to assume that at least some portion of past license buyers dropped out because of increased cost. However, about half of the interviewed anglers thought that the current license cost was appropriate.

**Table 20.** Opinion on the price of Oklahoma’s annual fishing license, by annual license buyers in 2006.

<b>“Currently, an Oklahoma fishing license costs \$20 and a combination hunting/fishing license costs \$37. Both also require a \$5 Legacy Permit. What is your opinion regarding the cost of fishing licenses and permits in Oklahoma?”</b>	<b>Frequency</b>	<b>Percent</b>
Should cost much less	90	19.03
Should cost a little less	166	35.10
Price is just right	195	41.23
Should cost a little more	4	0.85
Should cost much more	1	0.21
Missing	17	3.59

In 2003 Oklahoma passed legislation that added a \$5.00 fee to all annual licenses holders. This “Legacy” fee would be assessed one time, each year, when the first annual license was purchased making a \$20.00 annual fishing (or hunting) license, in essence, cost \$25.00. Holders of good for life licenses were exempt from this extra fee. These fees would be put in an ODWC trust account and the interest earned would be used to purchase public hunting and fishing land. Less than 1/3 of this surveys annual license respondents knew how these Legacy fees were used (Table 21).

**Table 21.** Understanding of the use of Fishing and Hunting Legacy Permit funds, by annual license buyers in 2006. Correct answer in bold.

<b>“Which of the following best describes your understanding of how the funds collected from the Legacy Permit are used?”</b>	<b>Frequency</b>	<b>Percent</b>
General funding for State Parks	51	10.97
General funding for the Wildlife Department	143	30.75
Building boat ramps and boat docks	36	7.74
<b>Purchasing public hunting and fishing land</b>	<b>152</b>	<b>32.69</b>
Building the Legacy Memorial	14	3.01
Missing	69	14.84

Various new types of fishing licenses were proposed to the survey population (Table 22). Overall, support for any of these licenses was, in some cases, substantially less and in most cases less than seen in the 2000 survey (Summers and Crews 2002). It should be noted that between these surveys a 1-800 telephone site and an internet site were added as a means to purchase annual fishing (and hunting) licenses in Oklahoma. Also a 2-day resident fishing license was established in 2003. In 2008, the Oklahoma Legislature was asked by the ODWC to establish a 3-year license based on the results of these surveys. In a compromise, a 5-year license was added and began on January 1, 2009.

**Table 22.** Interest (either extremely interested or interested) for various fishing license options by annual fishing license holders in 2006 compared to results from 2001 survey.

<b>INTEREST IN FISHING LICENSE OPTIONS</b>	<b>Support % 2006</b>	<b>Support % 2000</b>
3-year fishing license	49.4	81.1
Family fishing license	44.1	76.3
Buddy fishing license	43.3	59.8
Mailed reminder notice with an option to buy a license through the mail	44.7	52.2
1-800 site to buy fishing license	n/a	44.3
Internet site to buy fishing license	n/a	40.6
3-day resident fishing license	n/a	18.3
Fall fishing license	34.8	14.5

Little change was seen in the amount of tournament fishing participation by all anglers and by license type (Table 23) when compared to previous surveys where the same question was asked (Summers and Crews 2002). As suspected, the most avid anglers participated in tournaments at the highest rate ( $\approx 15\%$ ) and almost 4% of avid anglers fish tournaments exclusively.

**Table 23.** Level of participation in fishing tournaments during 2006.

<b>“How often did you fish tournaments last year?”</b>	All*	Annual	Lifetime	Seniors	Bass Anglers**	Recruits	Occasional angler	Somewhat avid angler	Very avid angler
Never	92.3	93.2	88.5	94.7	89.0	94.7	93.0	97.5	85.3
Occasionally	5.3	4.3	9.1	3.7	7.4	4.2	3.9	1.9	9.7
Regularly	1.4	1.2	2.3	1.1	2.5	1.1	1.6	0.6	1.8
Exclusively	0.6	1.0	0	0	0.9	0	0.8	0	<b>3.7</b>
Don't know/no response	0.2	0.2	0	0.5	0.2	0	0.8	0	0

\*weighted by license type

\*\* defined as anglers who listed bass as their 1<sup>st</sup> or 2<sup>nd</sup> choice

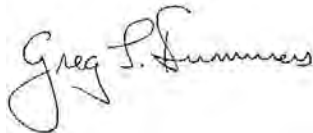
**V. CONCLUSIONS and RECOMMENDATIONS:**

Support, importance and satisfaction all appeared to be lower in this survey than in surveys of the past. The reasons for this are unknown but it would appear that the fishing culture in Oklahoma is changing. Anglers are becoming more price-sensitive to licensing, less knowledgeable about issues and less satisfied with the agency and their fishing experience. It would therefore appear that marketing/education should become a higher priority in the Fisheries Division's goals.

The data collected in these surveys will be further analyzed using different stratification as needs arise. As an example, this survey could be stratified for analysis by urban vs. rural anglers to identify needs for specialized urban fishing programs.

The angler survey should be repeated in five years.

**VI. PREPARED BY:**



Greg L. Summers, Laboratory Supervisor

**VII. DATE:** March 15, 2009

**VII. APPROVED BY:** \_\_\_\_\_

John Stafford, Federal Aid/Research Coordinator

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## Appendix I

### 2007 Angler Survey Instrument

**§ Did you fish in Oklahoma during 2006?**

YES

NO

**§ If not, what was the main reason that you did not fish last year**

*QUALITY OF FISHING*

*LACK OF SOMEONE TO GO FISHING WITH*

*LACK OF A PLACE TO GO FISHING*

*NO TIME*

*CHANGE IN PLANS*

*OTHER*

*DON'T KNOW/NO OPINION*

**§ Of the Following fishing methods, Which one did you use most often last year?**

**(Answer only one)**

*ROD AND REEL WITH NATURAL BAIT*

*ROD AND REEL WITH ARTIFICIAL BAIT*

*TROT LINING*

*FLY FISHING*

*GIGGING*

*LIMBLINING*

*BOW FISHING*

*THROW LINING*

*JUG LINING*

*NOODLING*

*YO-YO*

**§ Do you live in town or in the country?**

*IN TOWN*

*IN COUNTRY*

**§ Of the following, what type of water did you fish most often in Oklahoma last year? (Answer only one)**

*RESERVOIRS*

*SMALL LAKES*

*BELOW RESERVOIR DAMS (TAILWATERS, STILLING BASINS, ETC)*

*FARM PONDS*

*WILDLIFE DEPARTMENT LAKES*

*RIVERS, STREAMS OR CREEKS*

**\$ From where did you do most of your fishing in Oklahoma last year?(answer only one)**

*BANK  
BOAT  
WADING OR FLOAT TUBE  
DOCK*

**\$ (for bank anglers only) How satisfied are you with bank fishing in Oklahoma?**

*VERY SATISFIED  
SATISFIED  
NEITHER SATISFIED OR DISSATISFIED/NOT INTERESTED  
DISSATISFIED  
VERY DISSATISFIED*

**\$ (for only banks anglers that were dissatisfied) Which of the following best describes the reason you are dissatisfied with bank angling?**

*NOT ENOUGH BANK FISHING AREAS  
POOR QUALITY FISHING  
POOR FACILITIES AT BANK FISHING AREAS  
OTHER*

**\$ Please estimate about how many different days during 2006 that you spent fishing in Oklahoma?**

**\$ How did the price of fuel effect the number of days that you fished in 2006?**

*I FISHED A LOT LESS BECAUSE OF THE PRICE OF FUEL  
I FISH A LITTLE LESS BECAUSE OF THE PRICE OF FUEL  
THE PRICE OF FUEL DID NOT HAVE ANY EFFECT ON THE NUMBER OF DAYS I FISHED*

**\$ How did the drought effect the number of days that you fished in 2006?**

*I FISHED A LOT LESS BECAUSE OF THE DROUGHT  
I FISH A LITTLE LESS BECAUSE OF THE DROUGHT  
THE DROUGHT DID NOT HAVE ANY EFFECT ON THE NUMBER OF DAYS I FISHED*

**\$ Please estimate how many miles, one-way, you usually drive to go fishing in Oklahoma?**



**\$ When you go fishing, how important are each of the following to you? On a scale of 1-5, where 1 is not a reason and 5 is a big reason, please rank the following reasons why you go fishing.**

*TO CATCH FISH TO EAT*

*TO BE WITH FRIENDS AND FAMILY*

*TO CATCH A LOT OF FISH*

*TO ENJOY THE OUTDOORS AND/OR NATURE*

*TO CATCH LARGE FISH*

*FOR RELAXATION*

*FOR THE SPORT*

**\$ Of the Types of Fish That You Fished for Last Year, Which Ones Do You Most Prefer to Fish for Ranked in Order of First, Second and Third Choices?**

**First Choice:**

*LARGEMOUTH BASS*

*SMALLMOUTH BASS*

*SPOTTED/KENTUCKY BASS*

*CRAPPIE*

*CHANNEL CATFISH*

*BLUE CATFISH*

*FLATHEAD CATFISH*

*WHITE/SAND BASS*

*STRIPED BASS*

*HYBRID STRIPED BASS*

*WALLEYE*

*SAUGEYE*

*RAINBOW TROUT*

*BROWN TROUT*

*CARP*

*SUNFISH, BLUEGILL, PERCH, BRIM, ETC.*

*PADDLEFISH/SPOONBILL*

*GAR*

**Second Choice:**

*LARGEMOUTH BASS*

*SMALLMOUTH BASS*

*SPOTTED/KENTUCKY BASS*

*CRAPPIE*

*CHANNEL CATFISH*

*BLUE CATFISH*

*FLATHEAD CATFISH*

*WHITE/SAND BASS*

*STRIPED BASS*

*HYBRID STRIPED BASS*

WALLEYE  
SAUGEYE  
RAINBOW TROUT  
BROWN TROUT  
CARP  
SUNFISH, BLUEGILL, PERCH, BRIM, ETC.  
PADDLEFISH/SPOONBILL  
GAR

**Third Choice:**

LARGEMOUTH BASS  
SMALLMOUTH BASS  
SPOTTED/KENTUCKY BASS  
CRAPPIE  
CHANNEL CATFISH  
BLUE CATFISH  
FLATHEAD CATFISH  
WHITE/SAND BASS  
STRIPED BASS  
HYBRID STRIPED BASS  
WALLEYE  
SAUGEYE  
RAINBOW TROUT  
BROWN TROUT  
CARP  
SUNFISH, BLUEGILL, PERCH, BRIM, ETC.  
PADDLEFISH/SPOONBILL  
GAR

**\$ The next question is a measure of your satisfaction with various aspects of your fishing in 2006. Indicate your satisfaction with the following, on a scale of 1 to 5, where 1 is very dissatisfied and 5 is very satisfied**

1. NUMBER OF FISH CAUGHT
2. TIME SPENT ENJOYING NATURE/OUTDOORS
3. TYPE OF FISH CAUGHT
4. TIME SPENT WITH FAMILY AND FRIENDS
5. SIZE OF FISH CAUGHT
6. RELAXATION
7. NUMBER OF TIMES YOU FISHED
8. OVERALL FISHING EXPERIENCE

**\$ How would you rate the wildlife departments**

**performance in improving and/or maintaining fishing quality in Oklahoma?(Answer only one)**

*EXTREMELY DISSATISFIED*

*SOMEWHAT DISSATISFIED*

*DON'T KNOW/NO OPINION*

*SOMEWHAT SATISFIED*

*EXTREMELY SATISFIED*

**\$ While fish stocking is an important aspect of fishery management, there are other important activities as well. Please indicate how important you think each of the following are as an activity of the Wildlife Department. Rate each of the following as “extremely important”, “very important”, “somewhat important” or “not important”**

*EDUCATING CHILDREN ABOUT FISHING SETTING AND ENFORCING FISHING REGULATIONS*

*IMPROVING FISH HABITAT*

*INCREASING URBAN FISHING OPPORTUNITIES*

*IMPROVING FISHING ACCESS (BOAT RAMPS, DOCKS, FISH CLEANING STATIONS, ETC.)*

*PROVIDING FISHING INFORMATION TO THE PUBLIC*

*MONITORING AND SURVEYING FISH POPULATIONS*

*PROMOTING SOUND WATER QUALITY PRACTICES*

*ASSISTING LANDOWNERS WITH BUILDING PONDS AND CONTROLLING EROSION*

*BUILDING FISH ATTRACTORS*

*INCREASING AQUATIC VEGETATION IN LAKES AND RESERVOIRS*

**\$ Which best describes how you have used the Wildlife Departments Digital Atlas for making Oklahoma hunting and fishing maps on the internet?**

*YES, I HAVE USED THE DIGITAL ATLAS*

*I AM AWARE OF THE DIGITAL ATLAS BUT HAVE NOT USED IT*

*I WAS UNAWARE THAT THE DIGITAL ATLAS EXISTED*

**\$ If you have used the Digital Atlas, which of the following best describes your opinion on how helpful or useful it is?**

*VERY USEFUL AND HELPFUL*

*SOMEWHAT USEFUL AND HELPFUL*

*NO OPINION*

*NEITHER USEFUL OR HELPFUL*

**\$How often did you fish bass tournaments in Oklahoma last year?**

NEVER  
OCCASIONALLY  
REGULARLY  
EXCLUSIVELY

\$ (for anglers that listed channel, blue or flathead catfish as first or second choice) **Which of the following experiences would you prefer to have while fishing for catfish?**

CATCHING FIFTEEN 1 ½-POUND CATFISH  
CATCHING FIVE 3-POUND CATFISH  
CATCHING ONE 15-POUND CATFISH

\$ (for anglers that listed channel, blue or flathead catfish as first or second choice) **Would you support or oppose a size limit on catfish that would require you to release a 10 pound catfish if it meant that you had a greater chance in catching a 10 pound catfish?**

STRONGLY SUPPORT  
MODERATELY SUPPORT  
NEITHER SUPPORT OR OPPOSED/NO OPINION  
MODERATELY OPPOSE  
STRONGLY OPPOSE

\$ **Would you support or oppose a size limit on hybrid striped bass that would require you to release a 5 pound hybrid striped bass, if it meant that you had a greater chance of catching a 10 pound hybrid striped bass?**

\$ **Have you purchased or do you plan to purchase another fishing license in 2007?**

STRONGLY SUPPORT  
MODERATELY SUPPORT  
NEITHER SUPPORT OR OPPOSED/NO OPINION  
MODERATELY OPPOSE  
STRONGLY OPPOSE

\$ **Have you purchased or do you plan to purchase another fishing license in 2007?**

YES  
NO  
NOT SURE

\$ (for anglers who had purchase an annual fishing or combination license in 2006) **What is your opinion regarding the costs of licenses and permits to go fishing in Oklahoma? The current cost is a \$20 annual license (\$37 for a combination license) and a \$5 annual Legacy permit?**

NEEDS TO BE MUCH LESS IN PRICE  
NEEDS TO BE SOMEWHAT LESS IN PRICE  
JUST RIGHT  
COULD BE SOMEWHAT HIGHER PRICED  
COULD BE MUCH HIGHER PRICED

\$ (for anglers who had purchase an annual fishing or combination license in 2006) **Which of the following best describes your understanding of how the funds collected from the Legacy Permit are used??**

GENERAL FUNDING FOR STATE PARKS  
GENERAL FUNDING FOR THE WILDLIFE DEPARTMENT  
BUILDING BOAT RAMPS AND BOAT DOCKS  
PURCHASING HUNTING AND FISHING LAND  
BUILDING THE LEGACY MEMORIAL

\$ (for anglers who had purchase an annual fishing or combination license in 2006) **The following are several proposed options for purchasing an Oklahoma resident fishing license. Please tell me how much you would be interested in purchasing each of the following if it were available.**

1. A FISHING LICENSE THAT LASTED FOR THREE YEARS AT A COST LESS THAN THREE ANNUAL LICENSES
2. A FALL FISHING LICENSE (Good from Sept.1 through Dec. 31) AT A COST LESS THAN AN ANNUAL LICENSE
3. A DISCOUNTED "BUDDY" FISHING LICENSE FOR TWO PEOPLE
4. A DISCOUNTED HUSBAND/WIFE FISHING LICENSE
5. A MAILED REMINDER NOTICE WITH AN OPTION TO PURCHASE LICENSE BY MAIL

EXTEMELY INTERESTED  
VERY INTERESTED  
SOMEWHAT INTERESTED  
NOT INTERESTED