Oklahoma Department of Wildlife Conservation

2014 OKLAHOMA ANGLER SURVEY

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KEY RESULTS:

- Overall, 83% of respondents fished in Oklahoma during 2014. Annual license holders were most active, with 87% having fished during the past year, followed by 76% of lifetime license holders, and 53% of senior license holders. Of those that did not fish, nearly half cited not having time to participate.
- The majority of active anglers had been fishing in Oklahoma for a decade or more.
- Oklahoma anglers fished 31 days out of the year on average, and drove 39 miles one-way to their fishing destination.
- Oklahoma anglers fished in a variety of water bodies during 2014, but most often in lakes and reservoirs.
- Crappie were the species most anglers preferred to catch during 2014, closely followed by largemouth bass.
- Rod and reel angling continued to be the fishing method used most often.
- Bank and boat fishing were most popular across all angers during 2014.
- The majority of Oklahoma anglers practice catch-and-release fishing to some degree, with only ten percent of anglers preferring to keep their entire catch.
- Oklahoma anglers felt that relaxation, enjoying nature and the outdoors, and being with friends and family were the most important reasons for fishing.
- Overall, anglers fished most often with their family (66%), followed by their friends (24%) and a small group fished alone most often (10%).
- The number and economic impact of sportfishing trips varies with the size and location of lakes. However, even a small lake may attract 10,000 visits per year and generate hundreds of thousands of dollars in spending by anglers (Melstrom, Jayasekera, Jager & Boyer 2015).
- The average sportfishing trip has an economic value of about $67 (Melstrom et al. 2015).
- Water quality impacts anglers. The number of sportfishing trips to lakes decrease as turbidity (a loss of clarity) and an increase in hypereutrophic conditions (an excess of nutrients such as phosphorus and nitrogen, associated with algal blooms and little available oxygen in the water) (Melstrom et al. 2015).

INTRODUCTION

One of the most popular forms of outdoor recreation in Oklahoma is sportfishing. According to a national report on outdoor recreation, Oklahomans spend more total days fishing than wildlife watching and hunting combined (U.S. Fish and Wildlife Service 2014). Successful Oklahoma fisheries management depends on an understanding of both the biological and social aspects of a fishery. Because the fishing public bear the majority of the cost of maintaining and enhancing fishing through their license and equipment purchases, it is especially critical to understand the fishing public's experiences and preferences, as well as their attitudes toward Oklahoma fisheries management.

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. 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.

It is imperative that resource management agencies, primarily funded by user groups such as anglers, investigate fishing participation, reasons for fishing, opinions about fisheries management, and reasons why fishing participation is waning. Since the late 1960's, angler opinion surveys have been useful tool for fishery resource managers to learn about their angling constituents. This survey was once again employed during 2014 to learn about and monitor trends related to the fishing public in Oklahoma.

METHODS

Previous Oklahoma surveys consisted of both mail questionnaires (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, transitions to mobile phones and public displeasure with the amount of telemarketing seen in recent years, suggests that web-based surveys may provide a necessary supplement to access public opinion. After consultation with survey literature, Division personnel, ODWC administration and human dimensions colleagues, a mixed-mode angler questionnaire was developed.

Following the 2007 Angler Survey protocol, it was predetermined that the entire sample would consist of 75% annual license holders, 20% lifetime license holders and 5% senior license holders, even though the distribution of license types in the sample did not represent the distribution of the population. Senior license holders account for 43% of the population, lifetime license holders account for 32% and the remainder of the population (26%) are annual, fiscal, 5-year and combination license holders. Senior license holders tend to be less active—54% participation rate in 2000 (Summers and Crews 2002) and 44% participation rate in 2006 (Summers 2009). Therefore, to avoid a large return of inactive anglers, we maintained a distorted representation of the population frame (Appendix A, Table A1).

Past angler surveys have achieved a 50% response rate. With a goal of completing 1,200 completed interviews, a sample of 2,400 was needed. However, to account for declining response rates we further increased the sample to 3,000. This sample was randomly pulled from the year 2013-2014 annual license files, the existing lifetime license file and the existing senior license file using the relative percentages above.

All anglers selected for the survey were mailed a pre-survey postcard notification (Appendix B1) on October 1, 2014, which allowed anglers to access the survey online using a web link and unique identification number. However, identification numbers were not printed in the correct spot making it difficult for anglers to respond in this manner. All anglers were then mailed a copy of the survey instrument (Appendix B2) on October 6, 2014, with instructions for completing the survey by either by mail, telephone or online.

License holders who did not respond by mail or online were contacted by telephone beginning October 28, 2014. Interviews and data entry of mail surveys were conducted by an outside contractor. Interview staff were hired and trained by the contractor. Two supplementary training sessions were conducted by the ODWC project leader. A computer assisted telephone interview (CATI) system was used. If participants completed the survey by both telephone and mail, telephone interview data were used.

Interviewers attempted to contact interviewees from 3:00 p.m. to 9:00 p.m. Monday through Thursday, from 2:00 p.m. to 8:00 p.m. on Fridays, 10:00 a.m. to 2 p.m. on Saturdays and from 2:00 p.m. to 8:00 p.m. on Sundays. Date, time, interviewer, and outcome of each attempt were recorded. Telephones were allowed to ring 6 times before the interviewer recorded a no-answer response. Interviewers attempted to re-dial numbers 1-2 hours after a no-answer response and 15-30 minutes after a busy signal response. Before a phone number was retired as "over quota," it was attempted at least 6 different days, one of which was a Saturday, and at different times of the day, including at least one call during business hours.

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.

Non-response bias (resulting when the proportion of the sample from whom survey data was received does not represent the proportion from whom no data was received) is sometimes formally addressed by a follow-up study of non-respondents, comparative analysis, and subsequent weighting of the original data if differences are found. Alternatively, responses of early and late respondents can be compared for a few key variables. The presumption is that people who do not complete the survey (non-respondents) are likely more similar to those that responded slowly than those who responded quickly. This second approach (comparison of early vs. late respondents) was used to assess non-response bias. Differences between categorical variables were detected using chi-square (Pearson, Fisher's Exact Test, or Linear-by-Linear Association as appropriate. Multiple means were compared using a one-way ANOVA. All tests were considered significant at $P < 0.05$.

Differences between categorical variables were detected using the chi-square test. Multiple means were compared using a one-way ANOVA. All tests were considered significant at $P < 0.05$. Analysis was performed on the entire dataset along with

stratification by license type when differences were significant. Trend comparisons were made to previous Oklahoma Angler Surveys when appropriate. Surveys from previous years often asked the same questions, but in some years the response items differed. Trend data from previous years were pulled from reports, not raw data, due to accessibility and usability.

Economic questions were analyzed by an Oklahoma State University researcher and results are reported separately (refer to Melstrom et al. 2015).

RESULTS AND DISCUSSION

Sample Disposition and Response Rate

A total of 770 usable survey responses were received. Discarded from the analysis were one drop-out, and two responses that did not include an ID number. Sixty-six people completed survey via multiple methods (e.g. phone and mail), we opted to keep phone responses over mail or internet responses in these situations. Of the valid responses, 315 responded by mail (41%), 393 were interviewed by phone (51%), and 62 responded to the survey online (8%). The remaining license holders were not interviewed for a variety of reasons which are detailed in Table 1.

The final adjusted response rate was calculated by dividing the number of completed interviews by the number of all telephone numbers of "eligible" and "unknown eligibility" status. "Unknown Eligibility" and "Eligible numbers" were working numbers that could potentially have resulted in completed interviews (n = 1,722). After eliminating phone numbers that could not possibly have resulted in completed interviews (fax numbers, and wrong or disconnected numbers; n = 1,278), the final, adjusted survey response rate was 45%.

The respondent group was comprised of 5.2% senior license holders, 20% lifetime license holders, and 74.8% annual license holders, which nearly matched our sampling distribution (Appendix B). Data were subsequently not weighted by license type.

On average, three calling attempts were necessary to complete a telephone interview. The number of calling attempts ranged from one to twelve. The length of the telephone interview ranged from over a minute (e.g., non-angling participants) to 25 minutes. The average telephone interview was completed in less than twelve minutes.

Table 1: Final disposition of Angler Survey sampling pool as identified by OU POLL.

		Frequency	Percent
Ineligible:	Non-residential number	58	4.5%
	No eligible respondent	35	2.7%
	Non-working number	1030	80.6%
	Fax/Modem	17	1.3%
	Moved/Never Licensed	138	10.8%
Sub-total Ineligible:		***1278***	***42.6%***
Unknown Eligibility:	No answer	108	46.8%
	Caller ID/ privacy manager	2	0.9%
	Answering machine	16	6.9%
	Phone line busy	28	12.1%
	Quick Hang-up	41	17.7%
	Rude/Uncooperative	14	6.1%
	Language/physical problems	22	9.5%
Sub-total Unknown Eligibility:		***231***	***7.7%***
Eligible:	Completed Telephone Interview	393	26.4%
	Dropout Telephone Interview	10	0.7%
	Completed Mail Survey	315	21.1%
	Completed Web Survey	63	4.2%
	Unknown Web/Mail	4	0.3%
	Individual Refusal	83	5.6%
	Household Refusal	50	3.4%
	Outstanding Appointments	10	0.7%
	Respondent never available	563	37.8%
Sub-total Eligible:		***1491***	***49.7%***
Total:		***3000***	***100%***

Non-Response Bias

To assess non-response bias, answers from survey participants for whom the telephone interview was completed with one or two attempts ("early respondents," 50%) were compared to the responses for those that were interviewed after three or more attempts ("late respondents," 50%) for seven selected variables. Participants who responded by mail were not used in the comparison.

No significant differences were found for any of the selected variables: No difference in fishing participation, education, license type, age, average miles driven and average number of days fished ($P > 0.05$ for all tests).

Response Mode Bias

A mixed-mode methodology was used for the Angler Survey to improve coverage and response rates. Question formatting and wording was identical across modes, however, different response modes may introduce different biases. For example, a respondent might feel more comfortable disclosing sensitive information on a mail survey rather than over the phone while talking to an actual human (Dillman, Smyth & Christian 2014). To examine the impact of mixed methodology, survey responses were compared between mail and telephone respondents for eight variables. Web responses were excluded because they represented such a small proportion of overall responses.

Significant differences were found when response mode was compared for anglers' age group ($P \leq 0.001$) and satisfaction with the ease of purchasing a fishing license ($P = 0.029$). Research has shown that responses to scalar questions tend to differ between telephone responses and mail or web responses, with telephone respondents tending to select the extremes on the scale more often (Dillman et al. 2014). This appeared to be the case here. Further evaluation of scale question differences revealed two of four scale question responses differed by mode of completion. Each question offered a 5-category response scale. When reduced to three categories, all but one question no longer displayed significant differences. Responses to satisfaction with bank fishing remained different by response mode ($P \leq 0.001$). Because only one of the scalar questions showed differences, no weighting was done to account for response mode.

Comparisons were not significant for fishing participation, household income, education level, license category, average miles driven and average number of days fished ($P > 0.05$ for all tests).

Geographic Distribution

Oklahoma anglers are well-dispersed throughout the states, with the major metropolitan areas-- Oklahoma City and Tulsa— being home to the greatest number of anglers (Figure 1). Survey respondents followed a similar distribution to the population.

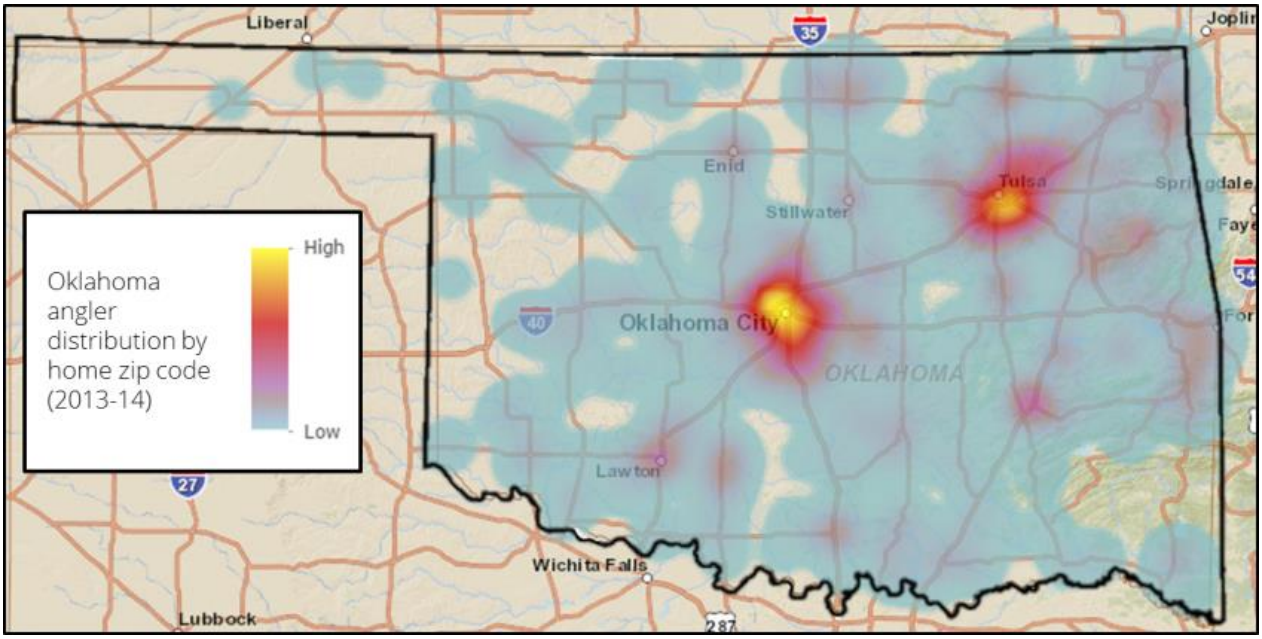

Figure 1. Geographic distribution of 2014 Oklahoma Angler Survey respondents, includes active and inactive 2014 anglers.

Use of Fishing Privileges

Overall, 83% of respondents fished in Oklahoma during 2014. Fishing activity differed by license category ($P \leq 0.001$). Annual license holders were most active, with 87% having fished during the past year, followed by 76% of lifetime license holders, and 53% of senior license holders (Figure 2). Fishing participation overall among survey respondents has been general stable over the past decades (Figure 3). Of those that did not fish, nearly half cited not having time to participate (Figure 4).

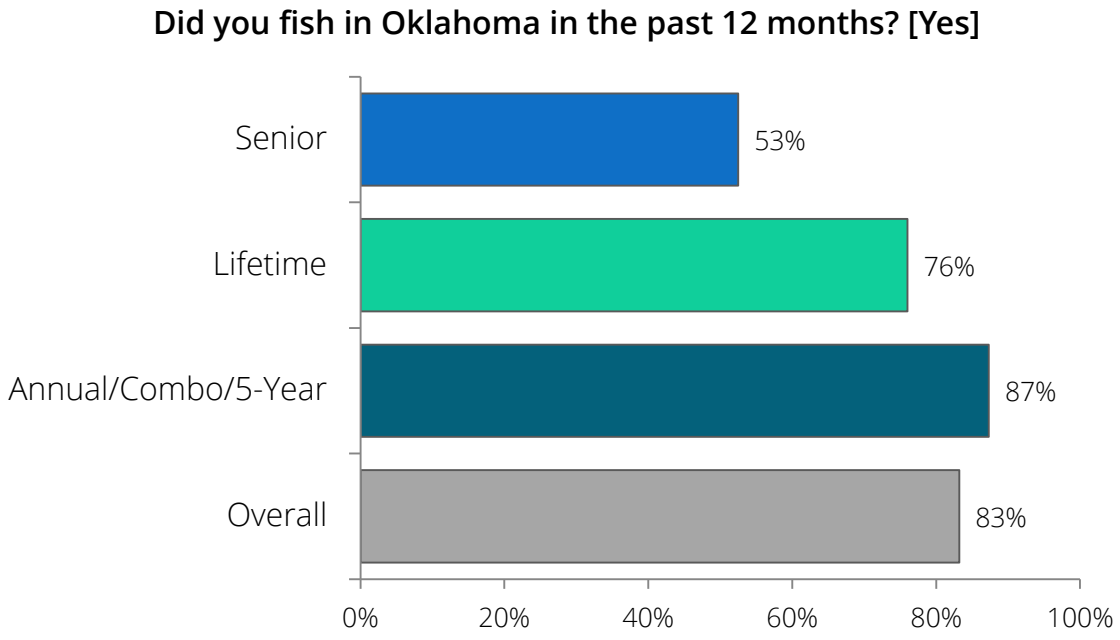

Figure 2. Fishing participation by Oklahoma anglers, 2013-2014 (*n* = 770).

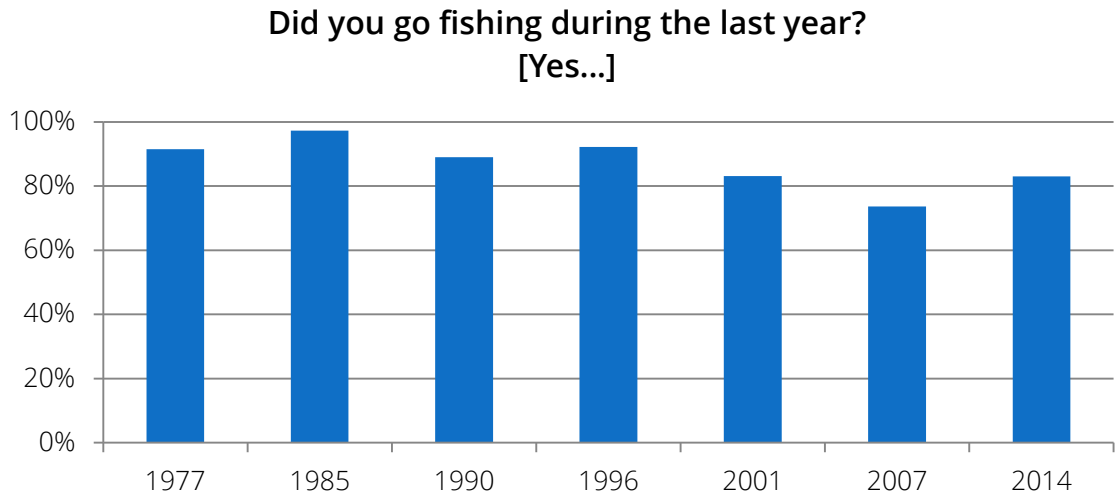

Figure 3. Fishing participation by surveyed Oklahoma anglers, 1977-2014.

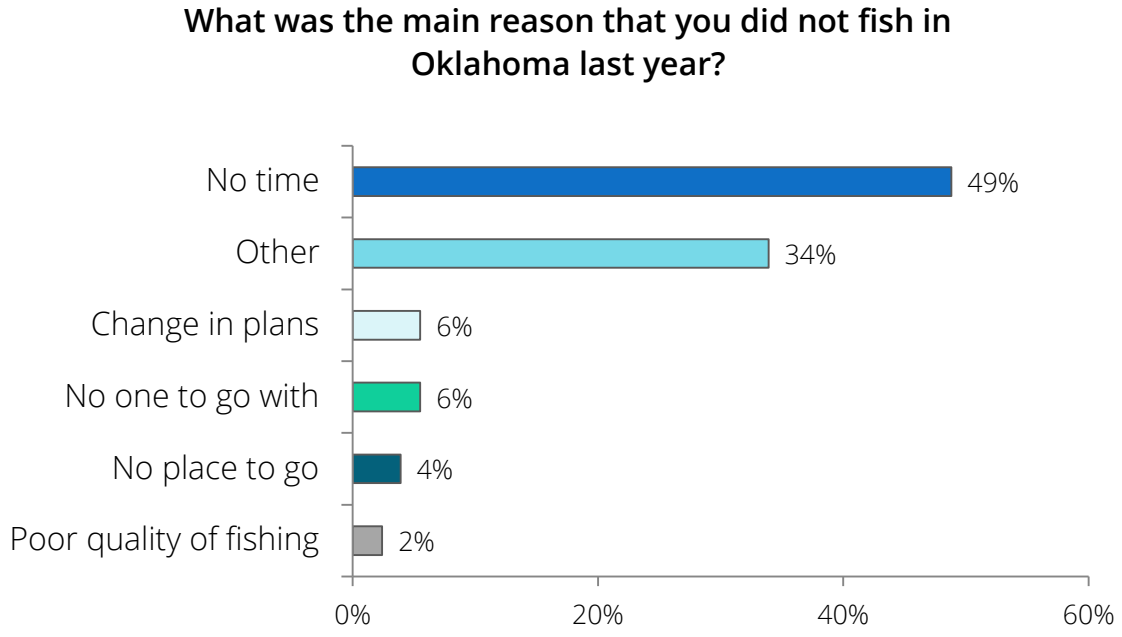

Figure 4. Main reasons for not fishing during the last year (*n* = 127; 2 missing).

Respondents were invited to provide open ended reasons for why they did not go fishing during 2014 to specify "other" responses. The majority did not fish due to heath reasons and due to water levels or drought conditions. A few respondents expressed a general disinterest in fishing.

No further survey questions were asked of license holders who did not fish in 2014. The remainder of this report presents results from respondents who were active anglers (*n* = 641).

The total number of active Oklahoma anglers was estimated by multiplying the percentage of active anglers to the population group: 83% of respondents were active anglers X 722,298 license-holders = 599,507 active anglers in Oklahoma.

Demographics

Active anglers provided a variety of demographic information (Table 2). The average active angler was 48 years old, with the youngest respondent being 15 years old and the oldest 83. Overall, respondent age was skewed toward older adults. On the 2000 Angler Opinion Survey, respondent average age was 44 (Summers and Crews 2002). The majority of responding anglers held an associate's or bachelor's degree and were employed full-time. Household incomes of anglers spread pretty evenly across the income categories. Respondents' ethnicity and race revealed to be less diverse than the overall state diversity. For example, 84% of angler survey respondents were white, whereas only 75% of Oklahomans are white. On the other hand, 11% of respondents were American Indian/Alaskan Native, whereas only 9% of Oklahomans fit into this demographic (U.S. Census Bureau 2015). The average household of respondents was above 3, with many respondent households comprised of families with young children, or older adults with no children.

Table 2. 2014 Oklahoma Angler Survey respondent demographics.

Age	Range	15-83
	Median	48.3
	S.E.	0.56
Education	Did not complete high school	5.3%
	High School Diploma or GED	44%
	Associate's or Technical Degree	22.5%
	Bachelor's Degree	19.9%
	Advanced Degree	8.3%
Employment	Unemployed	2.8%
	Employed PT	6.5%
	Employed FT	65.3%
	Homemaker	3.4%
	Student	2.1%
	Military	0.6%
	Retired	15.3%
	Other	4.1%
Income	<$25,000	11.6%
	$25,000-$49,000	20%
	$50,000-$74,000	24.9%
	$75,000-$99,000	18%
	$100,000-$149,000	16%
	$150,000+	9.5%
Race/Ethnicity	Hispanic/Latino	2.9%
	American Indian/Alaskan Native	11.1%
	Asian/Asian American	1.1%
	Black/African American	0.8%
	White	84.2%
	Bi-racial/Multi-racial	2%
	Other	0.8%
Household Size	Mean	3.23
	Range	1-15
	Mode	2
Household Composition	Family w/ children under 12	31%
	Family w/ teens, no children	9%
	Adults of mixed ages, no children	26%
	Adults >50, no children	34%

In addition to being skewed toward older ages, most active anglers responding to the survey had fished in Oklahoma for a decade or more (Figure 5). There was a significant difference in anglers' years of experience fishing by license category (*P* = 0.001). Nearly all lifetime license holders had been fishing in Oklahoma for over 10 years, while annual/5-year and senior license holders had more varied years of experience.

Most anglers rated fishing as equally important or as important when compared to their other outdoor activities. The level of importance varied by years of experience (*P* =0.038; Figure 6).

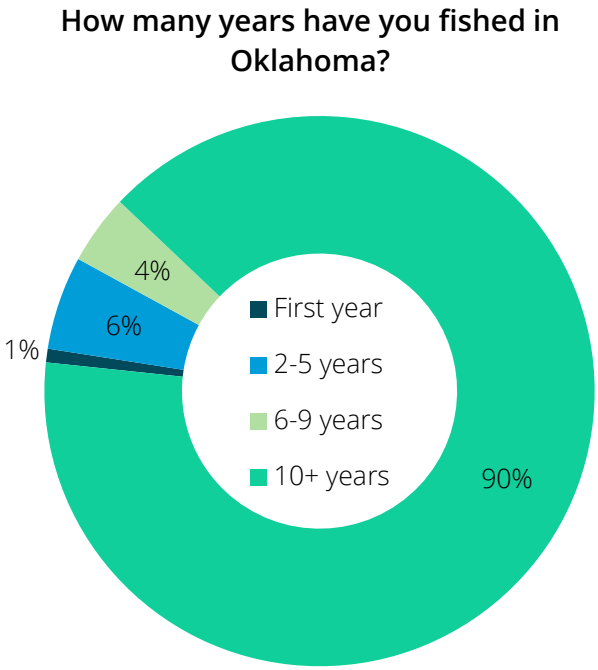

Figure 5. Years of experience fishing in Oklahoma, by active anglers (n = 619; 22 missing).

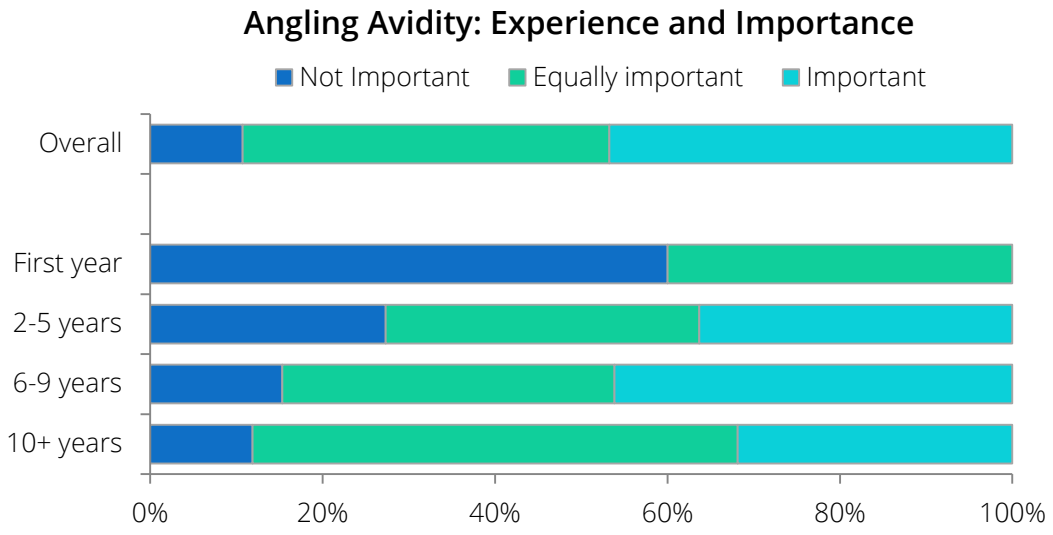

Figure 6. Years of experience fishing in Oklahoma and importance of fishing compared to other outdoor activities (*n* = 614).

Fishing Experiences and Preferences

Oklahoma anglers fished 31 days out of the year on average, and drove 39 miles one-way to their fishing destination. When observed over time, it appears anglers are travelling farther and fishing less than the previous few years (Figure 7).

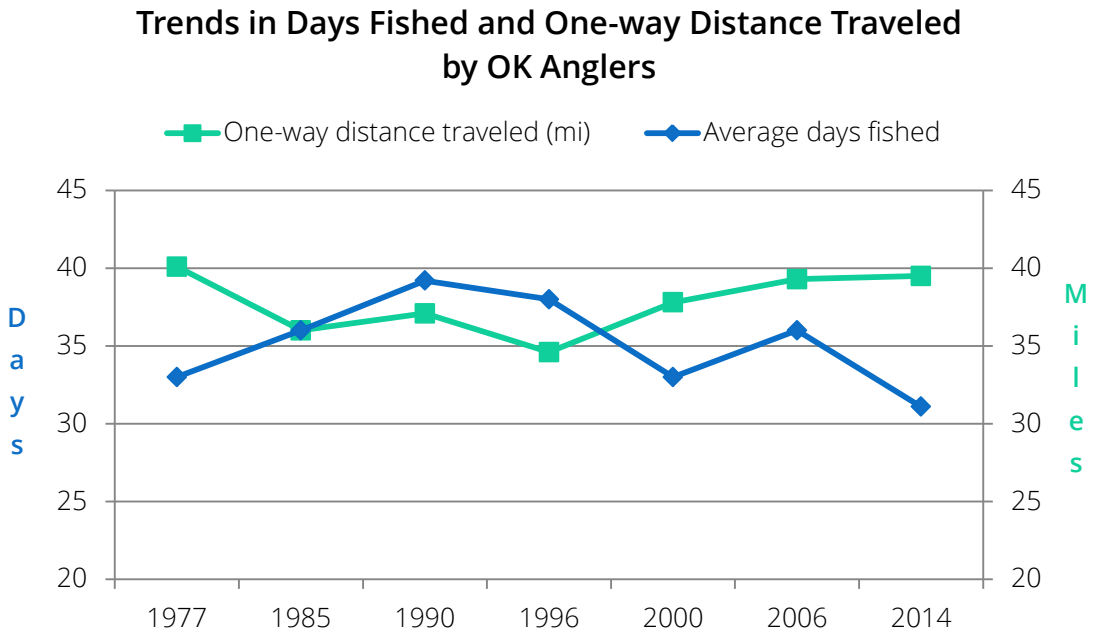

Figure 7. Trends in the average number of days anglers fished in Oklahoma and the average one-way travel distance (map miles) by Oklahoma Anglers.

Oklahoma anglers fished in a variety of water bodies, but most often in lakes and reservoirs (Figure 8). There was a significant difference between license types and where anglers fished most often (*P* = 0.024; Figure 9).

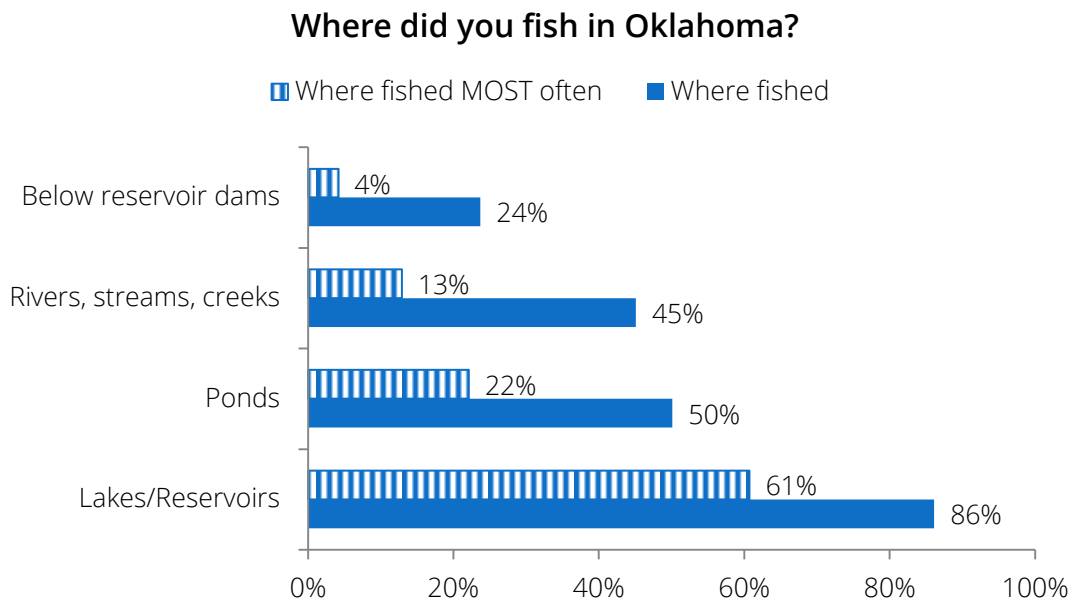

Figure 8. Water bodies that Oklahoma anglers fished during 2014, and water bodies anglers fished most often (*n* = 619; 22 missing).

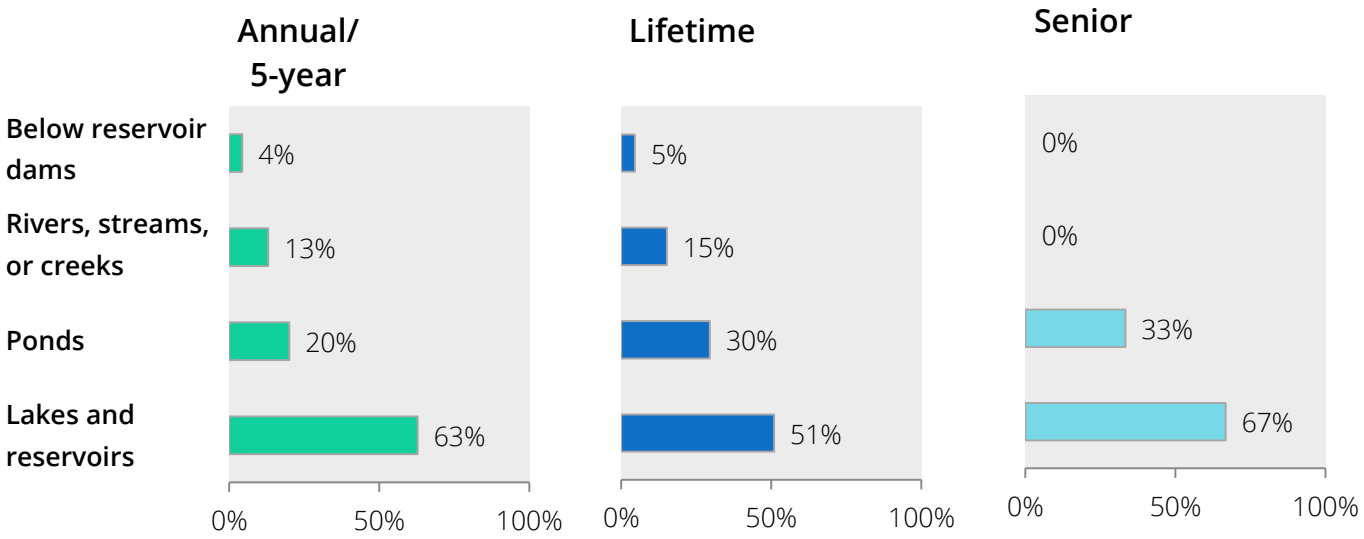

Figure 9. Comparison of water bodies fished most often by license category (Annual/5-year *n* = 486; Lifetime *n* = 112; Senior *n* =21).

Anglers were asked their first second and third choice of species they most preferred to catch (Table 3). 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. Crappie were the species most anglers preferred to catch during 2014, closely followed by largemouth bass. Although crappie earned the most total points, largemouth bass achieved the greatest number of first choice points—meaning more anglers chose largemouth as their number one preferred species. The order of the top seven preferred species to catch by Oklahoma anglers did not change from the 2000 Angler Survey. Preference for Saugeye displayed the greatest change since 2000, with a 3-point drop in rank. Other species moved up or down only 1 or 2 points.

Table 3. Species anglers prefer to catch when fishing, 1985-2014.

Species	2014						Previous Rank				
	1st Choice Points	2nd Choice Points	3rd Choice Points	Total Points	Rank	Rank change 2006-2014	2006	2000	1996	1990	1985
Crappie	765	390	96	1251	1	0	1	2	2	2	2
Largemouth bass	845	279	70	1194	2	0	2	1	1	1	1
Channel catfish	390	258	90	738	3	0	3	3	3	3	3
Blue catfish	315	237	57	609	4	0	4	4	5	5	9
White bass	110	120	55	285	5	0	5	5	4	4	4
Flathead catfish	140	90	37	267	6	0	6	6	6	7	5
Smallmouth bass	80	126	25	231	7	0	7	9	9	6	10
Striped bass	95	81	18	194	8	+1	9	10	8	8	6
Rainbow trout	115	45	12	172	9	+1	10	8	10*	11	8
Sunfish	55	60	43	158	10	-2	8	7	7	10	12
Walleye	70	33	16	119	11	+1	12	11	10*	10	7
Hybrid bass	65	24	18	107	12	-1	11	13	12	12	11
Brown trout	25	27	4	56	13	+2	15	14	13	n/a	n/a
Paddlefish	30	6	6	42	14	+2	16	17	15	18*	17
Spotted bass	10	9	12	31	15	-2	13	12	16	13	13
Gar	10	12	6	28	16	+2	18	18	17	20	18
Saugeye	10	9	7	26	17	-3	14	15	18	14	n/a
Carp	5	12	3	20	18	-1	17	16	14	18*	15

*Indicates a tie

Top species preferences were cross-referenced with water bodies fished most often (Table 4). Crappie and blue catfish anglers almost predominantly fish in lakes and reservoirs. Largemouth bass anglers are nearly split between their time in lakes and reservoirs and ponds. Channel and flathead catfish anglers are more versatile with their fishing locations, with flathead anglers not surprisingly spending a greater amount of time below dams, where the fish are often noodled.

Table 4. Species anglers prefer to catch when fishing, 1985-2014.

Species	**Water Body Fished Most Often**			
	Lakes and Reservoirs	**Ponds**	**Rivers, streams, creeks**	**Below reservoir dams**
Crappie (n=147)	74.8%	12.9%	10.9%	1.4%
Largemouth bass (n=165)	50.3%	46.1%	3.6%	0.0%
Channel catfish (n=74)	54.1%	19.3%	15.7%	2.4%
Flathead catfish (n=28)	46.4%	7.1%	32.1%	14.3%
Blue catfish (n=60)	75.0%	3.3%	18.3%	3.3%

*Percentage of anglers selecting that species as their first choice. Second and third choices are excluded. Species with sample sizes under 25 are also excluded

Rod and reel angling continued to be the fishing method used most often (Figure 10). There was no significant difference between license categories and fishing method preference used most often (*P* = 0.389).

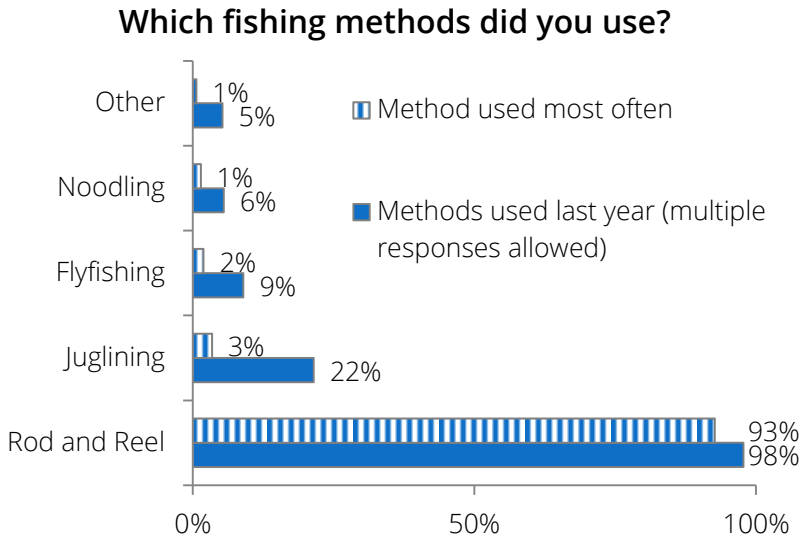

Figure 10. Comparison of fishing methods used during 2014, and methods used most often (*n* = 626; 15 missing).

Oklahoma anglers were asked what type of bait they used most often during the last year of fishing. The majority used artificial bait or lures (54%) and live bait (44%), while a small proportion preferred to use no bait at all (i.e. noodling; 2%; Figure 11).

Bank and boat fishing were most popular across all angers during 2014 (Figure 12). There was a significant difference between license holders and the platform from which they fished most often (*P* = 0.01; Figure 13). While all groups prefer bank fishing, 74% of lifetime anglers utilized a boat for fishing, 59% of annual/5-year license holders used a boat, and only 43% of seniors used a boat.

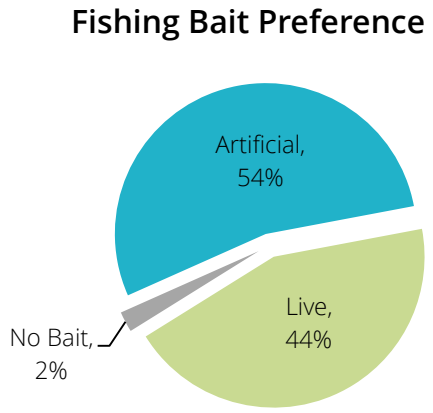

Figure 11. Fishing bait used most often by Oklahoma anglers (*n* = 624; 17 missing).

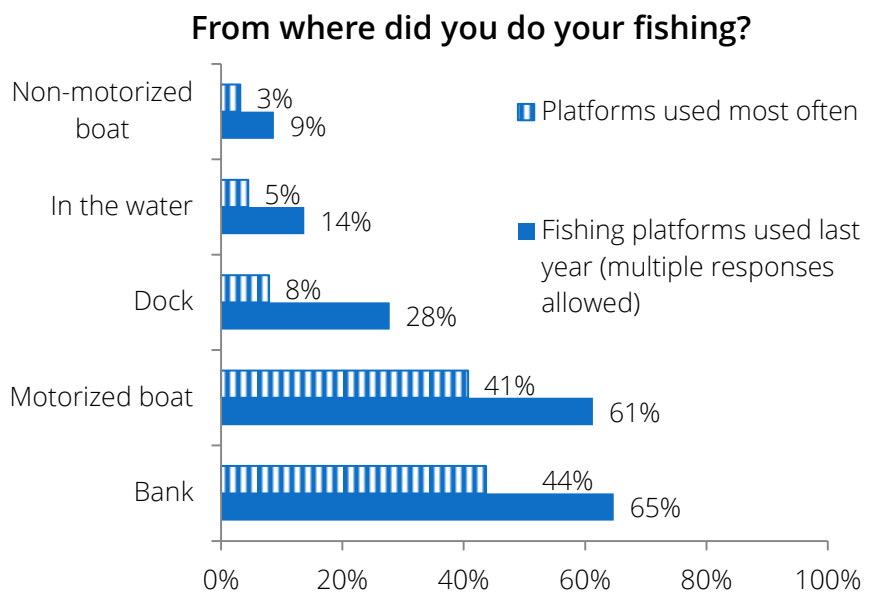

Figure 12. Angling platforms used during 2014, and platforms used most often (*n* = 624; 17 missing).

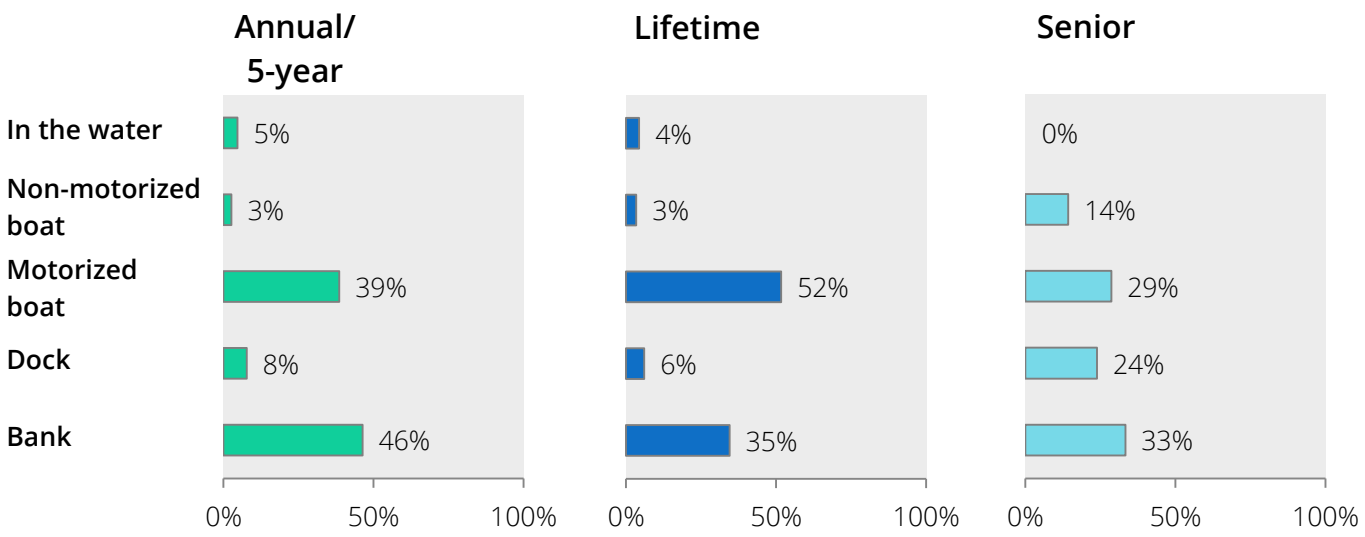

Figure 13. Angling platforms used most often during 2014, by license category (Annual/5-year *n* = 492; Lifetime *n* = 117; Senior *n* = 21).

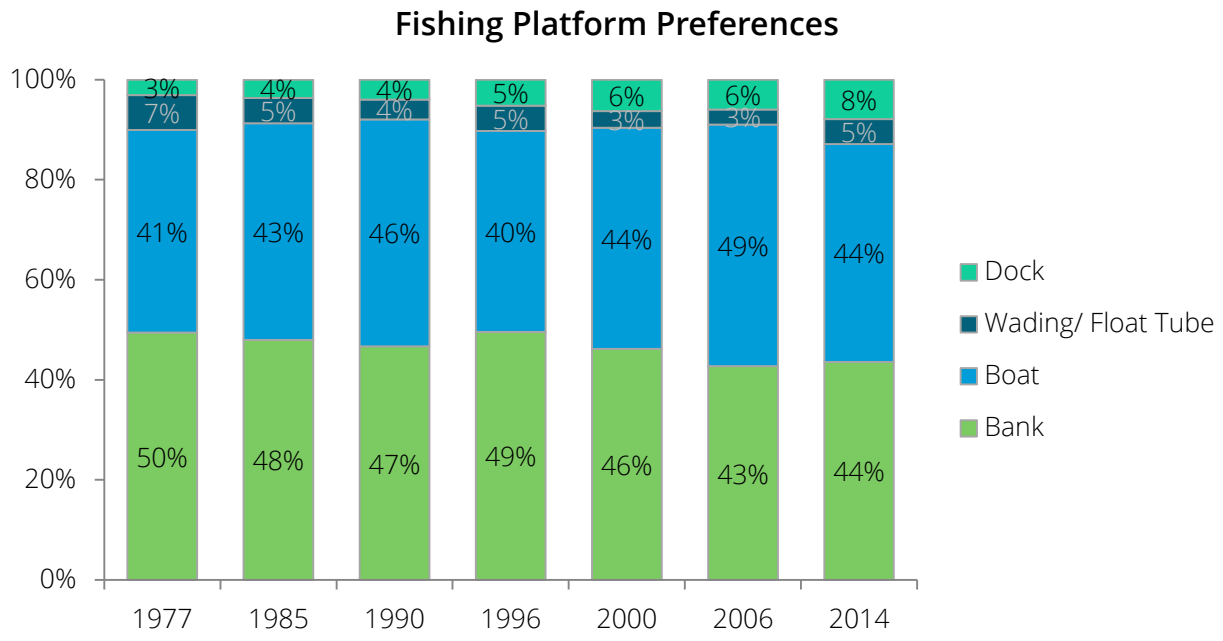

Figure 14. Angling platforms used most often during 1977-2014. In 1977, 1985 used bridge/overpass: lumped into "dock" (less than 1% of responses).

A shifting trend toward fishing platform preferences has started to occur, with more anglers using boats than fishing from the bank. This trend evened out slightly, with the same proportion of 2014 anglers fishing from boats as the bank, and an increase in the proportion of anglers fishing from docks (Figure 14). A shift is perhaps not surprising, as technology improves and becomes more accessible for anglers.

Anglers indicating that they fished from the bank we asked to rate their satisfaction with bank fishing. Forty-seven percent of respondents rated were "satisfied" or "very satisfied" with their bank fishing (Figure 15). Angler's dissatisfaction with bank fishing (Figure 16) was mostly explained by angler's perception of poor quality of fishing associated with bank fishing areas.

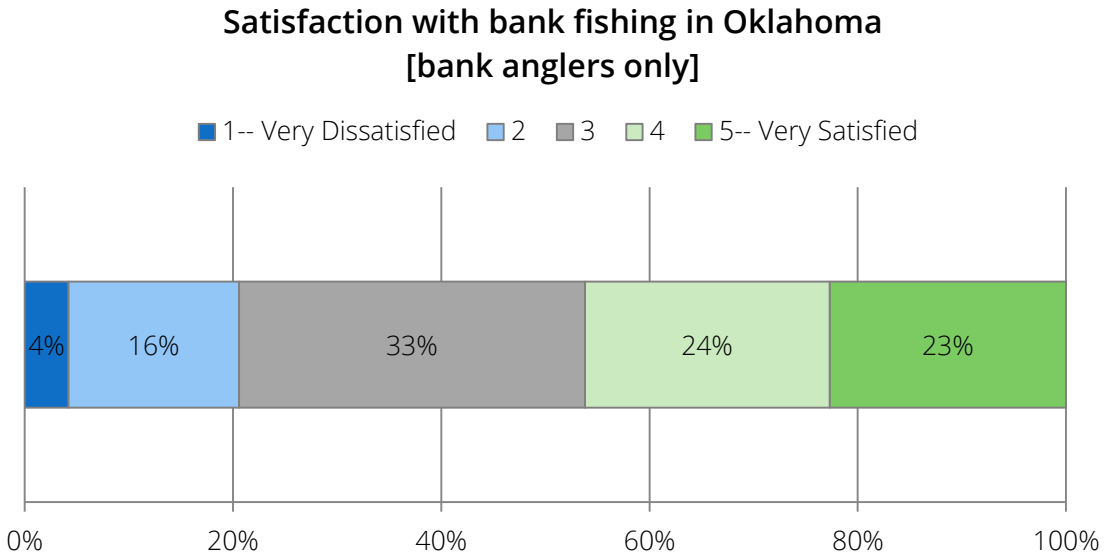

Figure 15. Satisfaction with bank fishing in Oklahoma by anglers that used banks for their fishing during 2014, rated on a scale from 1-5, where 1 = Very dissatisfied and 5 = Very satisfied (n = 379; 36 missing).

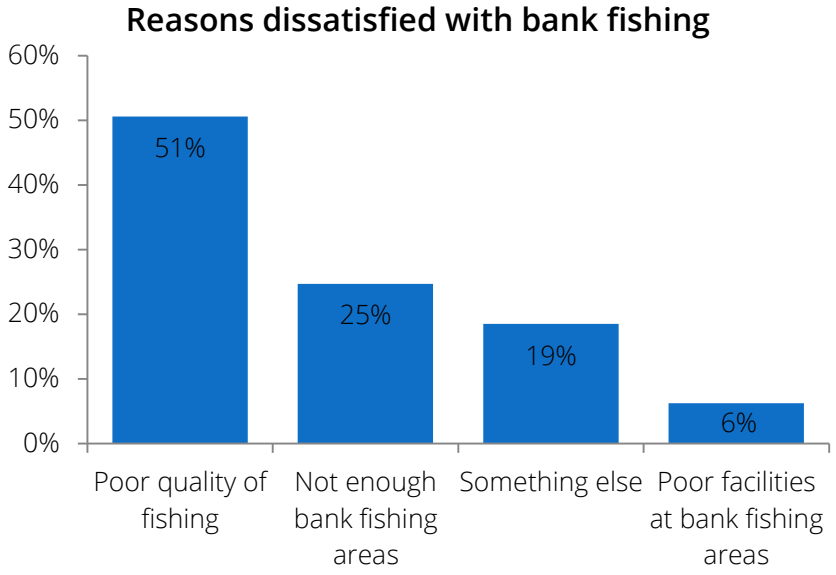

Figure 16. Reasons bank anglers were dissatisfied with Oklahoma bank angling. Responses are only from anglers rating bank angling as 1 or 2 out of 5 (*n* = 77; 1 missing).

The 2014 Angler Survey asked anglers to rate the importance of a variety of reasons one might go fishing. Consistent with the 2007 Angler Survey, Oklahoma anglers felt that relaxation, enjoying nature and the outdoors, and being with friends and family were the most important reasons for fishing (Figure 17). The various aspects of an angler's catch—catching fish to eat, catching a lot of fish, or catching large fish—weighed less heavily as reasons for Oklahoma anglers to go fishing, but were still moderately important.

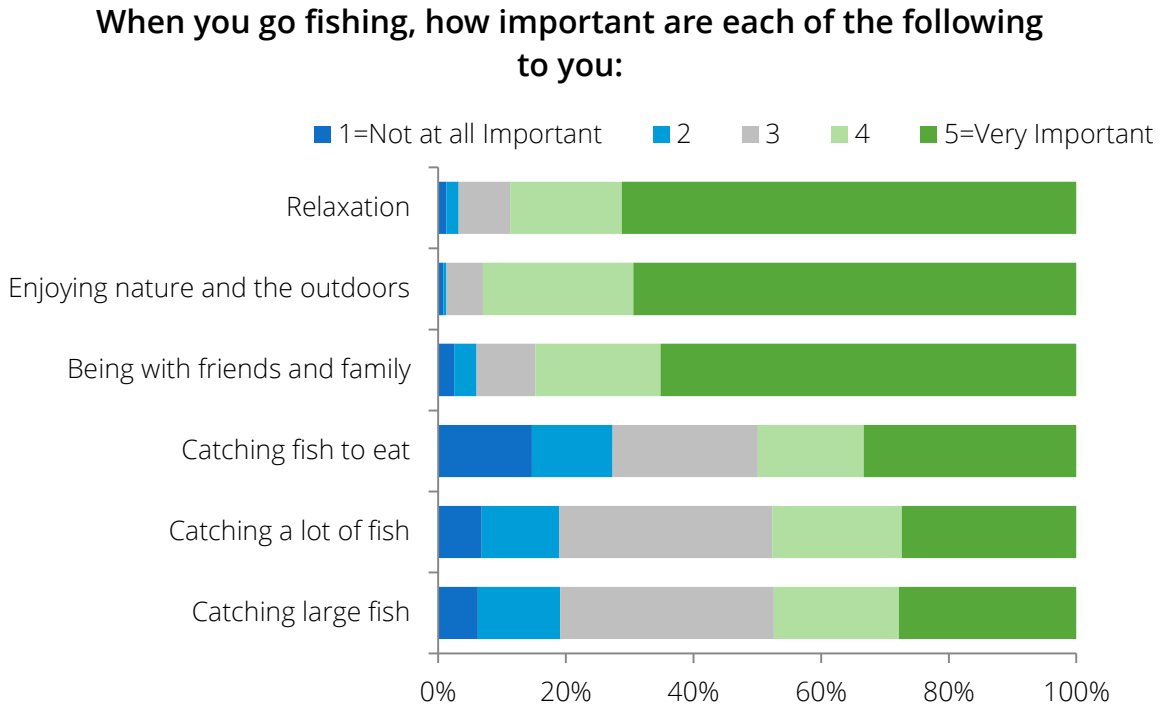

Figure 17. Importance of a variety of reasons anglers go fishing in Oklahoma, rated on a scale from 1-5, where 1 = Not at all important, and 5 = Very important (*n* = 624-627; 13-17 missing).

One aspect of the fishing experience that was explored more closely was catch-and-release fishing. Anglers were asked what proportion of fish they catch are typically released. The majority of Oklahoma anglers practice catch-and-release fishing to some degree (Figure 18). Only ten percent of anglers keep their entire catch. There was no significant difference by license types (*P* = 0.789).

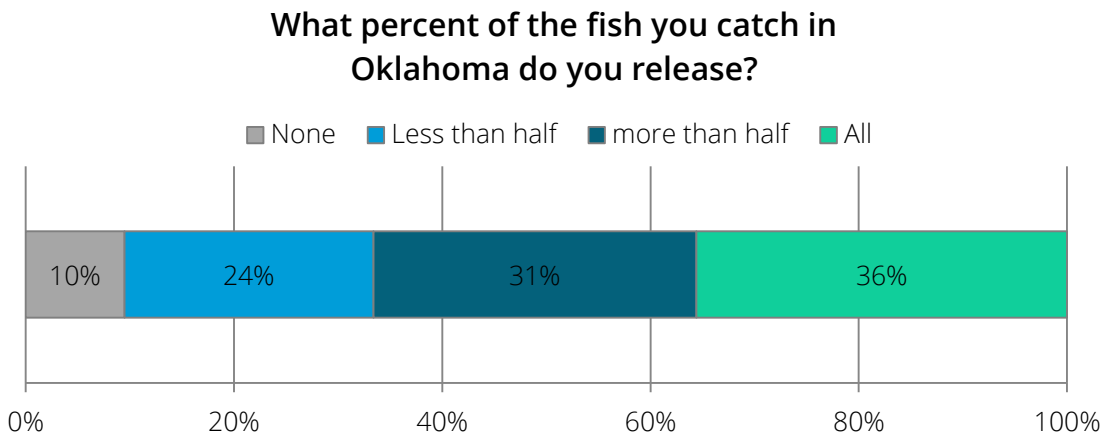

Figure 18. Proportion of fish released that were caught by Oklahoma anglers (*n* = 623; 18 missing).

To understand if fishing traditions are shared with others, such as friends or family, we asked Oklahoma angler who they fished with most often. Overall, anglers fished most often with their family (66%), followed by their friends (24%) and a small group fished alone most often (10%; Figure 19). There was a significant difference between license categories and who they fished with most often. Seniors tended to fish alone more often than annual/5-year and lifetime license holders (P = 0.022).

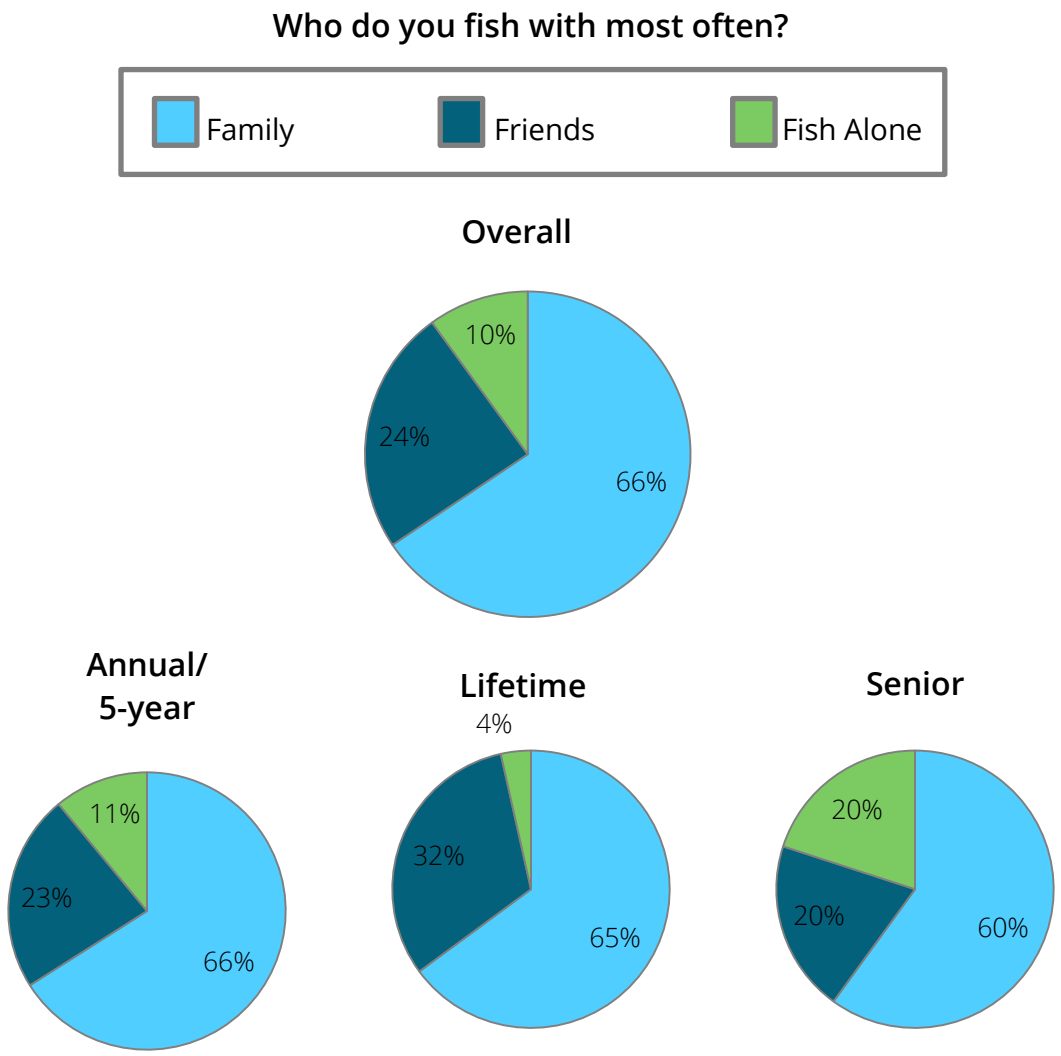

Figure 19. Responses to who Oklahoma anglers fish with most often, overall and by license category (Overall n = 622; Annual/5-year n = 488; Lifetime n = 114; Senior n = 20).

Anglers were also asked specifically if they take kids fishing. Responses were not significantly different by license type, but were significantly different by age group (*P* 0.003; Figure 20). Middle-aged anglers tended to bring kids fishing more often than early adult and senior age groups; this is likely because middle-aged individuals have their own children to take along.

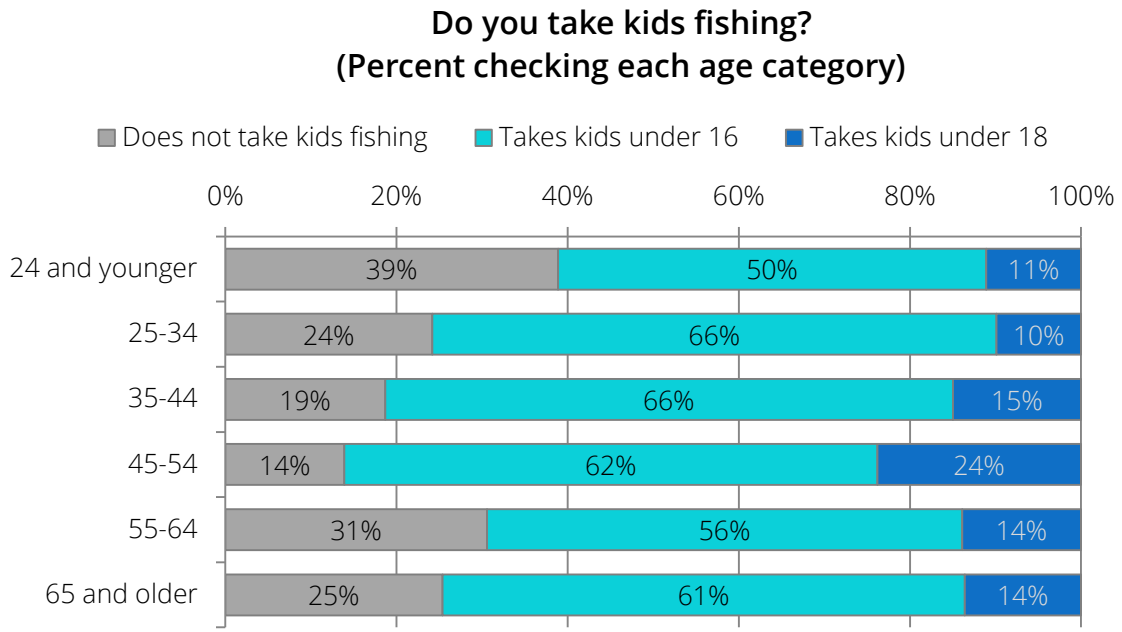

Figure 20. Percentage of anglers that do not take kids fishing, take kids under 16 fishing, and take kids under 18 fishing, by age group (*n* = 671).

Anglers were asked if they were a member of any fishing clubs or organizations. This information can be used to segment anglers by avidity; however a very small group of anglers indicated they were members of fishing clubs or organizations (5.5%; Figure 21). A similar question was posed to anglers on the 1985 Oklahoma Angler survey and only 6.5% indicated they were members of a fishing organization. Anglers that indicated they belong to fishing clubs or organizations had the opportunity to identify those groups. These responses are listed in Appendix C3.

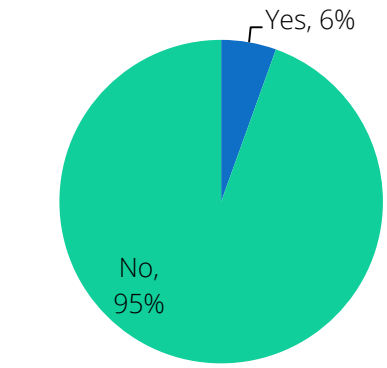

Figure 21. Percentage of Oklahoma anglers belonging to a fishing club or organization (*n* = 623; 18 missing).

Previous angler surveys asked about angler participation in bass tournaments. Just over 90% of anglers on each survey indicated they never fished bass tournaments during the previous year (Figure 22).

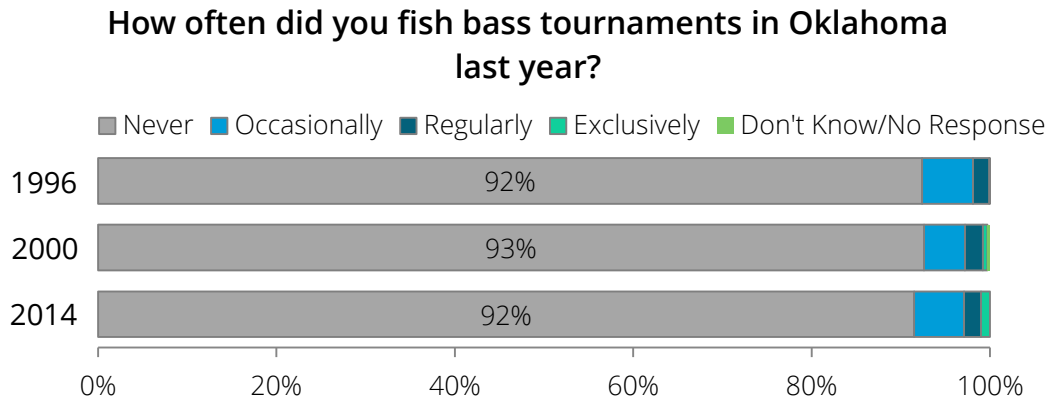

Figure 22. Frequency of participation in Oklahoma bass tournaments by Oklahoma anglers during the year prior to being surveyed, by year: 1997, 2001, and 2014.

Attitudes toward ODWC

The final series of questions focused on anglers' perceptions of the Wildlife Department and their management of Oklahoma Fisheries. First, anglers were asked to rate their satisfaction with items related to fishing regulations and licensing. Of the three items, anglers were most satisfied with the ease of purchasing a fishing license (85% rating a 4- "Satisfied" or 5- "Very Satisfied"; Figure 23). The majority of anglers were also satisfied with the ease of understanding Oklahoma fishing regulations (75% rating a 4 or 5) and the number of Oklahoma fishing regulations (59% rating a 4 or 5). There was no significant difference in responses for any of the items by license category ($P > 0.05$ for all items).

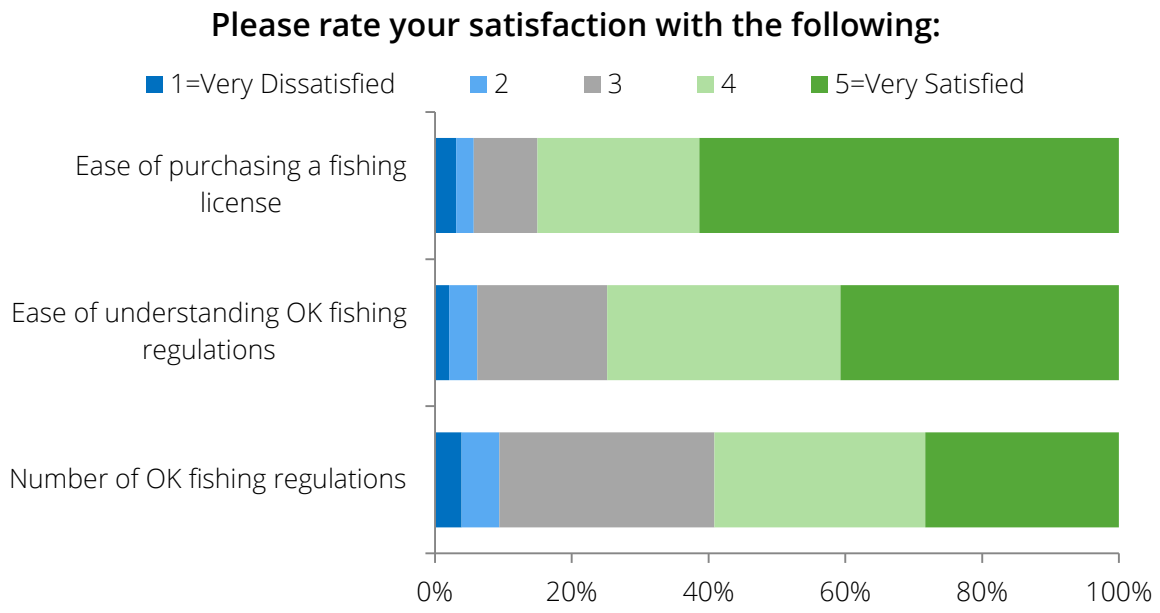

Figure 23. Angler satisfaction with three items related to Oklahoma fishing regulations and licensing (*n* = 614-627; 14-27 missing).

The Oklahoma Wildlife Conservation Department receives its funds differently than other government agencies—through the sale of hunting and fishing licenses, and a federal excise tax on hunting and fishing equipment. We asked Oklahoma anglers how they think the Wildlife Department is funded, providing them with four options, two of which were correct. The majority were aware that hunting and fishing license sales help fund the Wildlife Department (Figure 24). However, less than a third correctly identified the federal excise tax as a source of funding. More than one third also incorrectly identified Wildlife Department funding as coming from state tax dollars or state park fees.

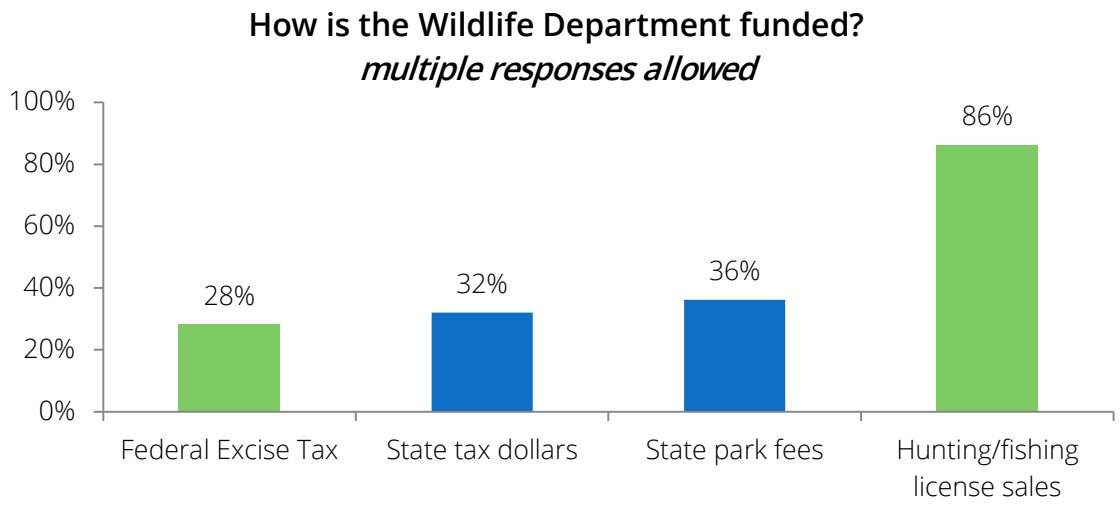

Figure 24. Angler responses to how the Oklahoma Wildlife Department is funded. Each column represents the percentage of respondents checking a given column. Green indicates correct funding sources (*n* = 641).

Taking a look at individual response patterns, we learn that only 7% correctly identified both funding sources, without checking a box for an incorrect funding source (Figure 25). The majority of anglers checked at least one correct box along with one incorrect box. There were no significant differences in responses by license type or by years of experience ($P > 0.05$).

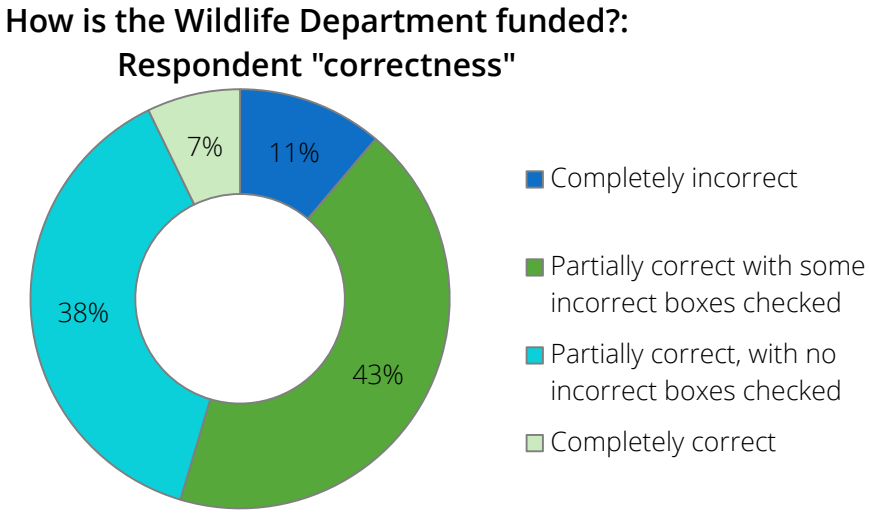

Figure 25. Individual responses patterns to how the Oklahoma Wildlife Department is funded. Percentages show levels of angler "correctness" (*n* = 641).

In consideration of a revised rule for Walleye, we asked anglers to specify which experience they prefer for their walleye fishing. Sixty-three percent of anglers never fish for walleye. Excluding those that do not fish for walleye, 64% would prefer to catch and keep a few 14" – 20" walleye, versus the other options given (Figure 26).

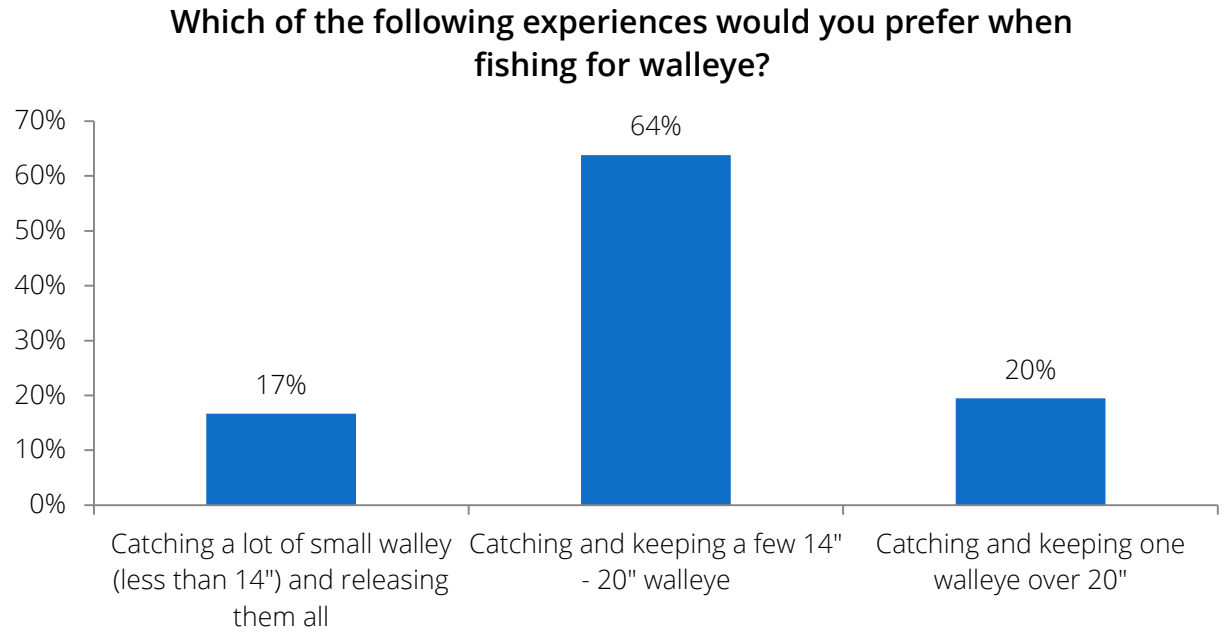

Figure 26. Individual responses patterns to how the Oklahoma Wildlife Department is funded. Percentages show levels of angler "correctness" (*n* = 572; 69 missing).

CONCLUSION

The quinquennial survey of Oklahoma anglers has provided valuable updates and trend information for resource managers since the mid 1970's. These surveys have provided an understanding of angler participation, experiences, preferences and attitudes toward a number of aspects of Oklahoma's fisheries. Interestingly, very little change can be seen for the majority of angling preferences and experiences since the inception of the survey. Fishing in Oklahoma remains a predominantly family-oriented activity. The majority of anglers use fishing as a means to get outside, relax and be with family and friends. However, trend data suggest anglers are spending fewer days on the water, and driving longer distances to get to their fishing destinations. A slight, but notable increase can be seen in the amount of anglers utilizing boats for their fishing. Lastly, anglers fished most often in lakes or reservoirs, and continued to prefer crappie, largemouth bass, and channel catfish over other species.

RECOMMENDATIONS

Only resident fishing license holders with telephone numbers in the database were eligible to be surveyed, yet nearly half of the 2013-2014 fishing license holders were ineligible for sampling because they lacked telephone data. This discrepancy is largely attributed to annual licenses and corresponds with the implementation of point-of-sale licensing at most vendors, where clerks using the electronic interface may have discovered the phone number field is not required. This could be problematic if those anglers who have willingly provided telephone information on their license differ in their angling participation from those that did not provide telephone information. In fact, Oklahoma hunter surveys have shown differences in participation rates between hunters with and without phone numbers on license data (Jager 2014). It is recommended that this potential bias in the angling population be further explored, and considerations be made to address the incomplete sampling frame on future surveys.

Oklahoma angler surveys have traditionally inquired into resident angler populations only. During 2014, over 68 thousand non-resident fishing licenses were sold by the Wildlife Department (Oklahoma Department of Wildlife Conservation 2014). The Wildlife Department could benefit greatly from learning more about these anglers, their participation, preferences and experiences fishing in Oklahoma. Future angler surveys should incorporate the non-resident angling population.

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APPENDIX A

Table A1. Distribution of license types for population (Oklahoma resident fishing license holders), sample, and completed surveys, 2013-2014. Percentages may not add to 100% due to rounding.

	Population		Sample		Completed	
	n	**%**	***n***	**%**	***n***	**%**
Lifetime						
Fishing	36,908	5.1%	140	5%	44	6%
Combination	104,626	14.5%	460	15%	107	14%
Total	***141,534***	***20%***	***600***	***20%***	***151***	***20%***
Senior						
Fishing	58,630	8.1%	49	2%	10	1%
Combination	100,568	13.9%	91	3%	30	4%
Lifetime over 60 combo	1,968	0.3%	4	0%	0	0%
Lifetime over 60 Fishing	6,097	0.8%	6	0%	3	0%
Total	***167,263***	***23%***	***150***	***5%***	***43***	***6%***
Annual						
Fishing	302,006	41.8%	1,393	46%	327	42%
Fishing 2-day	8,424	1.2%	20	1%	3	0%
Combination	24,517	3.4%	191	6%	53	7%
Combination FY	2,258	0.3%	21	1%	6	1%
Youth Fishing	17,223	2.4%	41	1%	9	1%
Youth Combination	3,503	0.5%	20	1%	4	1%
Youth Combination FY	324	0%	5	0%	1	0%
Lake Texoma	21,820	3%	82	3%	28	4%
Total	***380,075***	***53%***	***1,773***	***59%***	***431***	***56%***
Five-Year						
Fishing	22,624	3.1%	314	10%	98	12.7%
Combination	10,802	1.5%	163	5%	47	6.1%
Total	***33,426***	***5%***	***477***	***16%***	***145***	***19%***
Grand Total	**722,298**	**100%**	**3,000**	**100%**	**770**	**100%**

APPENDIX B: SURVEY INSTRUMENT

B1: PRE-SURVEY NOTIFICATION POSTCARD

Nonprofit Org.
US Postage Paid
Norman, OK
Permit No. 35

Oklahoma Department of Wildlife Conservation
P.O. Box 53465 Oklahoma City, OK 73152

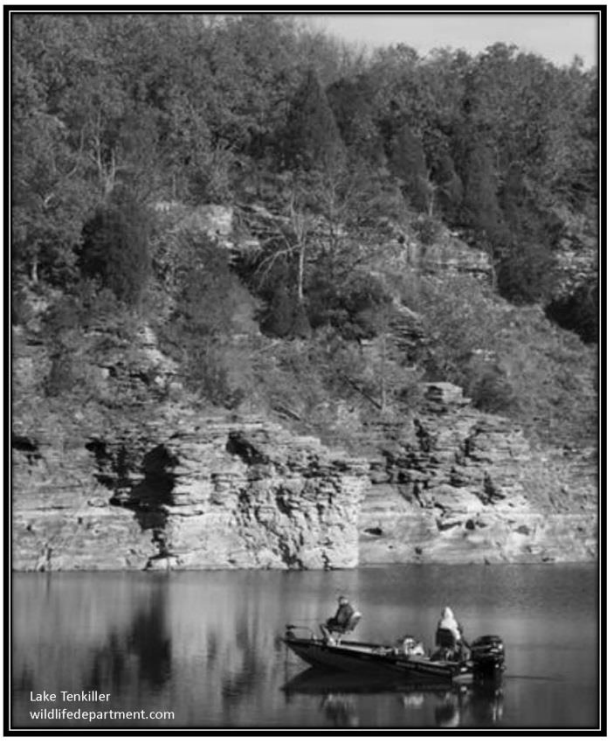
We need your help!

You are part of a sample of Oklahoma anglers selected to participate in an important survey by the Oklahoma Department of Wildlife Conservation. The survey will help us learn about your fishing experiences and preferences, as well as your attitudes toward Oklahoma fisheries management. In about a week, you will receive the survey in the mail, or you can respond online using the link and ID number below.

Take the survey online: http://tinyurl.com/ODWCanglers
ID Number:

We hope you will take a minute to complete this short survey even if you did not fish during the last year. Your answers will help us improve fisheries management and conservation in Oklahoma. Thank you for your time and consideration!

B2: MAIL SURVEY INSTRUMENT



Oklahoma Fishing Survey

ID NUMBER:

The Oklahoma Department of Wildlife Conservation is conducting a survey of fishing license holders. You are one of a few fishing license holders we have contacted, and we need your help -- even if you haven't fished recently. We are interested in learning about your fishing experiences and preferences, as well as your attitudes toward Oklahoma fisheries management. Your answers will help us improve fisheries management and conservation in Oklahoma.

Please help the Wildlife Department by completing your survey in <u>one</u> of the following ways:

1. MAIL: Complete the enclosed survey and mail it to us in the postage-paid envelope provided.

OR

2. ONLINE: Complete the survey online using the ID number found at the top of the this page. Go to **http://tinyurl.com/ODWCanglers** or scan the QR code on the right to access the online survey.

OR

3. PHONE: Wait for us to call you to complete the survey (Caller ID will show "University of Oklahoma") or complete the enclosed survey and leave it by the phone so that someone can read the answers to us when we call. Calls will be made about 2-6 weeks after you received this survey.

Your responses will remain confidential, and at no time will your name be associated with any of your responses

If you have any questions or would like a copy of the report for this study, please contact Corey Jager at (405) 521-4651 or corey.jager@odwc.ok.gov. Your help with this project is greatly appreciated, and we look forward to learning about your Oklahoma fishing experiences!

Your Fishing Activities Last Year. The first part of this survey is about any fishing you did in Oklahoma in the past 12 months.

1. Did you fish <u>in Oklahoma</u> in the past 12 months?

☐ Yes
☐ No → **1a.** What was the **<u>main</u>** reason that you did not fish this year?

Check only one.
☐ Poor quality of fishing
☐ Lack of someone to go fishing with
☐ Lack of a place to go fishing
☐ No time
☐ Change in plans
☐ Other_____

If you did not fish in Oklahoma in the last year, your survey is complete. Thank you, please mail it today. Otherwise, continue to question 2.

2. Where did you fish in Oklahoma? ***Check all that apply.***	**2a.** Where did you fish MOST often? ***Check <u>only one</u>.***
☐ Lakes or Reservoirs	☐ Lakes or Reservoirs
☐ Ponds	☐ Ponds
☐ Rivers, streams or creeks	☐ Rivers, streams or creeks
☐ Below reservoir dams (tailwaters, stilling basins, etc.)	☐ Below reservoir dams (tailwaters, stilling basins, etc.)

3. Approximately how many different days during the last year did you fish in Oklahoma?

_____ Days

4. Approximately how many miles, one-way, did you usually drive to go fishing in Oklahoma?

_____ Miles

Page 2

Thank you for your help. Please mail your completed survey today!
Use the postage-paid envelope provided or mail to:

Public Opinion Learning Laboratory
Cross Center
Alley House Room A-9
The University of Oklahoma
201 E Lindsey St.
Norman, OK 73069-9984

30. What is your ethnicity and race?

Ethnicity:
- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino

Race:
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Bi-racial or multi-racial

31. What is your employment status?

- ☐ Unemployed
- ☐ Employed Part-Time
- ☐ Employed Full-Time
- ☐ Homemaker
- ☐ Student
- ☐ Military
- ☐ Retired
- ☐ Other

32. Total household income before taxes for 2013:

☐Under $25,000	☐$75,000-$99,000
☐$25,000-$49,000	☐$100,000-$149,000
☐$50,000-$74,000	☐$150,000 or over

Please share any additional comments you have about fishing in Oklahoma:

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5. What were the top three types of fish you preferred to catch during the last year? Check one in each section (First Choice, Second Choice, Third Choice).

First Choice: (Check one)	
☐ Channel catfish	☐ Carp
☐ Blue catfish	☐ Sunfish, bluegill, perch, brim, etc.
☐ Flathead catfish	☐ Paddlefish/spoonbill
☐ Crappie	☐ Largemouth bass
☐ Walleye	☐ Smallmouth bass
☐ Saugeye	☐ Spotted/Kentucky bass
☐ Rainbow trout	☐ White/sand bass
☐ Brown trout	☐ Striped bass
☐ Gar	☐ Hybrid striped bass

Second Choice: (Check one)	
☐ Channel catfish	☐ Carp
☐ Blue catfish	☐ Sunfish, bluegill, perch, brim, etc.
☐ Flathead catfish	☐ Paddlefish/spoonbill
☐ Crappie	☐ Largemouth bass
☐ Walleye	☐ Smallmouth bass
☐ Saugeye	☐ Spotted/Kentucky bass
☐ Rainbow trout	☐ White/sand bass
☐ Brown trout	☐ Striped bass
☐ Gar	☐ Hybrid striped bass

Third Choice: (Check one)	
☐ Channel catfish	☐ Carp
☐ Blue catfish	☐ Sunfish, bluegill, perch, brim, etc.
☐ Flathead catfish	☐ Paddlefish/spoonbill
☐ Crappie	☐ Largemouth bass
☐ Walleye	☐ Smallmouth bass
☐ Saugeye	☐ Spotted/Kentucky bass
☐ Rainbow trout	☐ White/sand bass
☐ Brown trout	☐ Striped bass
☐ Gar	☐ Hybrid striped bass

Page 3

6. Which of the following fishing methods did you use during the last year? ***Check all that apply***.	**6a.** Which method did you use MOST often? ***Check only one***.
☐ Rod and Reel	☐ Rod and Reel
☐ Flyfishing	☐ Flyfishing
☐ Juglining	☐ Juglining
☐ Noodling	☐ Noodling
☐ Other methods (bowfishing, gigging, etc.)	☐ Other methods (bowfishing, gigging, etc.)

7. What type of bait did you use most often last year? ***Check only one***.

- ☐ Artificial bait
- ☐ Live bait
- ☐ No bait

8. From where did you do your fishing? ***Check all that apply***.	**8a.** From where did you do MOST of your fishing? ***Check only one***.
☐ Bank	☐ Bank
☐ Dock	☐ Dock
☐ Motorized Boat	☐ Motorized Boat
☐ Non-motorized Boat (kayaks, canoes, etc.)	☐ Non-motorized Boat (kayaks, canoes, etc.)
☐ In the water (wading, float tube, etc.)	☐ In the water (wading, float tube, etc.)

9. Bank anglers only: Please rate your satisfaction with bank fishing in Oklahoma:

Circle a number:

1----------2----------3----------4----------5

Very Dissatisfied *Very Satisfied*

9a. If dissatisfied with bank fishing: Why are you dissatisfied with bank fishing in Oklahoma? ***Check only one.***

- ☐ Not enough bank fishing areas
- ☐ Poor quality of fishing
- ☐ Poor facilities at bank fishing areas
- ☐ Other_____

Page 4

Background Information. The following questions will help us better understand the Wildlife Department's customers. All responses are confidential.

26. What is your home zip code: _____

27. In what year were you were born: _____

28. What is the highest level of school you have completed?

- ☐ Did not complete high school
- ☐ High school diploma or GED
- ☐ Associate's or technical degree
- ☐ Bachelor's degree
- ☐ Advanced degree (Master's, Doctorate, etc.)

29. Please list the number of individuals in your household (**not including you**) that fall within each of the following age categories:

Age	Number in household (not including you)
12 years and under	_____
13-18	_____
19-30	_____
31-40	_____
41-50	_____
51-60	_____
61+	_____

Page 9

Questions about Oklahoma Department of Wildlife Conservation. The following questions will help us learn what you think of the Wildlife Department and how they manage fisheries.

23. Please rate your satisfaction with each of the following: ***Circle a number*** to rate each item.

	Very Dissatisfied				Very Satisfied
Ease of understanding Oklahoma fishing regulations	1	2	3	4	5
Number of Oklahoma fishing regulations	1	2	3	4	5
Ease of purchasing an Oklahoma fishing license	1	2	3	4	5

24. How do you think the Oklahoma Department of Wildlife Conservation is funded? ***Check all that apply.***

- ☐ Federal tax on hunting/fishing equipment
- ☐ State tax dollars
- ☐ State park fees
- ☐ Hunting/fishing license sales

25. If you fish for walleye, which of the following experiences would you prefer to have? ***Check only one.***

Check only one

- ☐ I never fish for walleye
- ☐ Catching a lot of small walleye (less than 14") and releasing them all
- ☐ Catching and keeping a few 14"-20" walleye
- ☐ Catching and keeping one walleye over 20"
- ☐ Don't know/no opinion

Your General Fishing Preferences. The following questions will help us learn about your general preferences when fishing in Oklahoma.

15. When you go fishing, how important are each of the following to you? Circle a number to rate each item.

	Not at all important				Very Important
Catching fish to eat	1	2	3	4	5
Being with friends and family	1	2	3	4	5
Catching a lot of fish	1	2	3	4	5
Enjoying nature and the outdoors	1	2	3	4	5
Catching large fish	1	2	3	4	5
Relaxation	1	2	3	4	5

16. How many years have you fished in Oklahoma? ***Check only one.***

☐ First year ☐ 2-5 years ☐ 6-9 years ☐ 10+ years

Your Most Recent Fishing Experience. The next set of questions are specific to your most recent fishing trip or outing, whether it lasted a few hours or several days.

10. During what month was your **most recent** fishing trip/outing in Oklahoma?

Month _____

11. How many days did this fishing trip/outing last? (Count partial days as full days).

_____ Days

12. Was fishing the main purpose of this trip/outing?

- ☐ Yes
- ☐ No

13. Where did you spend the most time fishing during this trip/outing? (***Check only one***, then follow arrow)

☐ Lake, reservoir or river → **OR** ☐ Pond →

13a. Name of Lake, Reservoir or River: _____

13b. Nearest city/town: _____

13c. County name (if known): _____

13d. Approximately how big was this pond: _____Acres

13e. Nearest city/town: _____

13f. Do you own this pond, either in part or exclusively? ☐ Yes ☐ No

14. About how much money did you personally spend for this trip/outing in the following categories?

Transportation (gas, tolls, etc.):	$_____.00
Lodging/food (motel, restaurant, etc.):	$_____.00
Fishing costs (bait, boat rental, etc.):	$_____.00

17. Approximately what percent of the fish you catch in Oklahoma do you release? ***Check only one.***

- ☐ None; Keep all or almost all of the fish caught.
- ☐ Release less than half of the fish caught.
- ☐ Release more than half of the fish caught.
- ☐ Release all or nearly all of the fish caught.

18. Who do you fish with most often? ***Check only one.***

- ☐ Family
- ☐ Friends
- ☐ Fish alone

19. Do you take kids fishing? ***Check only one.***

- ☐ No
- ☐ Yes- kids all under 16 years
- ☐ Yes- kids all under 18 years

20. Are you a member of any fishing clubs or organizations?

☐ Yes → **20a.** Which one(s): _____

☐ No

21. How often did you fish bass tournaments in Oklahoma last year? ***Check only one.***

☐ Never ☐ Occasionally ☐ Regularly ☐ Exclusively

22. Compared to your other outdoor recreational activities, how important to you is fishing?

Circle a number:

1----------2----------3----------4----------5

Fishing is not at all important — *Fishing is equally important to other activities* — *Fishing is most important activity*