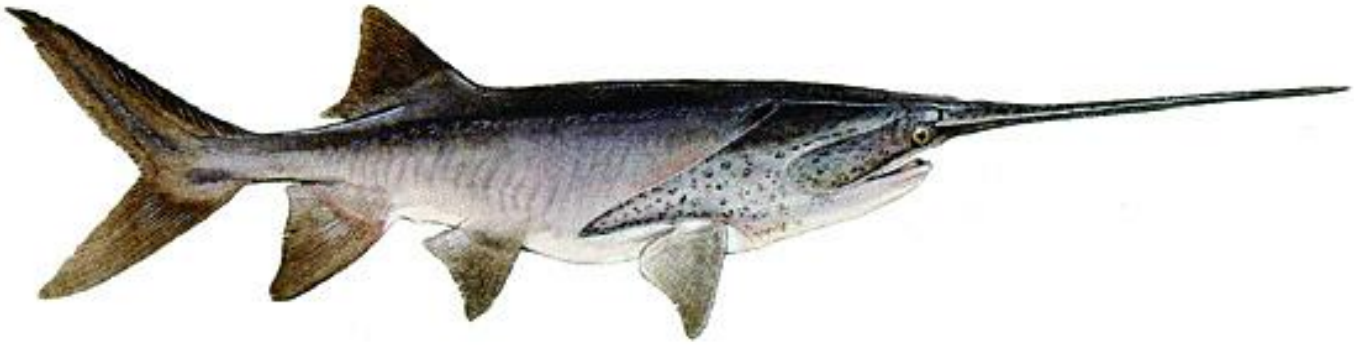
Oklahoma Department of Wildlife Conservation

2015 POST-SEASON SURVEY OF PADDLEFISH PERMIT HOLDERS



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EXECUTIVE SUMMARY

Oklahoma Department of Wildlife Conservation (ODWC) established the Paddlefish Research Center (PRC) on the Neosho River / Grand Lake in 2008; a program which utilizes wild-caught paddlefish donated by anglers to provide data for stock assessment. Anglers receive professionally-cleaned fillets in return and roe from female fish are salvaged to make caviar. The funds from caviar sales contribute to the Department's general fund and benefit fish and wildlife research and conservation programs statewide. Simultaneous with the installation of the PRC, the Department developed the paddlefish permit- a free fishing license addendum required to pursue or harvest paddlefish in Oklahoma. This permit provided the opportunity to identify and survey paddlefish anglers. To date, paddlefish angler surveys have been performed nearly every year since 2008. The purposes of this survey are variable, but generally include identifying and estimating statewide usage of the resource, harvest, and compliance, in addition to angler demographics, satisfaction, attitudes, and motivations related to paddlefish angling in Oklahoma.

The number of paddlefish permits continued to rise, with 85,640 permits issued at the time of sampling (May 25, 2015). A sample of 12,000 permit holders was surveyed, and 2,410 (19%) responses were received. Only 29% of respondents fished for paddlefish, with a notable segment of respondents unintentionally receiving their permit (44%). Unintentionally issued paddlefish permits were most commonly acquired at license dealerships. An estimated 22,891 anglers pursued paddlefish in 2015, an increase of 75% since 2008. Most of the fishery growth is attributed to Oklahoma residents. Boat use continued to rise for paddlefish angling, with disproportionately higher use by non-residents. Fishing pressure was primarily focused on the Grand Lake and Fort Gibson stocks. An increase in the number of days fished was seen in all areas. Catch per unit effort remained relatively stable, and three out of four anglers were successful in catching at least one paddlefish. Most of the successful anglers caught just one or two fish total. The number of fish harvested by anglers declined. Most of Grand Lake harvesting anglers donated their catch to the PRC. Oklahoma continues to recruit anglers to the fishery, with 32% of respondents fishing for paddlefish for the first time in 2015.

On average, resident paddlefish anglers spent $186 on their most recent Oklahoma paddlefishing trip, while non-resident anglers spent $537. Additional economic data from the 2015 survey were analyzed by researchers at Oklahoma State University and provided in the Addendum (*forthcoming*).

The paddlefish angler survey continues to provide a valuable source of information on angler demographics, harvest regulation feedback, and new insights into effective fishery management.

INTRODUCTION

In 2008, the Oklahoma Department of Wildlife Conservation (ODWC) opened a Paddlefish Research Center (PRC[1]) on the Neosho River near Miami, OK. The PRC serves as a collaborative effort between ODWC and recreational paddlefish anglers where wild-caught paddlefish are used as research specimens. Anglers donate their catch to ODWC, who in-turn collects various data metrics from each specimen and returns professionally cleaned fillets back to the angler at no charge. When present, paddlefish roe is removed, processed into caviar, and sold wholesale, providing funds for ODWC fish and wildlife research and conservation programs statewide. As a major component of ODWC's harvest management framework, an annual survey of paddlefish permit holders provides critical feedback including expectations of the fishery, paddlefishing participation, use of the PRC, satisfaction with the experience, and the impact of the PRC on paddlefish harvest. These results will continue to assist with long-range planning of paddlefish harvest management (Schooley et al. 2014) as advocated in the Oklahoma Paddlefish Management Plan (Scarnecchia et al. 2013).

METHODS

Methods for this survey have been consistent since 2008 (see Boxrucker 2009, Crews 2010 and 2011). Paddlefish permit holders provided the sampling frame for post-season mail surveys. Free, annual permits available from license vendors were required of all paddlefish anglers.

In 2015, at the time of sampling (May 25), 85,640 paddlefish permits had been issued. Ninety-one percent of permits were issued through license vendors using the ODWC electronic system, 9% through online sales, and less than 1% directly through the ODWC license section.

Some records were deemed ineligible for the survey and removed from the sampling frame (duplicates and incomplete records). The sampling frame included 84,363 records. A sample of 12,000 permit holders was randomly selected. Sampled permit holders were mailed a pre-survey postcard on June 19, 2015, followed by a survey and cover letter with a postage-paid reply envelope mailed on June 23, 2016. A reminder postcard was mailed on July 8, 2015 to 6,000 randomly selected non-respondents to test the efficacy of reminder postcards on improving overall survey response. A second and final mailing to non-respondents was mailed on July 20, 2015 (Appendix B). Bulk-rate third class mail rates were used; undeliverable surveys were not returned.

[1]Formerly known as the Paddlefish Research and Processing Center, the facility name was permanently changed to Paddlefish Research Center (PRC) in 2012 and is regarded as such throughout this report.

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). Normality was tested using Shapiro-Wilk. In cases of nonparametric data, medians were compared using the Mann-Whitney U test. All tests were considered significant at $P < 0.05$.

Trend comparisons were made to previous Oklahoma Paddlefish Permit-Holder Surveys when appropriate. In most years survey questions were consistent, however, formatting changes were made in 2015 to accommodate economic analyses. In particular, the 2015 survey asked anglers to separately report their total number of overnight trips and day trips, as opposed to asking anglers to report total days fished. Using prior knowledge of Oklahoma paddlefish anglers, fishing locations and additional information provided by anglers on the 2015 survey, we calculated a "total days fished" variable from the number of day and overnight trips anglers reported. We applied this calculated variable to the Days Fished trends (refer to Days Fished section for additional details).

RESULTS AND DISCUSSION

Response Rate

Unique, useable surveys were received from 2,324 paddlefish permit holders through October 5, 2015. The non-adjusted response rate was 19%. (Undeliverable surveys were not returned; an adjusted response rate could not be calculated.) There was a significant difference in response rate by those that received a reminder postcard and those that did not ($P = 0.003$). However, the response by those that received a reminder was only 2% higher than for those that did not receive a reminder (15% compared to 13%, respectively). Since 2010, paddlefish angler survey response rates have continued to decline. The response rate is especially concerning considering ODWC's historical success with surveys (49% - 62% raw response rates on routine in-house hunter and angler surveys).

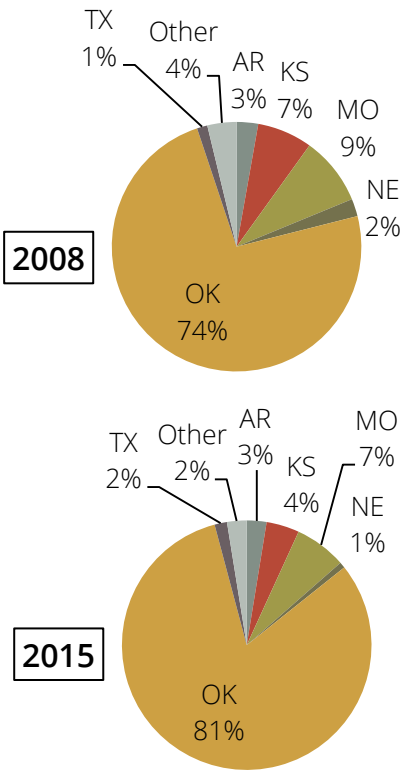
Non-Response Bias

Data from early respondents (received prior to final survey mail preparation on July 14; 51% of all returned surveys) were compared to data from late respondents (49%) for seven selected variables. Differences were found in only one comparison. Early respondents were more likely to be non-residents ($P = 0.005$). Early respondents used their paddlefish privileges proportionately to late respondents during 2015, and were just as likely to fish in the Grand, Keystone, and Fort Gibson regions, as well as other parts of the state. There was no difference in use of the PRC by early and late respondents ($P > 0.05$ in all cases). Data were subsequently not weighted, however in most cases, results are reported independently for residents and non-residents.

Geographic Distribution

Paddlefish permit holders came from 55 states and provinces, as determined by the address used when acquiring the permit (Figure 1 and Table 1). Most permit holders were from Oklahoma (81%). Non-Oklahoma residents with paddlefish permits came from all over the United States, but most frequently from neighboring states: Arkansas, Kansas, and Missouri. The overall distribution of permit holders has changed over the years, with Oklahoma residents comprising a larger proportion of total paddlefish permit holders compared to 2008 (81% compared to 74%). However, the proportion of non-resident paddlefish anglers in 2015 was unchanged from 2014.

GEOGRAPHIC DISTRIBUTION OF PADDLEFISH PERMIT HOLDERS



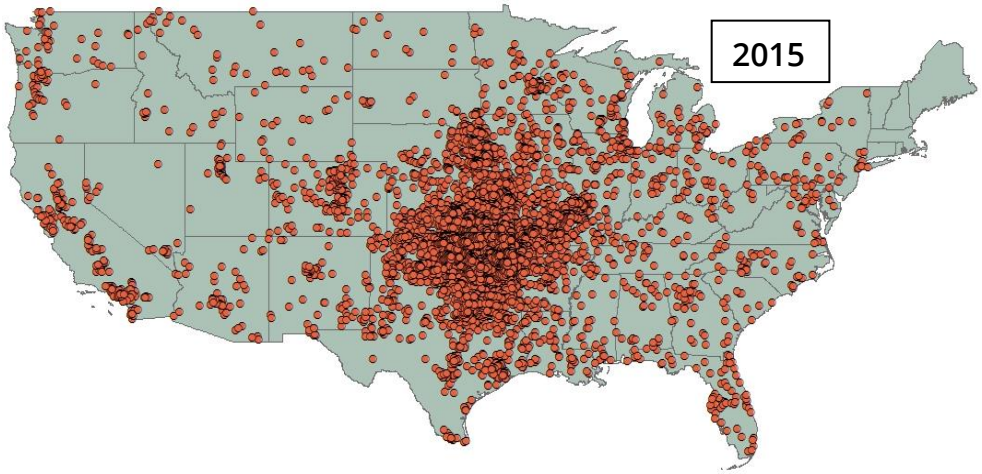


Figure 1. Map (above) displays the distribution of 2015 paddlefish permit holders determined by zip code of residence in the continental U.S. Each dot on the map represents an individual paddlefish permit holder. The pie charts (left) summarize the geographic distribution of paddlefish permit holders for 2008 and 2015.

The randomly selected sample reflected the state distribution found in the population (Table 1). However, in the final respondent dataset, Oklahoma residents were slightly under-represented (by 7%). The differential response rate by residency was statistically significant ($P < 0.001$), but likely linked to higher permit use rate by non-residents (see next section).

State	Population		Sample		Respondents	
	N	%	*n*	%	*n*	%
Non-U.S.	9	0.01	1	0.01	1	0.04
AA	41	0.05	4	0.03	2	0.09
AK	18	0.02	2	0.02	0	0.00
AL	31	0.04	3	0.03	0	0.00
AR	2,162	2.56	303	2.53	75	3.23
AZ	72	0.09	12	0.10	1	0.04
CA	187	0.22	30	0.25	5	0.22
CO	248	0.29	29	0.24	9	0.39
CT	3	0.00	1	0.01	0	0.00
DC	1	0.00	0	0.00	0	0.00
DE	2	0.00	0	0.00	0	0.00
FL	71	0.08	8	0.07	1	0.04
GA	48	0.06	7	0.06	2	0.09
HI	2	0.00	1	0.01	0	0.00
IA	274	0.32	40	0.33	16	0.69
ID	21	0.02	2	0.02	0	0.00
IL	124	0.15	17	0.14	6	0.26
IN	40	0.05	7	0.06	2	0.09
KS	3,601	4.27	492	4.10	175	7.53
KY	30	0.04	2	0.02	0	0.00
LA	71	0.08	7	0.06	1	0.04
MA	5	0.01	1	0.01	0	0.00
MD	11	0.01	1	0.01	0	0.00
ME	2	0.00	0	0.00	0	0.00
MI	46	0.05	7	0.06	3	0.13
MN	131	0.16	18	0.15	2	0.09
MO	5,651	6.70	774	6.45	190	8.18
MS	30	0.04	6	0.05	2	0.09
MT	33	0.04	4	0.03	0	0.00
NC	35	0.04	5	0.04	0	0.00
ND	13	0.02	2	0.02	0	0.00
NE	639	0.76	85	0.71	32	1.38
NH	2	0.00	0	0.00	0	0.00
NJ	9	0.01	0	0.00	0	0.00
NM	68	0.08	9	0.08	2	0.09
NV	20	0.02	4	0.03	1	0.04
NY	26	0.03	3	0.03	0	0.00
OH	29	0.03	7	0.06	3	0.13
OK	68,808	81.56	9,860	82.17	1,741	74.91
OR	39	0.05	5	0.04	1	0.04
PA	34	0.04	6	0.05	3	0.13
RI	1	0.00	0	0.00	0	0.00
SC	10	0.01	0	0.00	0	0.00
SD	50	0.06	5	0.04	3	0.13
TN	33	0.04	6	0.05	2	0.09
TX	1,358	1.61	192	1.60	37	1.59
UT	32	0.04	1	0.01	0	0.00
VA	15	0.02	2	0.02	1	0.04
WA	54	0.06	8	0.07	0	0.00
WI	84	0.10	13	0.11	3	0.13
WV	8	0.01	3	0.03	1	0.04
WY	30	0.04	5	0.04	1	0.04
Total	84,362	100.00	12,000	100.00	2,324	100.00

Table 1 (right). 2015 distribution of paddlefish permit holders by state/province for population, sample and respondents.

Use of the Paddlefish Permit

ODWC suspected the number of paddlefish anglers, as measured by permits issued, was exaggerated. Some anglers requested the permit along with their fishing license "just in case" or simply because it was free. Also, some vendors automatically issued the free permit along with each fishing license sale. The number of permits issued at the time sampling occurred (usually in May or June) has more than doubled since the PRC opened in 2008 (Table 2).

Table 2. Number of permits issued at the time of sampling for the survey in the spring, 2008-2015. These numbers do not reflect total, annual permit issuance (through Dec. 31).

Year (as of date)	Total permits issued
2008 (6/12/08)	29,387
2009 (5/18/09)	33,488
2010 (5/24/10)	39,018
2011 (5/27/11)	46,060
2012 (5/15/12)	59,978
2014 (5/22/14)	74,599
2015 (5/25/15)	84,362

The initial question on the survey sought to assess this suspected inflation. Overall, 29% of respondents in 2015 fished for paddlefish (Figure 2). Non-residents were more likely to use their paddlefish fishing permit privileges than residents (41% participation compared to 24% for residents; $P < 0.001$). Seventy-one percent of survey respondents did not fish for paddlefish in 2015. The majority of respondents who did not fish reported unintentionally receiving a paddlefish permit. (Respondents who did not fish and did not indicate whether or not their permit acquisition was intentional [i.e., "missing" $n = 83$] were counted among those who did not intend to get a permit.) The percentage of survey respondents unintentionally receiving paddlefish permits has steadily increased over the years. See Table A1 for 2008-2015 responses by residency.

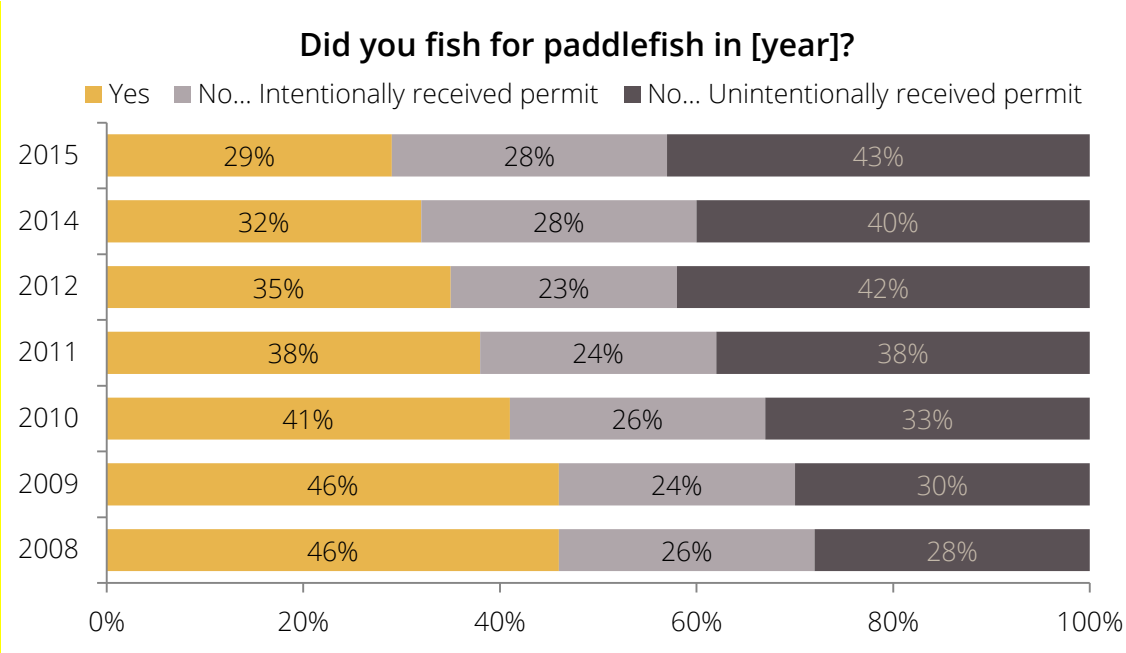


Figure 2. Use of paddlefish permit priviledges and intentions to receive paddlefish permit, by year.

Fishing licenses and relevant fishing privileges can be purchased using one of three venues: online, through license dealers (such as Walmart, bait shops, etc.), and at the ODWC Central Office. The majority of paddlefish permits are issued through license dealers, which is also where the greatest proportion of anglers acquired paddlefish permits unintentionally (Table 3).

Table 3. Use of paddlefish permit privileges in 2015, by permitting system and by residency (*n* = 2,324). Respondents who did not fish and did not indicate whether or not their permit acquisition was intentional [i.e., "missing" *n* = 83] were counted among those who did not intend to get a permit.

	Permitting system/location:	**Fished for paddlefish?**		
		Yes	**No- Intentionally got permit**	**No- Unintentionally got permit**
Resident	Online (*n*=259)	62%	31%	7%
	License Dealer (*n*=1,476)	18%	30%	52%
	ODWC Central Office (*n*=6)	100%	0%	0%
Non-Resident	Online (*n*=115)	72%	22%	6%
	License Dealer (*n*=468)	34%	22%	44%
	ODWC Central Office (*n*=0)	-	-	-

The number of active paddlefish anglers was estimated, overall and by residency (Figure 3). Estimates were calculated by multiplying the percentage of active anglers to the respective population group (Ex: 24% of resident permit-holders were active in 2015 X 68,808 resident permit-holders = 16,513 estimated active resident paddlefish anglers). The estimated number of paddlefish anglers decreased slightly from 2014. However, since 2008, the total number of anglers has increased by 71%. Much of the growth is attributed to resident anglers, as this group has increased by 93% since 2008. Non-resident anglers have increased by 32% since 2008. The overall growth could reflect growing popularity of the sport, increased familiarity with the permitting process, or both.

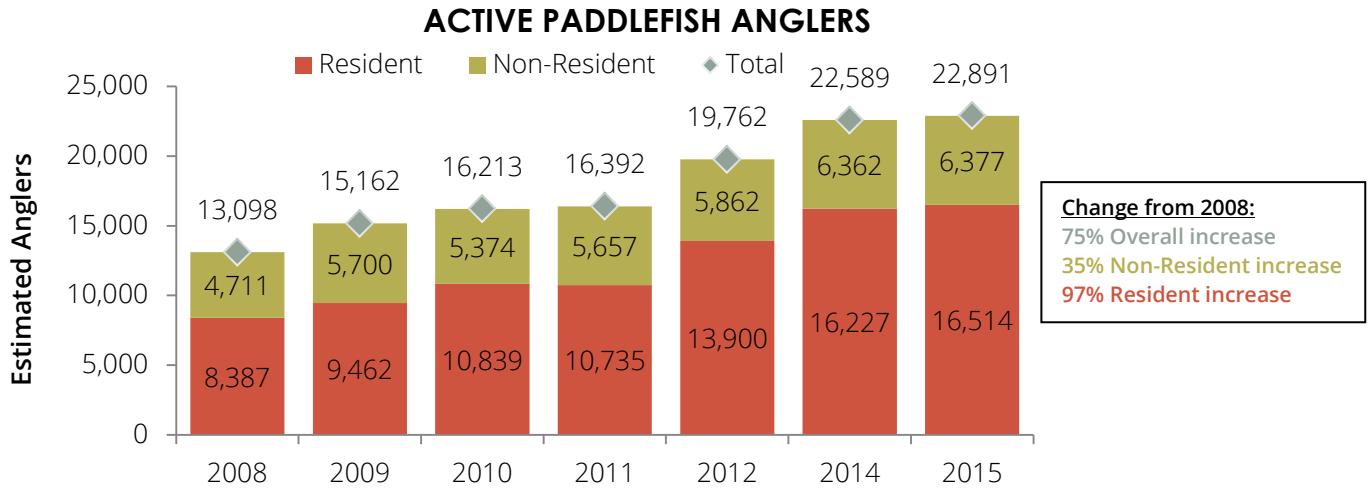


Figure 3. Estimated number of active paddlefish anglers by residency, and by year. Estimates calculated by applying percentage of active paddlefish anglers to the number in each respective paddlefish angler population.

No further survey questions were asked of permit holders who did not fish for paddlefish. The remainder of this report presents results from respondents who fished for paddlefish (2008 n = 734; 2009 n = 1,884; 2010 n = 1,863; 2011 n = 1,177; 2012 n = 971; 2014 n = 770; 2015 n = 679). Each year, thirty to forty percent of the active paddlefish anglers surveyed were non-residents (Table A2). Because the needs and expectations of residents and non-residents may differ, many survey items were analyzed by residency.

Location of Paddlefish Angling Across the State

Active paddlefish anglers were asked if they fished in each of three major paddlefish fisheries (Grand Lake, Fort Gibson and Keystone) or anywhere else in the state. Overall, the Grand Lake fishery was used by the largest portion of 2015 paddlefish anglers (Figure 4). However, the popularity of the Grand Lake area was largely driven by non-residents, who were nearly three times as likely to fish the area as residents (P - < 0.001). Residents were more likely than non-residents to use the Fort Gibson area (P - < 0.001) and the Keystone area ($P < 0.001$). The majority of anglers did not fish in other locations in Oklahoma (75%), but for those that did, most of the focus was proximal to Grand Lake or Fort Gibson (e.g. Hudson Lake and the Neosho/Grand River below Fort Gibson dam). Residents were more likely to fish in other locations ($P <$ 0.001), perhaps due to an increased awareness of local geography. See Table A3 for 2008-2015 data.

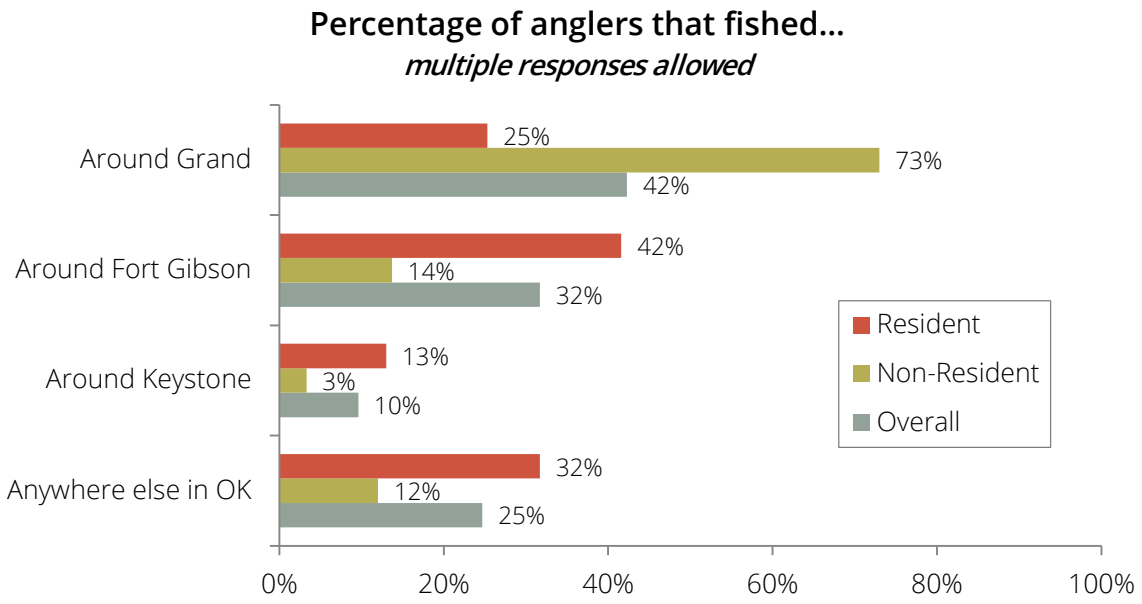


Figure 4. Percent of active paddlefish permit holders fishing at each area in 2015 overall and by residency (Overall n = 679; Residents n = 438; Non-residents n = 241).

In addition to asking anglers which bodies of water they fished for paddlefish, we examined anglers' preferences for boat and shore fishing. Boat angling has increased in popularity for both residents and non-residents since 2008 (Jager 2014); however, resident paddlefish anglers continued to utilize the shore more often than they used boats (Figure 5). The difference between resident and non-resident angling preferences was significant (P <0.001). Grand Lake and Ft. Gibson Lake anglers used boats more often than the shore, whereas Keystone Lake anglers and anglers fishing in other areas tended to use the shore more frequently (Table 4).

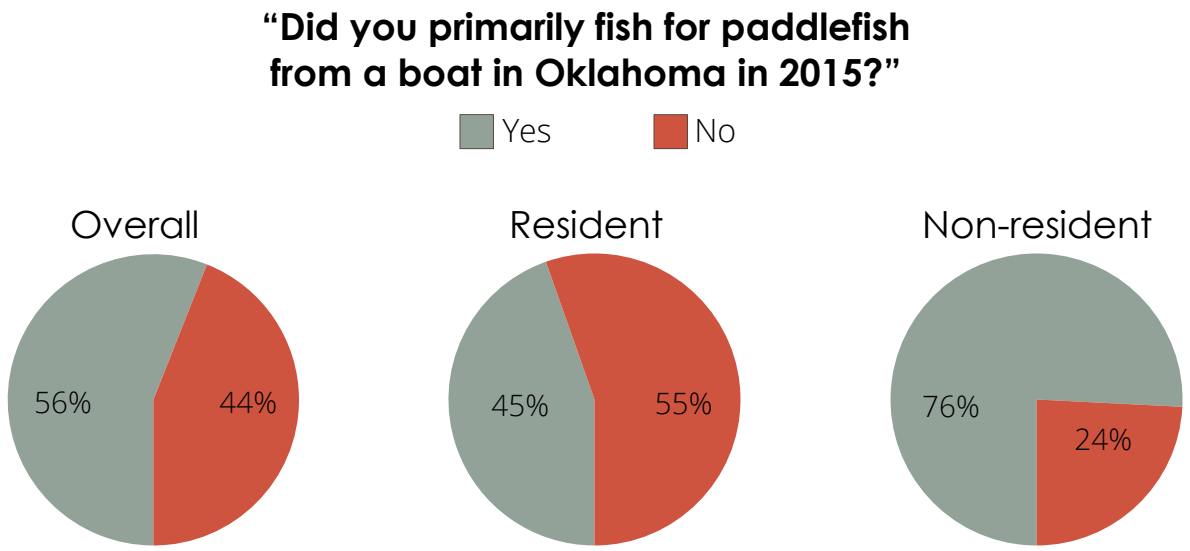


Figure 5. Angler preference for fishing primarily from a boat for paddlefish in 2015 (Overall n = 622; Residents n = 395; Non-residents n = 227).

Table 4. Comparison of 2015 paddlefish angling preferences—boat or shore—by region fished (n = 622).

	Grand Lake Region	Ft. Gibson Lake Region	Keystone Lake Region	Other Areas
Boat Angler (n = 348)	64%	58%	13%	42%
Shore Angler* (n = 274)	36%	42%	87%	58%

*Assumes that anglers who reported not primarily fishing from a boat in 2015 are primarily shore anglers (alternative fishing platforms were not identified in question or response items).

Days Fished

Trends for the average number of days anglers paddlefished around Grand Lake, Fort Gibson and Keystone are shown in Figure 6. The average number of days spent paddlefishing in all major Regions increased from 2014. Days spent fishing in the Keystone Lake Region have steadily increased since 2012, presumably a sociological response to the 125lb state record paddlefish snagged in the Arkansas River near Cleveland, OK in 2011. The number of days fished per angler in Grand and Ft. Gibson Lake Regions has been gently declining during the period studied, although the decline may be due to increased harvest efficiency. In both locations, 2014 represented the fewest days fished per angler, which may be due in part to low river discharge, reduced fish availability, and major harvest regulation changes (Schooley et al. 2014). Descriptive statistics for all years and median differences by residency, when present, are shown in Table A4.

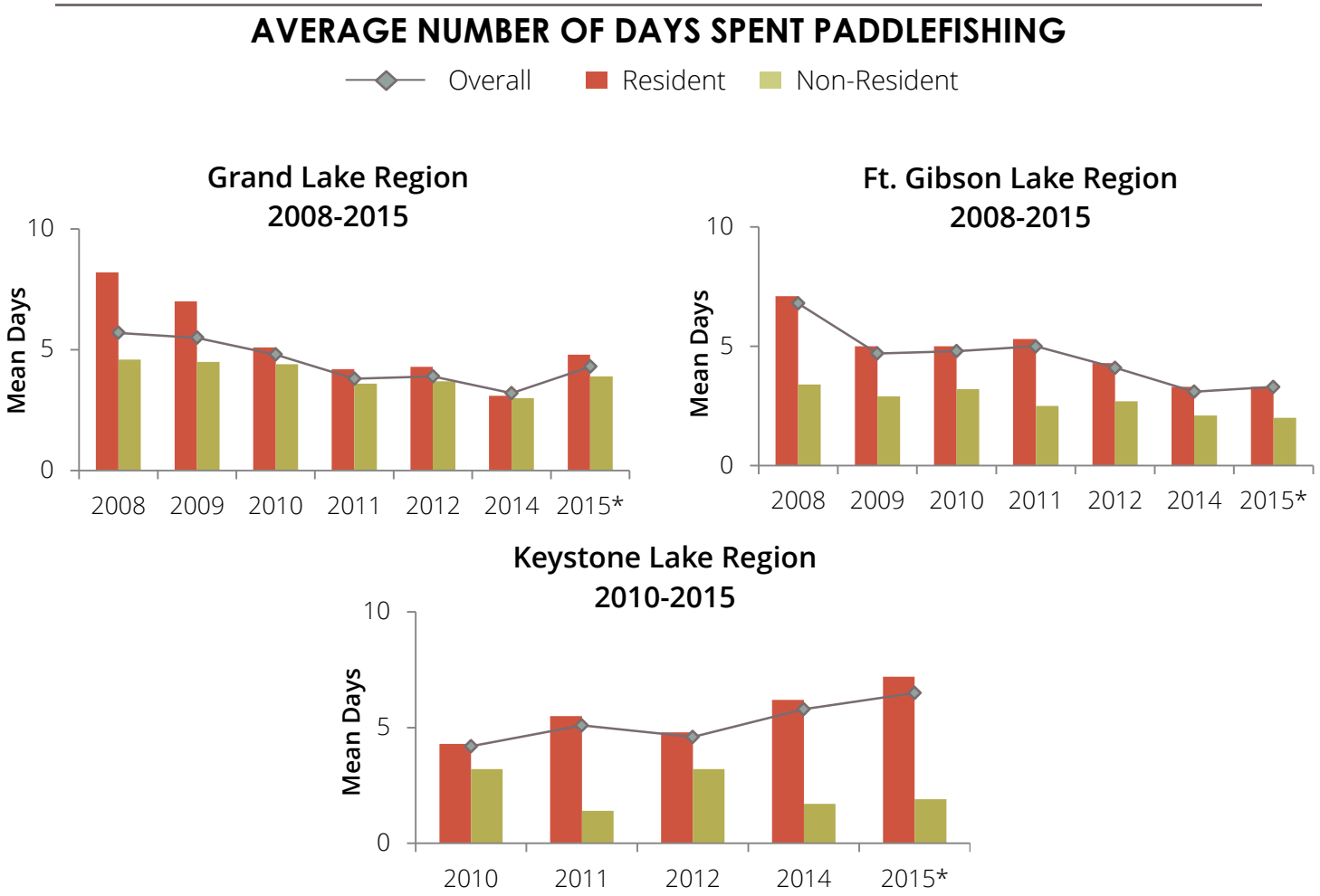


Figure 6. Average number of days anglers fished for paddlefish in the Grand Lake Region, Ft. Gibson Lake Region, 2008-2015; and Keystone Lake Region, 2010-2015.

*Survey questionnaires for 2008-2014 asked anglers to report total days fished in each area, whereas the 2015 questionnaire asked anglers to report their total number of day trips and overnight trips for each area. We calculated a mean number of days for overnight trips using a question about the *most recent* trip. Means were calculated by residency and area, multiplied by the number of overnight trips, and added to the number of day trips for a combined mean for days fished.

Fish Kept

Trends for the average number of fish anglers kept (harvested) around Grand Lake, Fort Gibson and Keystone are shown in Figure 7. Harvest trends reflect regulatory changes implemented in 2010 and 2014. (In 2010, Mondays and Fridays became catch and release only, and the Spring River was closed to paddlefishing. In 2014 annual harvest was reduced to two fish per angler.) Although the number of fish kept per angler in the Grand Lake and Ft. Gibson Lake Regions have trended downward since 2008, the total harvest is distributed among a growing number of anglers (Fig. 3). Average harvest in the Keystone Lake Region has remained stable across years data were collected, other than a one-year increase in 2012. Descriptive statistics for all years and median differences by residency, when present, are shown in Table A5.

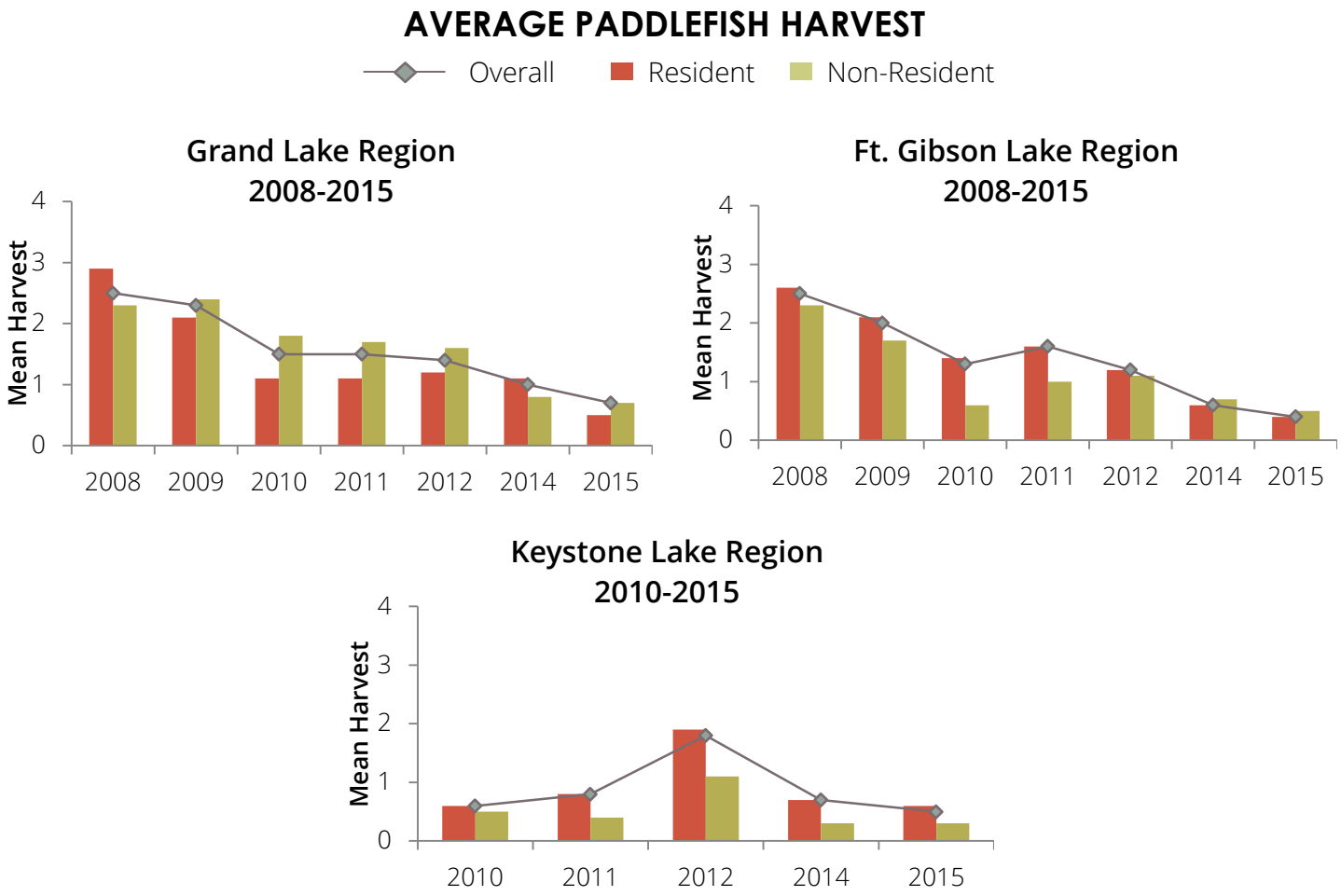


Figure 7. Average number of paddlefish kept in the Grand Lake Region, Ft. Gibson Lake Region, 2008-2015; and Keystone Lake Region, 2010-2015.

Fish Released

Trends for the average number of fish caught and released by anglers around Grand Lake, Fort Gibson and Keystone are shown in Figure 8. Grand Lake Region catch and release numbers have slowly trended downward since 2008. Non-resident catch and release numbers in the Ft. Gibson Lake area have trended far above resident anglers since 2012, while resident catch and release in this area has slowly trended downward. This may related to the Ft. Gibson region receiving increasing attention from non-resident anglers (presumably utilizing boats): increasing to 14% in 2014 and 2015 from ≤8% in 2008-2012 (Table A3). Further, local conditions at the Ft. Gibson area such as high stock abundance and upstream movement barriers (low-water dam and Markham Ferry Dam) result in a highly accessible fishery to a snag angler with boating mobility. The average number of fish released in the Keystone Lake Region has remained relatively stable since 2008, despite a large increase in released fish by resident anglers in 2014. Descriptive statistics for all years and median differences by residency, when present, are shown in Table A6.

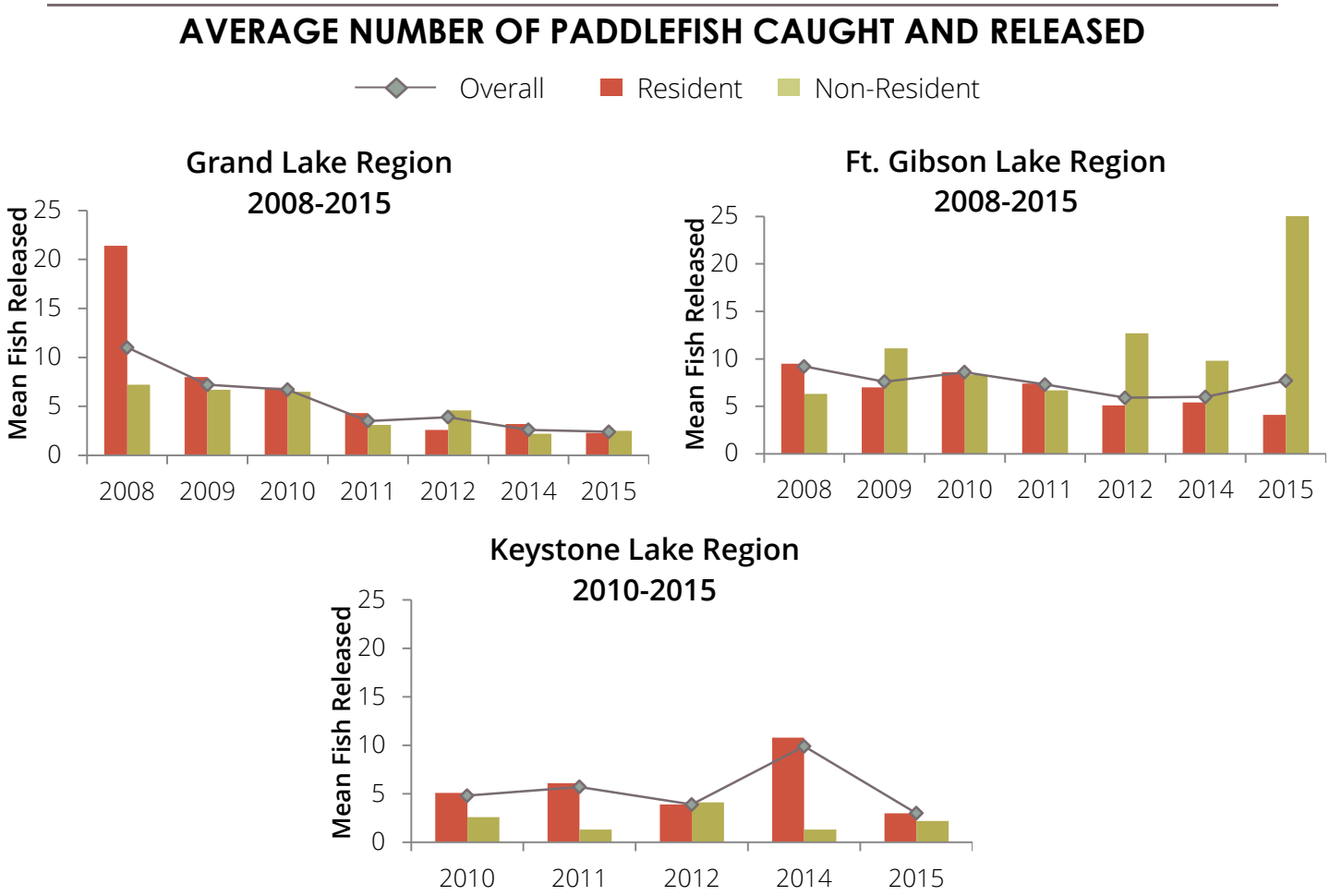


Figure 8. Average number of paddlefish caught and released by anglers in the Grand Lake Region, Ft. Gibson Lake Region, 2008-2015; and Keystone Lake Region, 2010-2015.

In addition to the major paddlefishing areas (Grand Lake, Ft. Gibson Lake, and Keystone Lake), anglers were asked to provide their fishing information for a list of other areas in Oklahoma. Twenty-two percent of respondents fished for paddlefish in other areas in Oklahoma. Fishing trip statistics for these other areas are detailed in Table 5.

Table 5. Other areas anglers fished for paddlefish, the number of days, fish kept and fish released in each area, 2015. Open ended responses to the "other" category can be found in Appendix C.

	Other Areas Fished for Paddlefish	Mean Days Fished*	Mean Harvest	Mean Fish Released
By Residency	Overall (*n*=168)	7.2	0.52	3.34
	Resident (*n*=139)	8.2	0.55	2.79
	Non-Resident (*n*=29)	2.5	0.39	5.46
By site	Grand River (below Grand Lake) (*n*=57)	2.76	0.36	3.98
	Hudson Lake (*n*=16)	7.62	0.47	2.47
	Grand River (below Ft. Gibson Lake) (*n*=40)	3.36	0.35	4.65
	Oologah Lake (*n*=17)	4.47	0.20	2.07
	Verdigris River (below Oologah Lk) (*n*=14)	3.79	0.29	2.07
	Lower Arkansas River below Keystone Lk (*n*=30)	6.83	0.31	0.72
	Eufaula Lake incl. tributaries (*n*=12)	4.83	0.09	0
	Red River (including Texoma Lake) (*n*=8)	8.66	2.5	0.88
	Other (*n*=9)	37.22	0.56	0.56

*Survey questionnaires for 2008-2014 asked anglers to report total days fished in each area, whereas the 2015 questionnaire asked anglers to report their total number of day trips and overnight trips for each area. We calculated a mean number of days for overnight trips using a question about the *most recent* trip. Means were calculated by residency and area, multiplied by the number of overnight trips, and added to the number of day trips for a combined mean for days fished. In the cases where no data were available to calculate a mean by a specific area, the mean for across all areas was used: non-residents = 2.67 and residents = 3.63.

Catch Success

In 2015, three out of four anglers caught at least one paddlefish. Most of the successful anglers caught just one or two fish total. Anglers utilizing a boat to paddlefish were more likely to catch a paddlefish than those fishing from the shore (P = 0.002). Boats can enhance the ability of anglers to access and locate paddlefish with the use of sonar, whereas shore anglers are limited to few access points for legal snagging.

Since 2008, angler catch per day (otherwise known as catch per unit effort—CPUE) has remained relatively stable, other than a decline in 2012 (Figure 9).

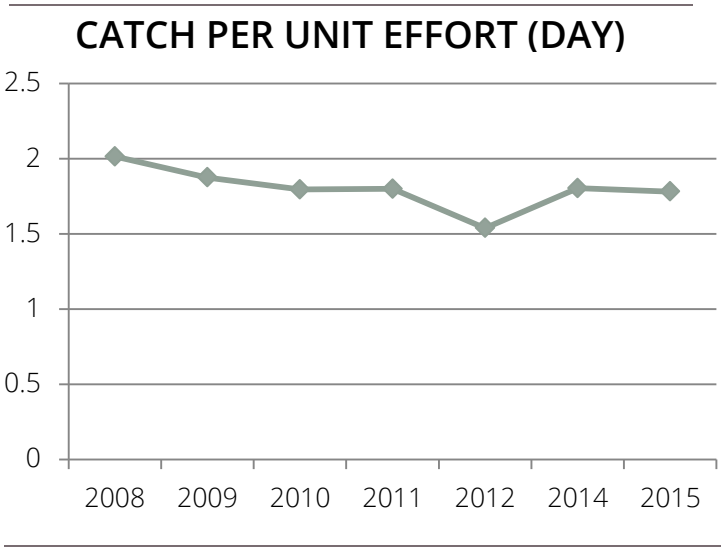


Figure 9. Paddlefish catch per unit effort (day), 2008-2015.

Use of the Paddlefish Research Center

PRC users have traditionally and predominantly been Grand Lake Region anglers, often because of their proximity to the Center. Seventy-one percent of all surveyed anglers who kept at least one paddlefish from the Grand Lake Area brought their catch to the PRC for processing (Figure 10; Table A7). Non-residents continued to use the PRC more than residents ($P < 0.001$). PRC use by residents and non-residents declined slightly compared to 2014, although remaining within the range of usage reported since 2008.

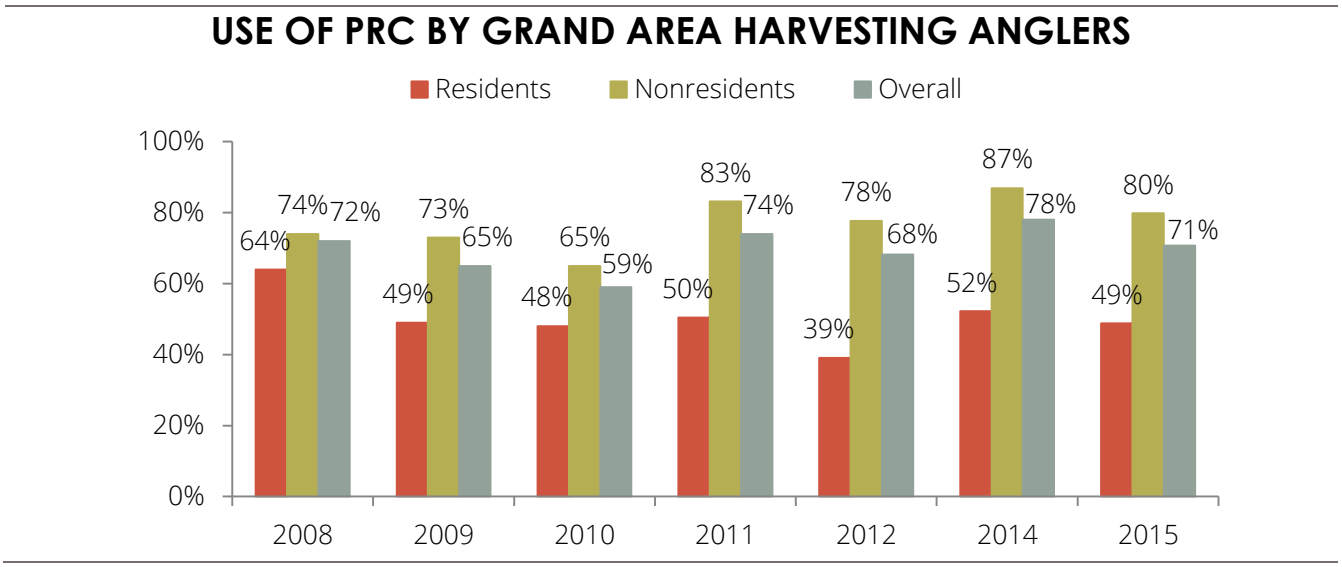


Figure 10. Use of the Paddlefish Research Center (PRC) by Grand Lake Region anglers who caught and kept paddlefish in the Grand Region, by residency.

Anglers reported taking an average of 1.47 paddlefish for processing in 2015 (Figure 11; Table A8). The number of fish taken to the PRC for processing did not differ by residency ($P = 0.157$). Figure 11 also includes the actual mean number of fish processed at the PRC. The comparison shows that survey-reported means differ from actual means, but the trends are relatively similar. There are several biases associated with surveys that can lead to inflated reporting, and thus might explain why the reported values trend above the actual values. In this case, recall bias may have affected accurate reporting by anglers. We asked anglers to recall their paddlefishing experiences for up to five months after they may have fished, and anglers could have had trouble recalling the exact number of paddlefish they harvested and subsequently had processed at the PRC. Second, social desirability bias may have affected these numbers. Survey participants may have felt uncomfortable admitting that they did not harvest, and subsequently process any fish at the PRC. Descriptive statistics for all years and median differences by residency, when present, are indicated in Table A8.

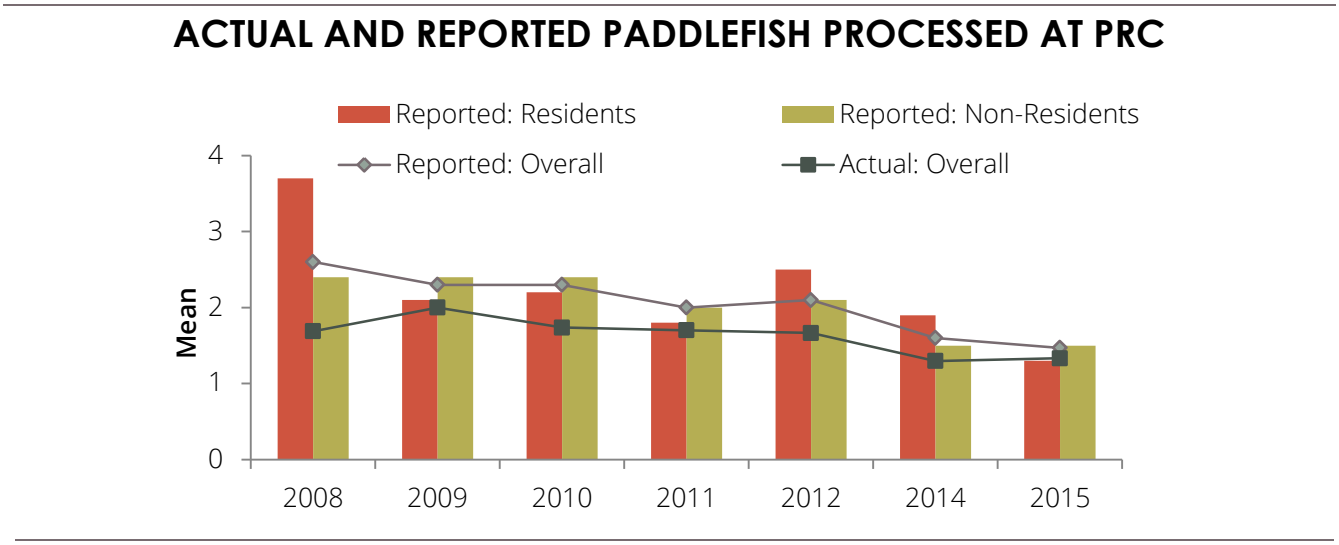


Figure 11. Survey-reported average number of paddlefish processed at the PRC by residents and non-residents 2008-2015 and actual average number of paddlefish processed at PRC.

Paddlefish Angler Demographics

Since the installation of the PRC in 2008, there have been concerns regarding the Center's impact on harvest rates and recruitment of harvesting anglers to the fishery. Anglers were asked to categorize their fishing experience based on the years that they have been paddlefish angling. The largest segment of anglers (34%) had been pursuing paddlefish for 2-5 years, while 32% of respondents noted that 2015 marked their first paddlefish angling experience (Figure 12). On the 2008 paddlefish angler survey, 30% of PRC users had never fished for paddlefish in Oklahoma prior to the PRC opening (Crews 2009). This provides evidence that at least a portion of the fishery is being maintained by recruitment of anglers to the fishery. The difference in experience by residency was not significant (P = 0.217). There was also no difference in catch success by years of experience paddlefish angling (P = 0.836).

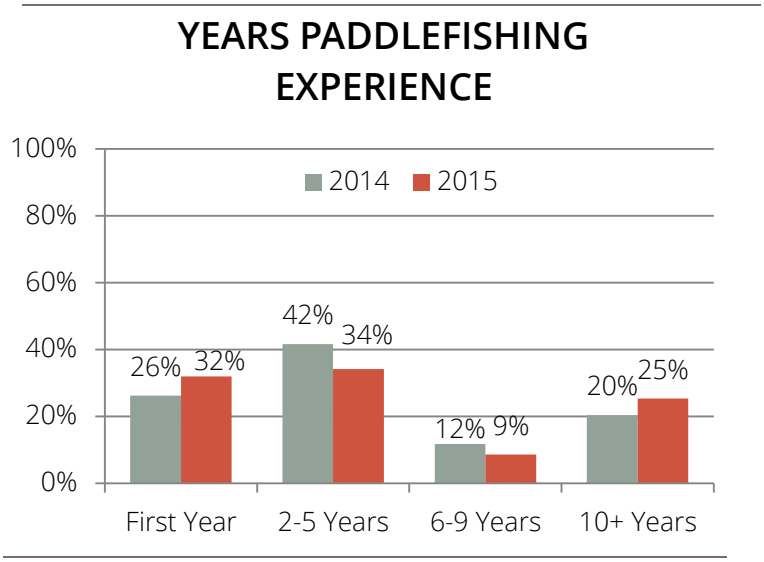


Figure 12. Comparison of experience paddlefishing in Oklahoma, by 2014 and 2015 survey respondents (2014 n = 759, 11 missing; 2015 n = 636, 18 missing).

Paddlefish Angler Trip Expenditures

Anglers were asked to provide estimates for what they spent on fishing related expenses for their most recent paddlefishing trips. Resident anglers spent $186 on average for their most recent Oklahoma paddlefishing trip, while non-resident anglers spent $537. For both groups, the majority of spending was on boat-related expenses (Table 6). Additional economic analyses from the 2015 survey can be found in the Addendum (*forthcoming*).

Table 6. Average trip expenditures by category for 2015 most recent paddlefishing trip in Oklahoma, by residency (Residents *n* = 418, 20 missing; Non-residents *n* =228, 13 missing).

Expense Category:	Resident Average Spent	Non-resident Average Spent
Gear and tackle purchased specifically for the trip	$42.57	$53.08
Boat, including fuel and any rental fees	$88.71	$353.61
Transportation to site, including gas, tolls, and rental fees	$37.61	$86.44
Food, beverages, and ice	$29.52	$59.69
Lodging, including campgrounds and hotels	$20.69	$92.96
Other	$16.86	$82.65
TOTAL	**$185.77**	**$536.60**

RECOMMENDATIONS

The annual survey of paddlefish permit holders has been valuable to resource managers. The data have provided an understanding of angler use of the fishery (number of anglers, days fished, harvest), popularity of the PRC, and reported/unreported harvest. This survey provides valuable context to estimates of angler harvest from Grand Lake. In past years, satisfaction questions have helped to improve and monitor operations at the PRC and a better understanding of preferences for the paddlefishing experience has been helpful in considering regulatory changes. Survey data from 2008-2011 were valuable in developing new harvest regulations in 2014 (Schooley et al. 2014) and will likely continue to be.

The response rates for the paddlefish angler survey have continually declined, while the number of anglers with unintentionally issued paddlefish permits has continued to rise annually. Surveying permit holders with no stake in the resource is a waste of time, effort, and funds. Evaluation of problems with paddlefish permit issuance noted in this and previous reports is warranted along with consideration of a revised permitting and/or harvest tag system. Further, the Wildlife Department has improved its ability to monitor paddlefish harvest with the implementation of mandatory E-check. This process eliminates the need to conduct the paddlefish angler survey on an annual basis.

At this time, ODWC will discontinue the annual implementation of the paddlefish permit holder survey. As needs arise, permit-holder surveys will continue to serve as a tool for collecting social data to inform management of the Oklahoma paddlefish fisheries.

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APPENDIX A: DESCRIPTIVE STATISTICS

Table A1. Use of paddlefish permit privileges 2008-2015. Superscripts denote significant differences in angling participation between residents and non-residents within a given year. The proportion of unintentional permits issued has increased over the studied years- a trend shared by residents and non-residents.

"Did you fish for paddlefish in [year]?"	Overall	Residents	Non-Residents
2008	*n*=1,595	*n*=1,072[a]	*n*=515[b]
Yes	46%	39%	61%
No, I wanted to but did not have a chance	26%	30%	18%
No, I did not intend to get a paddlefish permit	28%	31%	21%
2009	*n*=4,073	*n*=2,792[a]	*n*=1,279[b]
Yes	46%	39%	62%
No, but I intentionally got a paddlefish permit	24%	27%	16%
No, I unintentionally got a paddlefish permit	30%	34%	22%
2010	*n*=4,512	*n*=3,270[a]	*n*=1,242[b]
Yes	41%	38%	51%
No, but I intentionally got a paddlefish permit	26%	28%	19%
No, I unintentionally got a paddlefish permit	33%	34%	30%
2011	*n*=3,142	*n*=2,219[a]	*n*=923[b]
Yes	38%	30%	55%
No, but I intentionally got a paddlefish permit	24%	28%	16%
No, I unintentionally got a paddlefish permit	38%	43%	28%
2012	*n*=2,788	*n*=2,038[a]	*n*=750[b]
Yes	34%	29%	52%
No, but I intentionally got a paddlefish permit	23%	26%	17%
No, I unintentionally got a paddlefish permit	42%	46%	32%
2014	*n*=2,410	*n*=1,740[a]	*n*=670[b]
Yes	32%	27%	45%
No, but I intentionally got a paddlefish permit	28%	30%	22%
No, I unintentionally got a paddlefish permit	40%	43%	33%
2015	*n*=2,324	*n*=1,741[a]	*n*=583[b]
Yes	29%	24%	41%
No, but I intentionally got a paddlefish permit	28%	30%	22%
No, I unintentionally got a paddlefish permit	43%	46%	37%

Table A2. Distribution of active paddlefish anglers by residency, 2008-2015.

"Did you fish for paddlefish in [year]?"	Residents	Non-Residents
2008 : Yes (*n*=734)	57% (*n*=416)	43% (*n*=314)
2009: Yes (*n*=1,884)	58% (*n*=1,093)	42% (*n*=791)
2010: Yes (*n*=1,863)	66% (*n*=1,225)	34% (*n*=638)
2011: Yes (*n*=1,177)	57% (*n*=666)	43% (*n*=511)
2012: Yes (*n*=971)	60% (*n*=582)	40% (*n*=389)
2014: Yes (*n*=770)	61% (*n*=468)	39% (*n*=302)
2015: Yes (*n*=679)	65% (*n*=438)	35% (*n*=241)

Table A3. Paddlefishing participation by region. Different superscripts denote significant differences between residents and non-residents within a fishing area (row) in a given year.

"Did you fish for paddlefish in [region]?"	Overall	Residents	Non-Residents

2008	*n*=734	*n*=413	*n*=314
Grand Lake Region: Yes	50%	24%[a]	84%[b]
Fort Gibson Region: Yes	30%	48%[a]	6%[b]
2009	*n*=1,884	*n*=1,093	*n*=791
Grand Lake Region: Yes	65%	47%[a]	90%[b]
Fort Gibson Region: Yes	29%	43%[a]	10%[b]
2010	*n*=1,863	*n*=1,225	*n*=638
Grand Lake Region: Yes	58%	43%[a]	89%[b]
Fort Gibson Region: Yes	30%	43%[a]	8%[b]
Keystone Region: Yes	9%	14%[a]	4%[b]
Anywhere else: Yes	19%	26%[a]	9%[b]
2011	*n*=1,177	*n*=666	*n*=511
Grand Lake Region: Yes	61%	38%[a]	93%[b]
Fort Gibson Region: Yes	30%	49%[a]	7%[b]
Keystone Region: Yes	7%	12%[a]	2%[b]
Anywhere else: Yes	13%	21%[a]	3%[b]
2012	*n*=971	*n*=582	*n*=389
Grand Lake Region: Yes	56%	35%[a]	88%[b]
Fort Gibson Region: Yes	29%	42%[a]	8%[b]
Keystone Region: Yes	11%	16%[a]	3%[b]
Anywhere else: Yes	18%	27%[a]	4%[b]
2014	*n*=741	*n*=468	*n*=302
Grand Lake Region: Yes	54%	33%[a]	87%[b]
Fort Gibson Region: Yes	35%	49%[a]	14%[b]
Keystone Region: Yes	11%	16%[a]	3%[b]
Anywhere else: Yes	27%	36%[a]	14%[b]
2015	*n*=679	*n*=241	*n*=438
Grand Lake Region: Yes	42%	25%[a]	73%[b]
Fort Gibson Region: Yes	32%	42%[a]	14%[b]
Keystone Region: Yes	10%	13%[a]	3%[b]
Anywhere else: Yes	25%	32%[a]	12%[b]

Table A4. Number of days spent paddlefishing by region. Different superscripts denote significant differences between residents and non-residents within a fishing area (row) in a given year. An increase in fishing days was reported by residents and non-residents in all areas.

Number of	Overall	Residents	Non-Residents

days fished	Mean	Median	Range	Mean	Median	Range	Mean	Median	Range
2008									
All Areas (*n* = 707)	6.6	3	1-150	8.1	4[a]	1-150	4.5	3[b]	1-60
Grand Area (*n* = 350)	5.7	3	1-102	8.2	3[a]	1-102	4.6	3[a]	1-60
Ft Gibson Area (*n* = 210)	6.8	3	1-60	7.1	3[a]	1-60	3.4	2[a]	1-9
2009									
All Areas (*n* = 1,790)	5.9	3	1-130	7.0	3[a]	1-130	4.5	3[b]	1-72
Grand Area (*n* = 1,152)	5.5	3	1-110	7.0	3[a]	1-110	4.5	3[a]	1-72
Ft Gibson Area (*n* = 519)	4.7	3	1-90	5.0	3[a]	1-90	2.9	2[a]	1-15
2010									
Grand Area (*n* = 1,054)	4.8	3	1-75	5.1	2[a]	1-75	4.4	3[b]	1-46
Ft Gibson Area (*n* = 539)	4.8	2	1-100	5.0	2[a]	1-100	2.6	2[a]	1-10
Keystone Area (*n* = 165)	4.2	2	1-40	4.3	2[a]	1-40	3.2	3[a]	1-14
2011									
Grand Area (*n* = 699)	3.8	2	1-40	4.2	2[a]	1-35	3.6	3[a]	1-40
Ft Gibson Area (*n* = 339)	5.0	2	1-100	5.3	2[a]	1-100	2.5	2[a]	1-15
Keystone Area (*n* = 81)	5.1	2	1-90	5.5	2[a]	1-90	1.4	1[b]	1-3
2012									
Grand Area (*n* = 536)	3.9	3	1-34	4.3	2[a]	1-35	3.7	3[a]	1-30
Ft Gibson Area (*n* = 270)	4.1	3	1-30	4.3	3[a]	1-30	2.7	2[b]	1-8
Keystone Area (*n* = 104)	4.6	2	1-35	4.8	2[a]	1-35	3.2	4[a]	1-6
2014									
Grand Area (*n* = 396)	3.2	2	1-65	3.6	2[a]	1-65	3	2[a]	1-35
Ft Gibson Area (*n* = 248)	3.1	2	1-30	3.3	2[a]	1-30	2.1	1.5[a]	1-6
Keystone Area (*n* = 73)	5.8	2	1-30	6.2	2.5[a]	1-30	1.7	1[a]	1-4
2015									
Grand Area (*n* = 290)	4.3	2	1-75	4.8	2[a]	1-75	3.9	2[a]	1-37
Ft Gibson Area (*n* = 218)	3.3	2	1-30	3.3	2[a]	1-30	3.4	2[a]	1-10
Keystone Area (*n* = 70)	6.5	2	1-138	7.2	2[a]	1-138	1.9	2[a]	1-4

Table A5. Fish kept by region. Different superscripts denote significant differences between residents and non-residents within a fishing area (row) in a given year. A general decrease in number of fish kept was reported by residents and non-residents.

Number of paddlefish kept	Overall			Residents			Non-Residents		
	Mean	Median	Range	Mean	Median	Range	Mean	Median	Range

2008									
All Areas (*n* = 688)	2.4	1	0-80	2.5	1[a]	0-80	2.2	2[b]	0-18
Grand Area (*n* = 343)	2.5	2	0-80	2.9	1[a]	0-80	2.3	2[b]	0-18
Ft Gibson Area (*n* = 199)	2.5	1	0-30	2.6	1[a]	0-30	2.3	2[a]	0-6
2009									
All Areas (*n* = 1,745)	2.3	1	0-110	2.3	1[a]	0-110	2.4	2[b]	0-64
Grand Area (*n* = 1,121)	2.3	1	0-110	2.1	1[a]	0-110	2.4	2[b]	0-64
Ft Gibson Area (*n* = 510)	2.0	1	0-30	2.1	1[a]	0-30	1.7	1[b]	0-6
2010									
Grand Area (*n* = 1,028)	1.5	1	0-25	1.1	0[a]	0-25	1.8	1[b]	0-16
Ft Gibson Area (*n* = 510)	1.3	0	0-30	1.4	0[a]	0-30	0.6	0[b]	0-4
Keystone Area (*n* = 161)	0.6	0	0-10	0.6	0[a]	0-10	0.5	0[a]	0-3
2011									
Grand Area (*n* = 673)	1.5	1	0-20	1.1	1[a]	0-13	1.7	1[b]	0-20
Ft Gibson Area (*n* = 332)	1.6	1	0-38	1.6	1[a]	0-38	1.0	1[a]	0-8
Keystone Area (*n* = 78)	0.8	0	0-20	0.8	0[a]	0-20	0.4	0[a]	0-2
2012									
Grand Area (*n* = 525)	1.4	1	0-20	1.2	0[a]	0-20	1.6	1[a]	0-20
Ft Gibson Area (*n* = 264)	1.2	1	0-14	1.2	0[a]	0-14	1.1	1[a]	0-6
Keystone Area (*n* = 104)	1.8	0	0-100	1.9	0[a]	0-100	1.1	1[a]	0-3
2014									
Grand Area (*n* = 396)	1	0	0-50	1.1	0[a]	0-50	0.8	1[b]	0-4
Ft Gibson Area (*n* = 248)	0.6	0	0-20	0.6	0[a]	0-20	0.7	1[b]	0-4
Keystone Area (*n* = 73)	0.7	0	0-20	0.7	0[a]	0-20	0.3	0[b]	0-1
2015									
Grand Area (*n* = 287)	0.7	1	0-7	0.5	0[a]	0-4	0.7	1[b]	0-7
Ft Gibson Area (*n* = 208)	0.4	0	0-2	0.4	0[a]	0-2	0.5	0[a]	0-2
Keystone Area (*n* = 68)	0.5	0	0-12	0.6	0[a]	0-12	0.3	0[a]	0-1

Table A6. Fish released by region. Different superscripts denote significant differences between residents and non-residents within a fishing area (row) in a given year. A general decrease in number of fish released was reported by residents and non-residents.

Number of paddlefish released	**Overall**			**Residents**			**Non-Residents**		
	Mean	**Median**	**Range**	**Mean**	**Median**	**Range**	**Mean**	**Median**	**Range**
2008									
All Areas (*n* = 659)	11.6	2	0-440	15.1	3[a]	0-440	6.9	1[b]	0-155

Grand Area (*n* = 318)	11.0	2	0-415	21.4	4[a]	0-415	7.2	1[b]	0-155
Ft Gibson Area (*n* = 200)	9.2	3	0-138	9.5	3[a]	0-138	6.3	1[a]	0-49
2009									
All Areas (*n* = 1,675)	8.4	2	0-345	8.9	2[a]	0-300	7.7	1[b]	0-345
Grand Area (*n* = 1,069)	7.2	1	0-272	8.0	2[a]	0-272	6.7	1[a]	0-250
Ft Gibson Area (*n* = 490)	7.6	2	0-100	7.0	2[a]	0-100	11.1	4[b]	0-65
2010									
Grand Area (*n* = 982)	6.7	1	0-300	6.9	1[a]	0-300	6.5	1[a]	0-215
Ft Gibson Area (*n* = 509)	8.6	1	0-911	8.6	1[a]	0-911	8.3	3[a]	0-40
Keystone Area (*n* = 155)	4.8	1	0-100	5.1	1[a]	0-100	2.6	1[a]	0-15
2011									
Grand Area (*n* = 649)	3.5	0	0-100	4.3	1[a]	0-100	3.1	0[b]	0-95
Ft Gibson Area (*n* = 324)	7.3	2	0-150	7.4	2[a]	0-150	6.7	3.5[a]	0-40
Keystone Area (*n* = 77)	5.7	1	0-50	6.1	1.5[a]	0-50	1.3	0[a]	0-5
2012									
Grand Area (*n* = 499)	3.9	0	0-190	2.6	0[a]	0-30	4.6	1[b]	0-190
Ft Gibson Area (*n* = 260)	5.9	1	0-142	5.1	1[a]	0-127	12.7	2[a]	0-142
Keystone Area (*n* = 99)	3.9	0	0-91	3.9	0[a]	0-91	4.1	2.5[a]	0-20
2014									
Grand Area (*n* = 396)	2.6	0	0-50	3.2	1[a]	0-40	2.2	0[b]	0-50
Ft Gibson Area (*n* = 248)	6	2	0-80	5.4	2[a]	0-80	9.8	2[a]	0-80
Keystone Area (*n* = 73)	9.9	1.5	0-138	10.8	2[a]	0-138	1.3	0[a]	0-6
2015									
Grand Area (*n* = 266)	2.4	0	0-90	2.3	0[a]	0-90	2.5	0[a]	0-45
Ft Gibson Area (*n* = 207)	7.7	2	0-653	4.1	1[a]	0-50	27.9	5[b]	0-653
Keystone Area (*n* = 68)	3	0	0-65	3	0[a]	0-65	2.2	0[a]	0-7

Table A7. Percent of Grand Lake Region anglers who caught and kept at least one paddlefish that took their harvest to the PRC. Different superscripts between residents and non-residents denote significant differences within a given year (row).

PRC Use	Overall	Residents	Non-residents
2008	*n*=263	*n*=47	*n*=216
	72%	64%	74%
2009	*n*=792	*n*=276	*n*=516
	65%	49%[a]	73%[b]
2010	*n*=599	*n*=225	*n*=374
	59%	48%[a]	65%[b]
2011	*n*=454	*n*=225	*n*=374
	74%	50%[a]	83%[b]
2012	*n*=191	*n*=27	*n*=164
	64%	39%[a]	78%[b]
2014	*n*=143	*n*=24	*n*=119
	78%	52%[a]	87%[b]
2015	*n*=99	*n*=20[a]	*n*=79[b]
	71%	49%	80%

Table A8. Number of paddlefish processed at PRC by Grand Lake Region anglers who caught and kept at least one fish. Different superscripts denote significant differences between residents and non-residents and the number of paddlefish they processed (row) in a given year.

Fish Processed at PRC	Overall				Residents				Non-residents			
	Mean	Median	Mode	Range	Mean	Median	Mode	Range	Mean	Median	Mode	Range
2008 (*n*=192)	2.6	2	2	1-24	3.7	2[a]	1	1-24	2.4	2[a]	2	1-13
2009 (*n*=549)	2.3	2	1	1-17	2.1	1[a]	1	1-17	2.4	2[b]	1	1-15
2010 (*n*=354)	2.3	2	1	1-25	2.2	1[a]	1	1-25	2.4	2[b]	1	1-16

2011 (*n*=332)	2.0	2	1	1-13	1.8	1[a]	1	1-13	2.0	2[b]	1	1-13
2012 (*n*=188)	2.1	1.5	1	1-12	2.5	1[a]	1	1-12	2.1	2[a]	1	1-10
2014 (*n*=142)	1.6	1	1	1-12	1.9	1[a]	1	1-12	1.5	1[a]	1	1-4
2015 (*n*=94)	1.47	1	1	1-7	1.3	1[a]	1	1-2	1.5	1[a]	1	1-7

APPENDIX B: SURVEY INSTRUMENT

Pre-survey Notification

Dear Oklahoma Angler,

In about a week, you will receive in the mail a brief survey for an important study by the Oklahoma Department of Wildlife Conservation.

This study is about the Oklahoma paddlefish program. We hope you will take a minute to complete this short survey even if you did not fish for paddlefish.

We are sending this notice in advance because we have found many people like to know ahead of time that they will be contacted. Your help with this study will allow us to improve paddlefish conservation and management in Oklahoma.

Thank you for your time and consideration.

Sincerely,

Brandon Brown

Brandon Brown, Paddlefish Program Coordinator

Paddlefish Survey

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

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

Survey Reminder

REMINDER!

Recently we mailed you a **Paddlefish Survey** asking questions about your 2015 paddlefishing experiences.

If you have already filled out the survey, thank you! If you haven't had a chance to complete the survey, please take a moment to fill it out and mail it back in the postage-paid envelope.

Your response is very important to us– **even if you did not fish for paddlefish in 2015**. The information you provide will help us improve paddlefish conservation and management in Oklahoma. Thank you for your cooperation!

Sincerely,

Brandon Brown

Brandon Brown, Paddlefish Program Coordinator

REMINDER:
Paddlefish Survey

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

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

Survey Instrument: First Mailing

4. The costs of a fishing trip tend to change over time, for example, due to changes in the price of gas and supplies. For the most recent trip taken to fish for paddlefish in Oklahoma, what is the **maximum** you would be willing to pay in gas and other fishing costs and still take the trip, rather than stay home and not fish at all?

☐ $10	☐ $20	☐ $30	☐ $40
☐ $50	☐ $75	☐ $100	☐ $125
☐ $150	☐ $200	☐ $300	☐ $500

5. Suppose you are trying to decide whether to fish for paddlefish and there are two sites from which to choose. The sites have different characteristics as shown in the table, but otherwise they are the same (they have the same scenery and the same number of anglers). Please compare the sites and check one box to indicate if you prefer Site A, Site B or to stay home.

	Site A	Site B	Stay Home
Typical daily paddlefish catch	[random: 1-20]	[random: 1-20]	I would prefer to stay home if these were my only choices.
Paddlefish daily keep limit	[random: 0-1]	[random: 0-1]	
Water body type	[Lake/River]	[Lake/River]	
Miles from your home	[random: 5-200]	[random: 5-200]	
Which would you choose?	☐	☐	☐

6. In 2015 did you have any paddlefish processed at the Paddlefish Research Center in Miami, OK?

☐ Yes → **6a.** How many? ☐☐ fish
☐ No

7. Did you primarily fish for paddlefish from a boat in Oklahoma in 2015?

☐ Yes
☐ No

8. How many years have you been fishing for paddlefish in Oklahoma?

☐☐ years

9. What category best describes your current household income?

☐ $24,999 or less	☐ $50,000 - $74,999	☐ $100,000 - $149,999
☐ $25,000 - $49,999	☐ $75,000 - $99,999	☐ $150,000 or more

Oklahoma Department of Wildlife Conservation
2015 Paddlefish Angler Survey

Please help the Department of Wildlife by participating in this study, **even if you did not fish for paddlefish!**

The Oklahoma Department of Wildlife Conservation is conducting a survey of paddlefish (or spoonbill) anglers. Our records show that you had an Oklahoma Paddlefish Permit for 2015. You are one of a few paddlefish permit holders we have contacted, and your responses are very important. We want to know about your paddlefish angling experiences, as well as the value you place on the Oklahoma paddlefish program. Your input is critical and will help us improve Oklahoma's paddlefish program in the future.

Even if you did not fish for paddlefish in Oklahoma during 2015, please respond to the first question (below) and return it today in the pre-paid envelope provided.

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

If you have questions or would like a copy of the final report for this study, please contact Corey Jager at (405) 521-4651 or corey.jager@odwc.ok.gov.

Thank you for your participation in this project!

1. Did you fish for paddlefish in Oklahoma during 2015?

☐ Yes → If yes: Please continue with the survey on the next page →

☐ No → **1a.** If no: Our records show that you have a free paddlefish permit. Did you intend to get the free paddlefish permit?
☐ Yes
☐ No

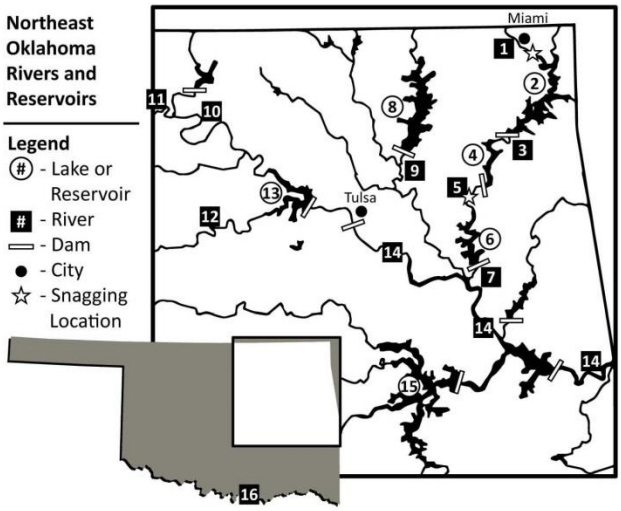
If you did **not** fish for paddlefish in Oklahoma during 2015, your survey is now complete. Please mail it today. Thank you!

2. For each lake/river listed in the table below, please indicate how often you visited and how many paddlefish you caught per day in 2015. Use the map on the right to identify lakes or rivers. Count partial day trips as full days.

Site #	Site name	Number of trips to each site		Average daily catch and keep	
		Single day	Overnight	Number caught	Number kept
1	Neosho River (above Grand Lake)	_____trips	_____trips	_____fish/day	_____fish/day
2	Grand Lake	_____trips	_____trips	_____fish/day	_____fish/day
3	Grand River (below Grand Lake)	_____trips	_____trips	_____fish/day	_____fish/day
4	Hudson Lake	_____trips	_____trips	_____fish/day	_____fish/day
5	Grand River (below Hudson Lake)	_____trips	_____trips	_____fish/day	_____fish/day
6	Fort Gibson Lake	_____trips	_____trips	_____fish/day	_____fish/day
7	Grand River (below Ft. Gibson Lake)	_____trips	_____trips	_____fish/day	_____fish/day
8	Oologah Lake	_____trips	_____trips	_____fish/day	_____fish/day
9	Verdigris River (below Oologah Lk)	_____trips	_____trips	_____fish/day	_____fish/day
10	Arkansas River (below Kaw Lake)	_____trips	_____trips	_____fish/day	_____fish/day
11	Salt Fork River	_____trips	_____trips	_____fish/day	_____fish/day
12	Cimarron River	_____trips	_____trips	_____fish/day	_____fish/day
13	Keystone Lake	_____trips	_____trips	_____fish/day	_____fish/day
14	Lower Arkansas River below Keystone Lake	_____trips	_____trips	_____fish/day	_____fish/day
15	Eufaula Lake incl. tributaries	_____trips	_____trips	_____fish/day	_____fish/day
16	Red River (including Texoma Lake)	_____trips	_____trips	_____fish/day	_____fish/day
17	Other (describe):_____	_____trips	_____trips	_____fish/day	_____fish/day

Northeast Oklahoma Rivers and Reservoirs

Legend
(#) - Lake or Reservoir
[#] - River
▭ - Dam
● - City
☆ - Snagging Location



For key snagging locations, use the following site numbers:
Miami Riverview Park - **1** Conner's Bridge - **1**
Low Water Dam Rec. Area - **5** Chouteau Bend - **5**

3. Please provide the following details about your **most recent** Oklahoma paddlefishing trip or day outing:

a. What lake or river segment did you visit on this trip? Refer to list above for site numbers.

☐ Site #

b. How many days did you fish on this trip? Count partial days as full days.

☐☐ days

c. In what month was this trip?

☐ Month

d. About how much money did you spend within **25 miles** of where you fished, in each of the following expense categories?

Gear and tackle purchased specifically for the trip	$_____.00
Boat, including fuel and any rental fees	$_____.00
Transportation to site, including gas, tolls, and rental fees	$_____.00
Food, beverages, and ice	$_____.00
Lodging, including campgrounds and hotels	$_____.00
Other (describe):	$_____.00

Survey Instrument: Second Mailing

4. The costs of a fishing trip tend to change over time, for example, due to changes in the price of gas and supplies. Thinking about your most recent paddlefishing trip in Oklahoma, what is the **maximum** you would have been willing to pay in gas and other fishing costs and still have taken the trip, rather than stayed home and not fished at all?

☐ $10	☐ $20	☐ $30	☐ $40
☐ $50	☐ $75	☐ $100	☐ $125
☐ $150	☐ $200	☐ $300	☐ $500

5. Suppose you are trying to decide whether to fish for paddlefish and there are two sites from which to choose. The sites have different characteristics as shown in the table, but otherwise they are the same (they have the same scenery and the same number of anglers). Please compare the sites and check one box to indicate if you prefer Site A, Site B or to stay home.

	Site A	Site B	Stay Home
Typical daily paddlefish catch	4	16	I would prefer to stay home if these were my only choices.
Paddlefish daily keep limit	0	0	
Water body type	lake	river	
Miles from your home	25	150	
Which would you choose?	☐	☐	☐

6. In 2015 did you have any paddlefish processed at the Paddlefish Research Center in Miami, OK?

☐ Yes → **6a.** How many? ☐☐ fish
☐ No

7. Did you primarily fish for paddlefish from a boat in Oklahoma in 2015?

☐ Yes
☐ No

8. How many years have you been fishing for paddlefish in Oklahoma?

☐☐ years

9. What category best describes your current household income?

☐ $24,999 or less	☐ $50,000 - $74,999	☐ $100,000 - $149,999
☐ $25,000 - $49,999	☐ $75,000 - $99,999	☐ $150,000 or more

Oklahoma Department of Wildlife Conservation
2015 Paddlefish Angler Survey

Final Reminder:

Please help the Department of Wildlife by participating in this study, **even if you did not fish for paddlefish!**

A few weeks ago we sent you a survey to learn about your 2015 paddlefishing experiences. As of today, we have not received your completed survey. We realize that you may not have had time to complete it; however, your response is very important. We sent you this replacement survey in the event your first survey has been misplaced. Even if you did not fish for paddlefish in Oklahoma during 2015, please respond to the first question of the survey (below) and return it today in the pre-paid envelope provided.

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

If you have questions or would like a copy of the final report for this study, please contact Corey Jager at (405) 521-4651 or corey.jager@odwc.ok.gov.

Thank you for your participation in this project!

1

1. Did you fish for paddlefish in Oklahoma during 2015?

☐ Yes → If yes: Please continue with the survey on the next page →

☐ No → **1a.** If no: Our records show that you have a free paddlefish permit. Did you intend to get the free paddlefish permit?
☐ Yes
☐ No

If you did **not** fish for paddlefish in Oklahoma during 2015, your survey is now complete. Please mail it today. Thank you!

2. For each lake/river listed in the table below, please indicate how often you visited and how many paddlefish you caught per day in 2015. Use the map on the right to identify lakes or rivers. Count partial day trips as full days.

Site #	Site name	Number of trips to each site		Average daily catch and keep	
		Single day	Overnight	Number caught	Number kept
1	Neosho River (above Grand Lake)	_____trips	_____trips	_____fish/day	_____fish/day
2	Grand Lake	_____trips	_____trips	_____fish/day	_____fish/day
3	Grand River (below Grand Lake)	_____trips	_____trips	_____fish/day	_____fish/day
4	Hudson Lake	_____trips	_____trips	_____fish/day	_____fish/day
5	Grand River (below Hudson Lake)	_____trips	_____trips	_____fish/day	_____fish/day
6	Fort Gibson Lake	_____trips	_____trips	_____fish/day	_____fish/day
7	Grand River (below Ft. Gibson Lake)	_____trips	_____trips	_____fish/day	_____fish/day
8	Oologah Lake	_____trips	_____trips	_____fish/day	_____fish/day
9	Verdigris River (below Oologah Lk)	_____trips	_____trips	_____fish/day	_____fish/day
10	Arkansas River (below Kaw Lake)	_____trips	_____trips	_____fish/day	_____fish/day
11	Salt Fork River	_____trips	_____trips	_____fish/day	_____fish/day
12	Cimarron River	_____trips	_____trips	_____fish/day	_____fish/day
13	Keystone Lake	_____trips	_____trips	_____fish/day	_____fish/day
14	Lower Arkansas River below Keystone Lake	_____trips	_____trips	_____fish/day	_____fish/day
15	Eufaula Lake incl. tributaries	_____trips	_____trips	_____fish/day	_____fish/day
16	Red River (including Texoma Lake)	_____trips	_____trips	_____fish/day	_____fish/day
17	Other (describe):_____	_____trips	_____trips	_____fish/day	_____fish/day

Northeast Oklahoma Rivers and Reservoirs

Legend
(#) - Lake or Reservoir
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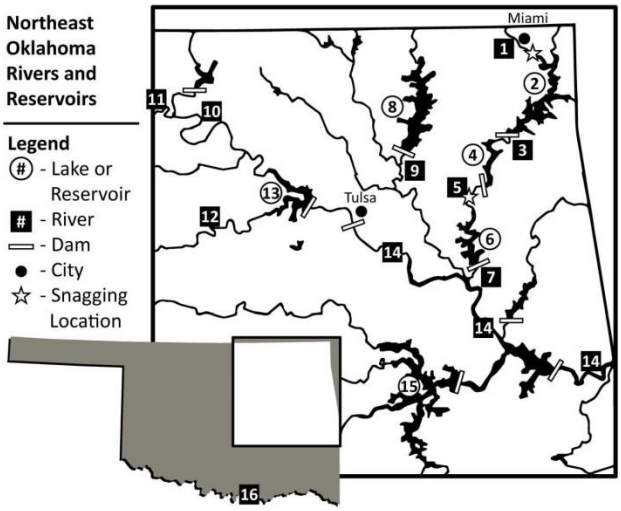
▭ - Dam
● - City
☆ - Snagging Location



For key snagging locations, use the following site numbers:
Miami Riverview Park - 1 Conner's Bridge - 1
Low Water Dam Rec. Area - 5 Chouteau Bend - 5

3. Please provide the following details about your **most recent** Oklahoma paddlefishing trip or day outing:

a. What lake or river segment did you visit on this trip? Refer to list above for site numbers.

☐ Site #

b. How many days did you fish on this trip? Count partial days as full days.

☐☐ days

c. In what month was this trip?

☐ Month

d. About how much money did you spend within **25 miles** of where you fished, in each of the following expense categories?

Gear and tackle purchased specifically for the trip	$_____.00
Boat, including fuel and any rental fees	$_____.00
Transportation to site, including gas, tolls, and rental fees	$_____.00
Food, beverages, and ice	$_____.00
Lodging, including campgrounds and hotels	$_____.00
Other (describe):	$_____.00

APPENDIX C: OPEN-ENDED RESPONSES

Q2: Description of Other Fishing Site(s) (n =18):

- WEBBERS FALLS
- WEBBERS FALLS
- WEBBERS FALLS
- WEBBER FALLS DAM
- VERDIGRIS UPPER
- VERDIGRIS ABOVE OOLOGAH LK
- TENKILLER
- SARDIS LAKE
- OVERHOLSER
- LOCK DAM 17
- LAKE EL RENO
- KERR
- KAW LAKE (BELOW THE DAM)
- KAW LAKE
- KAW
- FORT GIBSON DAM
- EUCHE
- CHOUTEAU BEND #5