

The 2020 Kansas Licensed Angler Survey

PREPARED BY

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THE 2020 KANSAS LICENSED ANGLER SURVEY

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THE 2020 KANSAS LICENSED ANGLER SURVEY

KEY TAKEAWAYS

- ✓ Kansas anglers are predominately male (76%) which is similar to those in the Midwest Region and the United States.
- ✓ Twelve-percent (12%) of the Kansas population participates in fishing, compared to approximately 17% in the Midwest.
- ✓ Survey results were representative of the Kansas angling population.
- ✓ Survey response rates are declining, making it more difficult, expensive, and time consuming to conduct human dimensions research.
- ✓ Licensed angler fishing participation is dropping. Eighty-seven percent (87%) of licensed anglers actually go fishing compared to 93% in 2013 and 95% in 2006.
- ✓ Bank fishing continues to be the most popular fishing access method.
- ✓ Largemouth Bass, Crappie, and Channel Catfish were the three most preferred and targeted species.
- ✓ The three most important Fisheries programs and services to anglers were lake rehabilitation, stocking fish, and improving fisheries habitat.
- ✓ The three least important Fisheries programs and services to anglers were master angler award, Vamos a pescar-Hispanic/Latino family fishing program, and the mobile aquarium.
- ✓ Fisheries Division staff and anglers do not always agree about the importance of fisheries programs and services.
- ✓ Fishing motivations differed slightly by sex; females were more motivated to fish “to be close to nature” and for “family recreation” whereas males were more motivated by fishing “for the challenge or sport.”

RECOMMENDATIONS

1. Create an angler profile each year in an easy-to-understand format (e.g., infographic, dashboard, etc.) for the Fisheries Division to be aware of Kansas angler demographics, trends, and patterns. This would be used to inform potential marketing efforts to increase fishing license sales and angling participation.
2. Implement recruitment, retention, and reactivation (R3) strategies from the Kansas R3 Action Plan to increase fishing participation.
3. Increase and improve shoreline access and fisheries habitat.
4. Delineate the Fisheries Division’s role in private pond management and providing pond management information and resources. Update the KDWP pond management website resources and information as necessary.
5. Increase marketing and aquatic education efforts geared toward women, such as the Becoming an Outdoors Woman program, to boost their fishing participation.
6. Prioritize KDWP resources (e.g., funding, staff time, hatchery resources, research, etc.) on species, programs, and services that align with angler level of importance and

preferences. Update species management plans with new research to guide priorities and future research recommendations and needs.

7. Expand fishing opportunities that align with female-preferred motivations optimized for family fishing recreation and to be close to nature.
8. Evaluate angler compliance and address Fisheries Division's concerns related to regulation enforcement.
9. Assess and prioritize Fisheries Division programs and services through facilitated discussions to allow diverse opinions to be expressed in a productive way. This is crucial for the programs mentioned in this report with differences in level of importance between anglers and KDWP (e.g., fishing reports, certified bait dealer program).
10. Determine the characteristics and fishing motivations of those new or reactivated anglers during the pandemic. Using this information, initiate a targeted marketing campaign to "personas" with similar characteristics in order to recruit, retain, or reactivate those individuals that have lapsed fishing participation since 2020.

PANDEMIC KEY TAKEAWAYS

- ✓ Level of fishing participation (i.e., how often one goes fishing) remained about the same.
- ✓ Anglers fished more often with family and closer to home.
- ✓ Lack of fishing supplies in stores, more litter, and unfamiliarity with regulations may indicate participation by new anglers.



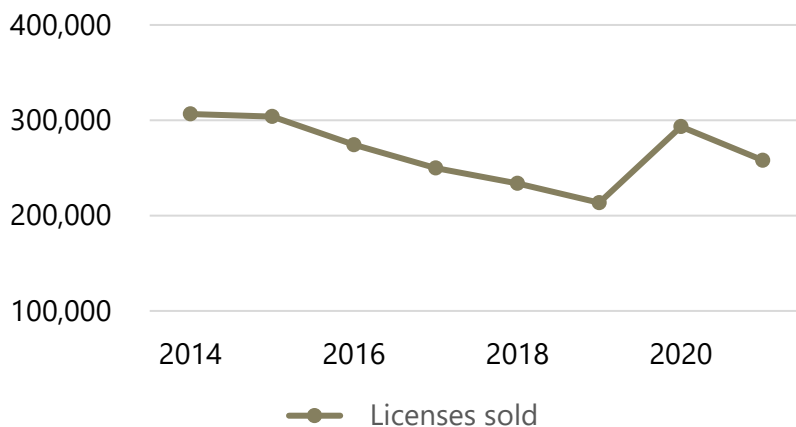
INTRODUCTION

Fishing is an important recreational activity for 35.8 million Americans (US DOI et al. 2016), including approximately 10% of Kansans (Table 1). The Kansas Department of Wildlife and Parks (KDWP) conducts fisheries population surveys and surveys of its licensed anglers to understand trends about general fishing characteristics, preferences, and attitudes of its anglers. This information from anglers (i.e., stakeholders) and traditional fisheries sampling data provide vital information to inform management decisions by the Fisheries Division (Figure 1; Decker et al. 2001).

Perhaps now more than ever, KDWP needs to understand its anglers; fishing license sales were stagnant to declining from 2014 to 2021 (Figure 2). However, there was an increase in 2020 due to the COVID-19 pandemic (also known as the "COVID bump") because fishing was a safe recreational activity for Kansans. KDWP added questions to the licensed angler survey to measure impacts of the pandemic on fishing participation, crowding, and social support.

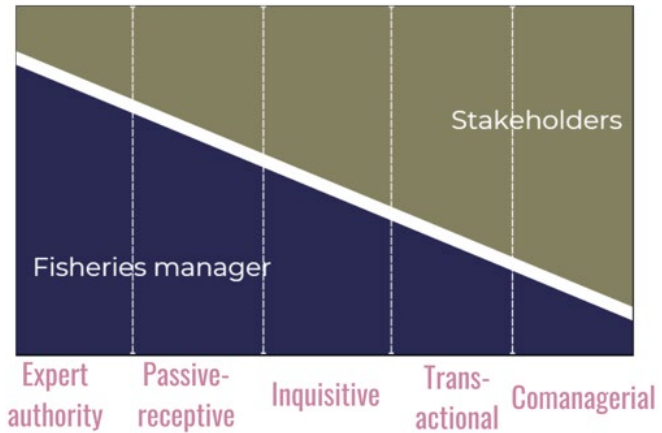
Generally, Kansas anglers are similar to those in the Midwest and the United States (Table 1). Fishing continues to be a male-dominated activity with participation rates of males exceeding females by 3 to 1 (Table 1). Kansas' angling participation rate, or the percentage of Kansans that are anglers relative to its population, is lower than the Midwest Region; the Midwest Region has participation rates as high as 17%, compared to 12% in Kansas (Table 1).

Figure 2. Total number of Kansas fishing licenses sold from 2014 - 2021



New angling recruits in Kansas increased 33% in 2020, which exceeded the increases of 27% and 30% in the Midwest and United States, respectively (Table 1). However, churn rates, the percentage of anglers that do not purchase a license from one year to the next, were generally higher for Kansas anglers than in the

Figure 1. Approaches to fisheries management (on horizontal axis) in which decisions are made with levels of input from stakeholders and fisheries managers. Adapted from Decker et al. 2001 (page 135).

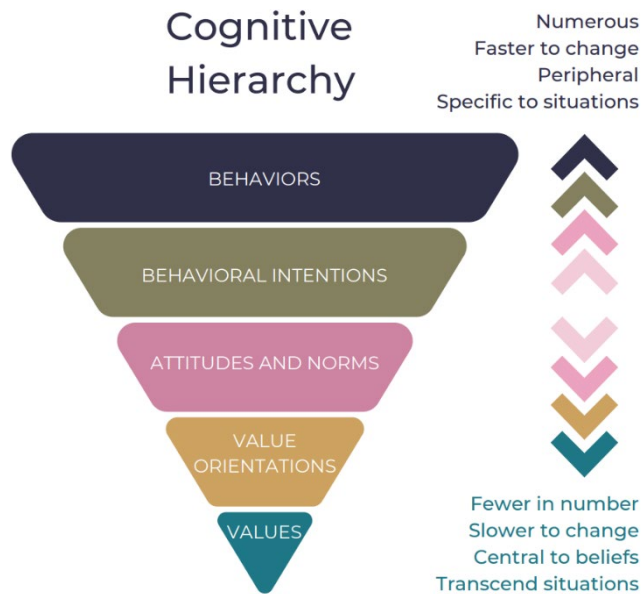


Midwest Region and United States (Table 1). Stagnant license sales, the need for angler input to facilitate fisheries management, and high churn rates justify the need for this licensed angler survey.

Table 1. Percentage of male and female anglers, participation rates, new recruits, and churn rate from 2017 – 2021 for the United States, the Midwest Region, and Kansas (ASA 2022). Churn rate is defined as the percentage of anglers that do not purchase a license from one year to the next (Southwick 2022).

Location	Male (%)	Female (%)	Participation Rate (%)	New Recruits (%)	Churn Rate (%)
U.S.					
2021	76.4	23.6	12.5	26.5	46.8
2020	69.8	30.2	13.9	30.2	43.0
2019	77.3	22.7	12.0	25.9	44.4
2018	77.2	22.8	12.1	24.4	45.3
2017	76.9	23.1	12.7	25.0	44.9
Midwest Region					
2021	75.2	24.8	15.0	22.7	44.4
2020	73.8	26.2	17.0	27.3	38.1
2019	76.0	24.0	14.3	21.4	41.8
2018	75.9	24.1	14.8	20.9	41.9
2017	75.6	24.4	15.5	21.9	41.7
Kansas					
2021	76.4	23.6	10.0	27.0	52.5
2020	74.4	25.6	12.0	33.1	43.0
2019	77.3	22.7	8.9	23.6	48.0
2018	76.5	23.5	9.6	22.7	45.6
2017	76.0	24.0	10.0	23.5	47.0

Figure 3. The cognitive hierarchy in which values transmute to behavior. Adapted from Decker et al. 2001 (page 46).



Human Dimensions Research

The field of human dimensions (HD) of wildlife is the study of what people do with wildlife and why. A core concept of human dimensions research is applying the cognitive hierarchy (Figure 3) in which researchers study angler cognitions including values, value orientations, attitudes, norms, and behavioral intentions to predict angler behavior (Decker et al. 2001). HD researchers use quantitative and qualitative methods such as surveys and interviews, respectively, to predict angler behavior. This approach is rooted in social psychology theories such as rational choice theory (Branch et al. 2006, Peterson and Isenhour 2014) and the theory of planned behavior (Ajzen

1991, Crandall et al. 2018), which are commonly applied in fisheries management (Pope et al. in press). Rather than fish as the object of study, human dimensions researchers study people and their interaction with the environment, or fisheries, in this case.

METHODS

Survey

The 2020 Kansas Licensed Angler Survey was implemented using three different methods: 1) a postcard with a link to take the survey online in June 2020, 2) an email with the link in June 2020, and 3) up to two mail questionnaires delivered between September – November 2020 (Appendices A-B). This mixed mode method was determined the best way to effectively sample the population of Kansas anglers from a cost-benefit perspective and to increase response rates (Dillman et al. 2009). The 2020 survey was not pretested because most questions were replicated from the 2013 survey which had already been pretested (Steffen 2015).

A total of 10,000 individuals aged 18 and older were randomly selected from the list of those who purchased a fishing privilege from approximately May 2019 to May 2020. Everyone had an equal chance of being selected (i.e., individuals who purchased more than one privilege were only in the sampling frame once). The large sampling frame was needed to ensure sufficient useable surveys would be returned to achieve a 5% margin of error (Salant and Dillman 1994). Administrative staff at the Emporia Research and Survey office processed and data entered surveys. Online surveys were delivered and recorded through the online survey platform Qualtrics (Qualtrics, Provo, UT).

One of the main sources of error in survey research is nonresponse error. This occurs when not enough people respond to the survey, thus biasing the survey results in favor of those who responded and may be different than nonrespondents (Dillman et al. 2009). User-friendly, easy to understand surveys are crucial to reduce the likelihood of nonresponse error, as is sending multiple surveys to allow for greater chances to reply (Ponto 2015). Nonresponse error was examined using a logistic model to compare variables of interest between respondents and nonrespondents. Variables tested for nonresponse error included survey participants' age, gender, residency (resident, border nonresident, or nonresident), and email address (i.e., 1 = email address present, 0 = email address absent). If there were differences in these variables based on response status, probability response weights from the logistic model were assigned to each respondent. Then, each respondents' survey responses were multiplied by these probabilities to weight the survey data during the survey analysis to ameliorate the effects of nonresponse error (Fisher 1996).

A survey of the KDWP Fisheries Division staff (herein referred to as KDWP staff) was conducted to ascertain the level of importance of the fisheries programs and services offered by the Department. KDWP staff's answers were compared to those of the general angling public of Kansas (herein referred to as anglers) to examine whether programs and services were rated similarly. The KDWP staff portion of the survey consisted of the same question wording as question #10 on the angler survey (Appendix B) and was implemented through Qualtrics (Qualtrics, Provo, UT).

Data Analysis

JMP® (Version 16.1.0) was used to analyze data and generate descriptive statistics. Weighted rank scores for favorite species to catch (i.e., preferred species) and most targeted species were calculated using the following steps:

Top 5 favorite (preferred) species to catch in Kansas (Figure 4):

- Proportions for each species ranking (i.e., first through fifth favorite) were calculated.
- Proportions for species groups (e.g., Black Crappie and White Crappie were grouped as Crappie, etc.) were summed.
- Weighted rank scores were determined by multiplying first favorite species proportions by 5, second favorite species proportions were multiplied by 4, third favorite species proportions were multiplied by 3, fourth favorite species proportions were multiplied by 2, and fifth favorite species were multiplied by 1.

Figure 4. Question #5 from the survey in which anglers ranked their top 5 favorite species to catch in Kansas.

5. Please write your top 5 favorite species to catch in Kansas from the list below. We are interested in your preferences, rather than which fish are readily accessible to you.

Fish species to choose from: No preference, Asian Carp, Blue Catfish, Bluegill, Channel Catfish, Common Carp, Crappie, Flathead Catfish, Green Sunfish, Largemouth Bass, Redear Sunfish, Sauger, Saugeye, Smallmouth Bass, Spotted Bass, Trout, Walleye, White Bass, Wiper (hybrid striped/white)

1st favorite species: (Example - *Largemouth Bass*) _____

2nd favorite species: _____

3rd favorite species: _____

4th favorite species: _____

5th favorite species: _____

Figure 5. Survey question #6 in which anglers ranked their most targeted species.

6. Of your preferred targeted species (the 5 fish you wrote above), which 3 do you actually fish for most?

1st most targeted species: _____

2nd most targeted species: _____

3rd most targeted species: _____

Most targeted species (Figure 5):

- Proportions for each species ranking (i.e., first through third most targeted) were calculated.
- Proportions for species groups (e.g., Black Crappie and White Crappie were grouped as Crappie, etc.) were summed.
- Weighted rank scores were determined by multiplying first most targeted species proportions by 3, second most targeted species proportions were multiplied by 2, and third most targeted species proportions were multiplied by 1.

Several figures in this paper depict mean and 90% confidence intervals for the variable of interest. A visual cue of non-overlapping confidence intervals was used to confer significant differences (Figures 14-19). Payton et al. 2003 noted this can yield "...extremely conservative comparisons, making it difficult to detect significant differences in means" (p. 1). However, this method is acceptable to provide a visual for the lay-person to easily understand the results, although the tradeoff is potentially not detecting a difference when there is one. This is not recommended in analyses where misinterpretation could affect human or environmental health (e.g., testing for differences in pesticide dosage applications; Payton et al. 2003).

RESULTS

Survey Metrics

In total, 1,944 anglers returned useable surveys for an effective response rate of 22%. This was lower than the 30% response rate from the 2013 survey and confirmed declining response rates (Vaske 2019). Responses from Kansas residents were received from all counties except for Greeley and Wallace counties (Figure 6, E.C. Martin, Emporia State University).

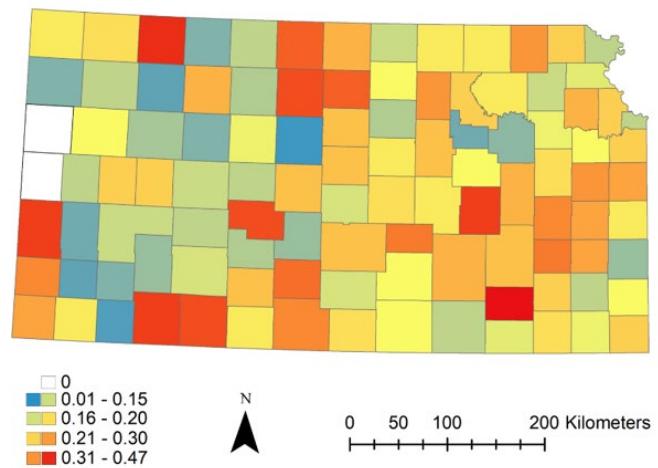


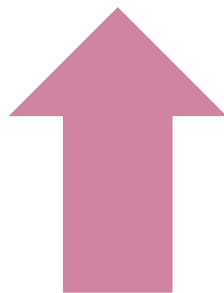
Figure 6. Proportion of survey responses (number received/number sent) by Kansas county. White represents zero values. Blue indicates low values; green, yellow, and orange indicate moderate values and red indicates high values (graphic provided by Dr. Erika C. Martin, Emporia State University).

There were differences in respondents and nonrespondents; younger respondents were less likely to respond (Figure 7). Survey participants with an email address in the KDWP license database were more likely to respond even though the survey was sent by mail and email.

Kansas residents were more likely to respond to the survey than nonresidents and border state nonresidents (i.e., Missouri, Nebraska, Colorado, and Oklahoma anglers) (Figure 7). Border nonresidents were

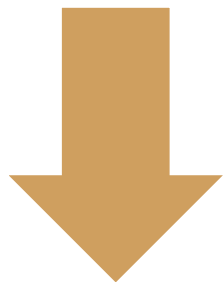
also slightly more likely to respond to the survey than nonresidents (Figure 7). Participants' gender was not related to whether they responded. Survey data were weighted as described in the methods section to minimize nonresponse error.

Figure 7. Characteristics of those who were more or less likely to respond to the 2020 Kansas Licensed Angler Survey.



More likely to respond

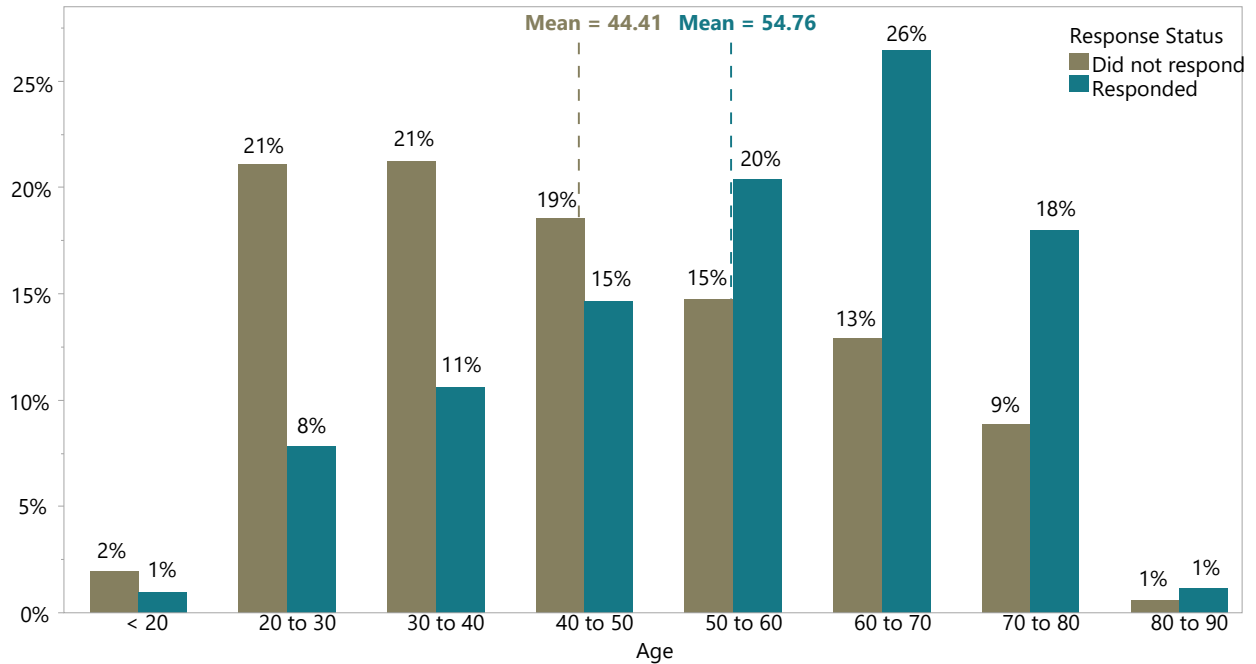
- Older people (also see Figure 8)
- Those with an email address in KDWP database
- Residents > border nonresidents and nonresidents
- Border nonresidents > nonresidents



Less likely to respond

- Younger people (also see Figure 8)
- Those without an email address in KDWP database
- Nonresidents

Figure 8. Percent of age categories by response status.



Angler Demographics

On average, respondents were 55 years old and nonrespondents were 44 years old (Figure 8). Approximately seventy-five percent (75%) of respondents were male and 24% were female. For gender, "Non-binary/other gender," "Prefer not to answer," and "Prefer to self-describe" were also presented to be inclusive of those who do not identify as male or female. One person (0.03%) identified as non-binary/other gender, and 12 individuals (0.54%) preferred not to answer. Three people (0.24%) preferred to self-describe. However, when allowed to comment on their self-described gender, these individuals provided whimsical or defiant responses:

"There are only 2 genders male, female. I am male."

"Some of these options offend me! HA! I like to think of myself as a FISH, a MALE fish!"

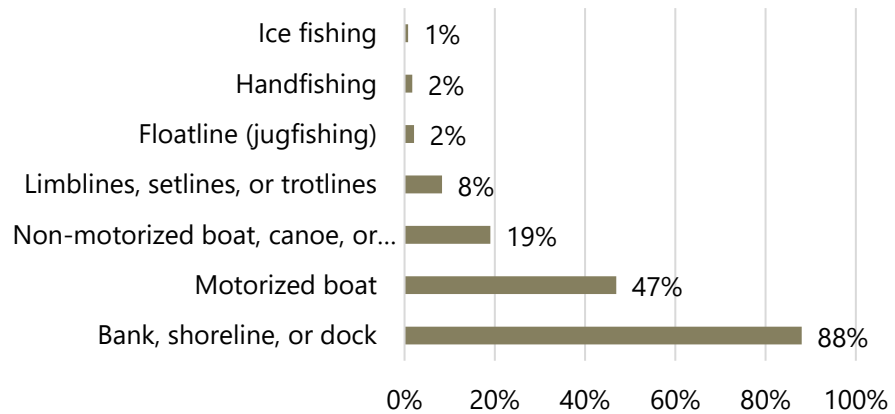
"A FREAKING FISH"



General Fishing Participation and Characteristics

Most respondents, or 87%, fished in Kansas in the previous 12 months. The top three fishing methods were bank, shoreline, or dock (88%), motorized boat (47%), and non-motorized boat (19%) (Figure 9). The sum of percentages was greater than 100 because respondents could select more than one fishing method.

Figure 9. Which of the following fishing methods did you use in Kansas in the previous 12 months?



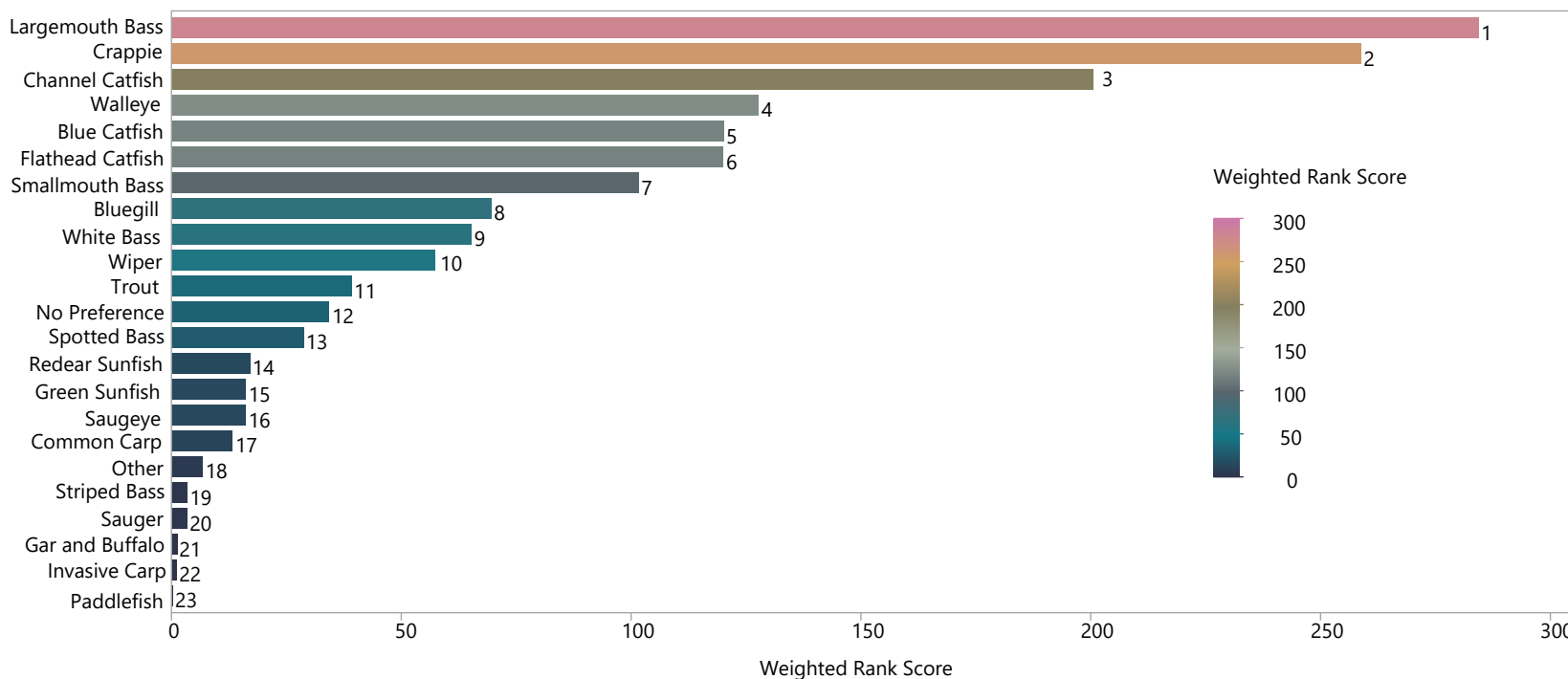
Anglers fished in Kansas waters an average of 28.71 days in the previous 12 months (Table 2). The most fished water types in Kansas by mean number of days included: private ponds (6.40 days), reservoirs (6.10 days), city or county owned lakes (6.10 days), State Fishing Lakes (5.36 days), rivers or streams (4.31 days), and walk-in fishing access, or WIFA (0.42 days). Anglers traveled an average of 39.03 miles one-way for their 1-day fishing trips in Kansas.

Table 2. Mean and standard deviation (SD) of number of days (single day or any portion of a day) fished in various water types in Kansas in the previous 12 months (n = 1,788).

Water type	Days fished in Kansas in the previous 12 months	
	Mean	SD
Private ponds	6.40	42.42
Reservoirs	6.10	35.74
City or county-owned lakes	6.10	45.67
State Fishing Lakes	5.36	38.62
Rivers or streams	4.31	30.22
Waters enrolled in the Walk-in Fishing Access program (WIFA, formerly called FISH)	0.42	7.39
For all water types	28.71	118.14

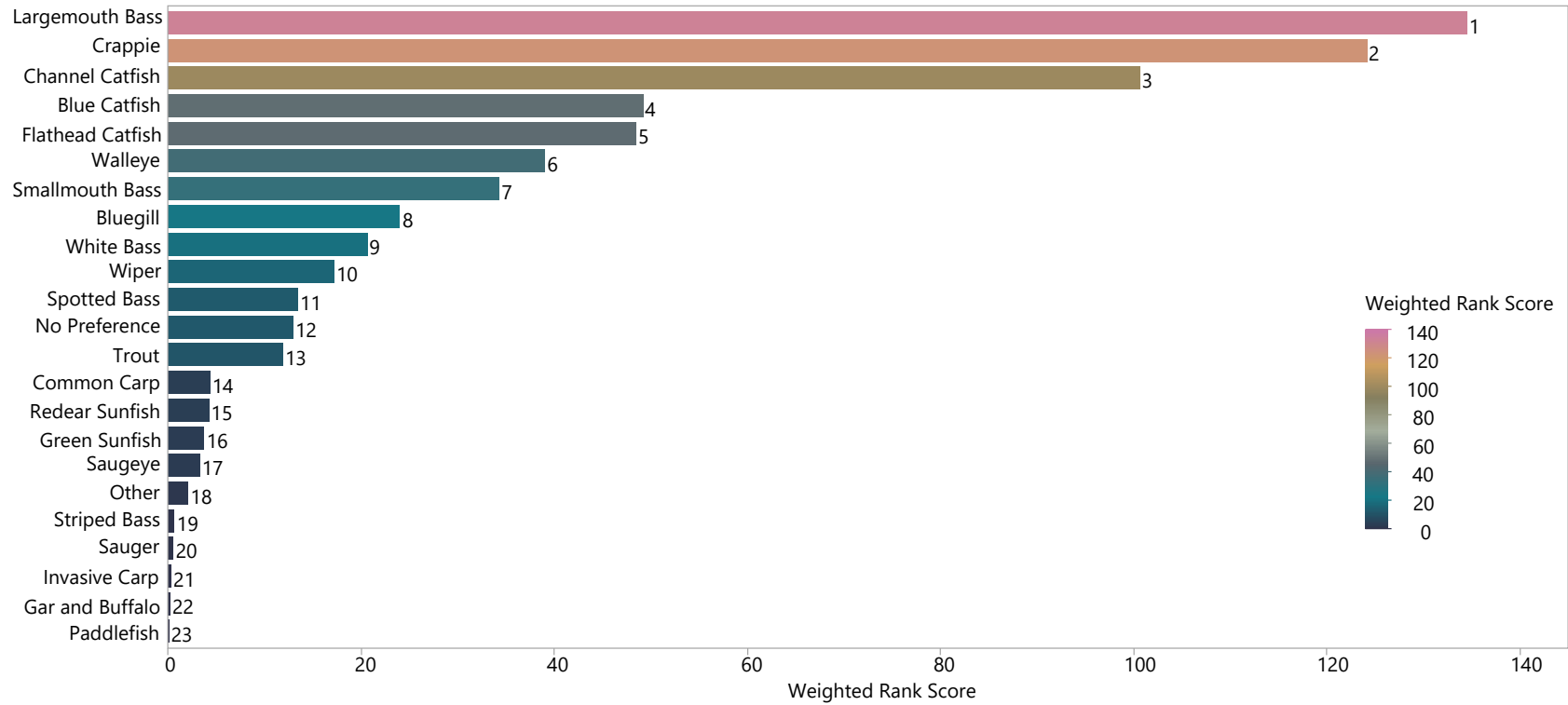
The five most preferred species to catch were Largemouth Bass, Crappie, Channel Catfish, Walleye, and Blue Catfish (Figure 10).

Figure 10. Preferred species to catch by Kansas anglers ranked from most (1st) to least preferred (23rd).



Similarly, anglers fished most often for Largemouth Bass, Crappie, Channel Catfish, Blue Catfish, and Flathead Catfish (Figure 11).

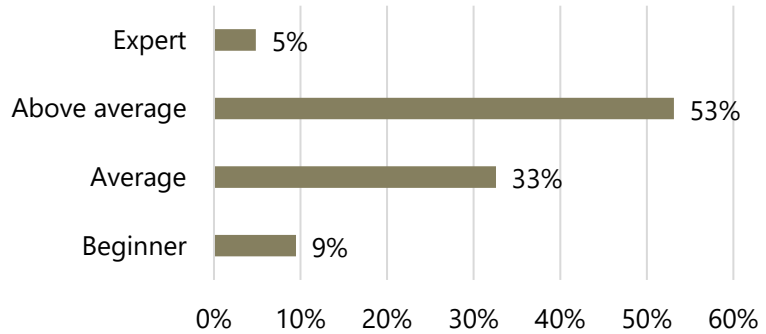
Figure 11. Most fished for species by Kansas anglers ranked from most targeted (1st) to least targeted (23rd).



Anglers were asked to identify *one place* they go fishing the most in Kansas. The top 10 locations were private ponds (19.5%), Milford Reservoir (4.4%), Hillsdale Reservoir (4.1%), Cheney Reservoir (3.3%), El Dorado Reservoir (2.9%), Clinton Reservoir (2.9%), Perry Reservoir (2.3%), Melvern Reservoir (2.0%), Glen Elder Reservoir (1.8%), and Pomona Reservoir (1.6%). See Appendix C for the complete list of locations.

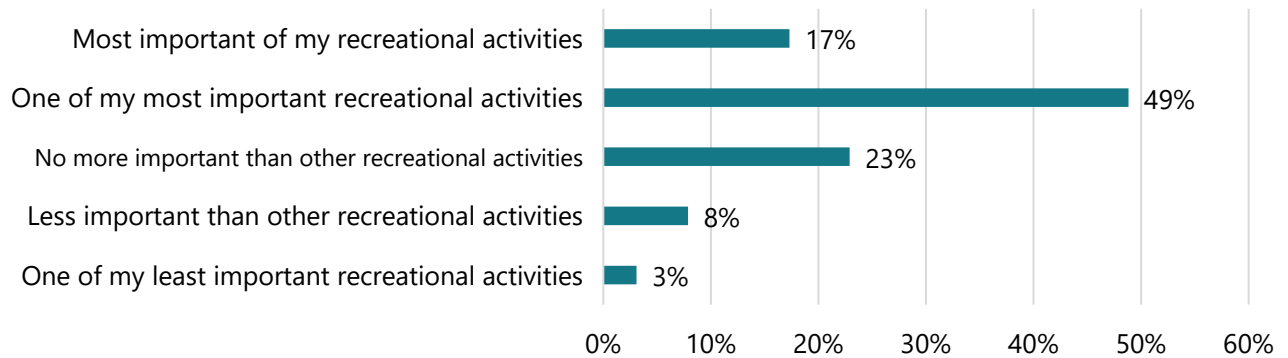
Anglers were asked to rate their angling skill level and the majority (53%) rated themselves as above average (Figure 12). The plurality, or 33%, rated themselves as average, while 9% self-reported as beginners and 5% as experts.

Figure 12. How do you rate yourself as an angler?



KDWP also asked respondents to rank the importance of fishing compared to their other outdoor recreational activities. Almost half (49%) rated fishing as one of their most important recreational activities (Figure 13). Only 17% ranked fishing as the most important of their recreational activities.

Figure 13. Compared to your other outdoor recreational activities, how important to you is fishing?



Importance of KDWP Fisheries Programs and Services

Anglers and Kansas Department of Wildlife and Parks Fisheries Division staff were surveyed about the level of importance of 33 fisheries programs and services offered by the Department to determine if there were similarities and differences between the two groups. Anglers rated 21 of the 33 programs with a mean level of importance 3.00 or greater (i.e., which is above the middle value of “moderately important” and indicated by the vertical dashed line on Figure 14). The 10 most important programs (i.e., highest mean value) according to anglers were lake

rehabilitation, stocking fish, improving fisheries habitat, enforcement of regulations, Operation Game Thief, aquatic nuisance species (ANS) information, fisheries research, Kansas Fishing Regulations Summary, fishing clinics for kids, and fishing reports (Figure 14). Anglers may rely on these core programs for quality fishing experiences.



Anglers rated 12 programs below moderately important, indicated by mean scores less than 3.00 (i.e., which is below the middle value of “moderately important” and indicated by the vertical dashed line on Figure 14) and were on the spectrum of “slightly important” or “not at all important.” The 10 least important programs according to anglers were

fishing clinics for families, fisheries district newsletters, the HuntFish KS mobile app, Kansas Wildlife and Parks magazine, trout stocking, GPS coordinates of fish attractors, KDWP Fisheries’ Division Facebook posts, mobile aquarium, Vamos a pescar – Hispanic/Latino family fishing program, and master angler award. Although these programs were not rated as important to anglers, this does not necessarily mean they should be dropped. These programs are likely tangential to anglers’ fishing experiences and further evaluation of these is warranted.

Anglers were provided the chance to select “unsure/I don’t know” when asked about level of importance of programs. The highest proportion of “unsure/I don’t know” responses were for the mobile aquarium at 8%. Conversely, the lowest proportion of “unsure/I don’t know” responses was less than 1% for enforcement of regulations. With such low proportions, the angling public is mostly familiar with many of the Fisheries Division services and programs. However, programs with the highest proportion of “unsure/I don’t know” responses could be an area of engagement with the angling public to increase familiarity.

There were 9 programs and services that anglers rated more important than KDWP, including Operation Game Thief, fishing clinics for kids, fishing reports, pond management information, fishing forecast, bathymetric maps, fisheries newsletters, Kansas Wildlife and Parks magazine, and the mobile aquarium; specifically, Operation Game Thief, fishing reports, Kansas Wildlife and Parks magazine, and the mobile aquarium were significantly more important to anglers than KDWP (Figure 14).

Programs that KDWP indicated were significantly more important compared to anglers were enforcement of regulations, aquatic nuisance species (ANS) information, fisheries research, Kansas Fishing Regulations Summary, stocking Walleye, Kansas fishing atlas, fish population

sampling, Community Fisheries Assistance Program (CFAP), creel surveys, angler opinion surveys, stocking Hybrid Striped Bass, certified bait dealers program, and Vamos a pescar – Hispanic/Latino family fishing program (Figure 14). KDWP fisheries staff are subject matter experts who know these programs are essential to fisheries management in Kansas. However, this provides KDWP an opportunity to improve awareness of these programs and improve the efficiency of programs where differences exist.

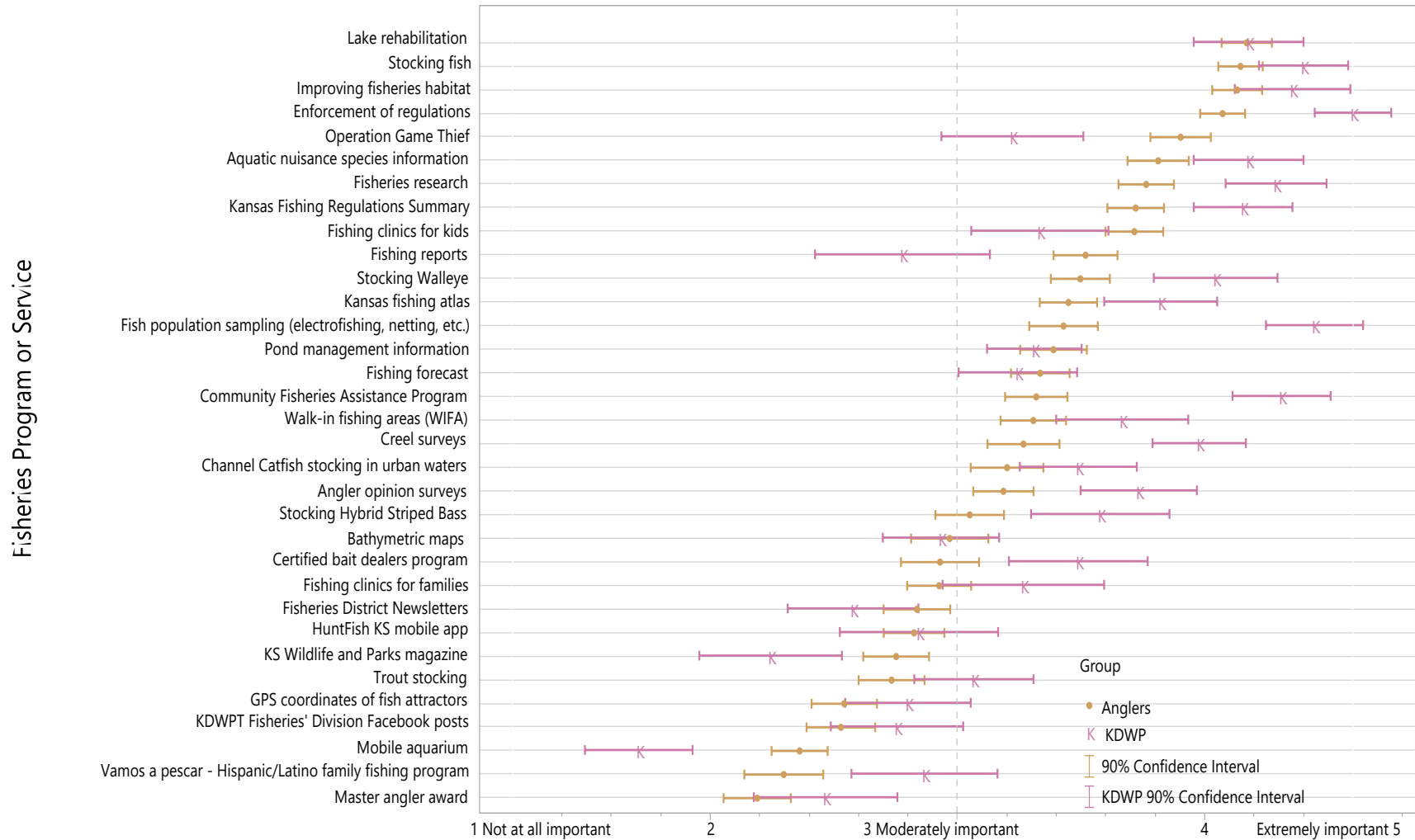
Anglers were also asked in an open-ended question if there were other fisheries programs or services that they would like KDWP to offer. Many respondents mentioned programs that were already



available or those they would like to see increased or provided more of, including more youth events or opportunities, stocking more fish, increased enforcement, volunteer trash pickup days involving the public, more habitat, real time fishing reports or public generated fishing reports, fish identification classes, more free fishing days, better access for kayaks and canoes, more heated docks, fish cleaning stations, more handicap fishing access, lake and lawn maintenance (mowing, trimming trees, fixing potholes in roads), more access to creeks, rivers,

and streams, summer programs for kids, connecting with schools to teach kids to fish, workshops for algae management in ponds, and fishing programs for women.

Figure 14. Mean and 90% confidence interval of the importance of fisheries programs or services according to anglers and KDWP.



Fishing Enablers and Constraints

Like the 2013 survey, KDWP investigated the factors that may limit or enable fishing participation. The factor that enabled fishing participation the most for respondents was their interest in fishing (mean = 3.83) (Figure 15). The next greatest enabler was fishing opportunities near their home (mean = 3.46). Also, respondents' health (mean = 3.37) and their fishing skills (mean = 3.33) greatly enabled their participation. Conversely, work commitments were the greatest constraint to their participation (mean = 2.30), followed by the number of other people fishing nearby (mean = 2.35). The presence of other people fishing near me was a constraint as well (mean = 2.48).

Figure 15.
Mean and
90%
confidence
interval for
limiting and
enabling
items to
respondents'
fishing
participation.

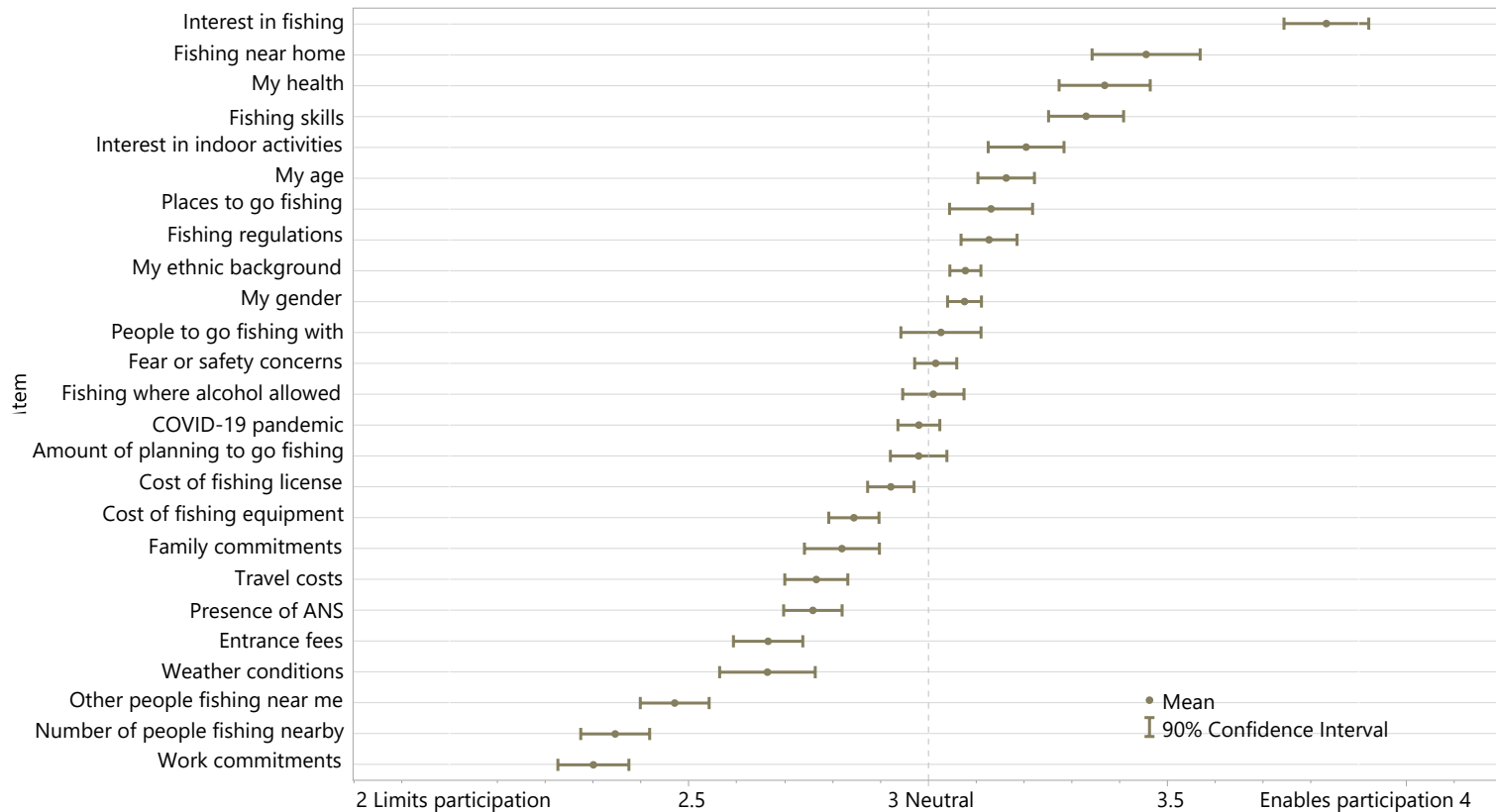
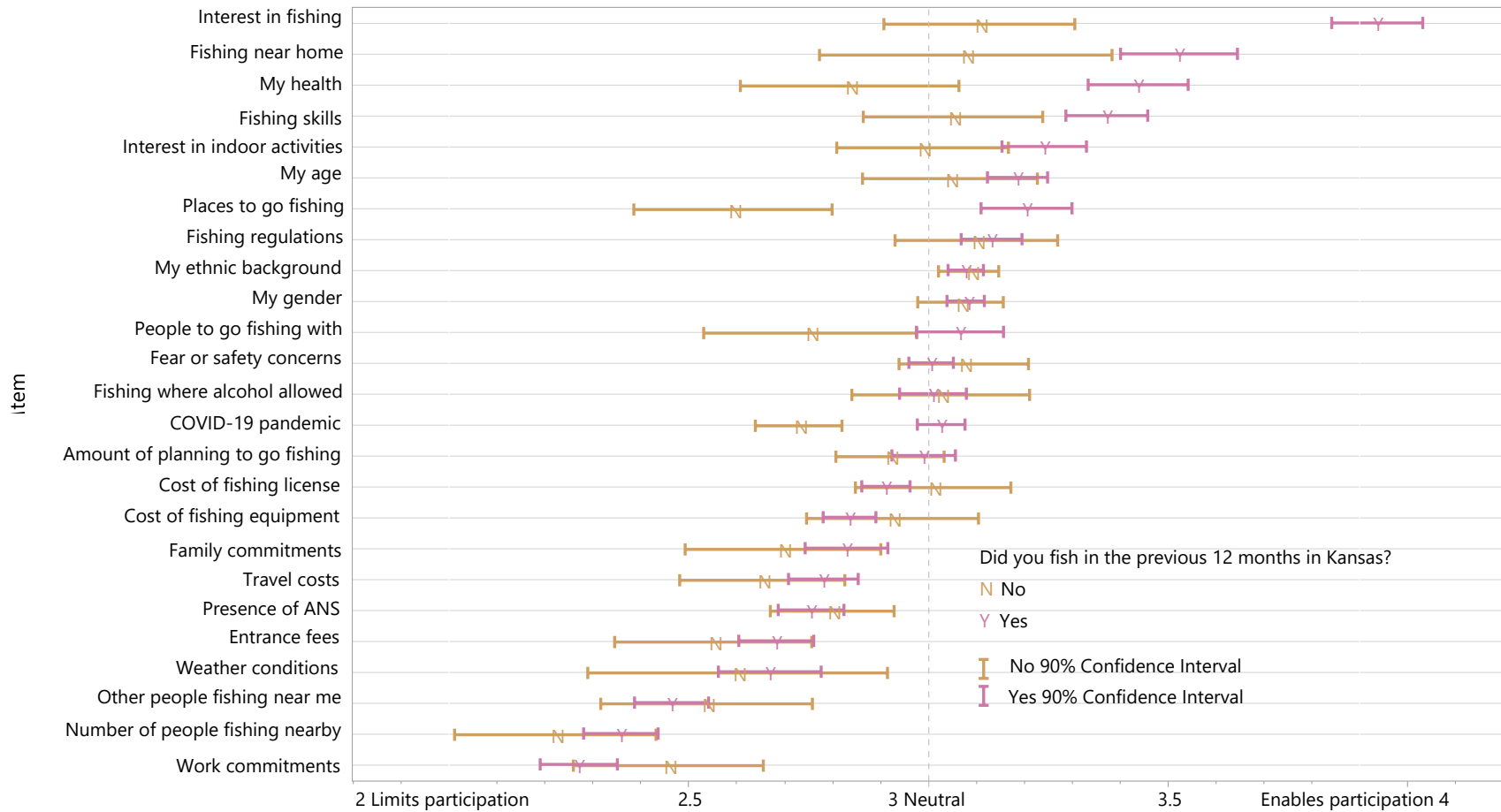


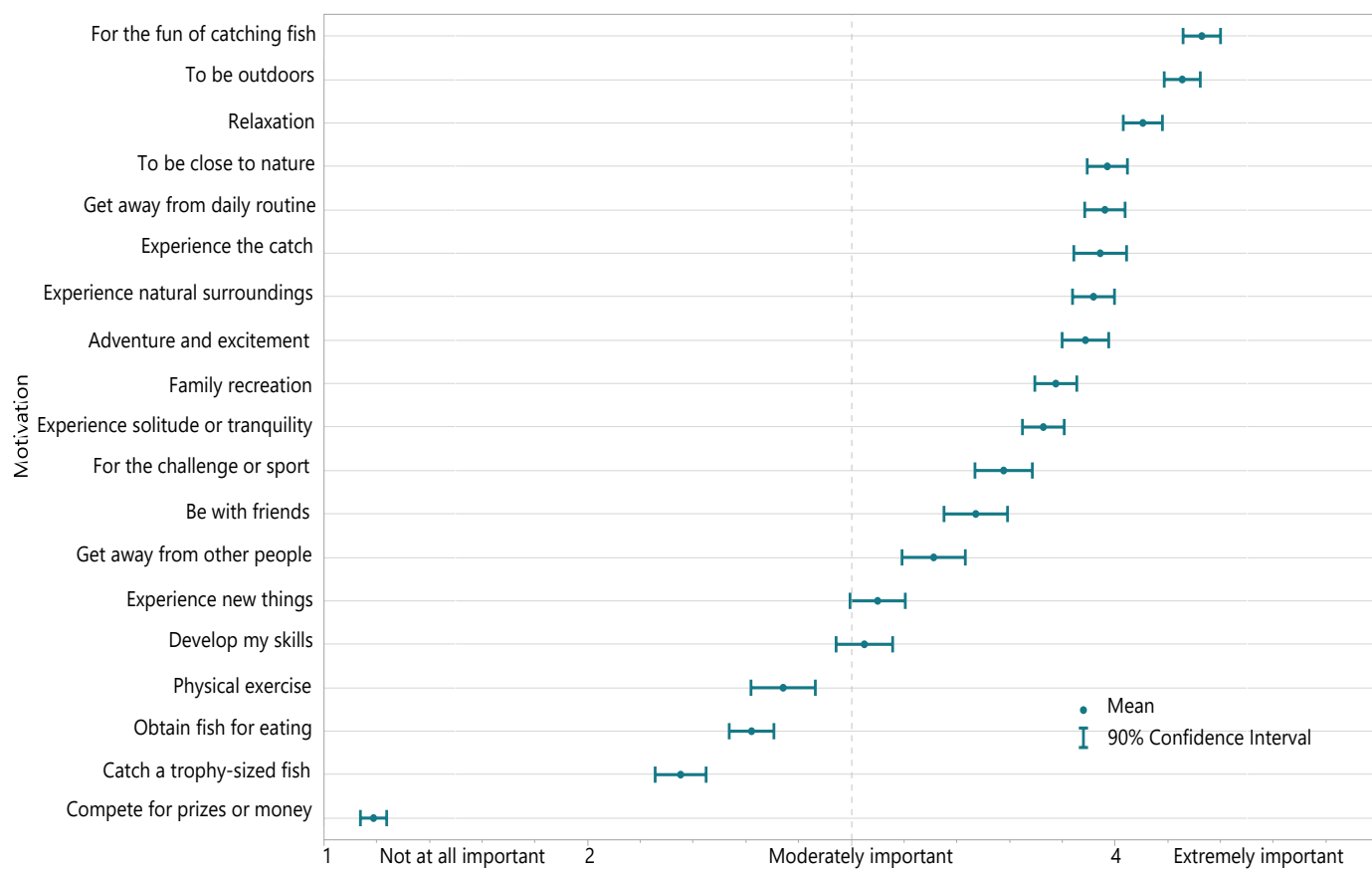
Figure 16. Mean and 90% confidence interval for limiting and enabling items to respondents' fishing participation based on whether they fished in the previous 12 months in Kansas.



Fishing Motivations

Understanding why people fish, i.e., their motivations, enables managers to tailor opportunities (e.g., remote locations, family-friendly amenities, or manage for high catch rates) to align with those motivations. The three most important motivations for fishing were for the fun of catching fish, to be outdoors, and for relaxation (Figure 17). To experience natural surroundings and to be close to nature were also rated relatively important motivators. The least motivating factor was to compete for prizes or money, followed by to catch a trophy-sized fish, and for physical exercise (Figure 17). To obtain fish for eating was the third least important rating to Kansas

Figure 17. Mean and 90% confidence interval for the level of importance of fishing motivations.



anglers. Anglers that intended to fish but did not fish in 2020 generally rated fishing motivations less important than their participating counterparts (Figure 18). Three motivations stood out that were different among male and female anglers; fishing for the challenge or sport was more important for males while fishing to be close to nature and family recreation were more important for females (Figure 19). Beyond that, male and female anglers have similar motivations.

Figure 18. Mean and 90% confidence interval for the level of importance of fishing motivations based on whether anglers fished in the previous 12 months in Kansas.

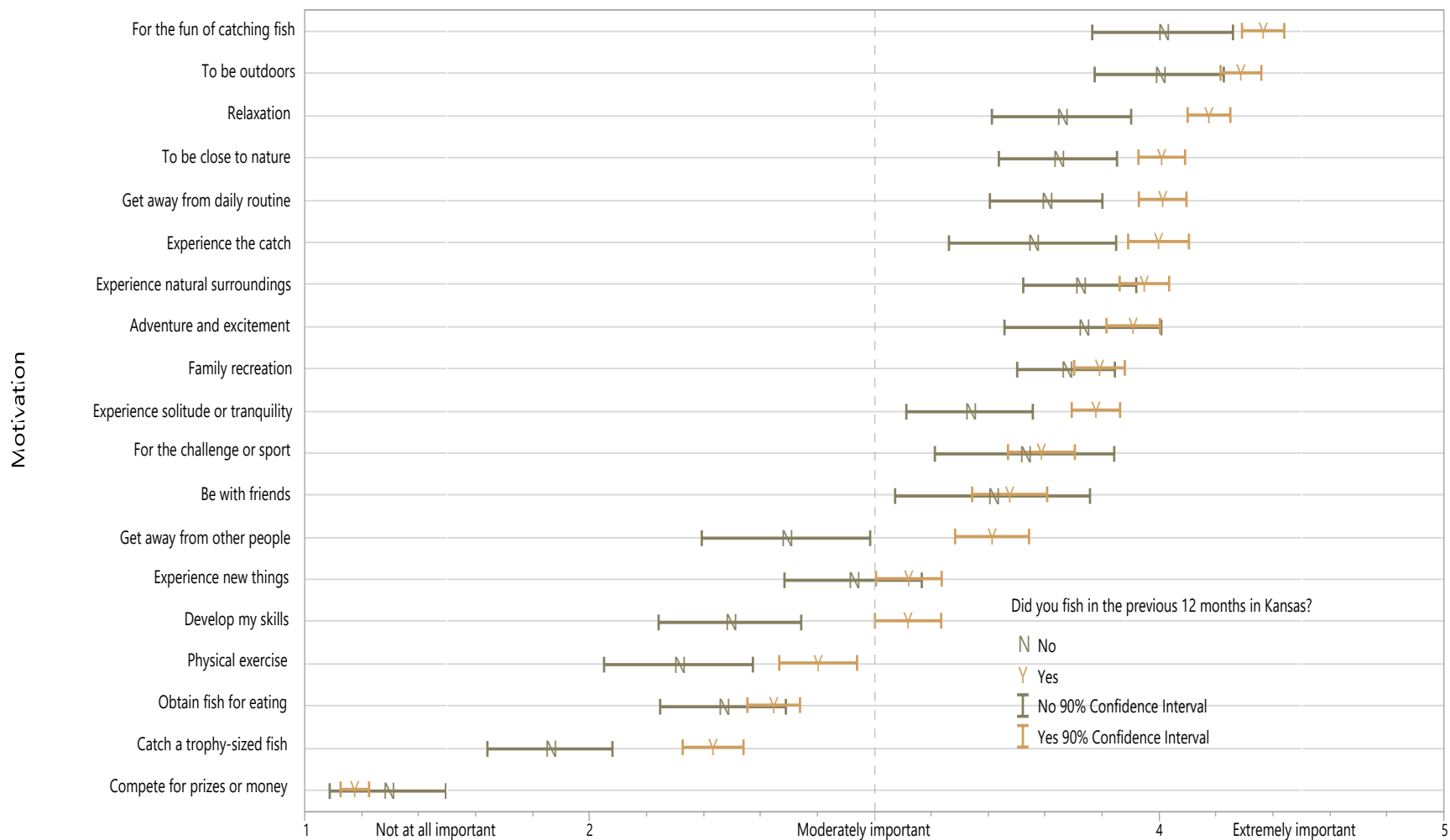
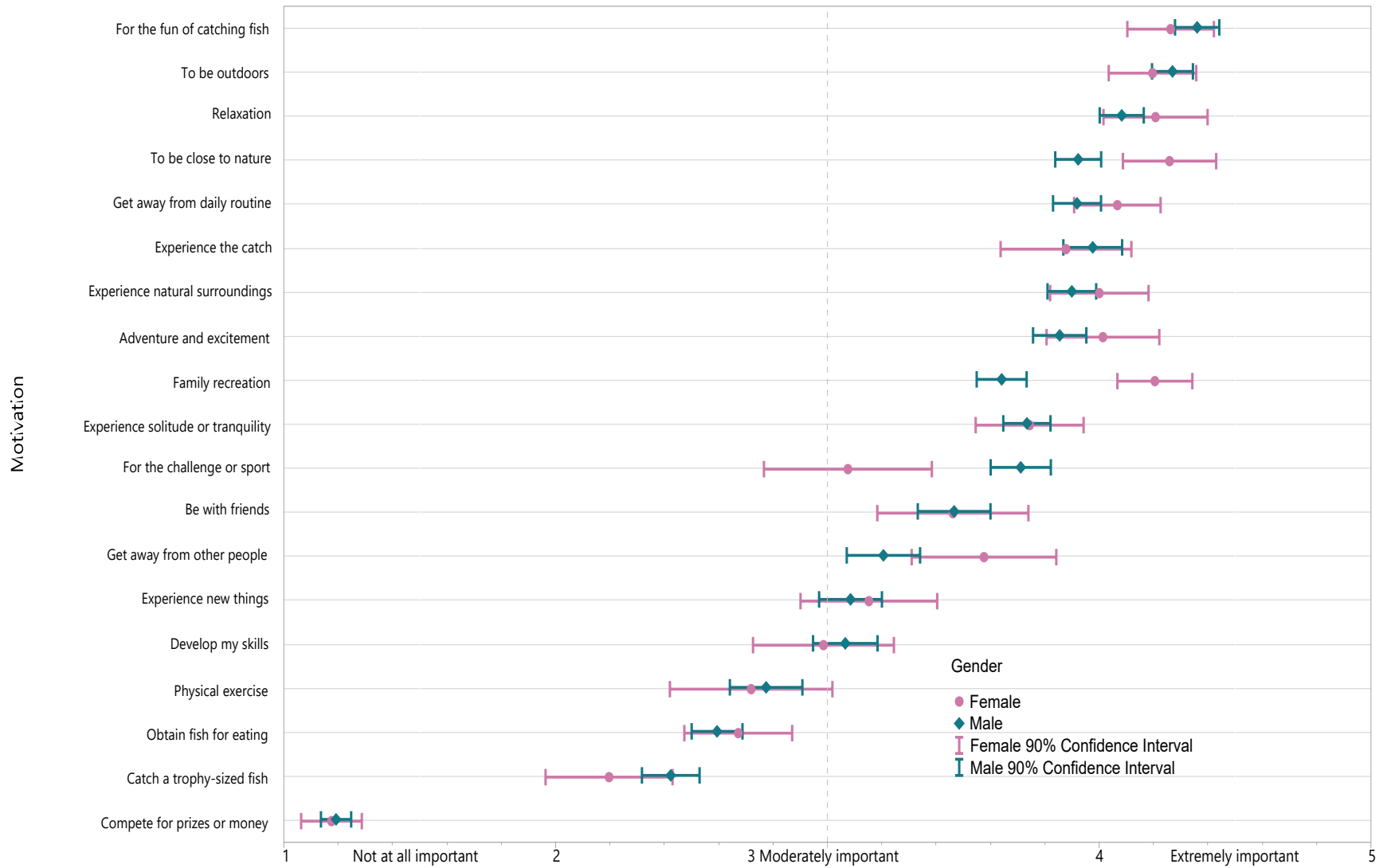


Figure 19. Mean and 90% confidence interval for the level of importance of fishing motivations by gender according to the 2020 Kansas Licensed Angler Survey.

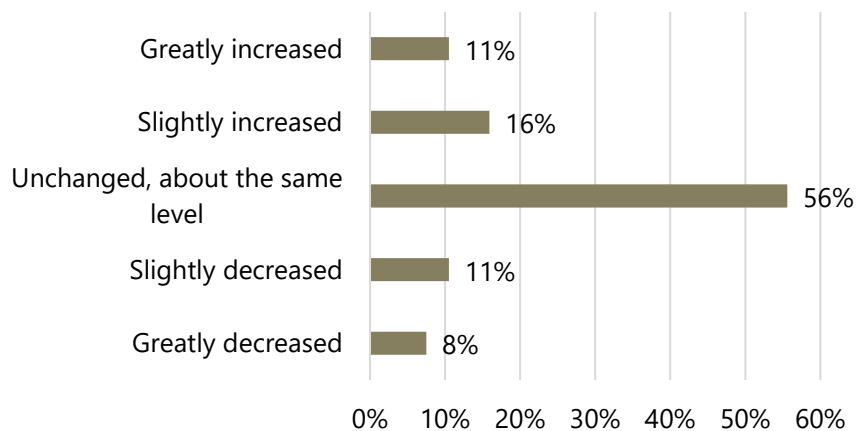


Impact of the COVID-19 Pandemic on Fishing Participation

The COVID-19 pandemic has impacted all our lives. Like those in other states, Kansans were advised to stay home to prevent the spread of the virus. Outdoor recreational activities, such as fishing, were deemed appropriate if social distancing guidelines were followed. To determine the impact of the COVID-19 pandemic on fishing participation, KDWP asked if anglers had fished in Kansas at any time during the pandemic (approximately March 2020 to present day). Eighty-seven percent (87%) fished in Kansas during the pandemic whereas 13% did not.

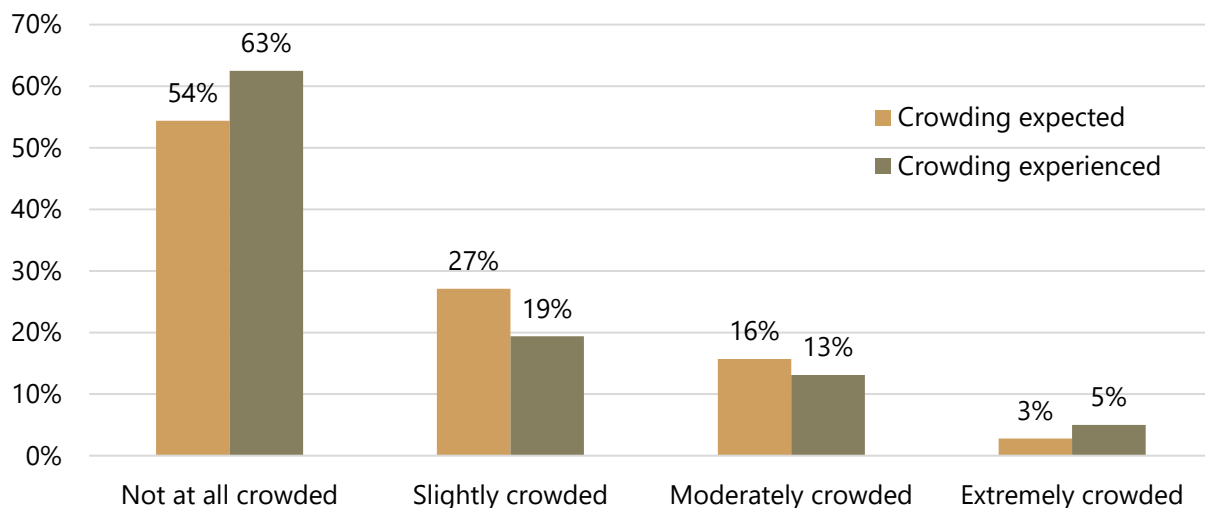
Most anglers, or 56%, indicated their fishing participation due to the pandemic was unchanged (Figure 20). Additionally, 27% indicated their fishing participation slightly or greatly increased due to the pandemic. Only 19% saw their fishing participation slightly or greatly decrease due to the pandemic (Figure 20).

Figure 20. How has the COVID-19 pandemic affected your fishing participation?



Respondents were asked about the level of crowding they expected and the level of crowding they experienced on their fishing trips during the pandemic because KDWP received anecdotal reports that fishing areas were crowded with an influx of participants. Most anglers, or 54%, indicated they did not expect it to be crowded at all (Figure 21). The next highest percentage, or

Figure 21. Level of crowding expected and experienced during the COVID-19 pandemic.

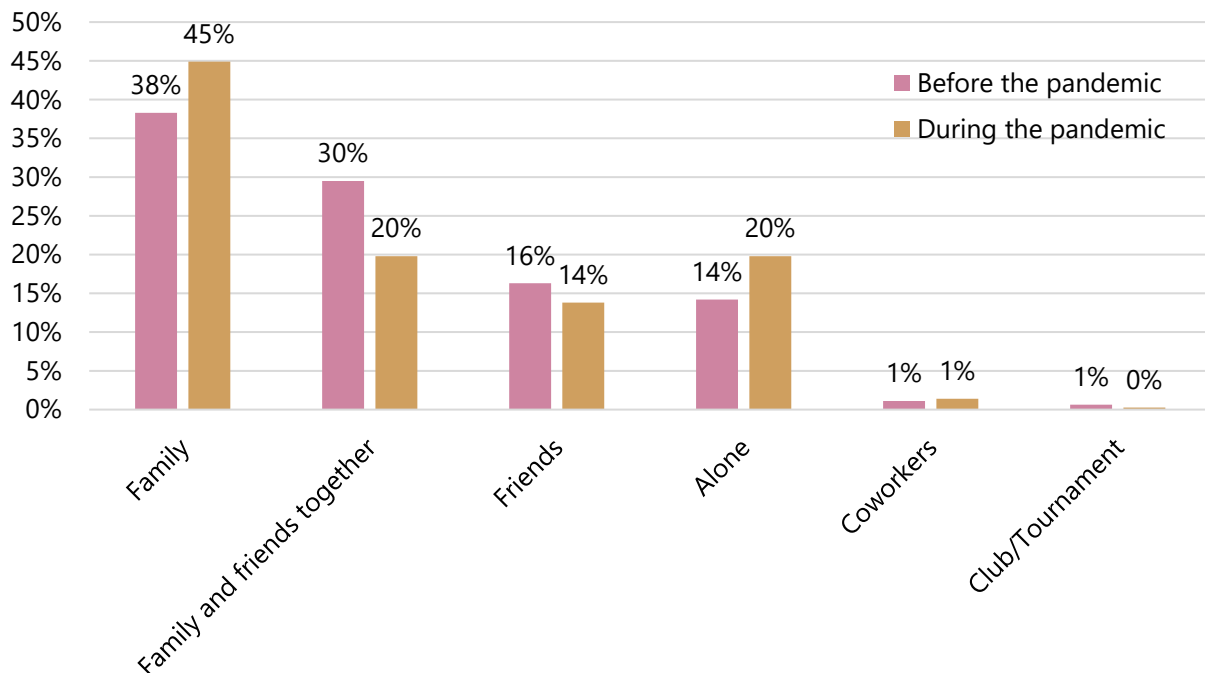


27%, expected it to be slightly crowded. Only 3% expected to be extremely crowded. When asked what level of crowding they experienced on their fishing trips during the pandemic, 63% were not at all crowded. Nineteen percent (19%) were slightly crowded. Only 5% of respondents were extremely crowded. Therefore, the anecdotal reports were not the reality for most participants, but likely the case for a few highly popular locations.

Anglers were asked if the social groups they fished with changed as a result of the pandemic. Before the pandemic, the plurality of anglers, or 38%, fished with their family most often (Figure 22). However, during the pandemic, this percentage increased to 45%. The percentage of anglers who fished with family and friends together before the pandemic (30%) decreased during the pandemic to only 20%. The percentage of people who fished alone increased during the pandemic, from 14% before the pandemic to 20% during the pandemic. Anglers also fished less often with friends: 16% before the pandemic to 14% during the pandemic.

As a result of the pandemic, anglers changed their behavior by carefully selecting who they went fishing with and it was not always the same group they participated with pre-pandemic. Before the pandemic, people traveled an average of 39.03 one-way miles for their fishing trips in Kansas. During the pandemic, there was another behavior change: people traveled fewer miles for their fishing trips, or an average of 34.62 miles.

Figure 22. Group fished with most often before and during the pandemic.



Angler comments about Covid

How else has the COVID-19 pandemic impacted your fishing?

Since covid 19 shut down some other activities, I had more time for fishing I had been wanting to do this spring.

Some places like the spillway were too crowded. We couldn't go there, and people weren't staying away from each other.

It made me find my passion for fishing again.

I lack fishing supplies due to everyone else buying them up.

Fish think I look funny in my mask!

CONCLUSION

Approximately 400,000 people annually fish in Kansas, including residents and nonresidents (USFWS 2011). KDWP is dedicated to conserving the natural resources of Kansas and the Fisheries Division is responsible for managing fisheries across the state. In addition to routine population sampling to monitor fisheries, human dimensions surveys are conducted to monitor the sociological aspect. Anglers that are dissatisfied may not continue fishing, thus causing declining license sales. The average churn rate, or percentage of anglers that do not purchase a license the following year, was 50% from 2016 to 2019 (Southwick Associates 2022).

The purchase of a fishing license privilege does not necessarily translate to fishing participation. Even among licensed anglers (i.e., those who already purchased the license with the intent to

participate), the participation rate is dropping. In 2006, 94.5% of Kansas licensed anglers fished in Kansas in the previous 12 months (KDWP 2006) and slightly fewer, or 93.0% fished in 2013 (Steffen 2015). This decreased to 87.4% in 2020. Those who purchase a license and do not participate are less likely to renew their license the next year, exacerbating the downward trend. To increase agency awareness of who Kansas anglers are, the Fisheries Division should create a Kansas angler profile/infographic each year that specifies the number of licensed anglers, participation rate (i.e., number of anglers in relation to state population), demographic data (sex, age, ethnicity/race), churn rate, new anglers, and any other relevant information to tell the story of the Kansas angler.

Recommendation #1: Create an angler profile each year in an easy-to-understand format (e.g., infographic, dashboard) for the Fisheries Division to be aware of Kansas angler demographics, trends, and patterns as specified in the Conclusion. This would be used to inform potential marketing efforts to increase fishing license sales and angling participation.

Implementation of KDWP's Recruitment, Retention, and Reactivation (R3) Action Plan in conjunction with re-tailoring our management efforts toward needed and valued programs will be crucial for KDWP to implement strategies to increase fishing participation.

Recommendation #2: Implement recruitment, retention, and reactivation (R3) strategies from the Kansas R3 Action Plan to increase fishing participation.

Due to the majority (88%) of Kansas anglers who fish from the bank, shoreline, or a dock and KDWP dedicating 3 regional fisheries biologists specializing in access, KDWP should increase resources spent on access. Similarly, this recommendation applies to habitat as well because KDWP has dedicated 3 regional fisheries biologists to improving and increasing fisheries habitat and anglers rated lake rehabilitation and improving fisheries habitat highly important.

Recommendation #3: Increase and improve shoreline access and fisheries habitat.

There were parallel findings that indicated private ponds are an important resource for Kansas anglers. Private ponds were the most fished location by nearly 20% of anglers (Appendix C) and had the greatest mean number of days fished (6.40 days, Table 2). Similarly, pond management information was rated fairly important by anglers and KDWP staff; it was anglers' 14th most important fisheries service (out of 33) provided by KDWP (Figure 14). KDWP district fisheries biologists frequently receive phone calls and emails from the public with questions about private pond management on topics including algae and aquatic vegetation control, harmful algal blooms, stocking, fish kills, general fish population management, and requests for KDWP to electrofish their pond (J. Koch, personal communication). KDWP district fisheries biologists must be prudent with their time because their priority is management of public waters.

Pond management resources including [pond management frequently asked questions](#) and the [Producing Fish and Wildlife in Kansas Ponds](#) booklet are available on the agency's website. These resources should be refreshed and promoted, especially during times of the year when these questions typically arise. Private pond discussions between the public and district fisheries biologists are an opportunity for positive interactions which demonstrate the expertise of our staff and to potentially enroll private ponds in the walk-in fishing access program. There is demand for pond management expertise as evidenced by the findings described above. It is recommended the Fisheries Division discuss its position or role in private pond management and providing information to private landowners with ponds; however, it is recognized that KDWP, like other Kansas state government entities, cannot compete with private companies.

Recommendation #4: Delineate the Fisheries Division's role in private pond management and providing pond management information and resources. Update the KDWP pond management website resources and information as necessary.

Fishing is a male-dominated activity (Manning 1999), and this is true in Kansas in which 75% of anglers are male (Southwick Associates 2022). This proportion has been consistent in the 2006, 2013, and 2020 licensed angler surveys (KDWP 2006, Steffen 2015). Previous studies on the intersectionality of gender and leisure have determined that female leisure time is replaceable; it is taken when time is abundant and sacrificed when other duties prevail, more so than their male counterparts (Floyd et al. 2006, Wiley et al. 2000). In the 2013 licensed angler survey, respondents' female children had 47% less odds of fishing participation than male children (Steffen 2015). Another study determined adult males were 3.5 times more likely to participate in freshwater fishing (Lee et al. 2016). These contributing factors (i.e., females not being as likely to participate in fishing, the fragility of female leisure time, and societal/familial reluctance to pass on fishing to daughters) portend constraints for future female angling participation.

Recommendation #5: Increase marketing and aquatic education efforts geared toward women, such as the Becoming an Outdoors Woman program, to boost their fishing participation.

Fisheries' Division resources, including staff time and budget allocation, may be prioritized on angler species preferences. A previous recommendation from the 2013 licensed angler survey was to increase Largemouth Bass from the third most fished for species to the first most fished for species to be measured in the next licensed angler survey (Steffen 2015). This goal was accomplished; Largemouth Bass were both the most preferred and targeted fish by Kansas anglers in 2020.

The aforementioned recommendation was accomplished by improving Largemouth Bass fishing opportunities through research and other efforts including:

- Effective management through standard sampling and regulation (Martene et al. 2012),
- Supplemental stocking,
- Comparison of naturally reproduced and stocked Largemouth Bass to a fishery through genetic tissue sample analysis (Sowards 2018),
- Regional fisheries biologists' efforts in northwest Kansas conducting research projects to improve Largemouth Bass angling (S. Waters, personal communication),
- A comprehensive review of Largemouth Bass virus (LMBV) in 25 impoundments in Kansas (Salazar et al. 2022),

- Increased Largemouth Bass relative abundance due to Gizzard Shad *Dorosoma cepedianum* (Klein et al. 2022),
- Ph.D. student research on the prey base of Largemouth Bass diet before and after rotenone treatment (Renner 2022),
- Research on how relative abundance of largemouth bass in small impoundments affects bluegill *Lepomis macrochirus* growth (Neely et al. 2020), and
- Habitat restoration from the 2019 flood (L. Kowalewski, personal communication)

La Cygne Reservoir in northeast Kansas is an example of a highly successful Kansas Largemouth Bass fishery; La Cygne Reservoir was ranked the 10th best bass lake in the Central region in 2018 by *Bassmaster*[®] magazine (<https://www.bassmaster.com/best-bass-lakes/news/2018-best-bass-lakes-revealed/>). It is recommended the Fisheries Division continue with dedicated management and research similar to those mentioned above due to the continued popularity of Largemouth Bass in Kansas and nationwide. Similarly, KDWP should also apply recommendation #6 for the species it deems priority (i.e., species preferences in this report) because there has been much research and expertise gained since the last publication of many species management plans.

Recommendation #6: Prioritize resources (e.g., funding, staff time, hatchery resources, research, etc.) on species, programs, and services that align with angler level of importance and preferences. Update species management plans with new research to guide species priorities and future research recommendations and needs.

Motivations are defined as the cognitions that propel people to go fishing, or more simply, *why* people fish. Fisheries managers need to understand angler motivations to ensure ample fishing locations and opportunities are congruent with motivations (Kuehn et al. 2013). Motivations were measured in the 2013 and 2020 licensed angler surveys to establish trends and examine patterns, and this should continue in future licensed angler surveys (Steffen 2015). The top three motivating factors, for the fun of catching fish, to be outdoors, and relaxation, were consistent in both surveys although ordered differently. This was also true for the bottom motivating factors to obtain fish for eating, catch a trophy-sized fish, and compete for prizes or money for the 2013 and 2020 surveys.

Motivations for those who intended but did not go fishing in 2020 (i.e., “intended-anglers”, see below description) were also compared to those who did (Figure 18). The angler survey sample was randomly drawn from the license database and the license was a surrogate for fishing intent. Therefore, the respondents who did not fish in 2020 are herein referred to as “intended-anglers.” There were several differences in motivations between the intended-anglers and others, but two in particular for which there was diverging importance. Intended-anglers were motivated less by getting away from other people and developing their skills, whereas these were significantly more important motivations for others (Figure 18). Additional analysis

determined differences in male and female angler motivations; males were significantly more motivated to fish for the challenge or sport whereas females were significantly more motivated to fish for family recreation and to be close to nature (Figure 19).

Recommendation #7: Expand fishing opportunities that align with female-preferred motivations optimized for family fishing recreation and to be close to nature.

KDWP should evaluate its programs and services periodically to effectively prioritize its resources (e.g., time, personnel, budget, etc.) and remain accountable, transparent, and relevant to the angling public. The programs and services rated most important (i.e., lake rehabilitation, stocking fish, improving fisheries habitat, etc.) should be prioritized because they are highly valued by the angling public. Angler satisfaction may decrease if these programs and services were not up to par. These highly important programs and services can serve as engagement opportunities with the public for which the agency can highlight its successes.

Researchers previously identified attitudinal differences and preferences between anglers and natural resource managers (Connelly et al. 2000). Therefore, it was important for KDWP to understand how agency staff opinions of the level of importance of fisheries programs and services could differ from anglers' importance ratings. However, KDWP fisheries professionals need to prioritize certain programs and services (i.e., regulation enforcement, fisheries research, fish population sampling, access programs such as the Community Fisheries Assistance Program (CFAP), and creel and angler surveys) to determine appropriate management actions, set regulations, and conserve the resource for current and future anglers, regardless of angler importance ratings. These are the tools necessary for KDWP fisheries managers and staff to effectively manage fisheries.



There was inconsistency in responses involving enforcement of regulations and Operation Game Thief for KDWP. Enforcement of regulations was the most important to KDWP; however, Operation Game Thief, an anonymous tip line for people to call and report wildlife violations, was of lower importance to KDWP compared to anglers. An interpretation of this result is some perceive Operation Game Thief as ineffective at catching wildlife violators (i.e., enforcing regulations). This inconsistency is best addressed with facilitated discussions for Fisheries Division staff to express their concerns about regulation enforcement. Few poaching studies have been conducted in Kansas and typically address wildlife violations (e.g., turkey poaching; Miller 1993). A study of angler compliance in Australia concluded 90% of anglers

complied with no-take zones in the Great Barrier Reef Marine Park (Arias and Sutton 2013). Fisheries Division staff's perceived issues with enforcement of regulations coupled with unknown levels of angler compliance in Kansas indicates the need for more research on this topic.

Recommendation #8: Evaluate angler compliance and address Fisheries Division staff's concerns related to regulation enforcement.

Two fisheries programs and services were seen as less important to KDWP: the Kansas Wildlife and Parks magazine and the mobile aquarium. Both of these are forms of public outreach and engagement, so KDWP may need to place more emphasis on these programs due to their relative importance to the angling public.

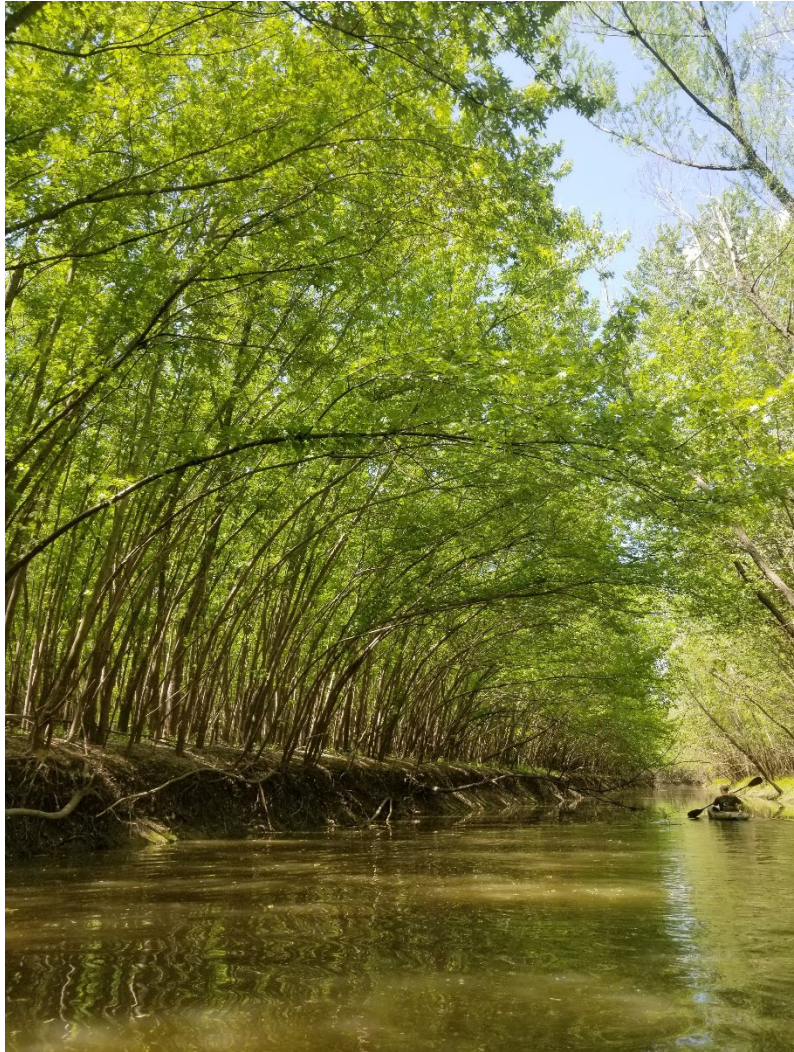
Two fisheries programs had significantly divergent importance to anglers and KDWP: fishing reports (anglers rated it above moderately important and KDWP below moderately important) and the certified bait dealer program (KDWP rated above moderately important and anglers below). Why do KDWP staff not rate fishing reports as highly as anglers? This question cannot be answered with the limited data from this survey effort. The proportion of anglers who were unsure or did not know about the certified bait dealer program was just under 5%. Fisheries staff understand the certified bait dealer program's purpose is to prevent the spread of aquatic nuisance species, but anglers may not. This may explain the differences in importance between anglers and KDWP.

Recommendation #9: Assess and prioritize Fisheries Division programs and services through facilitated discussions to allow diverse opinions to be expressed in a productive way. This is crucial for the programs mentioned in this report with differences in level of importance between anglers and KDWP (e.g., fishing reports, certified bait dealer program).

Analysis of the importance of Fisheries programs and services is meant to prompt further discussion about the use of agency resources. In the era of taking on more tasks, this analysis could be a useful tool for prioritization. It is prudent to periodically realign priorities to provide relevant services to the public and be responsible stewards of the resources the people of Kansas entrust us to manage.

Fishing participation constraints and enablers were fairly consistent in the 2013 and 2020 survey although direct comparisons cannot be made due to changes in item wording. When comparing those who did fish in 2020 to those who did not fish in 2020 (herein "intended-anglers"), the most notable difference was level of interest in fishing (Figure 16). Intended-anglers had lukewarm interest and it was not strong enough to propel them to go fishing. The most constraining factors for both anglers and intended-anglers were work commitments, number of

people fishing nearby, others fishing near me, weather conditions, and entrance fees; these constraints were not significantly different across the two groups. Additionally, the four most enabling factors for anglers (interest in fishing, fishing near home, their health, and fishing skills) were significantly higher than the intended-angler group. Therefore, anglers were most influenced by the enabling factors rather than overwhelmed by the constraints (Kuehn et al. 2013). There were inconsistent findings in which anglers indicated the lack of crowded conditions (Figure 21) but rated “number of people fishing nearby” and “other people fishing near me” as constraints to fishing participation (Figure 16). Future research is needed on fishing constraints and enablers, which may be best elucidated through in-depth, qualitative interviews.



The COVID-19 pandemic was in full force in 2020, which encompassed the time period of this survey project. KDWP restricted public access inside its offices to reduce the risk of infection of staff. However, there were few to no restrictions at facilities and locations including wildlife areas, state parks, reservoirs, and state fishing lakes. There were a few localized exceptions in which a city or county restricted access, like Chase State Fishing Lake. The county sheriff closed Chase State Fishing Lake for several weeks because there was an influx of recreationists from outside Chase County. Anecdotally, KDWP staff reported increased use at most of its areas as evidenced by more litter and an uptick in recreationists unfamiliar with regulations. Other studies have documented an increase in fishing effort during the pandemic (Midway et al. 2021) and other outdoor recreation like walking and gardening (Shen et al. 2022). Outdoor recreation participation increased during the pandemic in Sweden (Hansen et al. 2022).

Fifty-six percent (56%) of Kansas anglers’ fishing participation remained unchanged during the pandemic, unlike others that documented slight increases in recreational fishing effort (Midway et al. 2021) or declining fishing effort in Canada due to the pandemic (Howarth et al. 2021).

Although the majority of Kansas anglers' participation was unaffected by the pandemic, there were 27% whose fishing participation increased, and 19% that decreased. Changes in fishing effort during the pandemic may be due to several factors varying from state-to-state including access to fishing locations, travel restrictions, prevalence of infection, perceived risks of infection, changes in employment, family dynamics, or free time, and differing fishing motivations (Hansen et al. 2022, Howarth et al. 2021, Midway et al. 2021). It is important to note that fishing participation, fishing effort, and buying a fishing license are sometimes used interchangeably. For the purposes of this study, participation refers to how often one goes fishing.



Kansas anglers were not crowded on their fishing trips during the pandemic and were less crowded than they expected. Due to anecdotal reports of the lack of fishing gear in stores and more trash at fishing locations mentioned by several anglers in open-ended survey comments, KDWP staff reports of encounters with

recreationists that were not aware of regulations, and a 5-year high of 33% new anglers recruited in 2020, this confirms the presence of *new* people recreating outdoors during the pandemic. In a previous study of new outdoor recreationists, researchers determined these new participants substituted outdoor activities for their usual forms of leisure such as going to movies or bars (Rice et al. 2021). The lack of crowding at fishing locations in this study may also indicate new participants because they did not have prior experiences to form any expectations of crowding because they were inexperienced.

Future research should include data mining the KDWP license database to determine the characteristics of those who had not purchased a license previously (i.e., new participants) in 2020. The juxtaposition of these survey results and a thorough review of pandemic-related outdoor recreation changes and motivations could help KDWP identify marketing personas for which a targeted marketing effort could be implemented.

Recommendation #10: Determine the characteristics and fishing motivations of those new or reactivated anglers during the pandemic. Using this information, initiate a targeted marketing campaign to "personas" with similar characteristics in order to recruit, retain, or reactivate those individuals that have lapsed fishing participation since 2020.

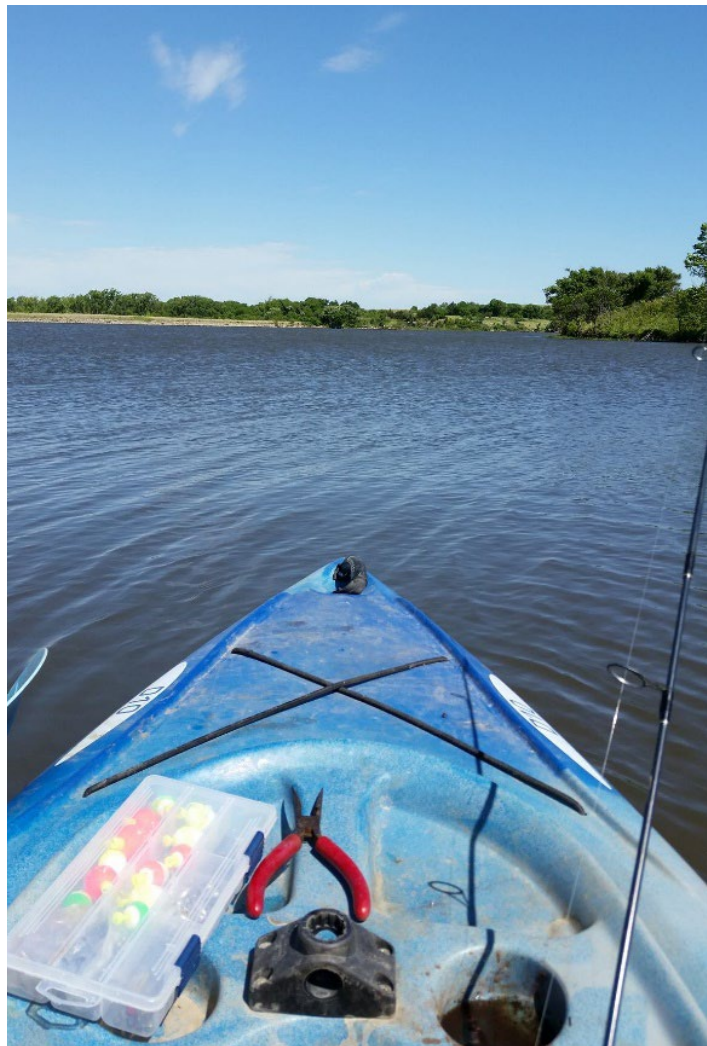
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Attention Kansas Angler –

You were randomly selected to participate in the 2020 Kansas Licensed Angler Survey. The Kansas Department of Wildlife, Parks & Tourism (KDWP) collects this information from anglers every few years to determine anglers' preferences and opinions. This information is extremely useful for us to better manage Kansas fisheries.

To take the survey online, please type <https://bit.ly/ksangler> into your web browser's address bar and click enter. **The survey will ask for your KDWP number which appears on the front of this card above your name.** If you are having difficulties accessing the survey, or prefer to complete a paper copy, please call (620) 342-0658 or email susan.steffen@ks.gov.

Kansas fisheries management relies on cooperation from its anglers. I hope your fishing trips are enjoyable and thank you in advance for your participation.

Susan Steffen
Human Dimensions Specialist for Fisheries Research



2020 Kansas Licensed Angler Survey



The Kansas Department of Wildlife, Parks and Tourism (KDWPT) would like to know your opinions about fishing in Kansas. We conduct these angler surveys to help us understand how to provide quality experiences for anglers.

You were randomly selected to participate in this survey because you had a Kansas fishing license in the previous 12 months or our survey technician encountered you recently fishing and you provided your contact information.

This survey should take about 20 minutes to complete. Your participation in this survey is voluntary; if you feel uncomfortable answering any question please skip it. If you have any questions or concerns, please contact Susan Steffen at the KDWPT Research and Survey office in Emporia at (620) 342-0658 or by email at susan.steffen@ks.gov. Thank you!

Section I. General Fishing Participation and Characteristics

1. Did you fish in Kansas in the previous 12 months?

- Yes - Continue to question #2
- No - We still have a few questions for you. **Skip to question #5.**

2. Which of the following fishing methods did you use in Kansas in the previous 12 months?

Please select all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Bank, shoreline, or dock | <input type="checkbox"/> Floatline fishing (jugfishing) |
| <input type="checkbox"/> Motorized boat | <input type="checkbox"/> Limblines, setlines, or trotlines |
| <input type="checkbox"/> Non-motorized boat, canoe, or kayak | <input type="checkbox"/> Handfishing |
| <input type="checkbox"/> Ice fishing | |

3. Please estimate the number of days (single day or any portion of a day) that you fished in the following water types in Kansas in the previous 12 months:

Reservoirs: _____ days	Private ponds: _____ days
City or county owned lakes: _____ days	Waters enrolled in the Walk-in Fishing Access (WIFA, formerly- called FISH) program: _____ days
State Fishing Lakes: _____ days	Rivers or streams: _____ days

4. On average, how far did you travel for most of your 1-day fishing trips in Kansas in the previous 12 months?

Average number of *one-way* miles: _____

5. Please write your top 5 favorite species to catch in Kansas from the list below. We are interested in your preferences, rather than which fish are readily accessible to you.

Fish species to choose from: No preference, Asian Carp, Blue Catfish, Bluegill, Channel Catfish, Common Carp, Crappie, Flathead Catfish, Green Sunfish, Largemouth Bass, Redear Sunfish, Sauger, Saugeye, Smallmouth Bass, Spotted Bass, Trout, Walleye, White Bass, Wiper (hybrid striped/white)

1st favorite species: (Example - *Largemouth Bass*) _____

2nd favorite species: _____

3rd favorite species: _____

4th favorite species: _____

5th favorite species: _____

If you did not fish in Kansas in the previous 12 months, please skip to question #8.

6. Of your preferred targeted species (the 5 fish you wrote above), which 3 do you actually fish for most?

1st most targeted species: _____

2nd most targeted species: _____

3rd most targeted species: _____

7. Please tell us the one place you go fishing the most in Kansas. Examples: Wilson Reservoir, Lyon State Fishing Lake, your farm pond, the Arkansas River, etc.

8. How do you rate yourself as an angler?

Beginner

Average

Above average

Expert

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

- One of my least important recreational activities
- Less important than other recreational activities
- No more important than other recreational activities
- One of my most important recreational activities
- Most important of my recreational activities

10. How important are the following KDWP Fisheries-related programs or services? ***

	Not at all important	Slightly important	Moderately important	Very important	Extremely important	Unsure/I don't know.
Trout stocking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing clinics for families	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HuntFish KS mobile app	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mobile aquarium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stocking Walleye	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel Catfish stocking in urban waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KDWPT Fisheries' Division Facebook posts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pond management information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lake rehabilitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Creel surveys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Certified Bait Dealers program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stocking fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing clinics for kids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vamos a pescar-Hispanic/Latino family fishing program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Master angler award	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing forecast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operation Game Thief	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stocking hybrid striped bass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk-in fishing areas (WIFA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enforcement of regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic Nuisance Species (ANS) information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fisheries research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kansas Fishing Atlas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bathymetric maps (maps showing water depth)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kansas Fishing Regulations Summary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish population sampling (electrofishing, netting, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kansas Wildlife and Parks magazine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GPS coordinates of fish attractors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improving fisheries habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Angler opinion surveys (such as this one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fisheries District Newsletters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community Fisheries Assistance Program (CFAP)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**** There were different versions of the survey in which only 5 programs/services were asked at a time. All programs/services are listed above.*

11. Are there other fisheries programs or services that you would like KDWPT to offer?

12. How much do the following limit or enable your fishing participation? ***

	Greatly limits my participation	Limits my participation	Neither limits nor enables my participation	Enables my participation	Greatly enables my participation
Work commitments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost of fishing licenses and permits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My gender	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of planning required to go fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fear or safety concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COVID-19 pandemic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing opportunities near my home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family commitments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My ethnic background	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Travel costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My interest in fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing locations where alcohol consumption is allowed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weather conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of other people fishing nearby	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost of fishing equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fishing regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Places to go fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

My interest in indoor activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of people to go fishing with	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presence of aquatic nuisance species (ANS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people fishing near me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My fishing skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*** There were different versions of the survey in which only 5 items were asked at a time. All items are listed above.

13. Please indicate the importance of each item as a reason *why* you fish: ***

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
To be close to nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For relaxation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To develop my skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To experience solitude or tranquility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To compete for prizes or money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To be outdoors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To be with friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To experience adventure and excitement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For the fun of catching fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For family recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To experience catching fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To catch a trophy-sized fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To experience natural surroundings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For the challenge or sport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To experience new things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To get away from the daily routine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To get away from other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To obtain fish for eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**** There were different versions of the survey in which only 5 items were asked at a time. All items are listed above.*

**If you did not fish in Kansas in the previous 12 months, please skip to question #21. **

Section II. Impact of the COVID-19 Pandemic on Fishing Participation

The COVID-19 pandemic has impacted all our lives. Similar to those in other states, Kansans were advised to stay home to prevent the spread of the virus. Outdoor recreational activities, such as fishing, were deemed appropriate as long as social distancing guidelines were followed.

14. How has the COVID-19 pandemic affected your fishing participation?

- | | | | | |
|--------------------------|--------------------------|---------------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Greatly decreased | Slightly decreased | Unchanged, about the same level | Slightly increased | Greatly increased |

15. Have you fished in Kansas at any time during the COVID-19 pandemic, or approximately March 2020 through present day?

- Yes - Please continue to question #16.
- No - **Please skip to question #21.**

16. Please tell us the level of crowding you experienced on your most recent fishing trip during the COVID-19 pandemic and your expected level of crowding.

	Not at all crowded	Slightly crowded	Moderately crowded	Extremely crowded
Level of crowding you experienced on your most recent fishing trip during COVID-19 pandemic:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expected level of crowding on your most recent fishing trip during the COVID-19 pandemic:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Before the COVID-19 pandemic, which group did you go fishing with most often?

- | | |
|--|--|
| <input type="checkbox"/> Family | <input type="checkbox"/> Coworkers |
| <input type="checkbox"/> Friends | <input type="checkbox"/> Alone |
| <input type="checkbox"/> Family and friends together | <input type="checkbox"/> Club/Tournament |

18. During the COVID-19 pandemic, which group did you go fishing with most often?

- | | |
|--|--|
| <input type="checkbox"/> Family | <input type="checkbox"/> Coworkers |
| <input type="checkbox"/> Friends | <input type="checkbox"/> Alone |
| <input type="checkbox"/> Family and friends together | <input type="checkbox"/> Club/Tournament |

19. During the COVID-19 pandemic, how far did you travel on average for most of your 1-day fishing trips in Kansas?

Average number of *one-way* miles: _____

20. How else has the COVID-19 pandemic impacted your fishing?

Section III. Angler Demographics

In this section, we would like you to tell us about yourself. These questions are necessary to conduct analysis of fishing preferences and behaviors across a wide variety of anglers. If you feel uncomfortable answering any questions, please leave them blank.

21. In what year were you born? _____

22. Are you:

- Male
- Female
- Non-binary/other gender
- Prefer to self-describe: _____
- Prefer not to answer

23. What is your ZIP code?

24. Is there anything else you would like to share with us about fishing in Kansas?

25. Would you like to see a copy of the survey results? *Please allow us at least 6 weeks to compile results.*

- Yes, please send it to the following email: _____
- No, thank you

Your contribution of time to this study is greatly appreciated. Please return your completed survey in the postage paid envelope as soon as possible. Thank you!

Kansas Department of Wildlife, Parks and Tourism
Emporia Research and Survey Office
PO Box 1525
Emporia, KS 66801
(620) 342-0658
06/20

Count and percent of fishing locations respondents went fishing the most in Kansas according to the 2020 Kansas Licensed Angler Survey.

Fishing location	Count	Percent (%)
1. Private ponds	1,590	19.5
2. Milford Reservoir	355	4.4
3. Hillsdale Reservoir	337	4.1
4. Cheney Reservoir	272	3.3
5. El Dorado Reservoir	237	2.9
6. Clinton Reservoir	234	2.9
7. Perry Reservoir	190	2.3
8. Melvern Reservoir	161	2.0
9. Glen Elder Reservoir	149	1.8
10. Pomona Reservoir	134	1.6
11. Streams	133	1.6
12. Wilson Reservoir	123	1.5
13. Tuttle Creek Reservoir	120	1.5
14. Arkansas River	113	1.4
15. Kanopolis Reservoir	111	1.4
16. Marion Reservoir	101	1.2
17. Wichita - Chisholm North Lake	101	1.2
18. Cedar Bluff Reservoir	100	1.2
19. Kirwin Reservoir	90	1.1
20. Mined Lands Strip Pits	90	1.1
21. Neosho River	87	1.1
22. Wyandotte County Lake	85	1.0
23. Elk City Reservoir	84	1.0
24. Kansas River	80	1.0
25. LaCygne Reservoir	72	0.9
26. Fall River Reservoir	70	0.9
27. Sebelius Reservoir	67	0.8
28. Marion County Lake	65	0.8
29. Winfield City Lake	65	0.8
30. Big Hill Reservoir	64	0.8

