2021-2022 STATEWIDE UTAH ANGLER SURVEY REPORT

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About the Institute

The Institute of Outdoor Recreation and Tourism at Utah State University does research, outreach, and teaching focused on outdoor recreation and tourism management — inside Utah and beyond its borders. Our work focuses on the social and economic trade-offs associated with providing outdoor recreation opportunities on public lands.

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Executive Summary

Continuing an effort that dates to 1967, we collected data through a statewide survey of licensed anglers in an effort to understand their preference and behaviors. Anglers were surveyed across the state of Utah, as well as nonresident anglers who purchased a Utah fishing license. This research was guided by objectives developed by the Division of Wildlife Resources (DWR) as and our research team at the Institute of Outdoor Recreation and Tourism at Utah State University. In the report, we provide statewide statistics and comparisons between the DWRs five management regions. The objectives and key findings are as follows:

Objective 1. Define the characteristics of Utah anglers

Utah anglers are a relatively homogeneous group and do not reflect Utahans in general. On average, Utah anglers are 51 years old, highly educated (52.2% had at least a bachelor's degree), male (88.9%), non-Hispanic (90.1%), white (97.9%), and relatively high earning (55.6% of anglers individually earn more than $75k per year). In comparison to Utah as a whole, Utah anglers are, on average, older (Utah's mean age is 31 years old), more educated (35.4% of Utahns have at least a bachelor's degree), more male (Utah's population is 50.2% male), less Hispanic (15.1% of Utahns are Hispanic/Latino(a)), more white (90.3% of Utahns identify as white), and have higher median incomes (Utahns have an annual median household income of $74,197).

Objective 2. Produce a snapshot of angling in Utah over a 12-month period

The data presented in this section provide a snapshot of angling across Utah over a 12-month period. General and regional trends emerge. The differences across regions are likely a result of the fishing resources and outdoor recreation opportunities available.

When looking at trends in use, the Southeast region received the lowest number of fishing trips during the year. This is likely attributed to the lack and proximity of angling resources in this region.

Looking at preferences, we see that anglers overwhelmingly prefer and seek opportunities to catch coldwater species over warmwater species. Anglers traveled the farthest on average (4.5 hours) to the Northeast region to pursue coldwater species in the Uinta Mountains, Flaming Gorge, and Green River. Anglers fishing the Central and Northern regions had the shortest travel times (2.1 and 2.3 hours respectively), which is likely attributed to abundant angling resources in these regions near large population centers. Most anglers fishing in the Central (86.3%) and Northern (82.0%) regions were on day trips; this suggests anglers in the Central and Northern regions are largely local anglers.

The most popular fishing methods were used evenly: bait (34.6%), artificial lure (30.1%), and artificial fly (29.7%). Utah anglers infrequently participated in ice fishing (5.2%) and other techniques such as spearfishing and archery (0.4%).

The most frequently used access method across the state was fishing from shore or a fishing pier/dock on a lake or reservoir; anglers used this method an average of 5.5 times per year. Wading in a stream or river (4.9 times per year), and fishing from a boat on a lake or reservoir (4.3 times per year), were also commonly used access methods. Fishing from a boat on a stream or river was the least common method (0.8 times per year). Access methods correspond with the types of waterbodies respondents fished most often (i.e., large and small lakes).

Restrooms were the most common amenities used by respondents (31.3%). Boat ramps (16.5%) and marinas/docks (10.2%) were the second and third most used amenities on-site. 41.4% of respondents said they did not want any additional amenities at fishing locations.

Objective 3. Identify what motivates Utah anglers

Utah anglers overwhelmingly want to: 1) get away from crowds and people; 2) mentally and physically relax; and 3) be immersed in nature. Overall, Utah anglers do not seek fishing opportunities that require them to take risks and experience thrills. By far the weakest motivation for angling in Utah was to show and tell others about fishing experiences and abilities.

Most Utah anglers also wanted to "to catch at least one fish" on all of their fishing trips within the state. Anglers also expressed strong preferences for fishing opportunities that allowed them to "get away from people," "improve their skills," and "fish waters where fish are safe to eat." However, anglers are only slightly motivated by catching fish to eat and catching their limit, which indicates environmental quality is more important than gathering food. Anglers are

the least motivated by socialization, competing, and fishing for warmwater species.

Objective 4. Identify what fish species anglers expected to catch, caught, and prefer to catch

Across all DWR administrative regions, Rainbow Trout, Cutthroat Trout, and Brown Trout were the top three species caught in Utah. Rainbow Trout was the most frequently caught species in every region, and the percent of respondents who caught these type of fish was much greater than any other species. A notable result from this analysis is the number of respondents who caught nothing during their last fishing trip. This ranged from a low of 13.7% (the Northeast region) to a high of 28.6% (the Northern region); the statewide average was 20.8%.

Data also suggest there is unmet demand for—in order from most to least—Brown Trout, Cutthroat Trout, Kokanee Salmon, Tiger Trout, Largemouth bass, Walleye, Wipers, Tiger Muskie, Crappie, Northern Pike, and Splake. Anglers also noted they commonly pursue Rainbow Trout more than they prefer to pursue Rainbow Trout, which may be an indicator that anglers are pursuing Rainbow Trout because they are present even though they would prefer to pursue other species, such as Brown and Cutthroat Trout.

Objective 5. Gauge anglers' perceptions and knowledge of native and nonnative fish species in Utah

Overall, Utah anglers showed strong support for native fish in Utah. Respondents showed the most agreement for the following statements: 1) native fish play an important role in the ecosystem; 2) I support promoting native fish that have sport fishing value; and 3) I support altering management to protect populations of sensitive native fish.

Respondents were also quizzed to see if they could identify fish species native to Utah. Most respondents correctly identified Bonneville Cutthroat (83%) and half correctly identified Mountain Whitefish (56%). Only 39% correctly identified Colorado Pikeminnow as native to the state. Almost half of respondents (45%) incorrectly identified Rainbow Trout as native to Utah.

Objective 6. Explore Utah anglers' perceptions of, and experiences with, crowding

Overall, the effects of crowding across the state are quite low, with over half of respondents indicating they have not experienced or been affected by crowding. Although crowding is not an issue for most Utah anglers, just over one-tenth of Utah anglers said crowding negatively impacted the quality of their fishing experience. The Northern region showed the largest signs of crowding. When anglers were affected by crowding, the most common adaptation strategy included changing the timing and or location of their trip. Going back to angler motivations, we know Utah anglers want to find solitude, which would likely make them very sensitive to crowding. These data, therefore, suggest there are still good opportunities in Utah to get away from people and find solitude while fishing.

Objective 7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience

When they are not fishing, the most common activities Utah anglers participate in are camping (62.7%), single day hiking (43.4%), and big game hunting (38.2%). The top activities respondents are most interested in combining with fishing, if they do not already, were camping, backpacking and flatwater boating (motorized and non-motorized). These data suggest management can produce information that shows ideal locations for fishing in combination with these other highly preferred and highly complementary activities. This type of advertising would likely resonate with the largest proportion of Utah anglers. In addition, information pertaining to responsible outdoor recreation practices associated with these activities would likely help mitigate potential management challenges associated with Utah anglers.

The report that follows provides tables and figures and explanations pertaining to each of the research objectives outlined above. In addition, statewide and regional statistics are provided to showcase the unique trends associated with Utah anglers and angling resources in the state.

Introduction

Since 1967, the Utah Division of Wildlife Resources (DWR) has surveyed anglers approximately every 5-years to assess the preferences and behaviors of those individuals who fish in Utah. Previous work with these data provided descriptive and basic information that is valuable for understanding the characteristics, preferences, and behaviors of anglers. Our goal with the current survey effort reported here, was to take a more applied approach to survey development, using input from managers to select and refine the specific research questions that were addressed with the survey data. Additionally, we used more focused analytical approaches where necessary to help fisheries managers within the state make more proactive and data-driven decisions.

We convened conversations with fisheries managers within the DWR to develop applied research objectives, survey instruments, and protocols for collecting angler data that can most effectively inform fisheries management in the state of Utah. Here, we report data pertaining to all but two of those objectives. The other two objectives—to understand the travel behaviors of Utah anglers as well as the constraints and barriers that lead to lapses in fishing license renewal—are covered in stand-alone reports. The objectives addressed in this report are to:

1. Define the characteristics of Utah anglers
2. Produce a snapshot of angling in Utah over a 12-month period
3. Identify what motivates Utah anglers
4. Identify what fish species anglers expected to catch, caught, and prefer to catch
5. Gauge anglers' perceptions and knowledge of native and nonnative fish species in Utah
6. Explore Utah anglers' perceptions of, and experiences with, crowding
7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience

Methods

The research process involved five distinct steps: conceptualization, instrument development, sampling design and data collection, analysis and reporting, and protocol sharing. More information related to each step follows.

Conceptualization

We met with personnel within the DWR to develop research objectives that can directly respond to the management needs of the agency. These research objectives were pulled together into a conceptual framework that provided a scope of work for the project (Appendix A). Relevant areas of interest included motivations, preferences, willingness to travel, group differences, native species knowledge and management, and lapsed angler assessments.

Instrument development

The research objectives were operationalized into two survey instruments with the first focusing on all currently licensed anglers within the state and the second focusing more specifically on the constraints and barriers that lead to lapses in fishing license renewal. Data collected from the former survey are reported in this report while data collected the later survey are reported in the report Constraints and Barriers that Lead to Lapses in Fishing License Renewal in Utah, released in conjunction with this report. Questions within both survey instruments were rooted in existing applied social science literature when possible. Survey questions from previous 5-year Statewide Utah Angler Surveys were also used when applicable. Drafts of the survey instruments were shared with DWR to ensure conceptual accuracy and solicit comments. The final survey instrument is provided in Appendix B.

Sampling design and data collection

We distributed the general angler survey instrument via email to four random samples of nearly 15,000 licensed anglers (total sample = 59,994). The random samples were drawn from the DWR's records of individuals who held an active fishing license within the state during in mid-July 2021; these records were also used to obtain the email addresses of license holders. Each of the four random samples received the survey instrument in either summer (August 2021), late fall (November 2021), winter (February 2022), or spring (May 2022) in an effort to gain a representative sample of angling experiences throughout the entirety of the year. The survey instrument focused on respondents' most recent fishing trip to minimize the potential for recall error (Shonkwiler & Barfield, 2015).

To provide results and observations on both statewide and regional levels, we sampled enough anglers from each DWR region so the number of responses

received would reflect angling effort in each of the DWR's administrative regions (Northern, Northeast, Central, Southern, and Southeast) (Figure 1). The target sample size for each region was 400 completed surveys. A sample of this size is large enough to be representative of all anglers within the region, assuming no systematic non-response bias exists. Participants were connected to the DWR's regions by one of two variables: either their residential zip code or the location of their most recent fishing trip. The variable chosen to separate respondents into groups was based on the objective of each piece of analysis. For example, some analysis required a comparison between where anglers live, and others required where anglers fished. Anglers' zip codes and the location of their most recent fishing trip were both obtained through the survey.

Figure 1. Division of Wildlife Resources management regions

Results

The results are broken into eight sections, the first of which reports on the response rate and the subsequent seven reflect a specific research objective. The report provides a thorough overview of the data, but it is limited in in-depth statistical analysis. The dataset offers numerous options for detailed analysis—too many to cover in one stand-alone report. The main purpose of this report is to address each of the research objectives and provide a thorough overview of the data. These data may be used in subsequent analyses to gain information pertaining to many aspects related to Utah anglers and the Utah angling experience. The results are presented in the order of the research objectives below:

1. Define the characteristics of Utah anglers
2. Produce a snapshot of angling in Utah over a 12-month period
3. Identify what motivates Utah anglers
4. Identify what fish species anglers expected to catch, caught, and prefer to catch
5. Gauge anglers' perceptions and knowledge of native and non-native fish species in Utah
6. Explore Utah anglers' perceptions of, and experiences with, crowding
7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience

Response rates

6,632 surveys were completed, which after accounting for undeliverable emails (1,568), tabulates out to an effective response rate of 11.4% (Table 1). This is notably lower than the response rate reported for the 2016 survey effort, which used a similar methodology (Lilieholm et al., 2017). The decline in response rates is reflective of a broader issue across survey research (Keeter, 2018).

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Separating the sample using the DWR region of respondents' most recent fishing trip (if it was provided), we collected 1,385 complete surveys from the Central region, 747 from the Northeast region, 1,107 surveys from the Northern region, 341 from the Southeast region, and 859 from the Southern region. These totals are sufficient to be representative of the total number of anglers recreating in each DWR region (Groves et al., 2009).

Objective 1. Define the characteristics of Utah anglers

To better understand Utah anglers, we collected data about anglers' residential status, the type of license they purchased, the ways they used that license, the frequency they fish within Utah, and their sociodemographic information.

Residence

78.4% of licensed anglers indicated they were residents of Utah. This is consistent with results of the 2016 survey effort (81.8% residents). However, license sales data show that a slightly higher proportion of anglers within the state are residents than these data represent. This is likely attributed to the fact our sampling design was not meant to gain a representative sample of non-resident anglers. Table 2 and Figure 2 show the proportion of Utah residents and non-residents by the region of their most recent fishing trip. The Central and Northern regions have the greatest proportion of Utah residents, and the Southern, Northeast, and Southeast regions have the highest proportions of non-residents.

License type and use

Respondents were asked what kind of fishing license they purchased. Most respondents across all regions had purchased a 365-day fishing license (37.7%) or a combination license (51.3%) (Table 3, Figure 3).
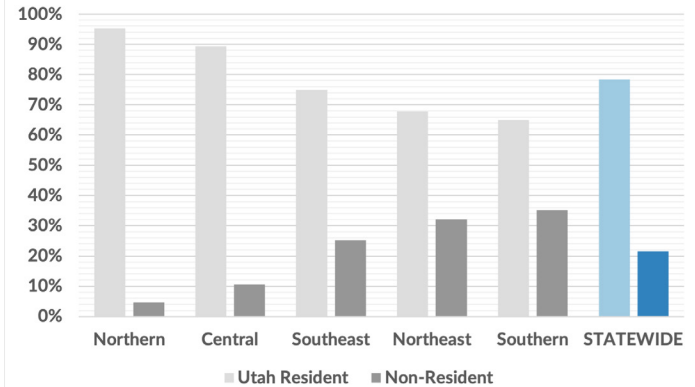
Figure 2. Distribution of residents and non-residents, by DWR region fished.
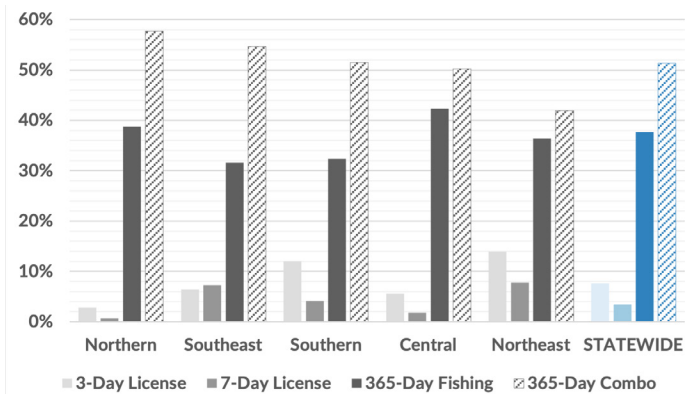
Figure 3. Type of license purchased, by DWR region fished.

The Northeast and Southern regions had the highest proportion of 3-day fishing licenses, with 13.9% and 12.0% of anglers fishing with these short-term licenses in these regions respectively. This is likely attributed to the higher proportion of non-residents that fish in these regions (Table 2, Figure 2).

Table 1. Summary of sampling and response rates.

		Undeliverable		Complete responses	
Survey round	**Emails sent**	*n*	%	*n*	%
Round 1 (Summer 2021)	14,999	372	2.5	1,735	11.9
Round 2 (Late Fall 2021)	14,999	381	2.5	1,634	11.2
Round 3 (Winter 2022)	14,999	401	2.7	1,718	11.8
Round 4 (Spring 2022)	14,997	414	2.8	1,545	10.6
Total	**59,994**	**1,568**	**2.6**	**6,632**	**11.4**

Table 2. Distribution of residents and non-residents, by DWR region fished.

DWR region	**Utah Resident (%)**	**Non-Resident (%)**
Northern (*n* = 1,107)	95.3	4.7
Central (*n* = 1,384)	89.4	10.6
Southeast (*n* = 342)	74.9	25.1
Northeast (*n* = 747)	67.9	32.1
Southern (*n* = 859)	64.8	35.2
STATEWIDE (*n* = 6,391)	81.4	18.6

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Table 3. Type of license purchased, by DWR region fished.

DWR region	3-day license (%)	7-day license (%)	365-day fishing (%)	365-day combo (%)
Northern (n = 1,107)	2.8	0.7	38.8	57.7
Southeast (n = 342)	6.4	7.3	31.6	54.7
Southern (n = 859)	12.0	4.2	32.4	51.5
Central (n = 1,383)	5.6	1.8	42.3	50.3
Northeast (n = 747)	13.9	7.8	36.4	41.9
STATEWIDE (n = 4,438)	7.6	3.4	37.7	51.3

Table 4. Primary use of combination license, by DWR region fished.

DWR region	Primarily for fishing (%)	Equally for fishing and hunting (%)	Primarily for hunting (%)
Southeast (n = 187)	26.2	59.9	13.9
Southern (n = 441)	29.9	57.1	12.9
Central (n = 694)	34.7	56.9	8.4
Northeast (n = 313)	29.7	56.9	13.4
Northern (n = 638)	33.5	54.9	11.6
STATEWIDE	32.1	56.6	11.3

The DWR was interested to know how anglers who purchased a combination license use their license. The combination license allows people to fish and hunt small game in the state of Utah. The combination license is also required for everyone applying for big game hunting licenses. Most (56.6%) anglers indicated they are using their combination license to both fish and hunt (Table 4, Figure 4). Roughly one-third (32.1%) primarily use their combination license to fish and only 11.3% indicated they primarily hunted with their combination license. It is difficult to know if the people who primarily use their combination license to hunt opted out of taking the survey at a higher rate because they had little interest in angling in Utah.

Sociodemographic characteristics

A summary of respondents' sociodemographic information is presented in Table 5. Respondents were, on average, 51 years old, had at least a Bachelor's degree, were male, white, and had a relatively high personal incomes (> $75k per year).

There are several statistically significant differences between the demographic characteristics of anglers who fish in different DWR regions (Table 5). Specifically, anglers in the Northern region tended to be the youngest in the state (48.5 years old) while those in the Southern region tended to be the oldest (55.5 years old). The Northeast region had the anglers with the most formal education (56.1% had at least at a bachelor's degree) while the Southeast region had the anglers with the least amount of formal education (45.6% with at least a bachelor's degree). The Northeast region also had the largest percent of anglers earning over $150,000 (20.5%) while the Northern region had the lowest (11.2%). Overall, the Northeast region had the largest proportions of anglers with a post graduate education as well as the largest proportions of anglers earning over $150,000. The Northern region had the youngest population of anglers, and the lowest proportion of anglers earning over $150,000. Anglers in the Southern region were the oldest, tended to have the least amount of formal education, and tended to have relatively lower income levels.
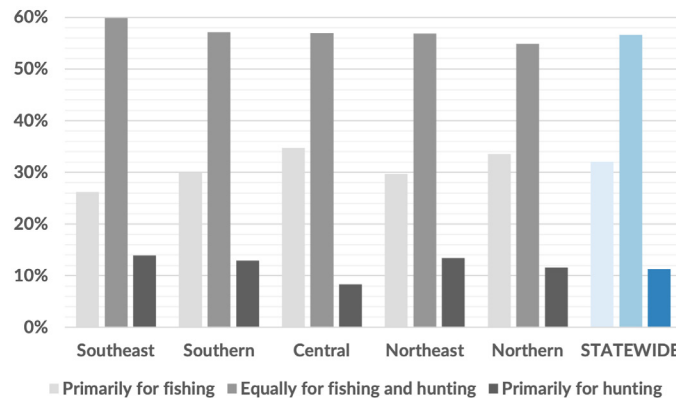

Figure 4. Primary use of combination license, by DWR region fished.

Table 5. Demographic characteristics of respondents, by DWR region fished.

Characteristic	STATEWIDE ($n \geq 2{,}869$)	Central ($n \geq 879$)	Northeast ($n \geq 479$)	Northern ($n \geq 756$)	Southeast ($n \geq 215$)	Southern ($n \geq 540$)	Sig. Diff.
Age							<0.001[††]
Mean	51.2	49.8	53.3	48.5	51.8	55.5	
Std. Dev.	15.5	15.6	14.7	15.5	15.2	15.5	
Education (%)							<0.001[†]
Some high school	1.0	0.8	1.4	0.8	2.3	0.8	
High school graduate	12.7	11.9	13.1	12.8	12.3	12.7	
Some college Associate degree	34.1	31.6	29.3	35.4	39.9	34.1	
Bachelor's degree	30.8	31.5	30.4	32.0	28.0	30.8	
Graduate degree	21.4	24.3	25.8	19.1	17.6	21.4	
Gender (%)							0.068[†]
Male	88.9	90.6	88.6	89.6	85.0	87.4	
Female	11.1	9.4	11.5	10.4	15.0	12.6	
Hispanic (%)							0.579[†]
No	90.1	88.8	90.8	91.3	90.1	90.1	
Ethnicity (%)							0.275[†]
American Indian	1.2	0.8	1.1	1.1	1.2	2.1	
Asian	1.3	1.4	1.3	1.7	0.0	1.0	
Black	0.3	0.2	0.0	0.2	1.2	0.2	
White	97.9	98.0	97.9	98.0	98.8	97.4	
Native Hawaiian	0.3	0.4	0.6	0.1	0.0	0.5	
Income (%)							<0.001[†]
Under $25,000	6.0	6.7	4.2	7.4	6.1	4.4	
$25,000 to $39,999	7.7	7.6	7.9	8.1	5.6	8.2	
$40,000 to $59,999	15.6	14.9	13.6	15.5	24.2	15.4	
$60,000 to $74,999	15.0	12.7	11.5	18.7	13.5	17.4	
$75,000 to $99,999	18.6	17.3	21.3	19.2	14.0	19.4	
$100,000 to $149,999	21.3	21.8	21.1	20.0	21.4	22.6	
$150,000 or higher	15.7	18.9	20.5	11.2	15.4	12.6	

Note. [†]Pearson's chi-square. [††]One-way ANOVA.

Objective 2. Produce a snapshot of angling in Utah over a 12-month period

As described in the methods section above, four rounds of surveys were distributed over a 12-month period. In the survey, respondents were asked a series of questions about their most recent fishing trip. In this section, we summarize these questions to provide an overview of what angling looks like in Utah over a 12-month period.

Fishing effort throughout the year

First, Table 6 and Figure 5 present the percent of fishing trips by month by region; Figure 6 presents the number of fishing trips by month by region. The percent of fishing trips shows that the trend across the state is very similar: low winter participation and high summer participation. There is a noticeable increase in fishing trips in February in the Central and Northern regions—likely attributed to ice fishing

Table 6. Proportion of fishing trips taken within each DWR region, by month.

Month	Southeast (%)	Northeast (%)	Central (%)	Northern (%)	Southern (%)	STATEWIDE (%)
January	4.1	1.2	3.2	3.1	3.2	3.0
February	4.7	1.6	6.5	6.1	4.7	4.7
March	1.8	1.6	3.8	3.4	1.8	2.5
April	2.9	7.4	5.0	3.7	4.1	4.7
May	13.5	11.9	12.8	12.2	11.3	12.4
June	12.4	17.0	11.9	12.5	17.7	14.3
July	21.2	23.6	18.2	19.6	21.8	20.9
August	12.1	12.6	10.5	12.1	11.6	11.8
September	12.6	12.6	10.1	10.2	10.6	11.2
October	8.8	6.4	8.8	8.3	6.4	7.7
November	4.7	3.6	7.3	6.7	5.8	5.6
December	1.2	0.4	2.0	2.0	0.9	1.3

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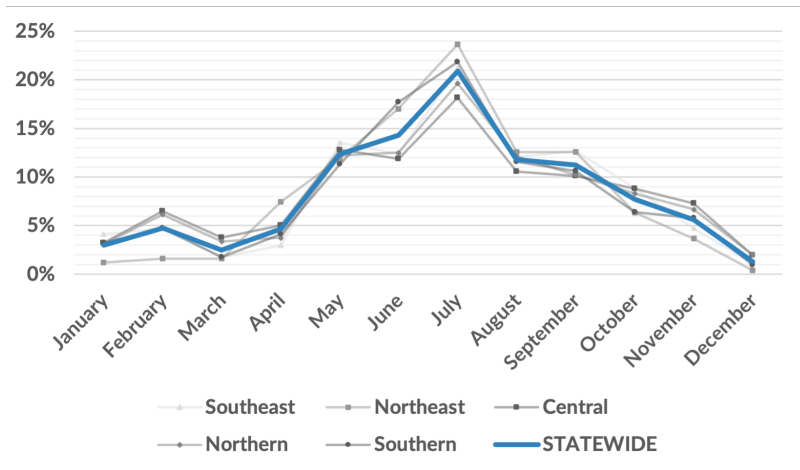
Figure 5. Percent of fishing trips by month by region (n = 4,398).
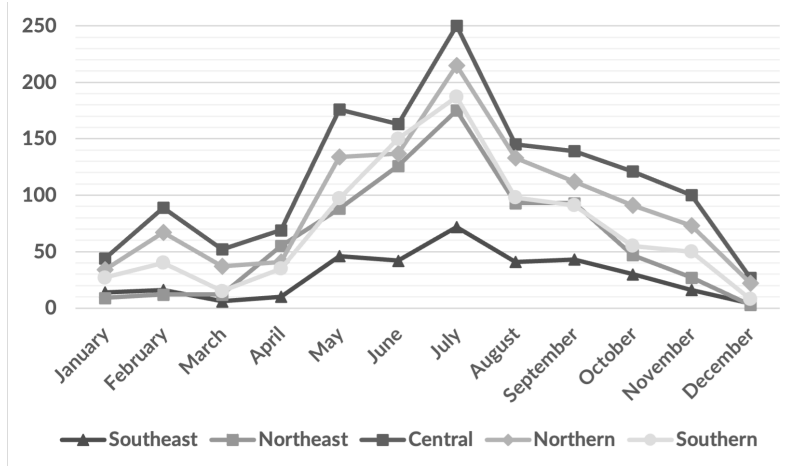
Figure 6. Number of fishing trips by month by region (n = 4,398).
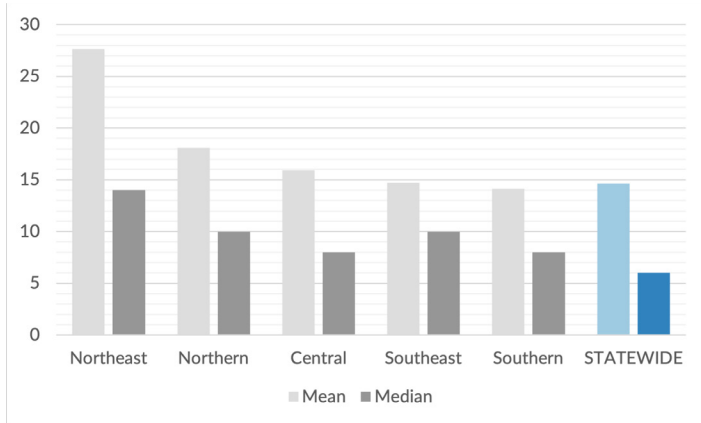
Figure 7. Mean and median number of trips taken by residents living within each DWR region.

trips. The number of trips shows the differences in use levels across the regions (Figure 6). The Central region received the most trips, the Northern, Northeast, and Southern received a similar number of trips, and the Southeast region received the fewest.

Trips taken

Respondents were also asked how many fishing trips they have taken within the state during the last 12 months. Using respondents' home zip code to distinguish between DWR regions, the data show anglers living in the Northeastern region tend to fish more than anglers living in other regions. Notably however, trip frequency is heavily right-skewed, meaning there are a small proportion of anglers who fish very frequently (~ 50 times per year or more). Consequently, the median number of fishing trips is a more realistic representation of trip frequency. The median number of trips across the entire state was 6 trips per year (Table 7, Figure 7).

Table 7. Number of fishing trips taking within Utah, by DWR region of anglers' residence.

DWR region	Mean	Std. Dev.	Median
Northeast (n = 126)	27.6	44.3	14
Northern (n = 1,050)	18.1	27.6	10
Central (n = 1,716)	15.9	21.9	8
Southeast (n = 88)	14.7	15.9	10
Southern (n = 383)	14.1	19.1	6
STATEWIDE	**14.4**	**22.9**	**6**

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Travel time

Respondents were asked how long they traveled on their most recent fishing trip, and the data show significant differences across DWR regions (Table 8, Figure 8). The longest travel times were for anglers to reach the Northeast region (mean = 4.5 hours), and the shortest were the Central region (mean = 2.1 hours) and Northern region (mean = 2.3 hours). The Central and Northern regions also have the highest proportions of resident anglers.

Day versus overnight trips

Respondents were asked if their most recent fishing trip was a day or overnight trip. Regions with the longest travel times also had higher proportions of anglers spending the night (Table 9, Figure 9). For example, anglers traveled the farthest to reach the Northeast region and 67.4% of them spend the night. Conversely, regions with the shortest travel times—the Central and Northern regions—had 86.3% and 82.0% of their anglers participating in day trips, respectively. The data also show significant differences across DWR regions in the amount of time anglers spend on site (Table 9). Again, the region with the longest travel time—the Northeast region—saw the longest time spent on site during day trips (mean = 5.0 hours).
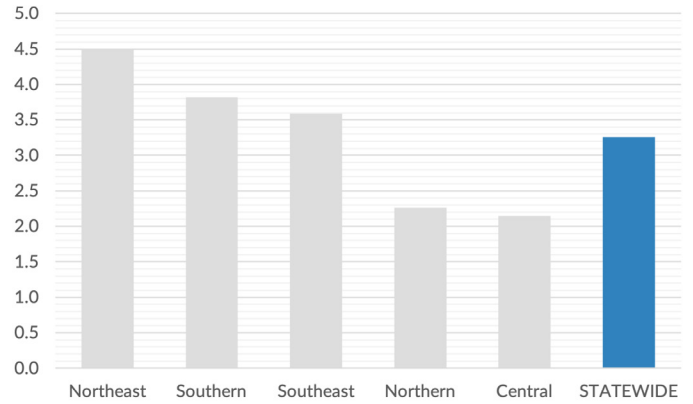
Figure 8. Mean travel time in hours to reach fishing destinations within each DWR region.
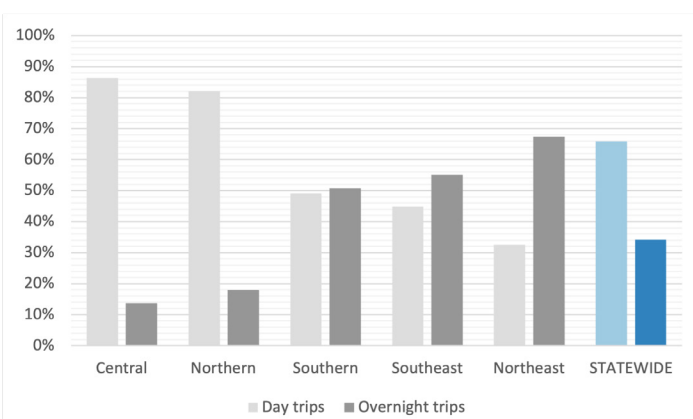
Figure 9. Trip type (day or overnight), by DWR region fished.

Table 8. Total travel time for fishing trips, by DWR region fished.

DWR region	Mean	Median	Std. Dev.	Min	Max
Northeast (n = 609)	4.5	3	4.8	1	48
Southern (n = 586)	3.8	2	3.0	1	17
Southeast (n = 262)	3.6	2	3.9	1	48
Northern (n = 511)	2.3	1	3.5	1	45
Central (n = 740)	2.1	1	2.4	1	30
STATEWIDE (n = 3,020)	**3.3**	**2**	**3.8**	**1**	**48**

Note. One-way ANOVA across DWR regions: $F_{(4, 2,703)} = 48.5$, $p \leq 0.001$.

Table 9. Time spent on site for both day and overnight fishing trips, by DWR region fished.

| | | Day trips | | | Overnight trips | |
| | | Time spent on site (hours) | | | Time spent on site (days) | |
DWR region	% of trips	Mean	Std. Dev.	% of trips	Mean	Std. Dev.
Central	86.3	4.6	2.2	13.7	3.1	2.3
Northern	82.0	3.7	1.6	18.0	4.0	2.6
Southern	49.2	4.3	2.3	50.8	3.3	2.0
Southeast	44.9	3.8	1.6	55.1	4.2	2.4
Northeast	32.6	5.0	2.1	67.4	3.8	2.9
STATEWIDE	**65.9**	**4.2**	**2.0**	**34.2**	**3.8**	**2.6**

Note. One-way ANOVA for time spent on site for day trips across DWR regions: $F_{(4, 706)} = 8.0$, $p \leq 0.001$. One-way ANOVA for time spent on site for overnight trips across DWR regions: $F_{(4, 1,508)} = 7.4$, $p \leq 0.001$.

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Group size

Group sizes only varied slightly across all angling regions (Table 10). The average size of a fishing group within the state was 3.6 people (Figure 10). However, there are statistically significant differences across DWR regions. The Southeast, Northeast, and Southern regions of the state tend to see group sizes larger than the statewide average while those in the Central and Northern region tend to be smaller (Table 10, Figure 10).

Methods used

We asked respondents what method they primarily used while fishing on their most recent trip, results are reported in Table 11 and Figure 11. Differences were significant across DWR regions. The Southern region had the highest percentage of anglers using bait (46.8%), and the Northeast region had the lowest (23.1%). The Northeast region had the highest percentage of anglers using artificial flies (42.1%). Anglers in the Central and Northern regions share proportionally similar fishing methods. Results were similar for the question asking about all of the methods used (as opposed to just the primary method) on an angler's most recent trip (Table 12, Figure 12).
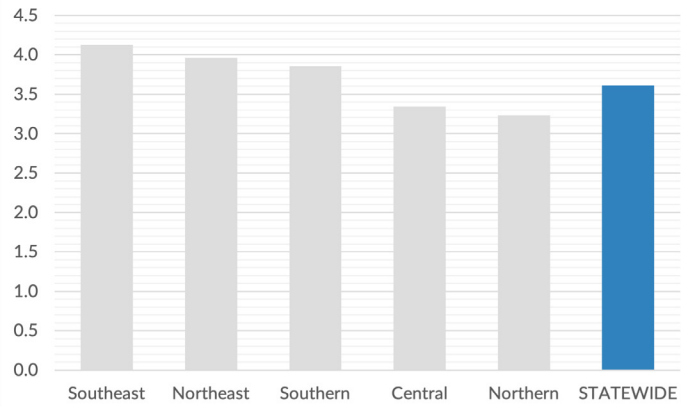
Figure 10. Group sizes, by DWR region fished.
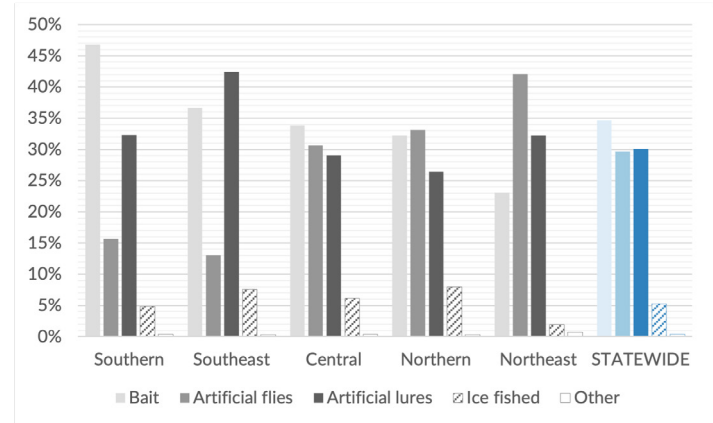
Figure 11. Proportion of anglers with different primary angling methods, by DWR region fished.

Table 10. Group sizes, by DWR region fished.

DWR Region	Mean	Std. Dev.	Min.	Max.
Southeast	4.1	3.1	1	26
Northeast	4.0	4.0	1	45
Southern	3.9	3.4	1	41
Central	3.3	2.6	1	36
Northern	3.2	2.1	1	21
STATEWIDE	**3.6**	**3.0**	**4**	**3**

Note. One-way ANOVA across DWR regions: $F(4, 2,775) = 8.5$, $p \leq 0.001$.

Table 11. Proportion of anglers with different *primary* angling methods, by DWR region fished.

	Method				
DWR Region	Bait (%)	Artificial flies (%)	Artificial lures (%)	Ice fished (%)	Other (%)
Southern	46.8	15.7	32.3	4.9	0.4
Southeast	36.7	13.0	42.4	7.6	0.3
Central	33.8	30.6	29.0	6.1	0.4
Northern	32.2	33.2	26.4	8.0	0.3
Northeast	23.1	42.1	32.2	1.9	0.7
STATEWIDE	**34.6**	**29.7**	**30.1**	**5.2**	**0.4**

Note. $\chi^2(16) = 256.3$, $p \leq 0.001$.

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Table 12. Proportion of anglers using different angling methods, by DWR region fished.

	Method				
DWR Region	Bait (%)	Artificial flies (%)	Artificial lures (%)	Ice fished (%)	Other (%)
Southern	61.9	25.1	52.3	5.7	0.6
Southeast	57.6	18.5	60.3	9.4	0.3
Central	45.9	36.2	44.0	7.0	0.6
Northern	43.3	39.5	43.3	8.9	0.3
Northeast	32.5	50.2	47.6	2.5	0.7
STATEWIDE	**47.1**	**36.9**	**47.1**	**6.1**	**0.6**

Access methods

Respondents were also asked how they accessed the water to fish, data are shown in Table 13 and Figure 13. First, the Northeast region had the largest percentage of anglers fishing from a boat on a stream or river, and the Northern region had the highest percentage of anglers fishing from the shore of a stream or river. In a later question, respondents were asked which types of waterbodies they fish, and lakes/reservoirs were the most common. Looking at the data below, fishing from shore or a boat on a lake or reservoir were the two most common options across all regions. Wading in a stream or river was also a common access method in the Central and Northern regions. Due to an oversight, the category "fishing from the shore of a lake or reservoir" was not included as a response option.
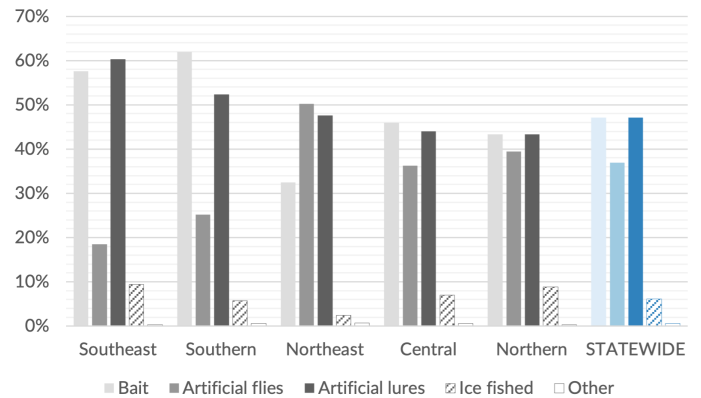
Figure 12. Proportion of anglers using different angling methods, by DWR region fished.

Table 13. Proportion of anglers using different access methods, by DWR region fished.

	Access method						
DWR region	From shore on a stream or river (%)	From a boat on a lake or reservoir (%)	Wading in a stream or river (%)	From a boat on a stream or river (%)	Wading in a lake or reservoir (%)	Ice fishing (%)	Other (%)
Central (n = 1,353)	39.8	30.0	24.9	0.7	3.8	7.4	6.4
Northeast (n = 729)	39.1	28.7	19.1	26.6	7.5	2.5	5.2
Northern (n = 1,094)	50.2	17.2	26.1	0.5	5.8	9.2	8.4
Southeast (n = 330)	37.3	37.0	4.5	0.3	7.0	9.4	13.6
Southern (n = 844)	42.4	42.5	5.1	0.4	8.6	6.3	10.2
STATEWIDE	**44.5**	**28.4**	**19.1**	**4.5**	**6.4**	**6.4**	**8.1**

Note. The category "fishing from shore or a lake or reservoir" was mistakenly excluded as a response option.
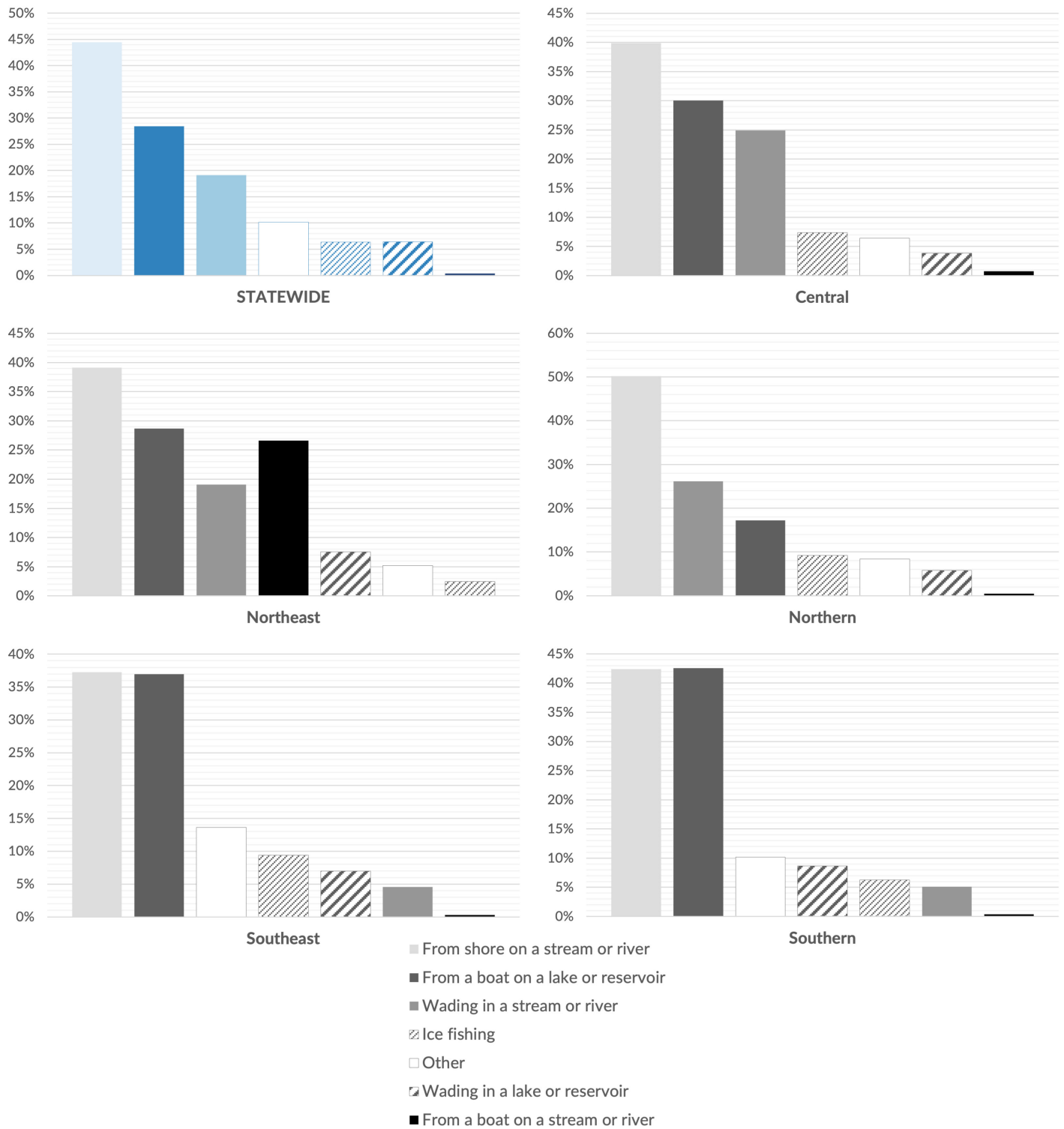
Figure 13. Proportion of anglers using different access methods, by DWR region fished.

Respondents were asked how many times in the last 12 months they used different access methods. We calculated the mean number of times respondents used each access method by region, the results are shown in Table 14 and Figure 14. The primary method across all regions was fishing from shore or a fishing pier/dock on a lake or reservoir (mean = 5.5 times per year). The second most common access method was wading in a stream or river (mean = 4.9 times per year). The third most common access method was from a boat on a lake or reservoir (mean = 4.3 times per year). Ice fishing (mean = 1.4 times per year), wading in a lake or reservoir (mean = 1.1 times per year), and fishing from a boat on a stream or river (mean = 0.8 times per year) are used far less frequently.

Types of waterbodies used

Respondents were given a list of different types of waterbodies and asked to identify how many times they fished each in the last 12 months. We calculated the mean number of times each type of waterbody was fished in the last 12-months by region (Table 15, Figure 15). Large lakes and reservoirs were fished more often by respondent (mean = 4.9 times per year), followed by small lakes and reservoirs (3.6 times per year). Other types of waterbodies were fished less frequently.

Respondents were then asked what type of waterbody they most prefer. Large and small lakes and reservoirs were the most preferred (32.1% of anglers preferred this type of water body more than all others), followed by smaller lakes or reservoirs (27.2%). Rivers, streams, and community fishing ponds were preferred less so (Table 15, Figure 15).
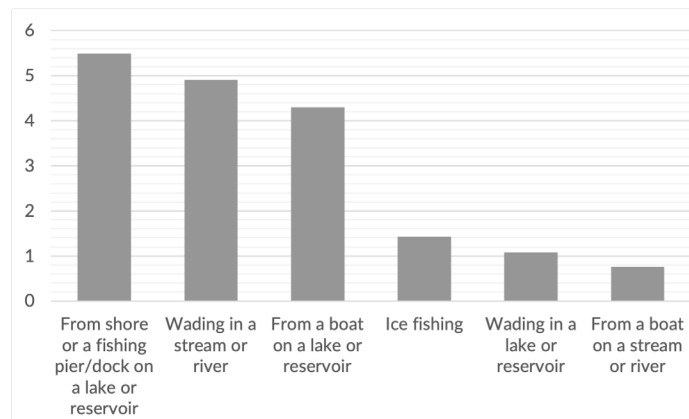
Figure 14. Mean number of times anglers used different access methods within the past 12-months.

Table 14. Mean number of times anglers used different access methods within the past 12-months.

Access method	Mean	Std. Dev.	Min.	Max.
From shore or a fishing pier/dock on a lake or reservoir	5.5	11.4	0	250
Wading in a stream or river	4.9	13.7	0	230
From a boat on a lake or reservoir	4.3	10.1	0	180
Ice fishing	1.4	4.5	0	100
Wading in a lake or reservoir	1.1	4.4	0	100
From a boat on a stream or river	0.8	3.8	0	100

Note. $n \geq 3{,}270$.

Table 15. Mean number of times anglers fished on different waterbodies within the past 12-months and anglers' preference for different waterbodies.

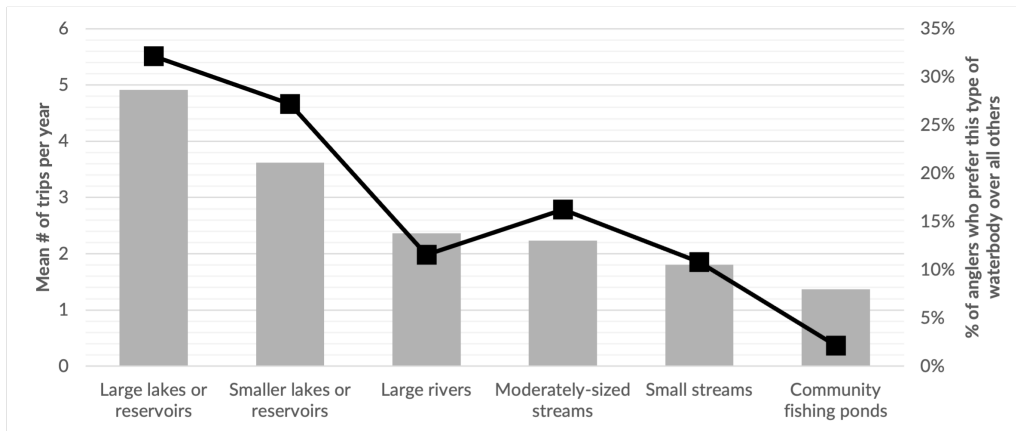| Waterbody type	Mean	Std. Dev.	% of anglers who prefer this type of waterbody over all others
Large lakes or reservoirs	4.9	12.9	32.1
Smaller lakes or reservoirs	3.6	8.1	27.2
Large rivers	2.4	8.0	11.5
Moderately-sized streams	2.2	7.4	16.3
Small streams	1.8	6.8	10.8
Community fishing ponds	1.4	6.1	2.1

Figure 15. Mean number of times anglers fished on different waterbodies within the past 12-months and anglers' preference for different waterbodies.

Amenities

The most common amenities used while on fishing trips within Utah are restrooms (used by 31.1% of anglers), boat ramps (16.5%), and marinas/docks (10.2%) (Table 16). Boat fueling stations were used most frequently in the Southeast region, likely on Lake Powell. The highest proportion of anglers not using any on-site amenities was in the Northern region (45.3%).

In addition to asking anglers what amenities they used during their last fishing trip, we also asked anglers what additional amenities and services they would like available. Overall, 41.4% of anglers said they did not want more amenities or services on-site. Of those who did want additional amenities or ser-

vices, restrooms (7.2%) were the most common, followed by picnic tables (3.9%) and fishing piers (3.2%).

Figure 16 illustrates both the proportion of anglers using different amenities on-site as well as angers' preference for those amenities if they were not present. The figures show the unique nature of restroom facilities as being both heavily used, and the most preferred in locations where they are not present. Although, it is important to note that only 7.2% of anglers wanted additional restroom facilities. This is a consistent trend across all five DWR regions.

Table 16. Proportion of anglers using and preferring different on-site amenities, by DWR region.

| | Amenities used | | | | | | | | | |
Region	Boat fueling station (%)	Boat ramp (%)	Marina/ dock (%)	Fishing supply store (%)	Rest-rooms (%)	Fishing pier (%)	Non-motor. hard launch (%)	Picnic table (%)	None (%)	Other (%)
Central	1.0	22.2	15.5	6.9	42.6	3.9	3.1	9.0	33.4	4.1
Northeast	4.1	35.1	15.7	23.7	54.9	2.5	12.2	23.6	20.6	5.1
Northern	0.1	13.3	7.0	1.5	33.2	2.8	6.1	8.9	45.3	3.7
Southeast	11.7	27.2	17.8	7.3	43.3	1.8	6.1	9.6	31.9	3.5
Southern	1.7	27.2	19.3	17.2	48.4	5.4	6.5	11.1	26.1	3.6
STATEWIDE	**2.0**	**16.5**	**10.2**	**7.5**	**31.3**	**2.7**	**4.4**	**8.7**	**25.3**	**3.0**

| | Amenities preferred if not present | | | | | | | | | |
Region	Boat fueling station (%)	Boat ramp (%)	Marina/ dock (%)	Fishing supply store (%)	Rest-rooms (%)	Fishing pier (%)	Non-motor. hard launch (%)	Picnic table (%)	None (%)	Other (%)
Central	0.7	1.4	1.2	3.7	10.5	4.5	1.7	4.7	55.0	4.1
Northeast	0.7	2.1	1.3	3.6	8.0	2.9	1.9	4.7	54.4	5.4
Northern	0.5	1.3	2.1	3.9	11.5	4.1	2.8	4.7	59.6	4.3
Southeast	0.6	2.9	1.8	3.5	8.8	4.1	1.8	6.4	54.4	5.8
Southern	1.0	2.6	2.3	4.8	7.9	6.2	2.2	7.3	52.4	4.1
STATEWIDE	**0.6**	**1.4**	**1.2**	**2.8**	**7.2**	**3.2**	**1.5**	**3.9**	**41.4**	**3.3**

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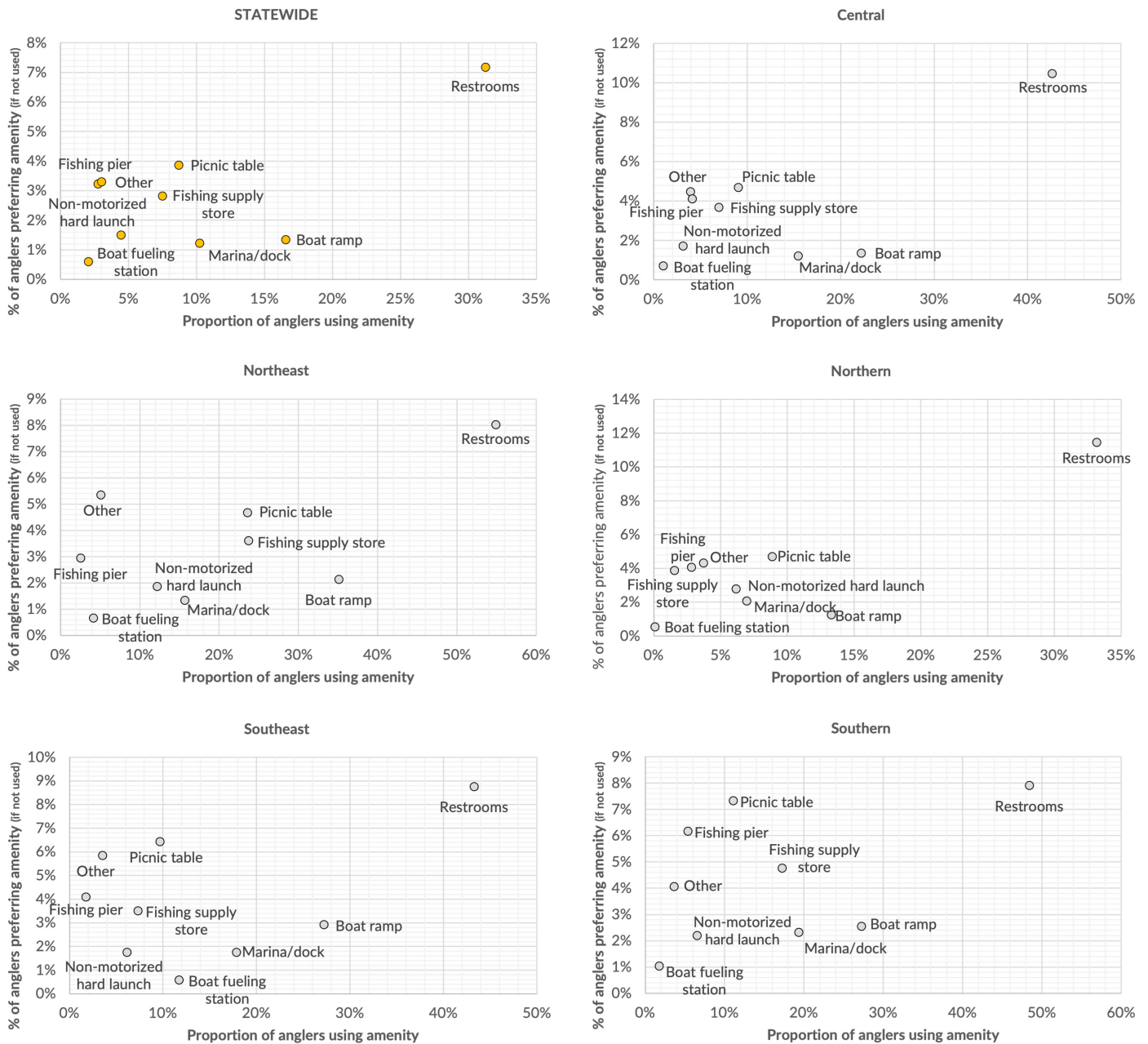
Figure 16. Proportion of anglers using different access methods, by DWR region fished.

Use of guides

Statewide, only 8% of anglers used a guide in the last 12 months. Anglers in the Northeast region use guides far more frequently (19.5%) than any other region. A moderate number of anglers used guides in the Central region (9.0%), and very few anglers use guides in the Southeast (5.2%), Northern (4.6%), and Southern (4.4%) regions (Table 17, Figure 17).

Table 17. Proportion of anglers who used a guide in the last 12 months and the frequency of guide use, by DWR region fished.

DWR Region	% of anglers using a guide
Northeast	19.5%
Central	9.0%
Southeast	5.2%
Northern	4.6%
Southern	4.4%
STATEWIDE	**8.4**

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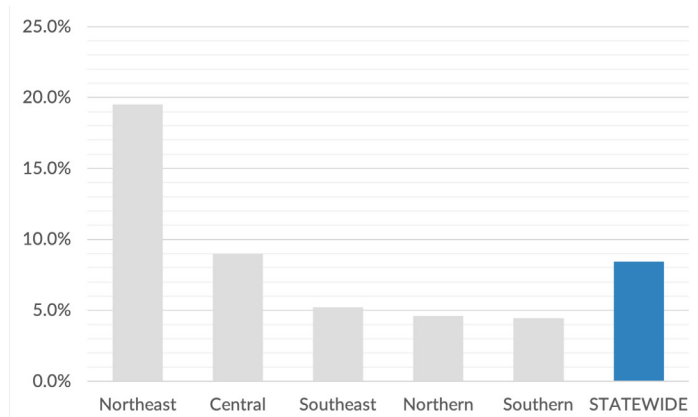
Figure 17. Proportion of guided and non-guided anglers by region.

Trip-related spending

Respondents were asked how much they spent before they left, on the way, and at their destination on their last fishing trip (Figure 18). The results presented below combine all three spending categories. A quick summary of these data shows the two regions with the longest travel times—Northeast and Southeast— also had the highest amounts of spending. The regions with the lowest angling–related spending were the Central and Northern regions. The top spending categories across all regions were transportation (mean of $61.57 spent per trip), lodging ($55.26), and food ($36.19).
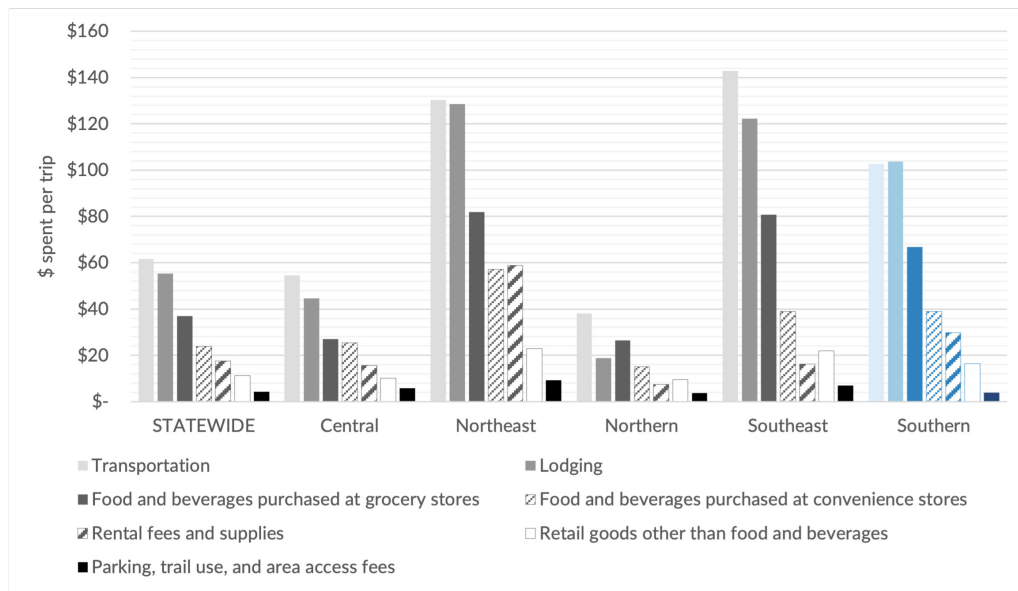
Figure 18. Trip related spending by region.

Objective 3. Identify what motivates Utah anglers

Motivations for angling in Utah

To better understand what motivates Utah anglers, respondents were given a list of common motivations associated with outdoor recreation activities and asked to rate how important each of the motivations are to them while fishing. These data allow us to better understand what motivates anglers to go fishing and it also tells us what kinds of experiences anglers are seeking. The results presented in Table 18 and Figure 19 clearly show what does, and does not motivate Utah anglers. For example, the top nine motivations fall into three categories: to get away from crowds and people, to mentally and physically relax, and to be immersed in nature. In contrast, the eight least motivating factors can be summed up in two categories: the desire to participate in a challenging adventure, and the motivation to show or tell others about their abilities and experiences. Taken together, we can see Utah anglers are seeking opportunities to get away from people in natural settings for the purposes of mental and physical relaxation. Very few Utah anglers are motivated by showing or telling others (e.g., social media) about their fishing experience in Utah.

Table 18. General motivations for angling in Utah.

| Motivation	Not at all important (%)	Slightly important (%)	Moderately important (%)	Very important (%)	Extremely important (%)
To be away from crowds of people	3.3	5.7	16.4	30.9	43.7
To physically relax	2.7	5.6	18.0	35.5	38.2
To get away from the noise back home	4.3	6.5	17.1	32.6	39.5
To be close to nature	2.1	6.6	20.9	38.8	31.7
To experience natural quiet	3.0	6.7	20.9	34.9	34.6
To enjoy the sounds of nature	2.9	8.1	21.4	35.3	32.3
To experience tranquility	4.3	8.8	21.2	32.8	33.0
To have my mind move at a slower pace	5.1	8.6	21.1	31.9	33.4
To view scenic beauty	3.0	9.2	28.2	36.0	23.5
To feel independent from rest of society	11.0	13.1	24.0	26.4	25.6
To be with others who enjoy the same things I do	12.0	13.9	22.9	30.7	20.5
To be with people who share similar values	14.9	14.4	22.8	29.1	18.8
To experience a sense of exploration	13.7	17.7	30.5	23.5	14.5
To learn what I am capable of	43.4	18.0	19.6	12.0	7.1
To have thrills	37.1	22.3	22.7	11.7	6.2
To gain a sense of self-confidence	45.8	19.0	20.1	9.7	5.3
To take risks	54.2	22.2	16.1	4.3	3.3
To tell others about my trip	53.1	24.9	14.7	5.3	1.9
To share photos on social media	69.6	16.8	9.1	3.1	1.4
To show others my abilities	70.1	16.2	9.3	2.7	1.8
To have others know that I have been here	73.7	15.6	7.1	2.2	1.4
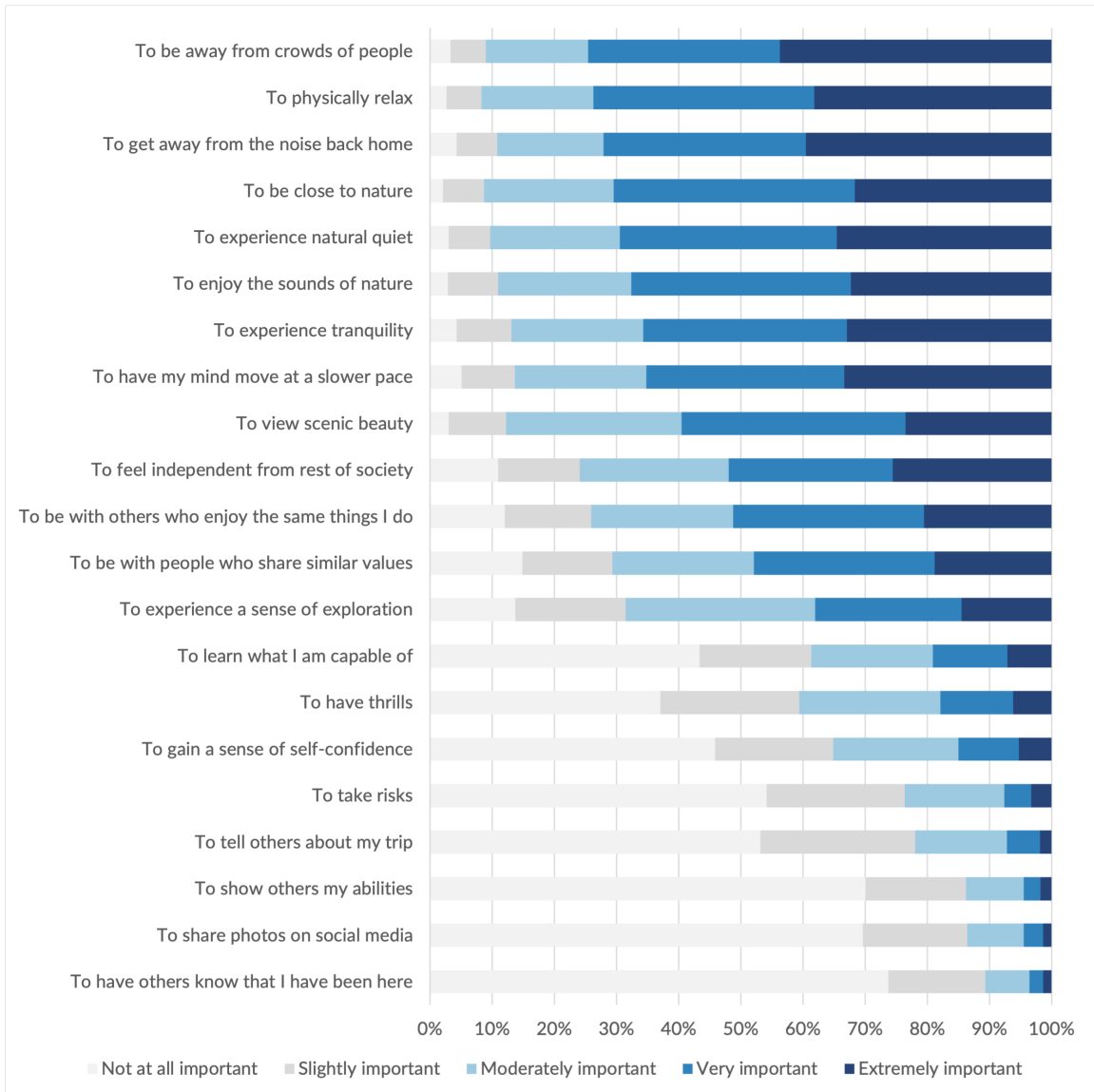
Figure 19. General motivations for angling in Utah.

Chart categories (top to bottom):
- To be away from crowds of people
- To physically relax
- To get away from the noise back home
- To be close to nature
- To experience natural quiet
- To enjoy the sounds of nature
- To experience tranquility
- To have my mind move at a slower pace
- To view scenic beauty
- To feel independent from rest of society
- To be with others who enjoy the same things I do
- To be with people who share similar values
- To experience a sense of exploration
- To learn what I am capable of
- To have thrills
- To gain a sense of self-confidence
- To take risks
- To tell others about my trip
- To show others my abilities
- To share photos on social media
- To have others know that I have been here

Axis: 0% to 100%

Legend: Not at all important ▪ Slightly important ▪ Moderately important ▪ Very important ▪ Extremely important

Preferences for specific opportunities on fishing trips in Utah

In addition to asking anglers about what generally motivates them to go fishing, anglers were also asked to assess a series of statements specifically about fishing. Besides the general motivations of solitude, nature, and relaxation, these results provide insights about what anglers are specifically wanting from their angling experiences. For example, when looking at the results presented in Table 19 and Figure 20, two opposing motivations emerge. First, anglers are very motivated by the opportunity to catch fish, find solitude, develop their skills as an angler, and to catch fish in an environment which renders them safe to eat. Anglers are only slightly motivated, however, by catching fish to eat and catching their limit, which indicates that environmental quality is more important than gathering food. Anglers are the least motivated by socialization, competing, and fishing for warmwater species.

Table 19. Anglers' preference for the occurrence of different opportunities on their fishing trips within Utah.

| Opportunity	On none of my fishing trips (%)	On some of my fishing trips (%)	On half of my fishing trips (%)	On most of my fishing trips (%)	On all of my fishing trips (%)
Have a chance to catch fish	1.0	6.8	6.4	20.2	65.6
Catch at least one fish	2.3	9.9	5.2	24.9	57.8
Get away from people	5.5	12.5	15.1	31.8	35.2
Develop or improve my fishing skills	6.2	13.6	14.5	24.7	41.0
Fish waters where fish are safe to eat	18.3	10.1	9.0	19.4	43.2
Catch several fish	2.9	19.4	15.3	37.9	24.4
Have a chance to catch large fish	2.8	20.6	17.4	26.6	32.6
Learn more about fish or fishing	9.5	19.2	15.7	22.3	33.3
Catch fish that are safe to eat	23.8	14.5	10.9	17.4	33.4
Fish for coldwater fish	8.5	18.3	23.1	28.5	21.6
Catch at least one large fish	4.8	32.0	18.0	26.3	19.0
Catch fish to eat	25.7	25.4	13.1	13.6	22.2
Fish wilderness-type areas	13.2	29.7	23.9	21.1	12.2
Try out new fishing tackle	11.4	36.7	22.2	16.6	13.1
Try a new fishing site	7.5	40.3	27.1	16.5	8.6
Challenge smartest or largest fish	31.5	26.7	17.9	13.5	10.5
Fish near nice camping areas	19.9	34.9	21.6	14.6	9.0
Teach others how to fish	18.9	39.6	19.3	14.2	8.0
Catch my limit	43.3	24.7	13.1	9.9	9.0
Fish at family-type areas	26.4	36.6	18.8	11.5	6.7
Show fish I caught to family and friends	41.1	30.4	12.7	9.2	6.6
Fish for warmwater fish	29.9	38.1	21.6	6.5	3.9
Catch the most fish of anyone in my group	61.0	20.9	8.7	4.9	4.6
Meet or talk with other anglers	38.7	39.6	12.3	6.0	3.4
Demonstrate fishing skills to others	53.9	27.8	9.8	5.3	3.2
Compete with other anglers	78.3	14.5	4.0	1.5	1.7
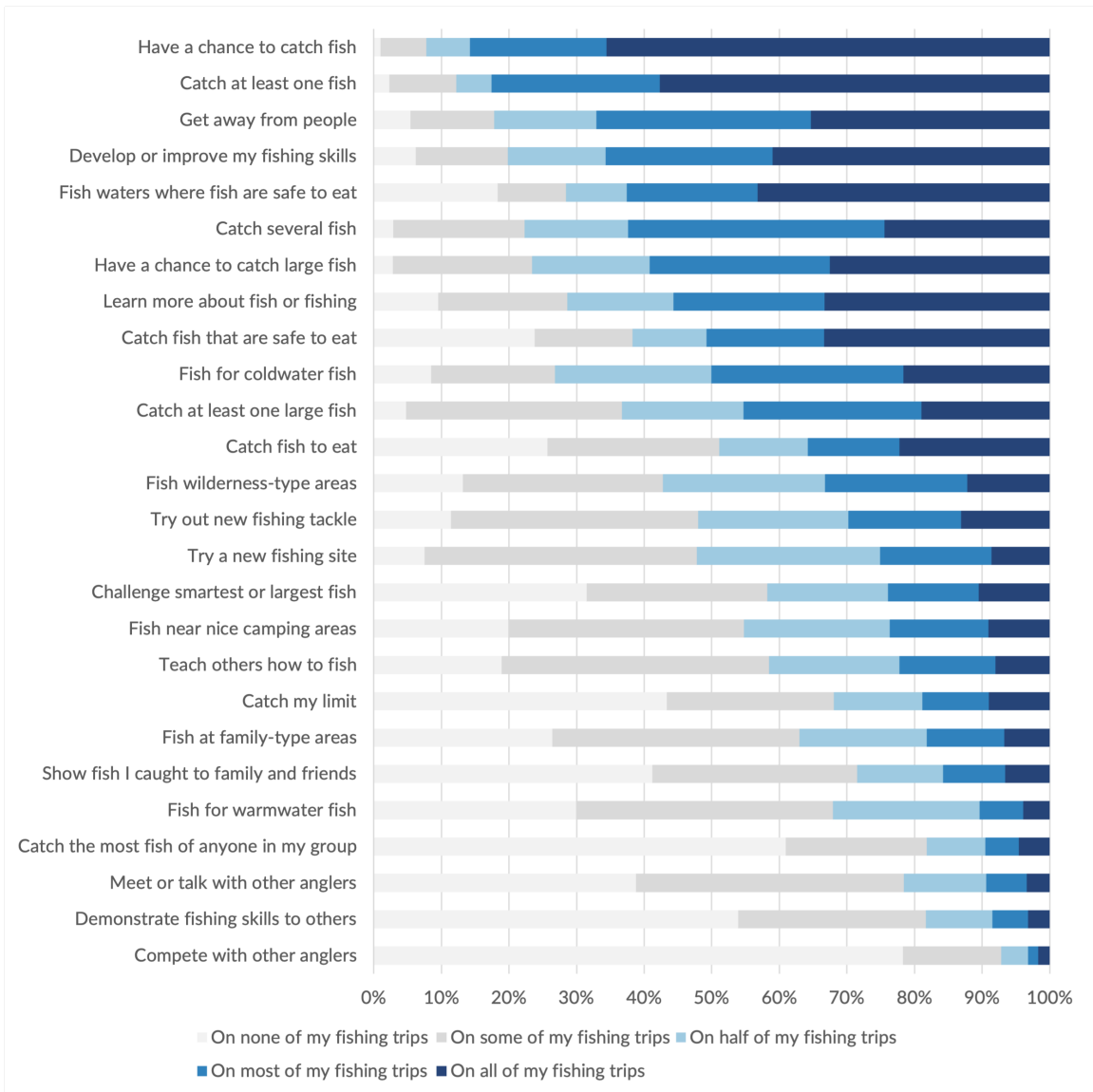
Figure 20. Anglers' preference for the occurrence of different opportunities on their fishing trips within Utah.

Species caught versus expectations

In addition to motivations, respondents were also asked questions that allowed us to compare their expectations to reality. For example, anglers were asked which species they expected to catch on their most recent fishing trip in Utah, and what species they actually caught. The results, shown in Table 20 and Figure 21, show Rainbow Trout were the species anglers expect to catch, and actually caught, more than any other species. Another interesting point was the number of anglers who caught nothing, which varied between a low of 13.7% (the Northeast Region) and a high of 28.6% (the Northern Region); the statewide average was 20.8%. Lastly, in the region–specific graphs shown in Figure 21, pay particular attention to the few regions where more anglers reported catching a particular species than the number that expected to catch it. In nearly all cases however, the proportion of anglers expecting to catch a particular species outweighed the number that actually caught it. Put simply, anglers consistently expected to catch more species than they did.

Table 20. Proportion of anglers expecting to catch specific species relative to the proportion who actually catch that species, by DWR region.

| Species	STATEWIDE			Central			Northeast			Northern			Southeast			Southern		
	% expect to catch	% actually catching	Diff.	% expect to catch	% actually catching	Diff.	% expect to catch	% actually catching	Diff.	% expect to catch	% actually catching	Diff.	% expect to catch	% actually catching	Diff.	% expect to catch	% actually catching	Diff.
Bluegill/sunfish	4.8	3.8	-1.0	3.2	1.3	-1.9	1.3	0.6	-0.6	7.8	5.4	-2.4	9.2	8.8	-0.4	4.5	4.3	-0.2
Brook Trout	12.5	8.2	-4.3	7.3	3.6	-3.7	16.4	10.9	-5.5	12.6	8.0	-4.6	5.8	3.2	-2.6	10.9	8.0	-2.9
Brown Trout	31.5	24.0	-7.5	34.6	26.7	-7.9	45.9	39.9	-6.0	35.5	26.8	-8.7	10.7	5.7	-5.0	19.7	12.6	-7.1
Bullhead	1.0	1.0	0.0	1.0	1.0	0.0	0.1	0.0	-0.1	1.5	1.9	0.4	1.8	1.1	-0.7	0.1	0.1	0.0
Channel Catfish	4.4	3.7	-0.8	3.5	1.8	-1.6	1.7	1.4	-0.3	7.4	6.3	-1.1	9.2	11.0	1.8	0.6	0.1	-0.5
Crappie	2.4	1.5	-0.9	0.8	0.4	-0.4	0.4	0.2	-0.3	5.3	4.0	-1.3	7.0	2.8	-4.2	1.3	0.7	-0.6
Cutthroat Trout	26.5	20.5	-6.0	37.7	35.7	-1.9	20.3	11.2	-9.1	23.1	12.5	-10.6	29.4	24.7	-4.7	19.3	14.3	-5.0
Kokanee Salmon	8.0	4.9	-3.1	15.4	8.1	-7.2	13.7	10.0	-3.7	2.2	1.3	-0.9	0.9	0.7	-0.2	6.3	3.6	-2.7
Lake Trout	9.3	4.4	-4.9	3.5	1.5	-2.0	19.8	11.7	-8.1	6.7	2.8	-3.9	5.8	2.1	-3.7	15.0	6.2	-8.8
Largemouth Bass	6.7	4.2	-2.5	3.0	1.1	-1.9	2.4	1.5	-0.8	6.3	3.8	-2.6	19.9	11.0	-8.9	9.2	7.7	-1.5
Mtn. Whitefish	3.8	3.8	0.0	3.4	2.5	-0.9	4.5	6.6	2.1	8.3	8.4	0.1	0.0	0.0	0.0	0.2	0.1	-0.1
Northern Pike	0.6	0.4	-0.2	0.8	0.2	-0.6	0.4	0.3	-0.1	0.0	0.0	0.0	2.8	3.2	0.4	0.4	0.0	-0.4
Rainbow Trout	70.4	61.7	-8.7	76.4	63.8	-12.6	73.9	68.9	-5.0	61.7	47.8	-13.9	54.7	46.6	-8.1	83.0	81.4	-1.6
Smallmouth Bass	7.9	6.1	-1.8	4.8	2.5	-2.2	8.0	8.0	0.0	8.4	6.1	-2.3	22.0	20.1	-1.9	4.9	2.5	-2.4
Splake	2.0	1.4	-0.7	0.2	0.2	-0.1	0.8	0.8	-0.1	0.4	0.4	0.0	1.5	1.1	-0.4	8.3	5.1	-3.2
Striped Bass	3.6	3.2	-0.4	0.7	0.5	-0.2	0.7	0.2	-0.5	0.6	0.2	-0.3	26.0	26.1	0.1	0.8	0.1	-0.7
Tiger Muskellunge	1.2	0.3	-0.9	0.2	0.0	-0.2	0.7	0.3	-0.4	2.5	0.5	-2.0	6.1	1.8	-4.3	0.1	0.0	-0.1
Tiger Trout	10.0	6.9	-3.1	2.2	0.7	-1.5	9.5	7.6	-2.0	7.7	6.8	-0.9	19.9	11.7	-8.2	21.6	12.1	-9.5
Walleye	3.8	2.3	-1.4	2.2	0.8	-1.4	3.9	3.2	-0.7	4.1	1.9	-2.2	17.7	12.4	-5.3	0.4	0.1	-0.3
White Bass	1.5	1.0	-0.5	4.0	3.1	-0.9	0.4	0.3	-0.1	0.2	0.1	-0.1	0.0	0.4	0.4	0.4	0.0	-0.4
Wiper	2.1	0.9	-1.2	1.1	0.4	-0.7	0.3	0.2	-0.1	4.9	2.5	-2.5	1.8	0.0	-1.8	2.1	1.0	-1.1
Yellow Perch	4.1	3.3	-0.8	2.1	1.3	-0.8	1.1	1.2	0.1	8.4	7.2	-1.3	0.6	0.4	-0.2	6.7	6.2	-0.5
Nothing	4.8	20.8	16.0	4.0	19.3	15.3	4.3	13.7	9.4	5.4	28.6	23.2	4.0	19.1	15.1	4.2	17.8	13.5
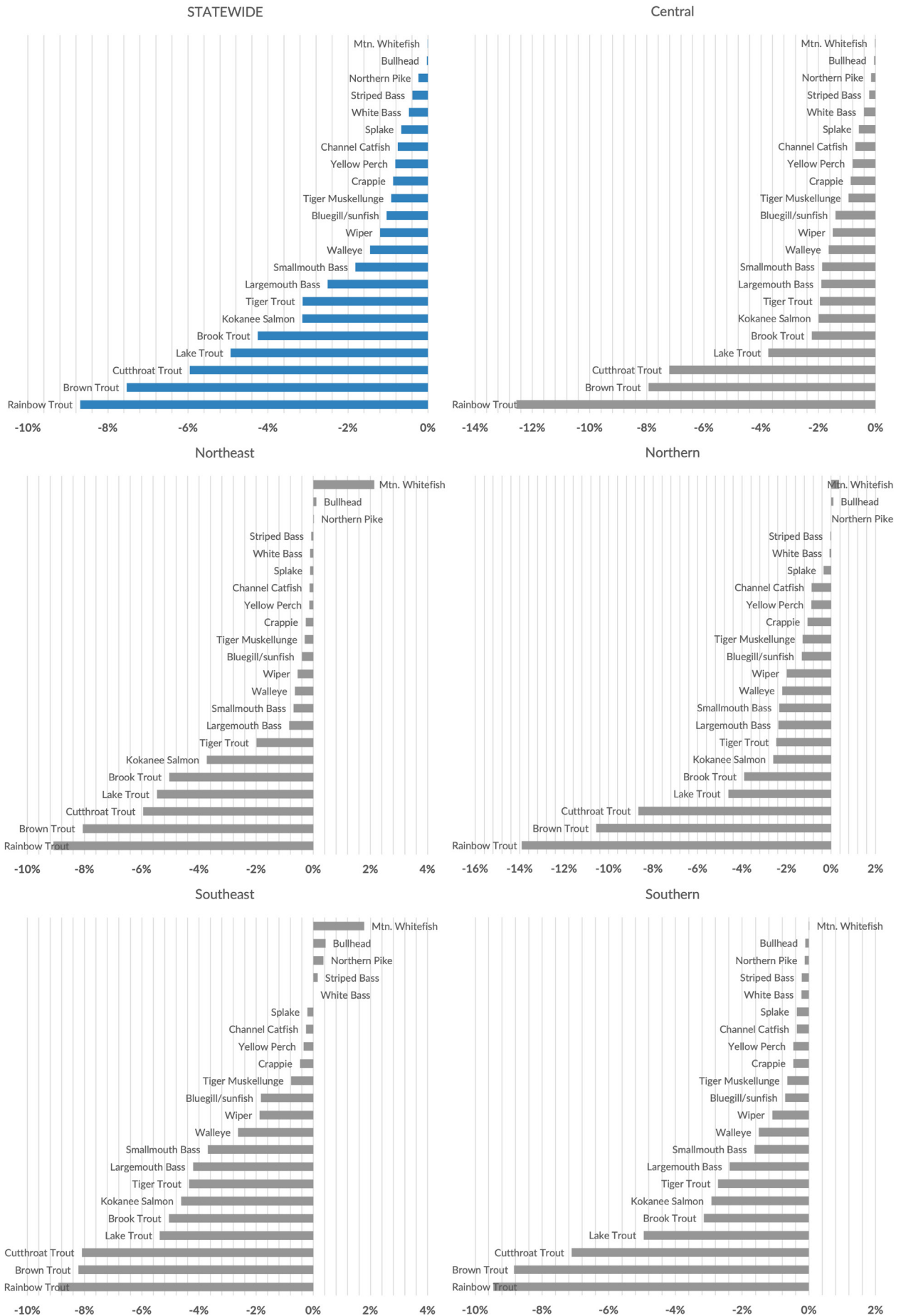
Figure 21. The percent of anglers expecting to catch specific species minus the proportion who actually caught that species, by DWR region.

Number of fish caught

In addition to asking respondents what species they caught, we also wanted to know how many of each species was caught on respondents' last fishing trip; Table 21 and Figure 22. Striped Bass were the most abundantly caught species on a per trip basis (mean number caught per trip = 12.2). Given trips to the Southeast region (where the majority of Striped Bass are within the state) tend to be longer, this finding may be skewed upwards for those species predominantly available in this region. Yellow Perch (mean number caught per trip = 8.0) and Smallmouth Bass (7.3) were the next most abundantly caught species on a per trip basis. Poor response to this question prohibited reporting region-specific results.
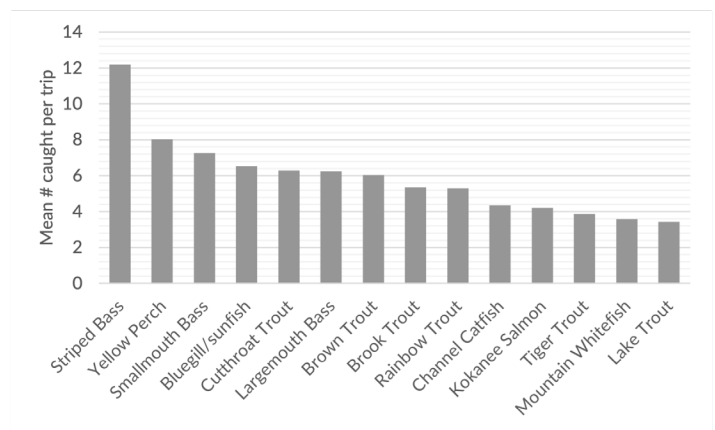

Figure 22. Mean number of different species caught per trip.

Table 21. Mean number of different species caught per trip.

Species	Mean Number Caught	Median Number Caught	Std. Dev.
Striped Bass	12.2	10	10.9
Yellow Perch	8.0	5	9.8
Smallmouth Bass	7.3	4	8.6
Bluegill/sunfish	6.5	4	7.5
Cutthroat Trout	6.3	4	7.3
Largemouth Bass	6.2	4	7.4
Brown Trout	6.0	4	6.8
Brook Trout	5.4	3	6.4
Rainbow Trout	5.3	3	5.9
Channel Catfish	4.3	3	4.2
Kokanee Salmon	4.2	3	4.9
Tiger Trout	3.9	2	4.5
Mountain Whitefish	3.6	2	3.2
Lake Trout	3.4	2	3.8

Note. n = 3,991

Species preferences

Lastly, to better understand anglers' preferences for specific species, and potentially find species for which more opportunity could be provided, we asked anglers to identify the top-3 species they prefer to pursue as well as the top-3 species they commonly pursue in Utah. We prefaced this question by first asking anglers whether or not they had a particular species they prefer to fish for—67.7% of anglers did. Of those with species-specific preferences, Rainbow, Brown, Cutthroat, and Brook Trout were the most preferred and commonly pursued (Table 22, Figure 23).

Comparing the data from these two questions shows where anglers' preferences for a particular species are higher than what they actually pursue. For half of the species listed—identified by an asterisk on Figure 23—a greater percentage of anglers prefer to fish for the species than the percent of anglers that do. In these cases, data suggest there is slightly more demand for these species than opportunity.

Table 22. Anglers' species-specific preferences.

Species	% of anglers who rank the species as one of the top-3 they prefer to target in Utah	% of anglers who rank the species as one of the top-3 they most commonly target in Utah
Rainbow Trout	64.9	80.3
Brown Trout*	49.6	47.2
Cutthroat Trout*	44.6	41.5
Brook Trout	26.9	26.5
Kokanee Salmon*	17.0	11.5
Tiger Trout*	14.2	12.7
Largemouth Bass*	11.9	10.2
Smallmouth Bass	10.5	11.0
Lake Trout	9.6	11.0
Walleye*	7.9	5.4
Channel Catfish	4.6	6.4
Wiper*	4.5	3.5
Striped Bass	3.7	4.0
Tiger Muskellunge*	3.7	1.8
Crappie*	3.1	2.7
Yellow	3.1	4.4
Bluegill/ other sunfish	2.3	4.1
Northern Pike*	1.9	0.7
Splake*	1.6	1.4
Mountain Whitefish	1.1	1.5
White Bass	1.0	2.3
Bullhead	0.2	0.5

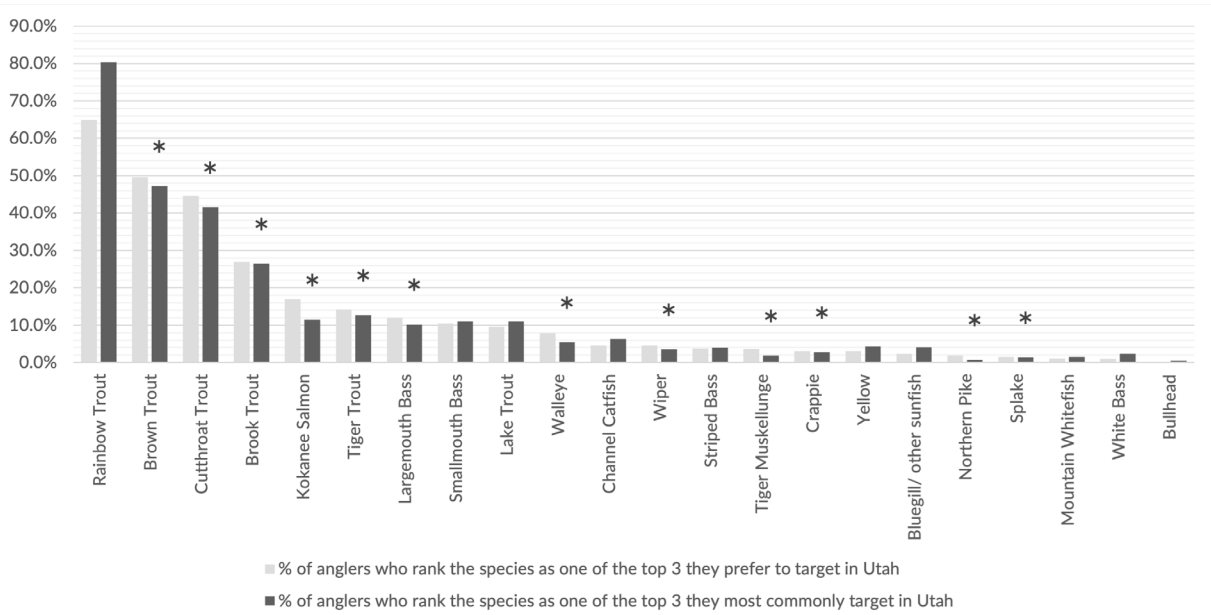* Indicates where demand may be higher than opportunity

Figure 23. Anglers' species-specific preferences.

Objective 5. Gauge anglers' perceptions and knowledge of native and nonnative fish species in Utah

To gauge Utah anglers' knowledge and perceptions of native fish species, we asked anglers a series of questions related to native fish and their management. In addition, respondents were given photos and names of fish found in Utah and asked to identify which were native. In combination, these data provide information about how Utah anglers feel about native fish and their management, and how well anglers can identify species native to Utah.

Perceptions of native fish

First, respondents were asked how much they agreed or disagreed with a series of statements related to native fish species in Utah (Table 23 and Figure 24). Overall, respondents showed high levels of agree-

ment for each of the statements. Respondents disagreed most with the following statements: 1) I am confident in my ability to identify native fish species, 2) I support managing some fisheries so they only contain native fish, and 3) some native species are more important than others. Respondents showed the highest levels of agreement for native fish playing important roles in ecosystems, supporting the recovery of native fish that have sportfishing value, and altering management to help protect sensitive native fish. Overall, respondents showed strong support for all these general statements; however, support may waver for specific management actions that would affect a specific fishery. More targeted questions would be needed to gauge public attitudes regarding specific decisions.

Table 23. Anglers' perceptions of native fish.

|	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Native fish species play an important role in the ecosystem	1.5	1.7	14.6	29.5	52.7
I would support the conservation or recovery of a native fish species if that species had potential value as a sportfish	2.0	2.5	25.6	42.4	27.6
I would support altering the management of a fishery if doing so would help protect a population of sensitive native fish species	2.9	5.0	24.0	34.7	33.4
I am confident in my abilities to identify fish species native to Utah	4.7	10.5	27.6	32.4	24.8
I would support efforts by DWR to manage some Utah fisheries so that they would contain only native fish species	5.1	8.4	33.3	33.6	19.7
DWR is doing a good job of protecting Utah's native fish species	2.3	4.0	41.1	39.5	13.1
Some native fish species are much more important to protect than others	4.9	7.6	36.8	33.2	17.6
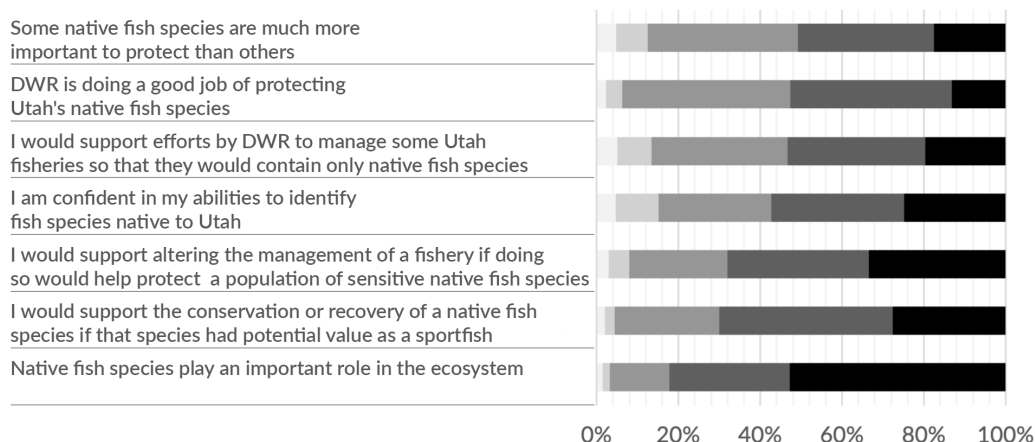
Figure 24. Anglers' perceptions of native fish.

Ability to identify native fish

To gauge anglers' knowledge of native fish species in Utah, respondents were shown pictures of eight different fish species and asked to pick which of them were native to Utah (Table 24). Most respondents (83.1%) correctly identified Bonneville Cutthroat as a species native to Utah. Just over half of respondents (56.0%) also correctly identified Mountain Whitefish. Nearly half of anglers (45.1%) incorrectly identified Rainbow Trout as native to Utah.
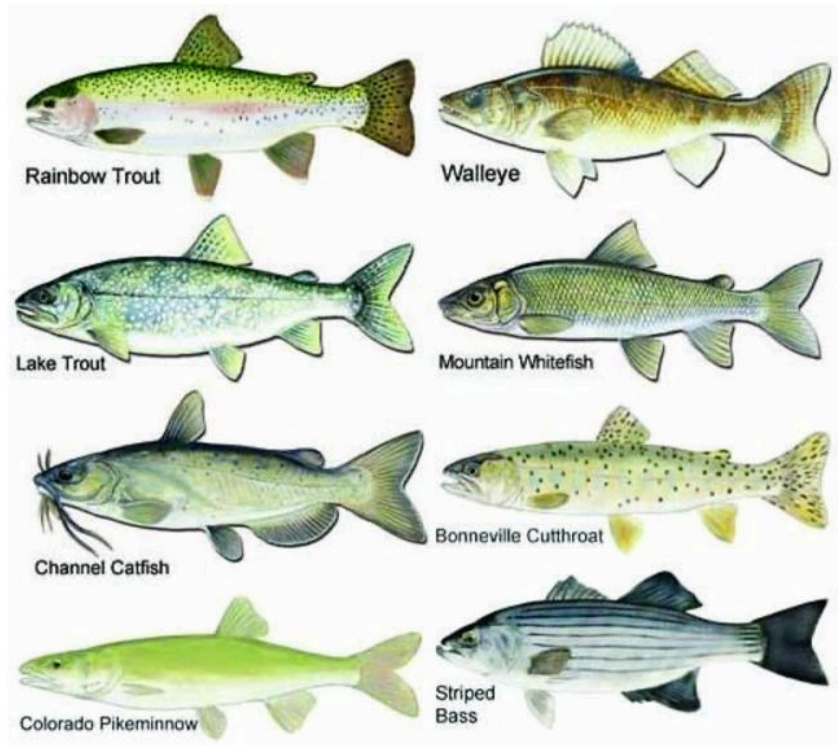
Figure 25. Image of native and non-native fish species shown to survey respondents.

Table 24. Proportion of anglers either correctly, or incorrectly, identifying specific fish species as native.

Species	Native/ Non-native	% of anglers identifying species as native	% of anglers identifying species as non-native
Bonneville Cutthroat	Native	83.1	16.9
Mountain Whitefish	Native	56.0	44.0
Colorado Pikeminnow	Native	38.7	61.3
Rainbow Trout	Non-native	45.1	55.0
Lake Trout	Non-native	33.9	66.1
Channel Catfish	Non-native	24.2	75.8
Walleye	Non-native	13.5	86.6
Striped Bass	Non-native	10.5	89.5

Note. Incorrect classifications are highlighted in red, correct classifications are highlighted in green.

Objective 6. Explore Utah anglers' perceptions of, and experiences with, crowding.

Perceptions of crowding

Regarding their most recent fishing trip, respondents were asked a series of statements to help understand how crowding affected them; results are shown in Table 25 and Figure 26. Overall, the effects of crowding in Utah are quite low, with over half of all respondents indicating that all four statements were "not true at all." However, when anglers were affected by crowding, the most common adaptation strategies included changing the timing and/or location of their fishing trip to avoid crowding. When asked their level of agreement with the statement "crowding negatively impacted the quality of my fishing experience", 12.8% of respondents indicated "very true" or "completely true." Going back to angler motivations,

we know Utah anglers want to find solitude, which would likely make them very sensitive to crowding. These data, therefore, suggest there are still good opportunities in Utah to get away from people and find solitude while fishing.

We separated these data by the region fished to identify regional differences in crowding. Anglers in the Central region were most affected by crowding, and anglers in the Southern regions were the least (Table 25, Figure 26). As we mentioned above, it is important to keep in mind that overall perceptions of crowding across all regions were generally low among anglers.

Table 25. Anglers' perceptions of crowding, by region fished.

| Statement	Level of agreement	Central (%)	Northeast (%)	Northern (%)	Southeast (%)	Southern (%)	STATEWIDE (%)
Crowding negatively impacted the quality of my fishing experience	Not true at all	45.4	43.6	53.6	60.4	56.3	50.4
	Slightly true	23.0	26.9	21.4	19.1	21.5	22.7
	Moderately true	16.0	16.4	13.5	10.9	11.6	14.2
	Very true	7.9	7.4	6.2	4.6	5.9	6.8
	Completely true	7.6	5.8	5.3	5.0	4.7	6.0
Crowding made me spend less time fishing	Not true at all	62.0	66.2	64.7	73.3	70.2	65.8
	Slightly true	15.2	16.3	15.4	10.5	14.9	15.0
	Moderately true	11.3	9.8	9.6	7.8	6.1	9.4
	Very true	6.0	4.1	5.8	4.4	4.6	5.3
	Completely true	5.5	3.7	4.5	4.1	4.2	4.6
I fished earlier or later in the day because of crowding	Not true at all	53.6	60.7	60.4	71.0	67.5	60.5
	Slightly true	11.7	15.1	13.3	12.5	11.3	12.6
	Moderately true	11.0	8.4	9.3	9.1	7.5	9.3
	Very true	11.2	9.9	7.6	4.4	8.0	9.0
	Completely true	12.6	5.9	9.5	3.0	5.7	8.6
Crowding made me change locations where I fished	Not true at all	50.7	56.7	58.6	65.7	62.6	57.1
	Slightly true	17.2	19.7	15.8	15.8	15.9	16.9
	Moderately true	12.7	9.3	8.5	7.1	9.5	10.1
	Very true	10.3	8.1	9.5	5.7	7.1	8.8
	Completely true	9.1	6.3	7.6	5.7	4.9	7.2
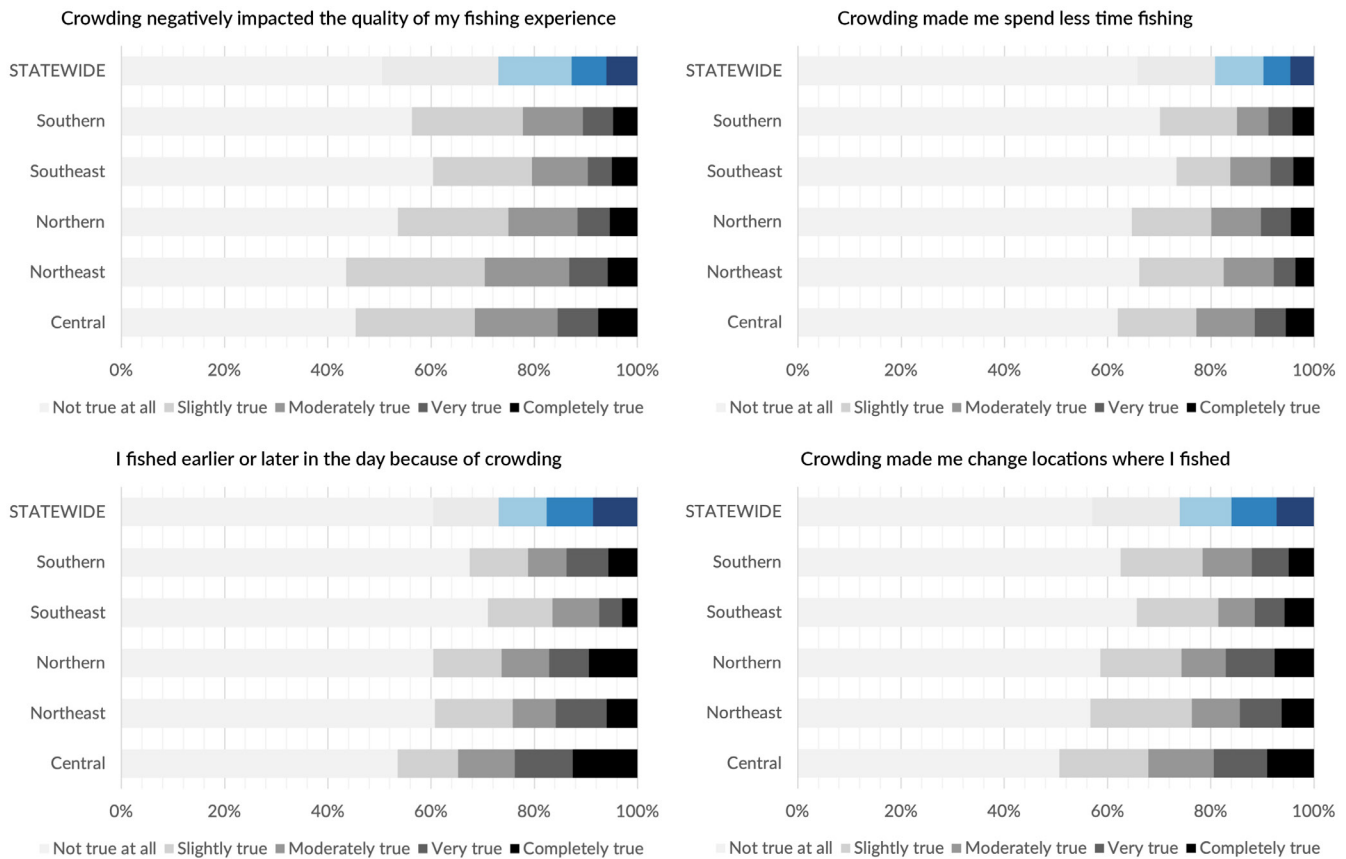
Figure 26. Anglers' perceptions of crowding, by region fished.

To understand how resident and nonresident anglers perceive crowding while fishing in Utah, we conducted an independent samples t-test to see if there were differences between the two groups. Overall, results suggest Utah residents perceive, and were affected by crowding more than non-residents (Table 26).

Table 26. Perceptions of crowding between residents and non-residents

Statement	Utah Residents (n ≥ 3,602)		Non-Residents (n ≥ 823)		
	Mean	Std. Dev.	Mean	Std. Dev.	Sig. Diff.[†]
Crowding negatively impacted the quality of my fishing experience	2.0	1.2	1.8	1.1	<0.001
Crowding made me spend less time fishing	1.7	1.2	1.5	1.0	<0.001
I fished earlier or later in the day because of crowding	2.0	1.4	1.7	1.2	<0.001
Crowding made me change locations where I fished	1.9	1.3	1.7	1.1	<0.001

Note. [†]Independent samples t-tests.

Objective 7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience.

The DWR was also interested to know more about the recreational activities Utah anglers participate in when they are not fishing. The goal was to help better understand Utah anglers and, if possible, create opportunities for Utah anglers to combine other recreational activities with fishing. To do this, respondents were asked three questions. First, to identify the three main activities—excluding fishing—they participated in over the last 12 months. Second, how important those three activities are to them compared to fishing. And third, how much they would like to combine other activities with fishing, if they don't already. These questions give us a better understanding of the preferences and behaviors of Utah anglers, and they also may provide information for managers to create additional recreation opportunities at or near fishing locations.

Other recreational activities anglers do

The first question asked respondents to identify the three main recreational activities, besides fishing, they have participated in the most over the last 12-months; results are shown in Table 27 and Figure 28. The most common activities Utah anglers participate in are camping (55.8%), single-day hiking (38.3%), and big game hunting (34.3%).
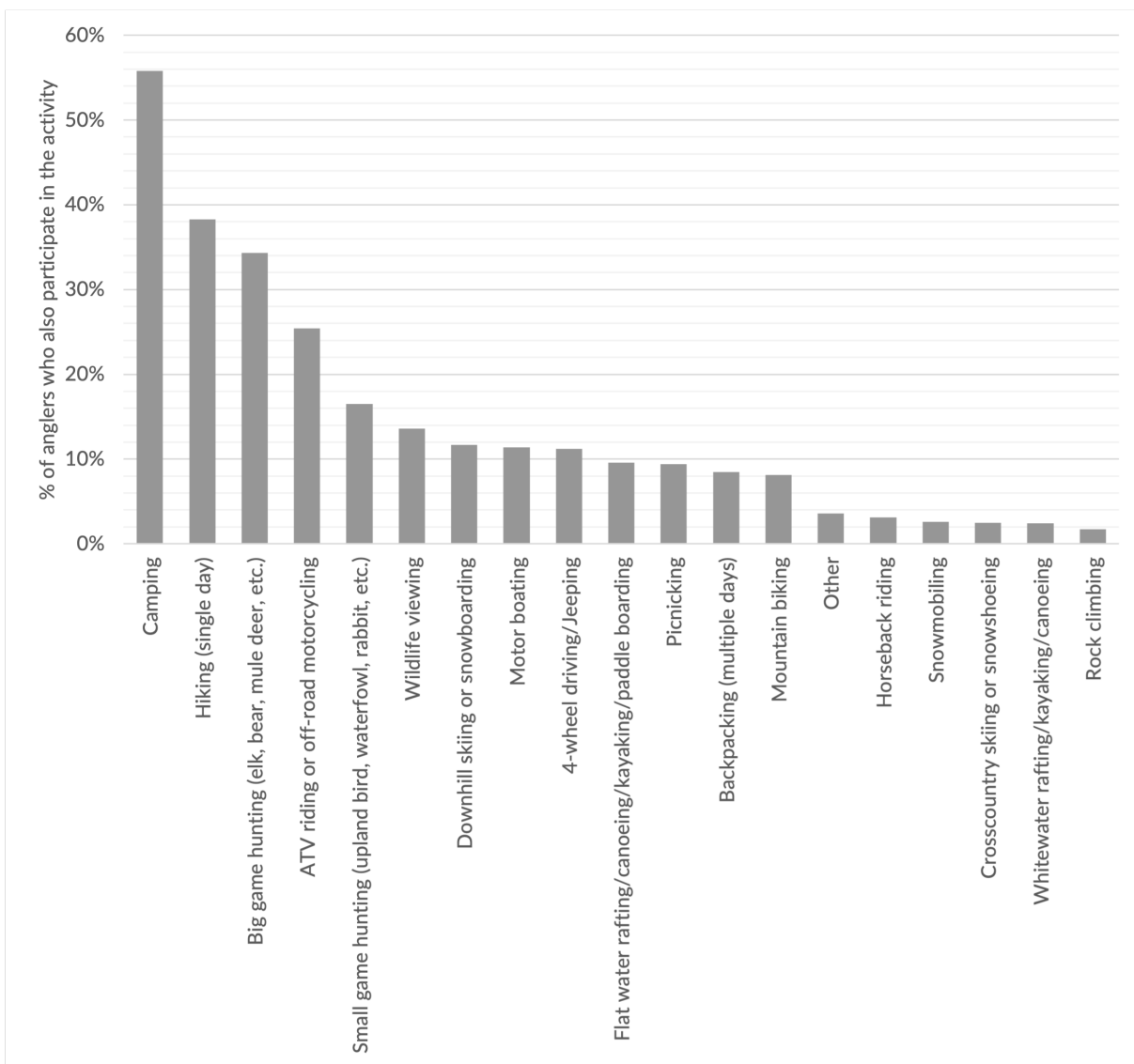

Figure 27. Other recreational activities anglers participated in over the last 12 months.

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Importance of other recreational activities relative to angling

Respondents were then asked how important those three activities are to them compared to fishing; result are shown in Figure 28. Activities like big game hunting, horseback riding, and downhill skiing tend to be more important to Utah anglers than fishing.

Most of the activities we asked about were roughly equivalent in importance as fishing. 4-wheel driving/Jeeping, picnicking, wildlife viewing, and several other activities (Figure 28) were reported to be less important to Utah angler than fishing.

■ % of anglers who say fishing is just as important as this activity
■ % of anglers who say fishing is slightly less important than this activity
■ % of anglers who say fishing is much less important than this activity
■ % of anglers who say fishing is just as important as this activity
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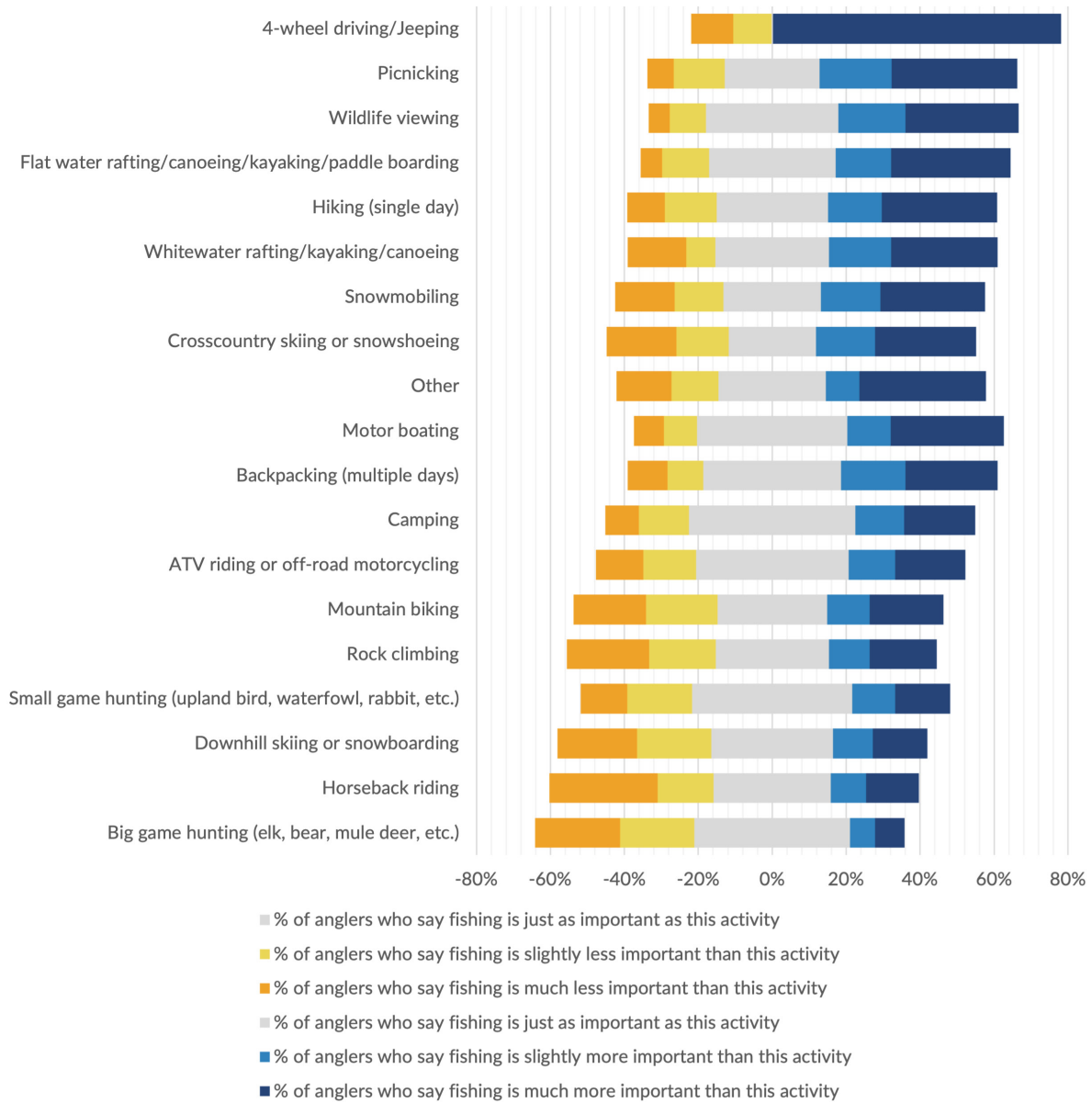
Figure 28. Importance of other activities compared to fishing.

Recreational activities anglers do, or would like to, combine with fishing

Next, respondents were asked which of their three main recreational activities they already combine with fishing (Table 27 and Figure 29). Results show more than half of anglers combine either backpacking (53.1%), camping (51.4%), or flatwater rafting/canoeing/kayaking/paddleboarding (51.1%) with fishing. We then asked how interested respondents were in combining different activities with fishing, if they did not already. Results show camping and backpacking were the two most common activities Utah anglers would like to combine with fishing if they didn't already (Table 27, Figure 30). There was also interest in combining fishing with flatwater canoeing/kayaking/paddleboarding and motor boating. Anglers showed moderate interest in combining many activities with angling, such as wildlife viewing, off roading, picnicking, amongst others. The activities anglers had the least interest in combining with fishing were snow sports like skiing and snowmobiling. Other activities like rock climbing and mounting biking also had low levels of interest (Figure 30).

Table 27. Other activities anglers participate in, their interest in combining the activity with fishing, and the proportion of anglers that already combine the activity with fishing.

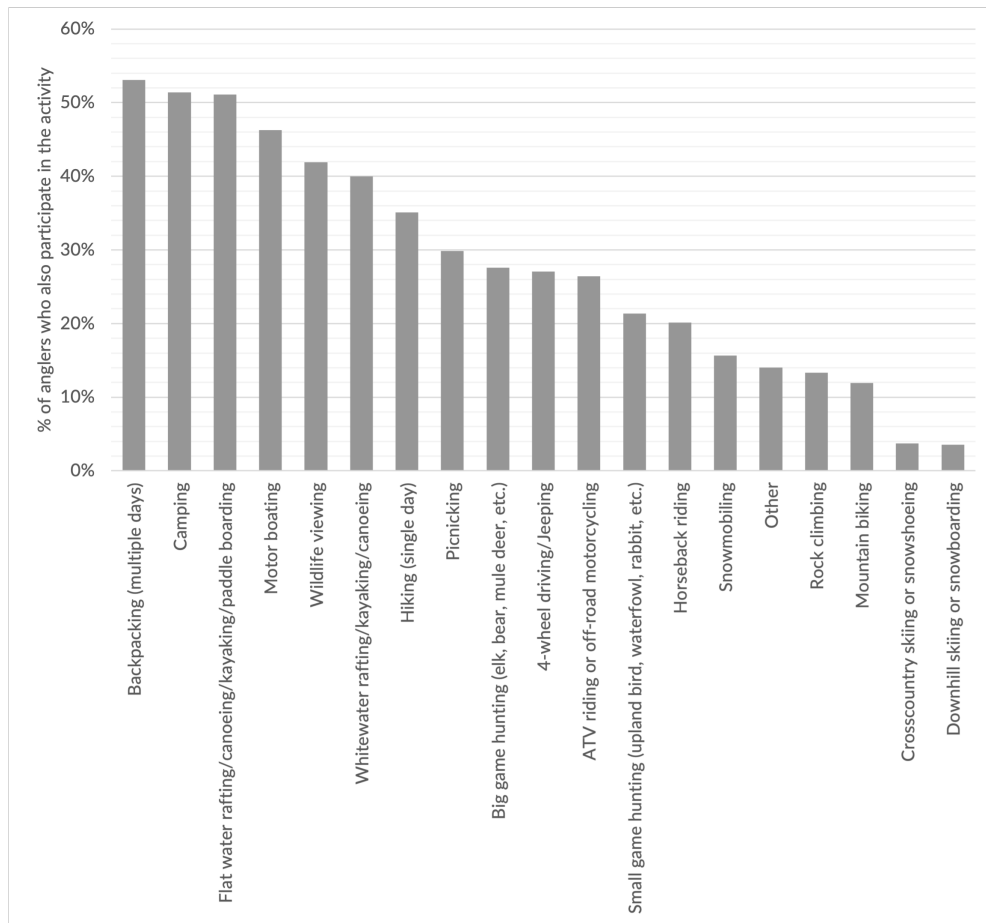| Other activity	% of anglers participating in activity within the past 12-months	% of anglers not interested at all in combining with fishing	% of anglers slightly interested in combining with fishing	% of anglers moderately interested in combining with fishing	% of anglers very interested in combining with fishing	% of anglers extremely interested in combining with fishing	% of anglers already combining activity with fishing
Camping	55.8	4.6	7.5	19.4	39.9	28.5	51.4
Hiking (single day)	38.3	12.3	15.8	26.4	27.7	17.7	35.1
Big game hunting (elk, bear, mule deer, etc.)	34.3	18.4	16.1	23.9	23.1	18.5	27.6
ATV riding or off-road motorcycling	25.4	13.2	15.2	24.4	26.7	20.5	26.4
Small game hunting (upland bird, waterfowl, rabbit, etc.)	16.5	22.8	17.8	22.4	19.9	17.1	21.4
Wildlife viewing	13.6	9.0	14.5	26.5	28.7	21.3	41.9
Downhill skiing or snowboarding	11.7	68.8	9.5	10.3	6.2	5.1	3.5
Motor boating	11.4	12.3	9.5	25.1	36.6	16.5	46.3
4-wheel driving/Jeeping	11.2	13.5	12.0	25.1	31.1	18.3	27.1
Flat water rafting/canoeing/kayaking/paddle boarding	9.6	8.8	10.9	24.9	33.2	22.3	51.1
Picnicking	9.4	10.1	17.5	24.3	29.5	18.7	29.9
Backpacking (multiple days)	8.5	5.4	10.2	17.5	38.0	28.9	53.1
Mountain biking	8.1	33.2	20.5	18.5	17.1	10.6	11.9
Other	3.6	37.0	17.4	16.3	18.5	10.9	14.0
Horseback riding	3.1	20.0	20.0	23.2	20.0	16.8	20.1
Snowmobiling	2.6	50.6	19.0	10.1	11.4	8.9	15.7
Cross-country skiing or snowshoeing	2.5	54.8	19.4	10.8	5.4	9.7	3.7
Whitewater rafting/kayaking/canoeing	2.4	10.7	17.9	25.0	28.6	17.9	40.0

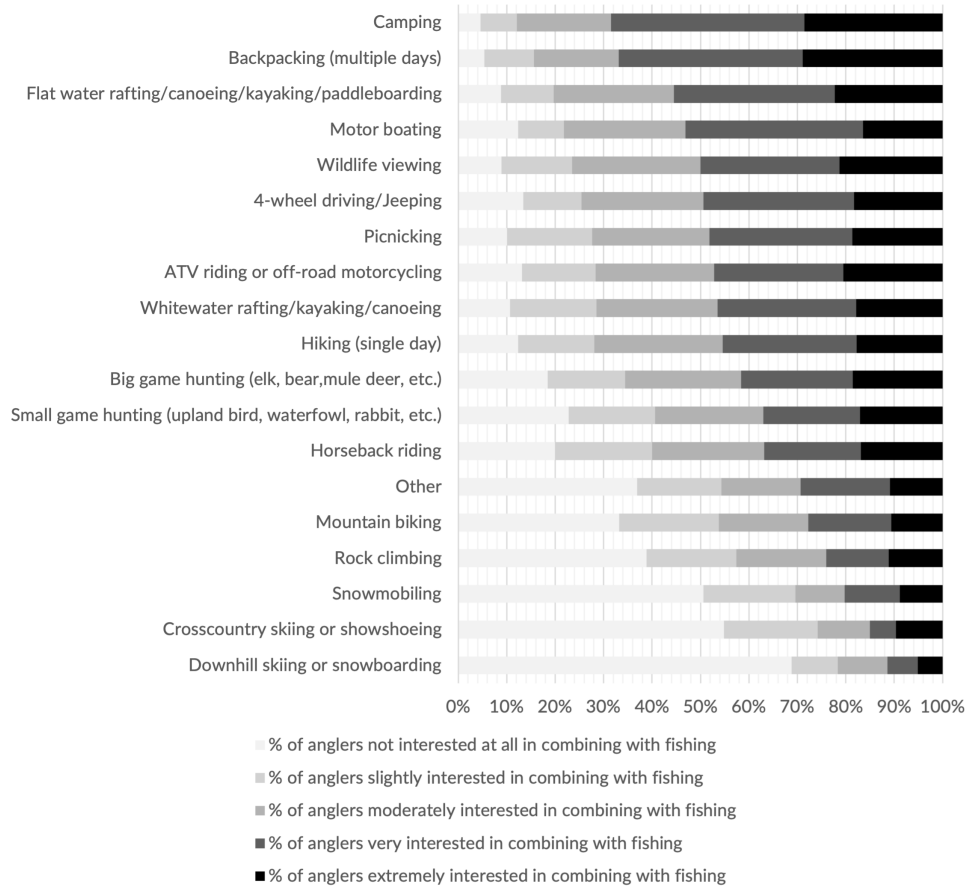**Figure 29.** Activities anglers already combine with fishing.

Figure 30. Other activities anglers are interested in combination with fishing, if they do not already.

Discussion

Continuing an effort that dates to 1967, we collected data that is valuable for understanding anglers and managing fisheries in the state of Utah. To meet the growing recognition of the human role in fisheries management, we surveyed anglers across the state of Utah, as well as nonresident anglers who purchased a Utah fishing license. To improve on past data collection efforts, we worked collaboratively with the DWR to create a survey and sampling design that would provide more applied and in-depth data to help managers make more proactive and data-driven management decisions about fisheries in the state.

This research was guided by a list of objectives developed by the research team at Utah State University and the DWR during the initial planning phase of this research. Here, we report data pertaining to all but two of those objectives. The other two objectives—to understand the travel behaviors of Utah anglers as well as the constraints and barriers that lead to lapses in fishing license renewal—are covered in stand-alone reports. The objectives discussed in this report are as follows:

1. Define the characteristics of Utah anglers
2. Produce a snapshot of angling in Utah over a 12-month period
3. Identify what motivates Utah anglers
4. Identify what fish species anglers expected to catch, caught, and prefer to catch
5. Gauge anglers' perceptions and knowledge of native and nonnative fish species in Utah
6. Explore Utah anglers' perceptions of, and experiences with, crowding
7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience

The following discussion reflects on the findings related to these objectives and the potential for future analysis.

Objective 1. Define the characteristics of Utah anglers

With regards to sociodemographic characteristics, Utah anglers are a relatively homogeneous group. Respondents were, on average, 51 years old, highly educated (52.2% had at least a bachelor's degree), male (88.9%), non-Hispanic (90.1%), white (97.9%), and relatively high earning (55.6% of anglers individually earn more than $75k per year). In comparison to Utah as a whole, Utah anglers are, on average, older (Utah mean age is 31 years old), more educated (35.4% of Utahns have at least a bachelor's degree), more male (Utah's population is 50.2% male), less Hispanic (15.1% of Utah residents are Hispanic/Latino(a)), more white (90.3% of Utahans identify as white), and have a slightly higher median income (Utahns have an annual median household income of $74,197).

When comparing across regions, there are statistically significant differences in who fishes where. For example, anglers who fish in the Northeast region are, on average, the highest earners with 20.5% having an annual individual income of over $150,000 per year. This is likely associated with the time it takes for anglers to travel there (over 4 hours on average), how long they stay there (67.4% spent at least one night), and the types of fishing opportunities available (42.1% used artificial flies, which is more than any other region). Overall, these data provide insights into who fishes where, along with their behaviors and preferences.

Objective 2. Produce a snapshot of angling in Utah over a 12-month period

The data presented in this section provide a snapshot of angling across Utah over a 12-month period. General and regional trends emerge. The differences across regions are likely a result of the fishing resources and outdoor recreation opportunities available.

When looking at trends in use, the Southeast region received the fewest fishing trips during the year. This is likely attributed to the lack and proximity of angling resources in this region. Even though Lake Powell is a high-quality angling resource, anglers traveled, on average, one hour farther (4.5 hours compared to 3.6 hours) to reach the Northeast region. This could be attributed to access—much of Lake Powell requires boat access—but when looking at preferences, we see that anglers overwhelmingly prefer and seek opportunities to catch coldwater species over warmwater species. Therefore, more anglers are likely willing to travel to the Northeast region to pursue coldwater species in the Uinta Mountains, Flaming Gorge, and Green River. Anglers fishing the Central and Northern regions had the shortest travel times (2.1 and 2.3 hours respectively), which is likely attributed to the abundance of angling destinations near large population centers. Most anglers fishing in the Central (86.3%) and Northern

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(82.0%) regions were on day trips. This suggests anglers in these regions are largely local anglers.

Fishing methods also varied across regions. Overall, the most popular fishing methods were bait (34.6%), artificial lure (30.1%), and artificial fly (29.7%). The highest proportion of bait fishing (46.8%) occurred in the Southern region, the highest proportion of fly fishing occurred in the Northeast region (42.1%), and the highest proportion of lure fishing occurred in the Southeast region (42.4%). Ice fishing occurred infrequently (5.2%), but relatively evenly across the state, except for the Northeast region, which had the lowest proportion (1.9%) of ice fishing trips. Other techniques, such as spearfishing and archery, were also used infrequently across the state (0.4%).

The most frequently used access method across the state was fishing from shore or a fishing pier/dock on a lake or reservoir; anglers used this method an average of 5.5 times per year. Wading in a stream or river (4.9 times per year) and fishing from a boat on a lake or reservoir (4.3 times per year) were also commonly used access methods. Fishing from a boat on a stream or river was the least common method (0.8 times per year). Access methods correspond with the types of waterbodies respondents fished most often (i.e., large and small lakes).

Respondents were also asked what amenities they used on their most recent fishing trip. Restrooms were the most common, with 31.3% of all respondents saying they used a developed restroom at the location of their most recent fishing trip. Boat ramps (16.5%) and marinas/docks (10.2%) were the second and third most used amenities on-site. 45.3% or respondents fishing in the Northern regions said they used no amenities. When respondents were asked which amenities they would have liked on-site, if they were not already there, 41.4% said they did not want any additional amenities. Responses to this question were consistent across all regions, meaning there was little to no regional variation. Of those who did want additional amenities, restrooms and picnic tables were the most common, but they were infrequently mentioned.

Objective 3. Identify what motivates Utah anglers

A series of questions were asked to help us better understand what motivates Utah anglers to fish, and what kinds of experiences anglers are seeking. Results showed anglers overwhelmingly want to: 1) get away from crowds and people; 2) mentally and physically relax; and 3) be immersed in nature. Overall, anglers do not seek fishing opportunities that require them to take risks and experience thrills. By far the least motivating factor for Utah anglers was to show and tell others about their experiences and abilities. This may be attributed to the general demographics of Utah anglers.

In addition to asking about general motivations, questions pertaining to angling-specific motivations were also asked. Results showed that 'on all of their fishing trips' Utah anglers wanted to: 1) have a chance to catch fish; 2) catch at least one fish; 3) get away from people; 4) improve their skills; and 5) fish waters where fish are safe to eat. However, anglers are only slightly motivated by catching fish to eat and catching their limit, which indicates that environmental quality is more important than gathering food. Anglers are the least motivated by socialization, competing, and fishing for warmwater species.

Motivations can be examined across many different variables (e.g., age, region, fishing method, etc.), which may be a focus for future analysis. This information can be used to better understand the differences in motivations and preferences among various segments of Utah anglers.

Objective 4. Identify what fish species anglers expected to catch, caught, and prefer to catch

The analysis of what respondents expected to catch and what they actually caught provided a regional comparison of: 1) what species are being caught; 2) the percentage of anglers who caught nothing; and 3) the mismatches where respondents expected to catch a species and did not. Across all regions, Rainbow Trout, Cutthroat Trout, and Brown Trout were the top three species caught in Utah. Rainbow Trout was the most frequently caught species in every region, and the percent of respondents who caught Rainbow Trout was much greater than any other species. A notable result from this analysis is the number of respondents who caught nothing during their last fishing trip. This ranged from a low of 13.7% (the Northeast region) to a high of 28.6% (the Northern region). In the Northern region, catching nothing was the third most frequently mentioned result of a respondent's fishing trip. The data gathered here do not shed light on why so many anglers are catching nothing in the Northern region. Managers may have insights on this topic.

In addition to exploring anglers' expectations and reality, respondents were also asked what species they commonly pursue and what species they prefer to pursue. Data from this question can be used to evaluate if there is unmet demand for a particular species (i.e., the proportion of respondents who prefer to fish for a species than the proportion that do). Data suggest there is unmet demand for half of the species listed. Specifically, and in order from most to least, respondents had more demand for Brown Trout, Cutthroat Trout, Kokanee Salmon, Tiger Trout, Largemouth bass, Walleye, Wipers, Tiger Muskie, Crappie, Northern Pike, and Splake. Also, anglers noted they commonly pursue Rainbow Trout more than they prefer to pursue Rainbow Trout, which may be an indicator that anglers are pursuing Rainbow Trout because they are present even though they would prefer to pursue other species, such as Brown and Cutthroat Trout.

Objective 5. Gauge anglers' perceptions and knowledge of native and nonnative fish species in Utah

Overall, Utah anglers showed fairly strong support for native fish in Utah. Respondents showed the most agreement for the following statements: 1) native fish play an important role in the ecosystem; 2) I support promoting native fish that have sport fishing value; and 3) I support altering management to protect populations of sensitive native fish. Respondents disagreed most with the following statements: 1) I am confident in my ability to identify native fish; 2) I support efforts to manage fisheries so they contain only native fish; and 3) some native fish are much more important than others to protect. Although there was some disagreement associated with all statements, far more anglers agreed with each statement than disagreed. This should be an indication that support for native fish among Utah anglers is high. However, the broad nature of these questions may not provide information specific enough to support management actions targeted at a particular species, and/or a particular location. More targeted efforts may be needed to gauge support for specific management actions that have the potential to greatly change the character of a particular fishery.

Respondents were also quizzed to see if they could identify fish species native to Utah. Most respondents correctly identified Bonneville Cutthroat (83.1% correct) and just over half (56.0%) correctly identified Mountain Whitefish. Only 38.7% correctly identified Colorado Pikeminnow as native to the state. Almost half of respondents (45.1%) incorrectly identified Rainbow Trout as native to Utah.

Objective 6. Explore Utah anglers' perceptions of, and experiences with, crowding

Overall, the effects of crowding across the state are quite low, with over half of respondents indicating that all four crowding statements were "not true at all." However, when anglers were affected by crowding, the most common adaptation strategy included changing the timing and or location of their trip. When asked if crowding negatively affected their fishing experience, 12.8% of respondents said this was "very" or "completely true." Although crowding is not an issue for most Utah anglers, just over one-tenth of Utah anglers said crowding negatively impacted the quality of their fishing experience. Going back to angler motivations, we know Utah anglers want to find solitude, which would likely make them very sensitive to crowding. These data, therefore, suggest there are still opportunities in Utah to get away from people and find solitude while fishing.

Looking at these data at the regional level, the Northern region showed the largest signs of crowding, which makes sense given that the Northern region had the highest number of fishing trips over the 12 months of the survey.

Analysis also showed nonresidents perceived less crowding during their last fishing trip in Utah then residents. Therefore, these data suggest Utah anglers are more sensitive to crowding than nonresidents when fishing within the state.

Objective 7. Identify potential areas where managers can create or promote opportunities for Utah anglers to combine recreational activities to enhance the angling experience

When they are not fishing, the most common activities Utah anglers participate in are camping (55.8%), single day hiking (38.3%), and big game hunting (34.3%). The top activities respondents are most interested in combining with fishing, if they do not already, were camping, backpacking and flat water boating (motorized and non-motorized). These data suggest management can produce information that shows ideal locations for fishing in combination with these other highly preferred and highly complementary activities. This type of advertising would likely resonate with the largest proportion of Utah anglers.

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Conclusion

Most Utah anglers are seeking opportunities to fish in high-quality environments where they can find solitude and relax. In addition, they prefer opportunities to catch coldwater species, and would like a more diverse set of species than currently exists. Lastly, Utah anglers commonly combine fishing with backpacking, camping, and other water-based activities like canoeing, kayaking, and paddleboarding. The anglers who are not already doing so indicated a desire to combine angling with these activities as well, highlighting opportunities where the DWR can produce information that shows ideal locations for fishing in combination with these other highly preferred and highly complementary activities. In addition to the data points briefly highlighted here, this report offers a wealth of data that can be used to inform the decisions made by fisheries managers across all of the DWR's administrative regions.

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Appendix A

Conceputal Framework

Final Research Questions, Sub-questions, and Sampling Frame
December 16, 2020

Research Questions	Potential sub-questions to incorporate into survey
1. **What are the major types of anglers and angling experiences in Utah?**	• *What are anglers' motivations and preferences for their fishing experience?* • *What indicators of quality are involved in an angler's fishing experience?* • *How do anglers' preferred fishing experiences differ from their actual fishing habits?* • *What limitations or barriers prevent anglers from achieving their preferred fishing experiences?* • *What are anglers' perceptions of crowding?* • *What are anglers' preferences for services?* • *What are anglers' willingness to change their behaviors for their preferred fishing experiences? i.e. via travel, additional investment, education, etc.*
2. **What are the travel behaviors of anglers in Utah?**	• *How far do anglers typically travel to fish?* • *What indicators are involved in determining an angler's fishing excursion?* • *What is the economic benefit offered by particular types of waterbodies and/or particular types of species?*
3. **What are anglers' knowledge and perceptions of native and non-native fish species?**	• *What are anglers' knowledge of native fish species?* • *What native and non-native fish species do anglers value?* • *What are anglers' fish identification abilities?* • *What are anglers' attitudes towards maintaining and supporting native fish populations?* • *What communication and outreach tools can be used to expand anglers' knowledge of native fish species?*
4. **What are the constraints and barriers that lead to a lapse in fishing license renewal in Utah?**	• *How do repeat license (experienced) holders motivations and habits differ from first time (inexperienced) license holders?* • *What are the main constraints and barriers that result in lapsed anglers in Utah?* • *For anglers that are successfully navigating these barriers and constraints, how are they doing so?*

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Appendix B

Survey Instrument

2021 Utah General Survey

You are invited to participate in a research study by Jordan Smith, Director of the Institute of Outdoor Recreation and Tourism at Utah State University.

The purpose of this research is to inform fisheries management about angler's resource use and fishing preferences. Specifically, we are interested in learning about your most recent fishing trip, the type of fishing you participate in, what you fish for, how much money you spend to fish, how far you typically travel, and what your preferences for fishing experiences are. You are being asked to participate in this research because you have purchased a Utah State Fishing License within the 2020-2021 fishing season.

Your participation in this study is voluntary and anonymous and you may withdraw your participation at any time for any reason. Your name or fishing license number is not requested in the survey and cannot be connected to your survey responses. For your privacy, you can choose when you take the survey, where you take the survey, and what device you take the survey on. **If possible, we recommend taking the survey on a computer instead of a mobile phone, as the formatting is easier to navigate.**

If you take part in this study, your total estimated participation in this online survey will be approximately 15 minutes.

The possible risks of participating in this study include loss of confidentiality. We cannot guarantee that you will directly benefit from this study, but it has been designed to learn more about the needs and preferences of anglers in Utah, to help fisheries managers better plan for public needs.

We will make every effort to ensure that the information you provide remains confidential. We will not reveal your identity in any publications, presentations, or reports resulting from this research study.

We will collect your information through an online survey. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. This survey data will be securely stored in a restricted-access folder on a secure storage platform at Utah State University.

You can decline to participate in any part of this study for any reason and can end your participation at any time.

If you have any questions about this study, you can contact our team at Utahfishingsurvey@usu.edu. Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at (435) 797-0567 or irb@usu.edu. The IRB protocol number for this survey is 12004.

By continuing to the survey you agree that you are 18 years of age or older, and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records. If you would like a paper copy of this form for your records, please let us know and one will be provided.

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Q0 I have read the conditions described above, and agree to participate
- I agree to participate in this survey (1)
- I disagree and will not participate in this survey (2)

Q1c Did you purchase a Utah resident license or a non-resident license?
- Utah Resident (1)
- Non-Resident (2)

Q1a What is the type of Utah fishing license that you purchased in the last 12 months?
- 3-Day license (1)
- 7-Day license (2)
- 365-day fishing or multi-year fishing license   (3)
- 365-day or multi-year combination hunting-fishing license   (4)

Display This Question:
If What is the type of Utah fishing license that you purchased in the last 12 months? = 365-day or multi-year combination hunting-fishing license

Q1b Which of the following best describes how you use your combination hunting-fishing license?
- I primarily use my combination license to fish (1)
- I use my combination license equally for hunting and fishing (2)
- I primarily use my combination license to hunt (e.g. apply for limited entry hunting opportunities, over the counter tags, etc.) (3)

Q1d Have you **used your purchased Utah license** to fish in the past 12 months?
- Yes (1)
- No (2)

We would like to learn more about your **most recent fishing trip within Utah where fishing was the primary purpose for taking the trip**. Think back to your most recent trip within the state **where fishing was the primary purpose for taking the trip** and answer the questions below. A trip does not have to be overnight, and does not have to last the whole day.

Q2 What was the approximate month, day and year of your most recent fishing trip within Utah where fishing was the primary purpose for taking the trip?

Month (1)	▼ January (1) ... (150)
Day (2)	▼ January (1) ... (150)
Year (3)	▼ January (1) ... (150)

Q3 What was the name of the stream, river, lake, reservoir, etc. that you fished on your most recent trip in Utah? *Please be as specific as possible*

_____

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Q4 What is the closest city or town to the location of your most recent Utah fishing trip? *Please be as specific as possible*

_____

Q5 How long did it take you to travel to the place where you fished? Please estimate just your travel time and exclude incidental stops *(e.g., getting gas, stopping for food, etc.)*.

Hours	▼ 0 (1) ... 59 (125)
Minutes	▼ 0 (1) ... 59 (125)

Q6 Was this trip **a day trip** (i.e., you left and returned on the same day) **or an overnight trip?**
- Day trip (1)
- Overnight trip (2)

Q6a Once you arrived at your fishing destination, how long did you spend at the destination?

Hours (1)	▼ 0 (1) ... 59 (61)
Minutes (2)	▼ 0 (1) ... 59 (61)

Q6b Once you arrived at your fishing destination, how long did you spend at the destination? Count the day you arrived and the day you departed as two separate days.

Days (1)	▼ 0 (1) ... 24 (83)
Nights (2)	▼ 0 (1) ... 24 (83)

The following image of fish species and their common names can assist you for the following two questions

Cutthroat Trout

Mountain Whitefish

Rainbow Trout

Brook Trout

Lake Trout

Brown Trout

Kokanee

Tiger Trout

Splake

Striped Bass

White Bass

Wiper

Walleye

Yellow Perch

Northern Pike

Tiger Muskellunge

Bullhead

Channel Catfish

Crappie

Bluegill

Smallmouth Bass

Largemouth Bass

Q7 What species of fish were you **expecting to catch** on this trip?

- Bluegill / other sunfish (4)
- Brook Trout (5)
- Brown Trout (7)
- Bullhead (8)
- Channel Catfish (9)
- Crappie (10)
- Cutthroat Trout (11)
- Kokanee Salmon (12)
- Lake Trout (13)
- Largemouth Bass (14)
- Northern Pike (15)
- Rainbow Trout (16)
- Smallmouth Bass (17)
- Splake (18)
- Striped Bass (19)
- Tiger Muskellunge (20)
- Tiger Trout (21)
- Walleye (22)
- White Bass (23)
- Mountain Whitefish (24)
- Wiper (25)
- Yellow Perch (26)
- No Expectations (28)

Q8 What species of fish did you **actually catch** on this trip?

- Bluegill/ other sunfish (15)
- Brook Trout (16)
- Brown Trout (17)
- Bullhead (18)
- Channel Catfish (19)
- Crappie (20)
- Cutthroat Trout (21)
- Kokanee Salmon (22)
- Lake Trout (23)
- Largemouth Bass (24)
- Northern Pike (25)
- Rainbow Trout (26)
- Smallmouth Bass (27)
- Splake (28)
- Striped Bass (29)
- Tiger Muskellunge (30)
- Tiger Trout (31)
- Walleye (32)
- White Bass (33)
- Mountain Whitefish (34)
- Wiper (35)
- Yellow Perch (36)
- None (37)

Skip To: Q9 If What species of fish did you actually catch on this trip? = None
Skip To: Q9 If Condition: Selected Count Is Equal to 0. Skip To: Which of the following methods of fis....

Q8b Of the fish you caught on this trip, **how many** of each species did you catch?

	Number of Fish (1)
Bluegill/ other sunfish (x15)	
Brook Trout (x16)	
Brown Trout (x17)	
Bullhead (x18)	
Channel Catfish (x19)	
Crappie (x20)	
Cutthroat Trout (x21)	
Kokanee Salmon (x22)	
Lake Trout (x23)	
Largemouth Bass (x24)	
Northern Pike (x25)	
Rainbow Trout (x26)	
Smallmouth Bass (x27)	
Splake (x28)	
Striped Bass (x29)	
Tiger Muskellunge (x30)	
Tiger Trout (x31)	
Walleye (x32)	
White Bass (x33)	
Mountain Whitefish (x34)	
Wiper (x35)	
Yellow Perch (x36)	
None (x37)	

Q9 Which of the following methods of fishing did you use on this trip? *Please check all that apply.*
- Fished using bait *(e.g., powerbait, worms, minnows, etc.)* *(1)*
- Fished using artificial flies *(2)*
- Fished using artificial lures *(3)*
- Ice fished *(4)*
- Fished using other techniques *(e.g., spearfishing, archery)* *(5)*

Q10 Which of the following methods of fishing did you **primarily** use on this trip? *Please check one.*
- Fished using bait *(e.g., powerbait, worms, minnows, etc.)* *(1)*
- Fished using artificial flies *(2)*
- Fished using artificial lures *(3)*
- Ice fished *(4)*
- Fished using other techniques *(e.g., spearfishing, archery)* *(5)*

Q11 How did you access the water you fished during this trip? *Please check all that apply*
- From shore on a stream or river *(1)*
- Wading in a stream or river *(2)*
- From a boat on a lake or reservoir *(3)*
- From a boat on a stream or river *(4)*
- Wading in a lake or reservoir *(5)*
- Ice fishing *(6)*
- Other method *(7)*

Q12 Thinking about your most recent fishing trip where fishing was the primary purpose, **please provide your best estimate of what you personally spent for each kind of item <u>in your home city,</u> <u>along the way,</u> and <u>at the destination</u>**. *If your fishing trip was within your home city, leave the other columns blank*

	In your home city (1)	Along the way (2)	At the destination (3)
Lodging. Includes hotels, motels, bed/breakfasts, cabin or home rentals, public or private campgrounds, tents, and campers (1)			
Food and beverages purchased at grocery stores (2)			
Food and beverages purchased at restaurants and convenience stores (3)			
Transportation. Includes gas for your vehicle, gas for your boat (if your trip included a motorboat), and any other transportation costs (4)			
Parking, trail use, and area access fees. (5)			
Rental fees and supplies. Includes all fishing supplies (tackle, bait, etc.) purchased just for this trip). (6)			
Retail goods other than food and beverages. Includes clothing, gifts, etc. (7)			

Q13 How many other people, excluding yourself, did your expenses cover on this trip? *Enter 0 if you were the only person on the trip*

_____

Display This Question:
    If If How many other people, excluding yourself, did your expenses cover on this trip? Enter 0 if you w... Text Response Is Greater Than 0

Q14 How many other people, excluding yourself, participated in fishing on this trip?

_____

Display This Question:
    If If How many other people, excluding yourself, did your expenses cover on this trip? Enter 0 if you w... Text Response Is Greater Than 0

Q15 Of the people who participated in fishing on this trip, how many were under the age of 12?

_____

Q16 How true do you find the following statements for **your most recent fishing trip where fishing was the primary purpose?**

	Not at all true	Slightly True	Moderately True	Very True	Completely True
Crowding negatively impacted the quality of my fishing experience (1)					
Crowding made me spend less time fishing (2)					
I fished earlier or later in the day because of crowding (3)					
Crowding made me change locations where I fished (4)					

Display This Question:
If How did you access the water you fished during this trip? Please check all that apply = From a boat on a lake or reservoir
And How did you access the water you fished during this trip? Please check all that apply = From a boat on a stream or river

Q17 How much do you disagree or agree with the following statements about boat facilities and access on **your most recent fishing trip where fishing was the primary purpose?**

	Completely disagree	Disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Agree	Completely agree
There were sufficient boat launching sites and facilities available to access the area (1)							
The boat launching sites and facilities were of acceptable quality (2)							
The boat launching sites and facilities could be better maintained at this site (3)							
Wildlife viewing (x18)							
Other (x20)							

Q18 Over the past 12-months, how many times have you fished at the same location as your most recent trip? *(e.g., the same stream, river, or lake). Please include your most recent trip in your count.*

_____

Q19 While you were there, what **on-site amenities and services** did you use, **if present at this location?**
- Boat fueling station (1)
- Boat Ramp (2)
- Marina/Dock (3)
- Fishing Supply Store (4)
- Restrooms (5)
- Fishing pier (6)
- Non-motorized hand launch *(e.g., kayaks, canoes, etc.)* (7)
- Picnic table (8)
- None / Not Applicable (9)
- Other (10) _____

Q20 **If not present at this location,** what on-site **amenities or services** would you have preferred to be on-site?

- Boat fueling station (1)
- Boat Ramp (4)
- Marina/Dock (5)
- Fishing supply store (6)
- Restrooms (7)
- Fishing pier (8)
- Non-motorized hand launch (e.g., kayaks, canoes, etc.)   (9)
- Picnic table (10)
- None / Not Applicable (11)
- Other (12) _____

Q21 Please enter the zip code of your current residence

_____

Q22 Which of the following years have you fished in Utah? *Please check all that apply*

- 2021 (1)
- 2020 (2)
- 2019 (3)
- 2018 (4)
- 2017 (5)

Q23 Besides fishing, which of the following activities have you participated in the most during the past 12 months? Please select your top 3.

- 4-wheel driving/Jeeping (1)
- ATV riding or off-road motorcycling (19)
- Backpacking (multiple days) (2)
- Big game hunting (elk, bear, mule deer, etc.) (3)
- Camping (4)
- Crosscountry skiing or snowshoeing (5)
- Downhill skiing or snowboarding (6)
- Flat water rafting/canoeing/kayaking/paddle boarding (7)
- Hiking (single day) (8)
- Horseback riding (9)
- Picnicking (11)
- Motor boating (12)
- Mountain biking (13)
- Rock climbing (14)
- Small game hunting (upland bird, waterfowl, rabbit, etc.) (15)
- Snowmobiling (16)
- Whitewater rafting/kayaking/canoeing (17)
- Wildlife viewing (18)
- Other (20) _____

Display This Question:
*   If If Besides fishing, which of the following activities have you participated in the most during the p…*
q://QID27/SelectedChoicesCount Is Greater Than or Equal to 1
Carry Forward Selected Choices from "Besides fishing, which of the following activities have you participated in the most during the past 12 months? Please select your top 3."

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Q24 Compared to the 3 activities you participated in the most during the past 12 months, how much *less or more* important is fishing for you?

	Fishing is much less important than this activity	Fishing is slightly less important than this activity	Fishing is just as important as this activity	Fishing is slightly more important than this activity	Fishing is much more important than this activity
4-wheel driving/Jeeping (x1)					
ATV riding or off-road motorcycling (x19)					
Backpacking (multiple days) (x2)					
Big game hunting (elk, bear, mule deer, etc.) (x3)					
Camping (x4)					
Crosscountry skiing or snowshoeing (x5)					
Downhill skiing or snowboarding (x6)					
Flat water rafting/canoeing/kayaking/paddle boarding (x7)					
Hiking (single day) (x8)					
Horseback riding (x9)					
Picnicking (x11)					
Motor boating (x12)					
Mountain biking (x13)					
Rock climbing (x14)					
Small game hunting (upland bird, waterfowl, rabbit, etc.) (x15)					
Snowmobiling (x16)					
Whitewater rafting/kayaking/canoeing (x17)					
Wildlife viewing (x18)					
Other (x20)					

Display This Question:
  If If Besides fishing, which of the following activities have you participated in the most during the p...
q://QID27/SelectedChoicesCount Is Greater Than or Equal to 1
Carry Forward Selected Choices from "Besides fishing, which of the following activities have you participated in the most during the past 12 months? Please select your top 3."

Q25 If the opportunity was available in Utah, how interested would you be in combining the 3 activities you participated in the most during the past 12 months with fishing?

	Not at all interested in combining with fishing	Slightly interested in combining with fishing	Moderately interested in combining with fishing	Very interested in combining with fishing	Extremely interested in combining with fishing	I already combine this activity with fishing
4-wheel driving/Jeeping (x1)						
ATV riding or off-road motorcycling (x19)						
Backpacking (multiple days) (x2)						
Big game hunting (elk, bear, mule deer, etc.) (x3)						
Camping (x4)						
Crosscountry skiing or snowshoeing (x5)						
Downhill skiing or snowboarding (x6)						
Flat water rafting/canoeing/kayaking/paddle boarding (x7)						
Hiking (single day) (x8)						
Horseback riding (x9)						
Picnicking (x11)						
Motor boating (x12)						
Mountain biking (x13)						
Rock climbing (x14)						
Small game hunting (upland bird, waterfowl, rabbit, etc.) (x15)						
Snowmobiling (x16)						
Whitewater rafting/kayaking/canoeing (x17)						
Wildlife viewing (x18)						
Other (x20)						

Q26 Approximately how many times have you gone fishing in the state of Utah over the past 12 months?
_____

Q27 Please select all the fishing methods that you've used in the last 12 months within Utah.
- Fished using bait *(e.g., Powerbait, worms, minnows, etc.)* *(1)*
- Fished using artificial flies *(2)*
- Fished using artificial lures *(3)*
- Ice fishing *(4)*
- Fished using other techniques *(e.g., spearfishing, archery)* *(5)*

Q28 Of the fishing methods you've used in the last 12 months within Utah, which is your <u>primary</u> method?
- Fished using bait (Powerbait, worms, minnows, etc.) (1)
- Fished using artificial flies   (2)
- Fished using artificial lures (3)
- Ice fished (4)
- Fished using other techniques (e.g., spearfishing, archery) (5)

Q29 In the last 12 months within the state of Utah, approximately how many times have you used the following access methods for fishing? *(enter 0 if you did not use the access method)*

	Number of Times Used (1)
From shore or a fishing pier/dock on a lake or reservoir (1)	
From a boat on a lake or reservoir (2)	
Wading in a lake or reservoir (3)	
From a boat on a stream or river (4)	
Wading in a stream or river (5)	
Ice fishing (6)	

Q30 Please indicate how many times you fished in the following types of waterbodies in the last 12 months in Utah *(enter 0 if you did not use fish the type of waterbody)*

	Number of times fished (1)
Large lakes or reservoirs (e.g., Pineview Lake, Strawberry Reservoir, Scofield Reservoir, Flaming Gorge Reservoir, Lake Powell, etc.) (1)	
Smaller lakes or reservoirs (e.g., Newton Reservoir, Grantsville Reservoir, Huntington North Reservoir, Calder Reservoir, Paragonah Reservoir, etc.) (7)	
Large rivers, more than 30 feet in width (e.g., Weber River, Lower Provo, Price River, Green River, Sevier River, etc.) (8)	
Moderately-sized streams, 15 to 30 feet in width (e.g., Logan River, Middle Provo, Huntington Creek, Currant Creek, East Fork Sevier River, etc.) (9)	
Small streams, less than 15 feet in width (e.g., Blacksmith Fork River, Sixth Water Creek, Right Fork Huntington Creek, Sheep Creek, Corn Creek, etc.) (10)	
Community fishing ponds (e.g., Bountiful Lake, Clinton Park Pond, Green River Golf Course, Pioneer Park Pond, Razor Ridge Pond, etc.) (11)	

<u>Q31</u> You have already told us about the types of waters you typically fish. Now we want to know about **the types of waters you prefer to fish**. Please choose the <u>**one**</u> type of location you <u>**most prefer**</u> as a place to fish in Utah.
- Large lakes or reservoirs (e.g., Pineview Lake, Strawberry Reservoir, Scofield Reservoir, Flaming Gorge Reservoir, Lake Powell, etc.) (1)
- Smaller lakes or reservoirs (e.g., Newton Reservoir, Grantsville Reservoir, Huntington North Reservoir, Calder Reservoir, Paragonah Reservoir, etc.) (22)
- Large rivers, more than 30 feet in width (e.g., Weber River, Lower Provo, Price River, Green River, Sevier River, etc.) (23)
- Moderately-sized streams, 15 to 30 feet in width (e.g., Logan River, Middle Provo, Huntington Creek, Currant Creek, East Fork Sevier River, etc.) (24)
- Small streams, less than 15 feet in width (e.g., Blacksmith Fork River, Sixth Water Creek, Right Fork Huntington Creek, Sheep Creek, Corn Creek, etc.) (25)
- Community fishing ponds (e.g., Bountiful Lake, Clinton Park Pond, Green River Golf Course, Pioneer Park Pond, Razor Ridge Pond, etc.) (26)

EXTENSION
UtahStateUniversity

Q32 Below are some **common reasons people go fishing**. Please **indicate how important each of these reasons** are in your decision to fish while in Utah.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
To view scenic beauty (1)					
To be close to nature (2)					
To be with people who share similar values (3)					
To be with others who enjoy the same things I do (4)					
To get away from the noise back home (5)					
To enjoy the sounds of nature (6)					
To experience natural quiet (7)					
To physically relax (8)					
To have my mind move at a slower pace (9)					
To experience tranquility (10)					
To feel independent from rest of society (11)					
To be away from crowds of people (12)					
To take risks (13)					
To have thrills (14)					
To experience a sense of exploration (15)					
To share photos on social media (16)					
To tell others about my trip (17)					
To have others know that I have been here (18)					
To gain a sense of self-confidence (19)					
To learn what I am capable of (20)					
To show others my abilities (21)					

Q33 Please indicate how preferable each of the items below are for your fishing experience based on how often you would like them to occur while fishing in Utah.

	On none of my fishing trips	On some of my fishing trips	On half of my fishing trips	On most of my fishing trips	On all of my fishing trips
Catch at least one large fish (1)					
Catch several fish (2)					
Catch at least one fish (3)					
Have a chance to catch large fish (4)					
Have a chance to catch fish (5)					
Develop or improve my fishing skills (6)					
Learn more about fish or fishing (7)					
Try out new fishing tackle (8)					
Try a new fishing site (9)					
Teach others how to fish (10)					
Meet or talk with other anglers (11)					
Compete with other anglers (12)					
Catch the most fish of anyone in my group (13)					
Demonstrate fishing skills to others (14)					
Show fish I caught to family and friends (15)					
Catch my limit (16)					
Challenge smartest or largest fish (17)					
Catch fish that are safe to eat (18)					
Fish waters where fish are safe to eat (19)					
Catch fish to eat (20)					
Fish wilderness-type areas (21)					
Get away from people (22)					
Fish for coldwater fish (23)					
Fish for warmwater fish (24)					
Fish near nice camping areas (25)					
Fish at family-type areas (26)					

EXTENSION
UtahState University

Q34 For places you typically fish in Utah that are publicly accessible (not requiring additional landowner permissions), how would you rate the overall availability of fishing access?
- Availability of accessible fishing is very poor (-2) (1)
- Availability of accessible fishing is poor (-1)   (2)
- Availability of accessible fishing is neither poor nor good (0)   (3)
- Availability of accessible fishing is good (1)   (4)
- Availability of accessible fishing is very good (2)   (5)

Q35 In the last 12 months, did you hire a paid guide or outfitter while fishing in Utah?
- No (1)
- Yes (2)

Display This Question:
If In the last 12 months, did you hire a paid guide or outfitter while fishing in Utah? = Yes

Q35a In the last 12 months, how many of your fishing trips involved a paid guide or outfitter?

_____

Q36 Are there particular fish species that you prefer to fish for in Utah?
- Yes (1)
- No (2)

Display This Question:
If Are there particular fish species that you prefer to fish for in Utah? = Yes

Please use this reference of common sport fishing species to answer the following 2 questions.

Cutthroat Trout

Mountain Whitefish

Rainbow Trout

Brook Trout

Lake Trout

Brown Trout

Kokanee

Tiger Trout

Splake

Striped Bass

White Bass

Wiper

Walleye

Yellow Perch

Northern Pike

Tiger Muskellunge

Bullhead

Channel Catfish

Crappie

Bluegill

Smallmouth Bass

Largemouth Bass

EXTENSION ✤
UtahState University

Q36a Please select the **top three fish** species **you most prefer** to catch when you have a chance to go fishing in Utah.

- Bluegill/ other sunfish (1)
- Brook Trout (2)
- Brown Trout (3)
- Bullhead (4)
- Channel Catfish (5)
- Crappie (6)
- Cutthroat Trout (7)
- Kokanee Salmon (8)
- Lake Trout (9)
- Largemouth Bass (10)
- Northern Pike (11)
- Rainbow Trout (12)
- Smallmouth Bass (13)
- Splake (14)
- Striped Bass (15)
- Tiger Muskellunge (16)
- Tiger Trout (22)
- Walleye (17)
- White Bass (18)
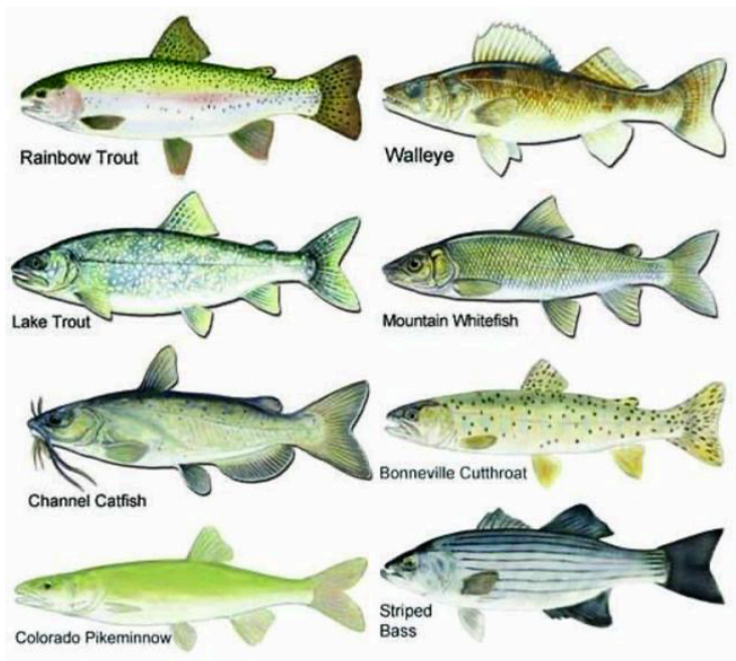- Mountain Whitefish (19)
- Wiper (20)
- Yellow Perch (21)

Q36b Looking again at the list blow, please click on the **top three species** you **most commonly fish for** when fishing in Utah.

- Bluegill/ other sunfish (1)
- Brook Trout (4)
- Brown Trout (5)
- Bullhead (6)
- Channel Catfish (7)
- Crappie (8)
- Cutthroat Trout (9)
- Kokanee Salmon (10)
- Lake Trout (11)
- Largemouth Bass (12)
- Northern Pike (13)
- Rainbow Trout (14)
- Smallmouth Bass (15)
- Splake (16)
- Striped Bass (17)
- Tiger Muskellunge (18)
- Tiger Trout (19)
- Walleye (20)
- White Bass (21)
- Mountain Whitefish (22)
- Wiper (23)
- Yellow Perch (24)

EXTENSION
UtahStateUniversity

Q37 Please indicate your level of agreement or disagreement with each of the following statements regarding native Utah species and their management.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Native fish species play an important role in the ecosystem (1)					
I would support altering the management of a fishery if doing so would help protect a population of sensitive native fish species (2)					
Some native fish species are much more important to protect than others (3)					
DWR is doing a good job of protecting Utah's native fish species (4)					
I would support efforts by DWR to manage some Utah fisheries so that they would contain only native fish species (5)					
I would support the conservation or recovery of a native fish species if that species had potential value as a sportfish (6)					
I am confident in my abilities to identify fish species native to Utah (7)					

Q38 To the best of you knowledge, which of the following are native fish species in Utah? Please look at the following image and then select each choice that you believe is a native species

- Rainbow Trout (1)
- Lake Trout (2)
- Channel Catfish (3)
- Colorado Pikeminnow (4)
- Walleye (5)
- Mountain Whitefish (6)
- Bonneville Cutthroat (7)
- Striped Bass (8)

Finally, we would like to know more about you. As with all of the questions in this survey, your response to these questions is completely voluntary, and any information you provide will remain completely confidential.

Q39 Please enter the year you were born (YYYY)

_____

Q40 Are you of Hispanic, Latino, or of Spanish origin?
- No (1)
- Yes (2)
- Prefer not to answer (3)

Q41 How would you describe yourself?
- American Indian or Alaska Native (1)
- Asian (2)
- Black or African American   (3)
- White (4)
- Native Hawaiian or other Pacific Islander (5)
- I prefer not to answer (6)

Q42 Is English your preferred language for communication?
- No (1)
- Yes (2)

Q42a What is your preferred language for communication?

_____

Q43 Which of the following best represents your pre-tax annual **personal** income for 2020?
- Under $25,000 (1)
- $25,000 to $39,999 (8)
- $40,000 to $59,999 (2)
- $60,000 to $74,999   (3)
- $75,000 to $99,999 (4)
- $100,000 to $149,999 (5)
- $150,000 or higher (6)
- I prefer not to answer   (7)

Q44 Please select your gender
- Male (1)
- Female (2)
- Non-binary / third gender (3)
- I prefer not to say (4)
- I prefer to self-describe (5) _____

Q45 What is the highest level of education you have completed?
- Some high school (1)
- High school graduate/GED (2)
- Some college or Associate's degree (3)
- College graduate (Bachelor's degree) (4)
- Post graduate degree (Master's/PHD) (5)

Q46 Finally, If the Utah Division of Wildlife Resources were to do just one thing that you think would be most effective in improving the quality of your fishing experiences in Utah, what would that be? Please use the space below to provide your suggestion:

_____
_____
_____
_____
_____

Institute of Outdoor Recreation & Tourism
UtahStateUniversity.