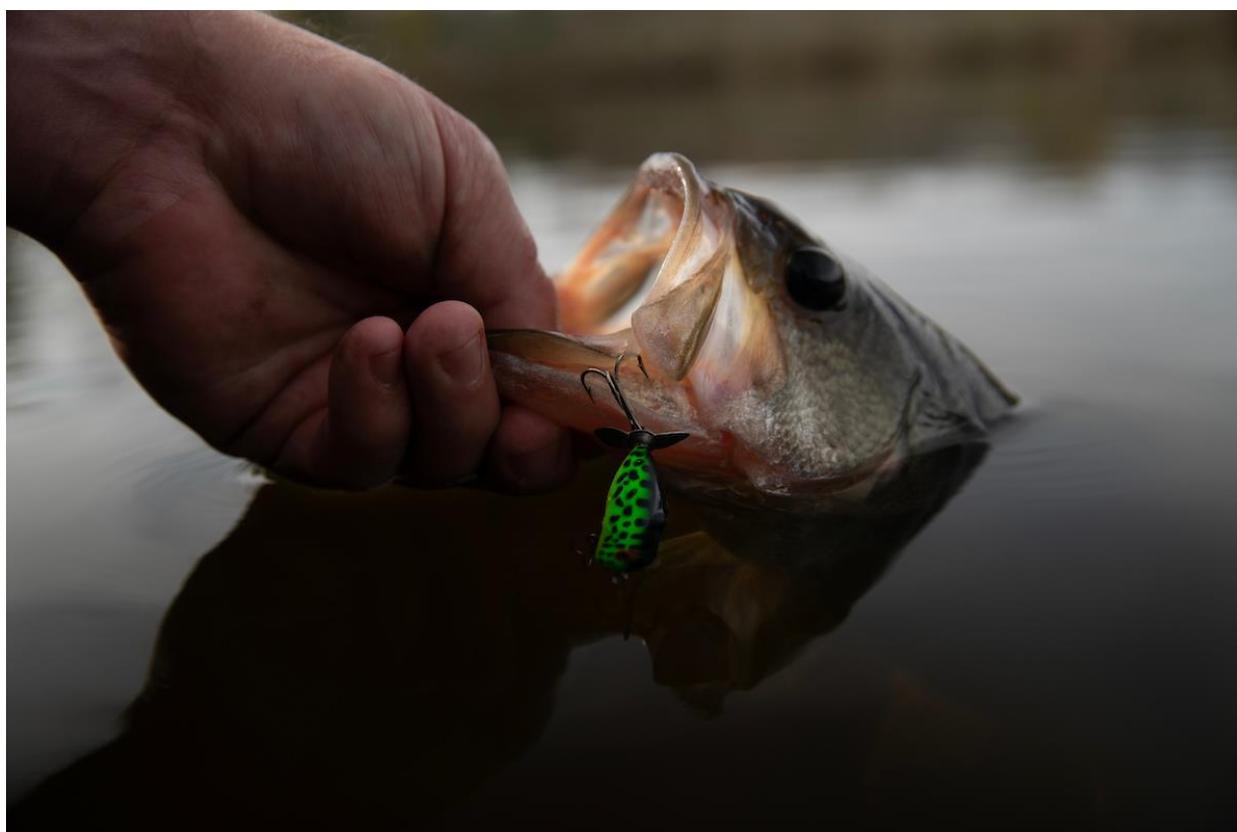




Understanding North Carolina's Black Bass Anglers

2025



North Carolina Wildlife Resources Commission
Office of Conservation Policy & Analysis

Acknowledgements

This report was prepared by the Office of Conservation Policy & Analysis (CPA) in collaboration with the Inland Fisheries Division (IFD).

Corresponding Author:

Kathryn Jewell
Lead Social Scientist
Office of Conservation Policy & Analysis, Social Research Unit
Kathryn.jewell@ncwildlife.gov

Collaborators:

Cristina Watkins, Social Research Coordinator, Office of Conservation Policy & Analysis
Kin Hodges, District 7 Fisheries Biologist, Inland Fisheries Division
Corey Oakley, Chief, Inland Fisheries Division
Elizabeth Pratt, Social Scientist, Office of Conservation Policy & Analysis

Recommended citation:

Jewell, K., Watkins, C., Hodges, K., Oakley, C., & Pratt, E. (2025). Understanding North Carolina's Black Bass Anglers. North Carolina Wildlife Resources Commission, Final Report, Raleigh, NC.

This project was funded under the Federal Aid in Sport Fish Restoration Program utilizing state fishing license money and federal grant funds derived from federal excise taxes on fishing tackle and other fishing related expenditures. Funds from the Sport Fish Restoration Program are used for fisheries management and research, aquatic education, and boating access facilities. The program is administered cooperatively by the N.C. Wildlife Resources Commission and the U.S. Fish and Wildlife Service.



Contents

Acknowledgements	2
Tables & Figures	3
Executive Summary	5
Introduction	6
Methods.....	6
Data Collection.....	6
Quantitative and Qualitative Data Analysis	6
Economic Assessment.....	7
Results	8
<i>Black Bass Angler Economic Contributions</i>	11
<i>Black Bass Fishing Participation</i>	13
<i>Black Bass Tournament and Fishing Club Participation</i>	32
<i>Black Bass Communication Preferences</i>	33
<i>Black Bass Crowding Concerns</i>	35
<i>Fishing Bait Usage</i>	39
Conclusion	41
References.....	42
Appendix.....	43
Appendix A: Selected Tables & Figures.....	43
Appendix B: Survey	74

Tables & Figures

Table 1. Total Black Bass angler trip expenditures.....	11
Table 2. Total Black Bass angler equipment expenditures	12
Table 3. Economic summary for Black Bass fishing in North Carolina	13
Table 4. Which waterbodies respondents reported fishing in the most.....	17
Table 5. Respondents' ranking of their preference of structure to Black Bass fish on (n = 2,112) ...	20
Table 6. Rankings of structure during Black Bass fishing compared to preferred species	20
Table 7. Rankings of structure preferred during Black Bass fishing compared to region fished most often	22
Table 8. Importance and satisfaction rankings for attributes of Black Bass fishing.....	23
Table 9. Importance of attributes of Black Bass fishing by anglers preferred species	24
Table 10. Importance of attributes of Black Bass fishing by region fished most often	26
Table 11. Satisfaction of attributes of Black Bass fishing by preferred species	27

Table 12. Satisfaction of attributes of Black Bass fishing by region fished most often	29
Table 13. Respondents' ideas for what the NCWRC could do to improve Black Bass fishing in North Carolina (n = 2,599).....	32
Table 14. What information respondents would like to receive about Black Bass fishing (n = 1,001)	34
Table 15. Most frequent responses for waterbodies on which respondents experienced crowding (n = 852)	38
Table 16. Most frequent responses for times of the year respondents experience crowding (n = 955)	38
Figure 1. Method of submission for all respondents (n = 3,808)	9
Figure 2. Freshwater species respondents targeted (n = 949)	9
Figure 3. Number of years respondents have been fishing	13
Figure 4. Species targeted by respondents (n = 2,454).....	14
Figure 5. Which Black Bass species respondents prefer to fish for the most (n = 2,423)	15
Figure 6. Respondents' self-reported rating of their skills as a Black Bass angler (n = 2,452)	15
Figure 7. Respondents' confidence in their ability to identify the different Black Bass species (n = 2,446).....	16
Figure 8. Types of waterbodies where respondents fish for Black Bass (n = 2,441).....	16
Figure 9. Respondent satisfaction with Black Bass fishing in North Carolina (n = 2,410)	18
Figure 10. Whether respondents took home the fish they caught (n = 2,391)	19
Figure 11. Satisfaction – Importance Matrix for attributes of Black Bass fishing.....	30
Figure 12. What kind of technology respondents who use technology utilize while Black Bass fishing (n = 1,564).....	31
Figure 13. Respondents' preferred communication channels (n = 2,002)	33
Figure 14. Other communication channels respondents get fishing information from (n = 732).....	34
Figure 15. How often respondents experience crowding while Black Bass fishing in North Carolina (n = 2,104).....	35
Figure 16. Respondents' indication if crowding has gotten better or worse over time (n = 1,736) ...	36
Figure 17. Impacts from crowding respondents experienced while Black Bass fishing in North Carolina (n = 1,664).....	37
Figure 18. Changes to respondent fishing habits due to crowding (n = 1,615)	37
Figure 19. What kind of baits or lures anglers reported fishing with, in general (n = 3,351)	39
Figure 20. How often respondents use live crayfish as bait (n = 71)	39
Figure 21. Where respondents get their live crayfish from (n = 71).....	40
Figure 22. What respondents do with live crayfish when they are done fishing (n = 70)	40
Figure 23. Respondents' support or opposition of a potential crayfish parts as bait regulation (n = 70).....	41
Figure 24. What changes respondents would make to their fishing if a crayfish parts regulation was implemented (n = 70)	41

Executive Summary

There are four main species of Black Bass in North Carolina – Largemouth (*Micropterus salmoides*), Smallmouth (*Micropterus dolomieu*), Spotted (*Micropterus punctulatus*) and Alabama (*Micropterus henshalli*) Bass. Because these species can be found in many lakes, reservoirs, rivers and ponds, Black Bass is a very accessible fishery. Previous social science research on anglers in North Carolina indicated that Black Bass anglers are one of the largest, if not the largest, angling groups in the state. To better understand these anglers, a mixed methods survey was distributed in late 2024. The survey was sent to 20,000 license holders with inland fishing privileges over the age of 18. The questionnaire was based on previous fisheries management surveys and was developed by the Social Research Unit and the Inland Fisheries Division. The questionnaire was open from July 23rd to December 15th and received 3,808 responses.

Results suggest that there were an estimated 711,593 Black Bass anglers in North Carolina over the last year. The average Black Bass angler took 10 trips and spent 24 days fishing for Black Bass specifically. They also went fishing with one other person and spent \$310 per person per trip. This led to a total estimated trip-related expenditure of \$1,204,712,553. Estimated equipment expenditures totaled \$1,346,694,733, leading to a total estimated expenditure of \$2,451,407,286. This resulted in a total economic contribution of \$2,559,653,433.

Most respondents have been fishing for Black Bass for more than 30 years. Nearly all respondents indicated they fished for Largemouth Bass (96%), 41% indicated fishing for Smallmouth Bass and 20% reported fishing for Alabama or Spotted Bass. Of those species, most respondents reported preferring to fish for Largemouth Bass the most. Respondents that fished most often in the mountains reported preferring Smallmouth Bass more than the other regions, likely due to the geographic distribution of Smallmouth Bass populations. Most (40%) respondents indicated being “proficient” as Black Bass anglers, and about half of respondents (47%) indicated they were completely confident in their ability to identify the different Black Bass species.

The majority of respondents (78%) indicated they fished for Black Bass in lakes or reservoirs, and most listed waterbodies in the piedmont region. Most respondents also reported fishing most often from a motorized boat. The majority of respondents were either somewhat (41%) or very (15%) satisfied with their Black Bass fishing experience.

When asked about their harvest orientations, most respondents (88%) reported they primarily practiced catch and release. Very few respondents indicated they had ever participated in a Black Bass fishing tournament (18%), and even fewer reported being a member of a Black Bass fishing club (6%).

Results from this project will be incorporated into the forthcoming Black Bass Management Plan.

Introduction

There are four main species of Black Bass in North Carolina – Largemouth (*Micropterus salmoides*), Smallmouth (*Micropterus dolomieu*), Spotted (*Micropterus punctulatus*) and Alabama (*Micropterus henshalli*) Bass. Not only are they intensively managed fisheries, but the distribution of these species also spans the entire state. They can be found in many lakes, reservoirs, rivers and ponds, making Black Bass a very accessible fishery. Previous social science research on angler perceptions in North Carolina has focused on the general angling population, and there is limited information on Black Bass anglers specifically, despite them being one of the largest angler groups.

The overall purpose of this project was to better understand Black Bass anglers in North Carolina to help inform the forthcoming Black Bass Management Plan. The specific objectives were to:

- Understand Black Bass angler motivations, preferences and fishing habits
- Assess Black Bass angler knowledge of invasive species and fish consumption advisories
- Estimate Black Bass angler trip and equipment expenditures and resulting economic impacts
- Determine overall satisfaction levels with Black Bass fishing in North Carolina
- Identify preferred communication channels for Black Bass fishing information
- Identify Black Bass angler demographics and determine Black Bass angler profiles

Methods

Data Collection

The survey instrument was based on previous fisheries management surveys (Jewell et al. 2024, Jewell et al. 2023, Linehan 2013) and was developed by the Social Research Unit and Inland Fisheries Division. A modified version of the Tailored Design Method (Dillman et al. 2014) was used to collect data via mixed methods from July 23rd through December 15th, 2024. An online survey was emailed to 20,000 license holders with inland fishing privileges over the age of 18. This sample included 18,076 residents, and 1,924 nonresidents. The online survey was hosted on Qualtrics XM. A letter including a push-to-web QR code and link with a unique identifier code that respondents had to enter to begin the survey was mailed to nonrespondents approximately two weeks after the first email. A second email reminder was sent on August 20th, 2024. Finally, approximately two weeks after the second email, nonrespondents were mailed a full survey packet with a cover letter and a business reply envelope. The survey packet also included a push-to-web QR code and survey link. After adjusting for deceased individuals and inaccurate addresses, the final sample was 19,210.

Quantitative and Qualitative Data Analysis

Data were analyzed using Stata 18 for quantitative analysis and NVivo for qualitative analysis. Quantitative analysis included descriptive statistics, frequencies, count data chi-square analyses, ordered logistic regressions and Wilcoxon signed-rank tests. The satisfaction importance-matrix was adapted from Alamanza et al. (1994) and Jewell et al. (2024). Qualitative data were analyzed using thematic analysis techniques. Qualitative data were grouped by theme and only themes with

more than 10% agreement were developed, to make sure the most relevant themes were developed.

Economic Assessment

The economic contribution to North Carolina of Black Bass fishing trips and equipment expenditures was estimated using survey-sourced data for an Input-Output model using IMPLAN and 2022 statistics. This method has been used previously for fisheries related economic assessments (Jewell et al. 2024, Jewell et al. 2023). It uses data collected from users on participation rates, equipment, and trip expenditures along with data on North Carolina’s economy to generate multiplier effects from Black Bass fishing. As the survey was administered in July of 2024 and asked respondents to estimate expenses from the last 12 months, economic impacts from this analysis span expenditures from late 2023 to early 2024. For simplicity, the report lists these as 2024 impacts.

Black Bass Fishing Participation

North Carolina does not offer a specific license for Black Bass fishing; thus, the number of Black Bass anglers was estimated via this survey. In recruitment of the survey, the emails to respondents did not mention Black Bass specifically but instead invited them to take a survey generally on “Fisheries Management.” This terminology was used to not bias the sample towards Black Bass anglers. After consenting to take the survey, the first question asked respondents to select which fish species they fished for in North Carolina in the last 12 months. If respondents did not select “Black Bass,” they were directed towards questions asking about their bait usage and demographics, skipping the questions that pertained to Black Bass fishing. Only respondents who took the survey from the email were counted in the estimation because once respondents received the full survey packet, they knew it was a Black Bass-specific fishing survey.

Based on the screener question, 65% of respondents reported fishing for Black Bass. Data on the number of certified inland fishing license holders was then used to estimate the total number of Black Bass anglers in North Carolina. Using the most recent data available, it was determined that there were 1,094,422 certified licenses with inland fishing privileges in Fiscal Year 2023. Thus, there were approximately 711,593 Black Bass anglers in North Carolina.

Sampling error describes the deviation in the sample from the population being measured. The maximum sampling error is calculated by dividing the standard deviation of the population by the square root of the size of the sample and multiplying by the Z-score value, which is based off the confidence interval of 95% (Dillman et al. 2014). The sample size from this project was 617 with an estimated population of 711,593. This leads to a maximum possible sampling error for the entire sample of Black Bass anglers of 3.94% (683,556 – 739,630).

$$B = \left(\sqrt{\frac{\frac{N_p(.25)}{N_s} - .25}{N_p - 1}} \right) (1.96)$$

Trip and Equipment Expenditures

The survey collected information on itemized expenditures for a typical Black Bass fishing trip, which included categories such as food and beverages, lodging, transportation costs and other trip expenses. Trip expenditures profiles were then estimated using the itemized expenditures, the average trips per person, and the average number of people paid for. This was then extrapolated to the entire Black Bass angler population.

The survey also collected information on Black Bass angler expenditures on equipment related to Black Bass fishing that may be used over the course of multiple trips (rods, reels, boats, etc.). Respondents were asked to estimate the cost of items purchased for Black Bass fishing specifically. Due to equipment purchases typically occurring where the angler lives, only equipment purchases made by North Carolina resident Black Bass anglers were used in calculations.

Multiplier Effects

Trip and equipment expenditures were then organized into industry-specific sectors to determine the secondary impacts resulting from those expenditures. The IMPLAN input-output model then uses those industry-specific expenditures to provide several economic indicators to determine overall impact. It generates direct, indirect and induced impacts. Direct impacts indicate the impacts to local industry, indirect impacts indicate the impact of the activity from regional business purchases, and induced impacts indicate the household spending of income generated by the activity. These three impacts also have three economic indicators – employment, labor income and value-added. Employment indicates how many full-time, part-time, and seasonal employees are supported by Black Bass fishing in North Carolina. Labor income describes the income from that employment, and value-added indicates the labor income in addition to taxes on production and imports and other property income. All these indicators combine to estimate the economic contributions of Black Bass anglers.

Results

In total, there were 3,808 respondents to the survey, leading to a response rate of 20%. The majority of participants responded to the survey online, and of those, most responded through one of the push-to-web distributions (**Figure 1**).

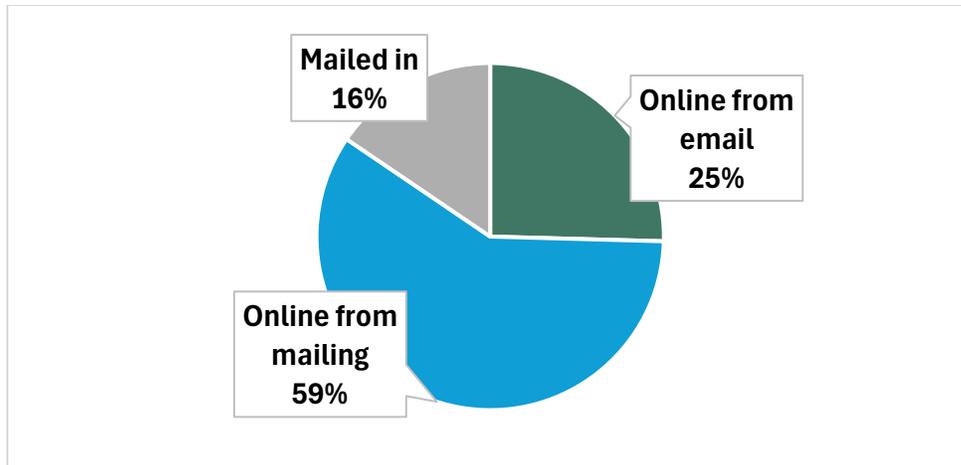


Figure 1. Method of submission for all respondents (n = 3,808)

When comparing method of submission to respondent age, statistically significant differences were present, as respondents who took the survey online from the mailing tended to be younger, and respondents who mailed the survey packet back tended to be older ($\chi^2 = 165.30$, $p < 0.01$, **Appendix A.1**).

The first question asked respondents to select what species of freshwater fish they targeted in the last 12 months. The purpose of this question was to filter for Black Bass anglers so a population estimation could be calculated. Only responses from the online survey from the emailed distributions were analyzed (see methods for rationale). The top species group selected was Black Bass (**Figure 2**), followed by Crappie, Panfish and Catfish. Respondents who selected “other” were given the opportunity to write in what other species they fished for and those included saltwater species, perch, carp and shad (**Appendix A.2**).

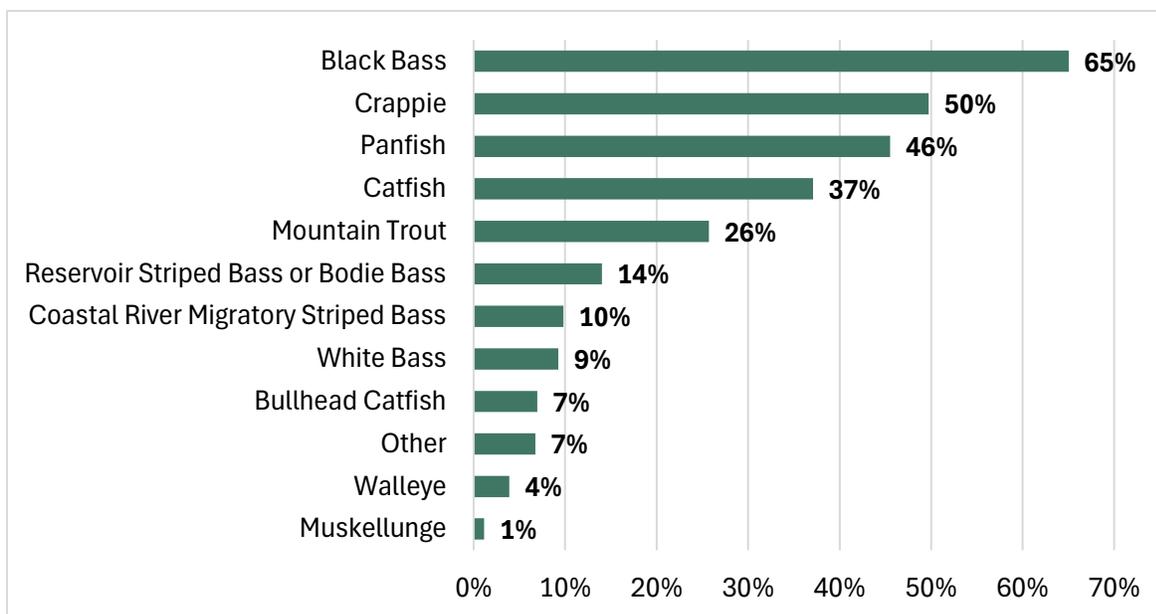


Figure 2. Freshwater species respondents targeted (n = 949)

All respondents were asked a series of demographic questions (**Appendix A.3**). Most respondents were male (98%), white (95%), non-Hispanic (99%), and older than 55 (70%). Most respondents had at least a bachelor's or 4-year degree (40%), or some college or associates degree (39%). Further, the category of income the largest percent of respondents reported was a gross household income of over \$120,000 (33%). Most respondents lived in the piedmont (**Appendix A.4**), and 7% of respondents lived out of state.

Demographic characteristics were compared between Black Bass anglers and non-Black Bass anglers in North Carolina through a chi-square test to determine if there were statistically significant differences among characteristics. Characteristics with significant differences are discussed below.

Individuals who lived in the piedmont or mountain region were more likely to be Black Bass anglers than respondents who lived out of state or in the coastal region ($\chi^2 = 65.37$, $p < 0.01$, **Appendix A.5**). More Black Bass anglers reported having at least some college or an associates degree than those that were not Black Bass anglers ($\chi^2 = 17.08$, $p < 0.01$). While the entire sample was predominantly males, Black Bass anglers were more likely to be women ($\chi^2 = 8.25$, $p < 0.01$) than non-Black Bass anglers. Black Bass anglers also tended to be younger than non-Black Bass anglers ($\chi^2 = 34.50$, $p < 0.01$), with the mean age for Black Bass anglers being between 45 and 54 and the mean age for non-Black Bass anglers being between 55 and 64. Respondents who indicated they identified as another, unlisted, race were more likely not to be a Black Bass angler ($\chi^2 = 5.86$, $p = 0.02$). There were no significant differences between any other race or ethnicity and whether respondents were Black Bass anglers or not. Black Bass anglers tended to report higher household income than non-Black Bass anglers ($\chi^2 = 14.85$, $p = 0.02$).

Black Bass Angler Economic Contributions

To determine the estimated expenditures and associated economic contributions of Black Bass anglers, respondents were asked a series of questions regarding their trip and equipment expenditures.

On average, Black Bass anglers spent 24 days fishing for Black Bass specifically, and took 10 trips, which could have been one day or multiple dates in 2024. The average Black Bass angler went fishing with one other person and spent \$310 per person per trip in North Carolina. When extrapolated to the total estimated number of Black Bass anglers, annual trip-related expenditures came to a total of \$1,104,712,553 (**Table 1**). On equipment related expenditures, North Carolina Black Bass anglers spent \$1,346,694,733 (**Table 2**) in 2024. The categories with the highest expenditures were motorized boat, vehicles, and electronic fishing equipment.

Table 1. Total Black Bass angler trip expenditures

Expenditure Item	Total Expenditures
Meals at restaurants	\$ 27,645,388
Convenience stores	\$ 30,313,862
Grocery stores	\$ 6,688,974
Gasoline & oil for car	\$ 106,596,631
Vehicle Repair	\$ 181,135,998
Vehicle or boat rental	\$ 55,931,210
Other transportation costs	\$ 37,394,212
Fishing gear	\$ 8,752,594
Gasoline & oil for boat	\$ 16,366,639
Bait	\$ 6,333,178
Equipment rentals	\$ 38,924,137
Access & launching fees	\$ 29,709,008
Guide/outfitter or charter fees	\$ 67,850,393
Camping & outdoor sporting goods supplies	\$ 119,583,204
Hotel or motel	\$ 219,206,224
Other lodging	\$ 135,060,351
Souvenirs and gifts	\$ 17,220,551
Total	\$ 1,104,712,553

Table 2. Total Black Bass angler equipment expenditures

Expenditure Item	Total Expenditures
Rods & reels	\$ 12,032,302
Fishing tackle	\$ 15,744,116
Fishing gear	\$ 13,354,676
Fly tying equipment	\$ 3,790,371
Electronic fishing equipment	\$ 117,062,904
Clothing	\$ 22,323,258
Life jackets, pfd's	\$ 15,246,589
Books and magazines	\$ 2,389,440
Cameras, binoculars	\$ 7,698,578
Camping equipment	\$ 7,593,836
Adaptive fishing gear	\$ 2,507,275
Other fishing items	\$ 8,988,221
Motorized boat	\$ 582,610,851
Nonmotorized boat	\$ 31,003,798
Boat accessories	\$ 54,381,028
Boat storage	\$ 22,002,484
Vehicle	\$ 391,887,742
Dues or contributions to clubs	\$ 15,848,859
Taxidermy	\$ 4,117,692
Coolers	\$ 13,498,697
Bug spray, sunscreen	\$ 2,612,018
Total	\$ 1,346,694,733

Trip and equipment expenditures were entered into IMPLAN to assess overall economic contributions. The overall economic contribution of Black Bass fishing in North Carolina in 2024 was \$2,559,653,433 (**Table 3**). Spending by Black Bass anglers totaled \$2,451,407,286 between trip and equipment expenditures. Black Bass fishing also directly and indirectly supported 20,801 full- and part-time jobs across the state. The Social Accounting Matrix (SAM) multiplier was 1.88, indicating that for every dollar spent on Black Bass fishing in North Carolina, there was a \$1.88 return to the economy.

Table 3. Economic summary for Black Bass fishing in North Carolina

NC Black Bass Angler Expenditures	
Trip Expenditures	\$ 1,104,712,553
Equipment Expenditures	\$ 1,346,694,733
Total Expenditures	\$ 2,451,407,286
NC Black Bass Angler Economic Contributions	
Total Economic Impact	\$ 2,559,653,433
Economic Indicators	
Labor Income	\$ 1,034,527,848
Value Added	\$ 1,569,667,255
Jobs Supported	20,801

Black Bass Fishing Participation

Respondents were asked a series of questions regarding their Black Bass fishing participation. First, respondents were asked to share how many years they have been freshwater fishing in North Carolina, both generally and specifically for Black Bass (**Figure 3**). While overall most respondents have been fishing for more than 30 years, there were 13% of respondents who indicated they have only been fishing for Black Bass for less than 5 years. Since the average age of Black Bass anglers was between 45 and 54, this indicates that many respondents have spent most of their lives fishing for Black Bass.

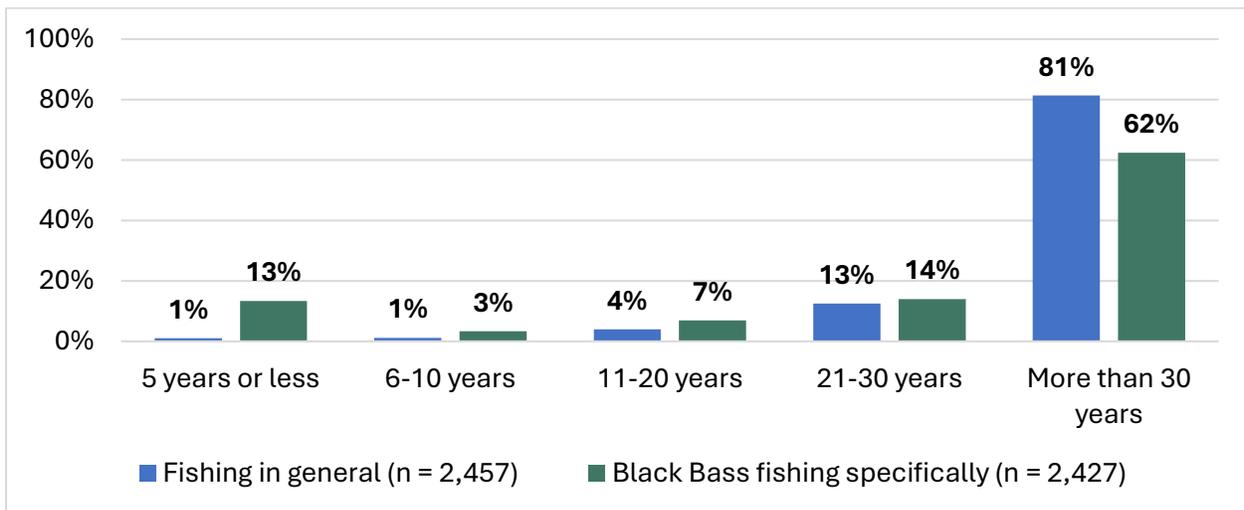


Figure 3. Number of years respondents have been fishing

The number of years respondents have been fishing for was compared to whether or not they fished for Black Bass in lakes or reservoirs (**Appendix A.6**). Respondents who fished in lakes or reservoirs reported fishing for Black Bass longer than respondents who did not ($\chi^2 = 20.97$, $p < 0.01$).

Next, respondents were asked to indicate which of the Black Bass species (Largemouth, Smallmouth, and Alabama/Spotted Bass) they fished for specifically, and they could select all the species they targeted in the last 12 months (**Figure 4**). Unsurprisingly, most respondents indicated fishing for Largemouth Bass, followed by just under half of respondents indicating they fish for Smallmouth Bass, and about a fifth of respondents indicating they fish for Alabama or Spotted Bass. Alabama and Spotted Bass species were grouped together due to genetics testing indicating there are very few pure Spotted Bass populations left in North Carolina. Most are the invasive Alabama Bass, or some hybrid of Alabama and Spotted Bass, and it is difficult to identify one species from the other.

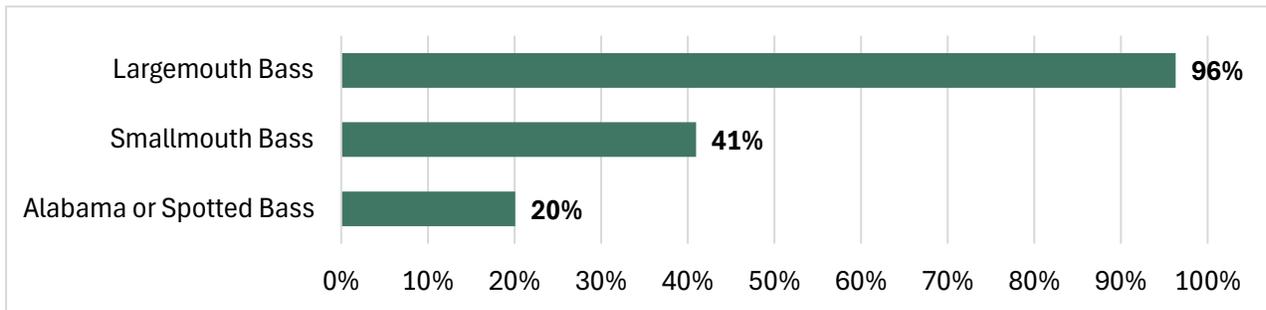


Figure 4. Species targeted by respondents (n = 2,454)

Respondents' selections of species targeted were compared to whether they fished for Black Bass in lakes or reservoirs or not (**Appendix A.7**). Respondents who fished for Black Bass in lakes or reservoirs were more likely to target Largemouth Bass than anglers who did not ($\chi^2 = 43.50$, $p < 0.01$). Respondents who did not fish for Black Bass in lakes or reservoirs were more likely to target Smallmouth Bass ($\chi^2 = 14.95$, $p < 0.01$) and Alabama or Spotted Bass ($\chi^2 = 106.62$, $p < 0.01$).

Next, respondents were asked to share which species they prefer to fish for the most (**Figure 5**). Most respondents indicated they prefer to fish for Largemouth Bass, followed by Smallmouth Bass. Only 2% of respondents indicated they prefer fishing for Alabama or Spotted Bass. When comparing preferred species to the region they fished the most often, there were statistically significant differences. Notably, none of the respondents who preferred Alabama or Spotted Bass fished the most often in the coastal region ($\chi^2 = 457.37$, $p < 0.01$), and most respondents who preferred Smallmouth Bass indicated they fished the most often in the mountain region (**Appendix A.8**). When comparing preferred species to whether anglers fished for Black Bass in lakes or reservoirs, there was also a statistically significant difference (**Appendix A.9**). Respondents who fished for Black Bass in lakes or reservoirs were more likely to prefer fishing for Largemouth Bass, and conversely respondents who did not fish in lakes or reservoirs were more likely to prefer fishing for Smallmouth Bass or Alabama or Spotted Bass ($\chi^2 = 24.94$, $p < 0.01$).

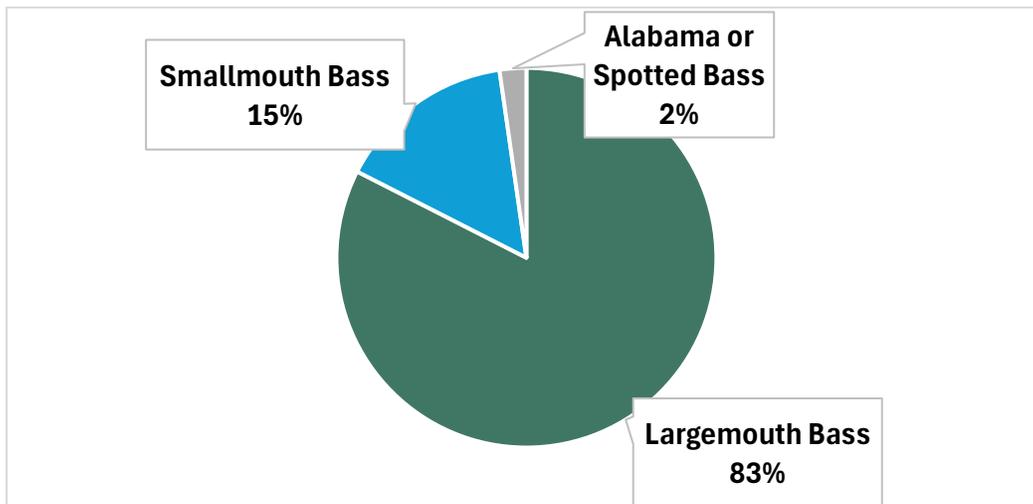


Figure 5. Which Black Bass species respondents prefer to fish for the most (n = 2,423)

Respondents self-rated their skills as a Black Bass Angler (**Figure 6**). The largest proportion of respondents rated themselves as proficient. When comparing self-reported expertise to preferred Black Bass species, there was no statistically significant difference, nor was there a statistically significant difference between self-reported expertise and region fished most often. However, when comparing self-reported expertise to whether anglers fished for Black Bass in lakes or reservoirs, there was a statistically significant difference (**Appendix A.10**). Respondents who fished in lakes or reservoirs were more likely to rate their skills as a Black Bass angler higher than the respondents who did not fish in lakes or reservoirs ($\chi^2 = 32.37, p < 0.01$).

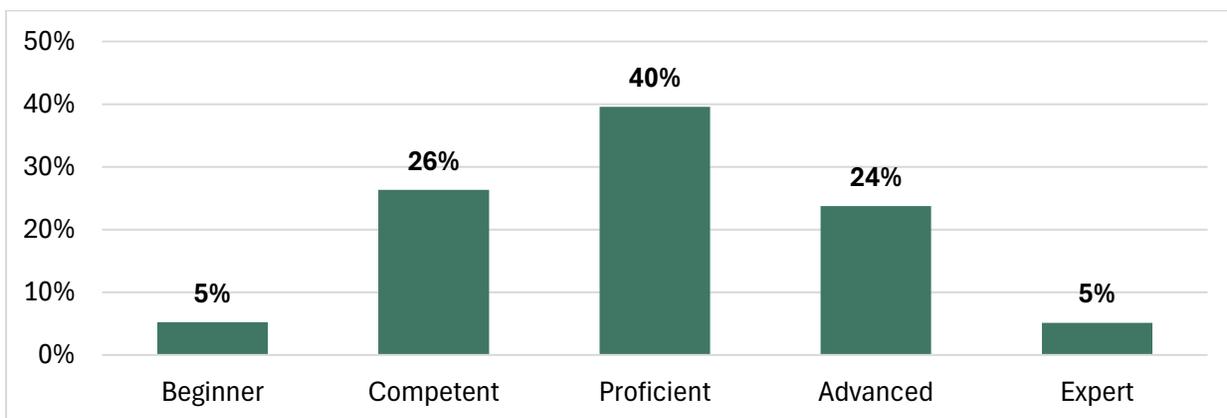


Figure 6. Respondents' self-reported rating of their skills as a Black Bass angler (n = 2,452)

As Black Bass species can be difficult to differentiate, respondents were asked to share how confident they were in their abilities to correctly identify the different species (**Figure 7**). Most respondents indicated they were completely or fairly confident they could tell the difference between the different species.

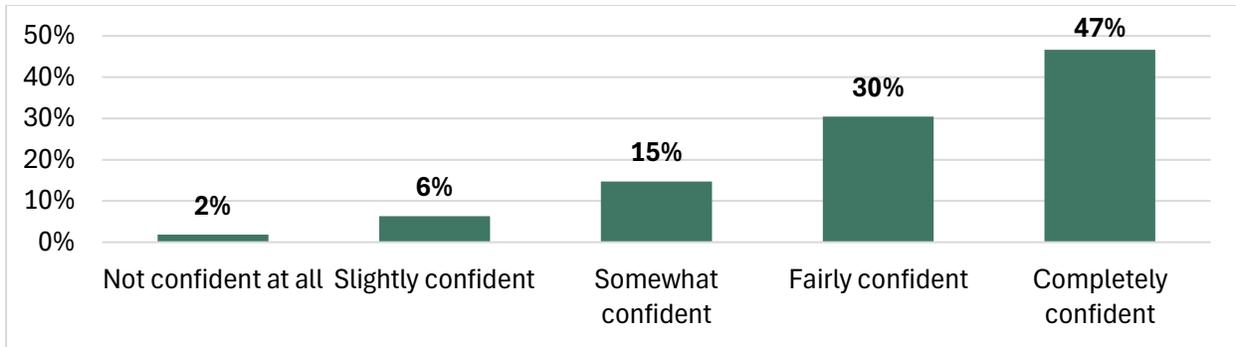


Figure 7. Respondents' confidence in their ability to identify the different Black Bass species (n = 2,446)

When comparing their confidence to preferred species and region fished most often, there were statistically significant differences with each variable. Respondents who preferred to fish for Alabama or Spotted Bass were more confident in their identification abilities ($\chi^2 = 22.78$, $p < 0.01$, **Appendix A.11**). Also, when looking at region fished most often, anglers who fished the mountain region most were more likely to indicate they were confident ($\chi^2 = 26.68$, $p = 0.01$, **Appendix A.12**). Further, when comparing anglers who fished in lakes or reservoirs to anglers who did not, respondents who fished in reservoirs reported higher confidence than anglers who did not ($\chi^2 = 27.05$, $p < 0.01$, **Appendix A.13**).

Next, respondents were asked to share the kind of water bodies they fish for Black Bass (**Figure 8**). Most respondents indicated they fished in lakes or reservoirs, followed by ponds and rivers. Responses from those who selected "other" included sounds (n = 16), creeks (n = 8), specific lakes (n = 4) and canals (n = 4, **Appendix A.14**).

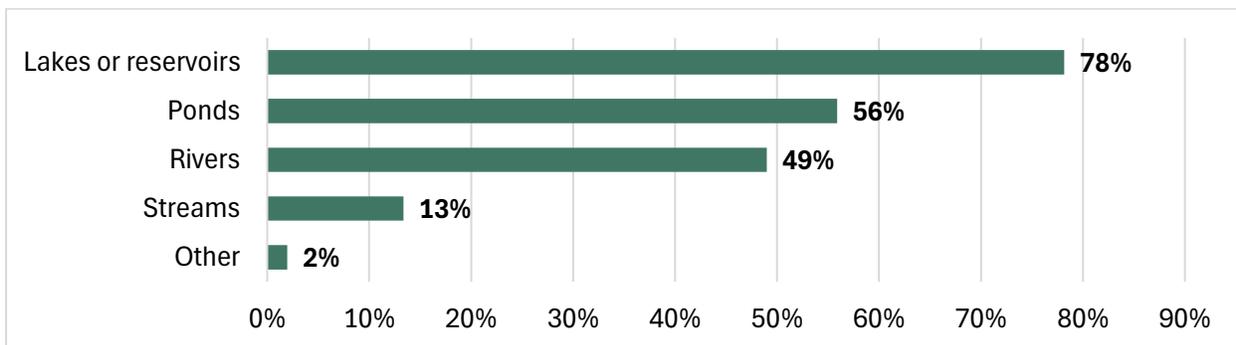


Figure 8. Types of waterbodies where respondents fish for Black Bass (n = 2,441)

Each waterbody was compared to preferred species and region fished most often. Nearly all anglers who preferred Alabama or Spotted Bass indicated they fished in lakes or reservoirs, and more anglers who preferred Largemouth Bass fished in lakes or reservoirs ($\chi^2 = 24.94$, $p < 0.01$, **Appendix A.15**). Individuals who preferred Largemouth Bass also fished more in ponds ($\chi^2 = 120.37$, $p < 0.01$). Respondents who preferred Smallmouth Bass fished more in rivers ($\chi^2 = 85.53$, $p < 0.01$), and streams ($\chi^2 = 98.95$, $p < 0.01$).

Additionally, nearly all anglers in the piedmont indicated they fished in lakes or reservoirs, while less than half of coastal anglers and anglers who fish in waterbodies that span multiple regions indicated they fished in lakes or reservoirs ($\chi^2 = 496.49$, $p < 0.01$, **Appendix A.16**). Respondents who fished most in the mountains indicated they fished ponds less often than other regions ($\chi^2 = 77.24$, $p < 0.01$). Respondents who fished most in the coast or in waterbodies that span multiple regions fished more in rivers ($\chi^2 = 278.79$, $p < 0.01$). Respondents who fished the most in a waterbody that was in multiple regions indicated they fished in streams ($\chi^2 = 56.03$, $p < 0.01$).

Respondents then could list up to four waterbodies they fished the most frequently. The top five shown include Lake Norman, Jordan Lake, Kerr Lake, High Rock Lake, and the New River (**Table 4**). Listed waterbodies were also assigned to the NCWRC management district (**Appendix A.17**) and region (**Appendix A.18**) where they are found. The majority of respondents reported fishing in waterbodies in District 6 (23%) and the piedmont region (55%) most often.

Table 4. Which waterbodies respondents reported fishing in the most

...the most? (n = 2,098)	...the second most? (n = 1,832)	...the third most? (n = 1,431)	...the fourth most? (n = 1,040)
Lake Norman (n = 204)	Jordan Lake (n = 108)	Lake Norman (n = 66)	Lake Norman (n = 59)
Jordan Lake (n = 120)	Lake Norman (n = 87)	Jordan Lake (n = 62)	Jordan Lake (n = 57)
Kerr Lake (n = 99)	Badin Lake (n = 77)	Badin Lake (n = 56)	Kerr Lake (n = 45)
High Rock Lake (n = 93)	Falls Lake (n = 71)	Falls Lake (n = 53)	High Rock (n = 44)
New River (n = 86)	Kerr Lake & High Rock Lake (n = 65)	Lake Hickory (n = 52)	Falls Lake (n = 35)

Respondents were also asked to share what kind of vessel they fished from most often while fishing for Black Bass, if applicable (**Appendix A.19**). Most respondents (65%) reported fishing from a motorized boat, followed by bank or wade fishing only (19%). In the “other” category, respondents also listed a specific way to bank fish (n = 32, i.e., from a dock or pier), or the specific motorboat they used (n = 30). When comparing this response to preferred species and region fished most often, there were statistically significant differences. Respondents who preferred fishing for Alabama or Spotted Bass reported fishing from a motorized boat more often than anglers who preferred fishing for Largemouth or Smallmouth Bass ($\chi^2 = 114.41$, $p < 0.01$, **Appendix A.20**). Additionally, respondents who preferred fishing for Smallmouth Bass were more likely to fish from the bank or a kayak than the other anglers. Thinking regionally, anglers who fished most in the mountains or a waterbody in multiple regions were more likely to fish from the bank or a kayak ($\chi^2 = 132.08$, $p < 0.01$, **Appendix A.21**). Conversely, coastal and piedmont anglers were more likely to report fishing mostly from a motorized boat.

Respondents’ selection of vessel was also compared to whether they fished for Black Bass in lakes or reservoirs (**Appendix A.22**). Respondents who fished in lakes or reservoirs indicated fishing from a motorized boat more often than respondents who did not. Further, respondents who did not fish

in lakes or reservoirs were more likely to indicate they fished most often from the bank ($\chi^2 = 189.00$, $p < 0.01$). Vessel selection was compared to age as well (**Appendix A.23**). Respondents between the ages of 25 and 44 were more likely to indicate they fished most often from the bank, as opposed to the other age categories in which a motorized boat was selected most often ($\chi^2 = 117.84$, $p < 0.01$). Finally, respondent' vessel selection was compared to how they responded to the survey (**Appendix A.24**). Respondents who responded to the survey through mailing in the full survey packet were more likely to fish most often from a motorized boat ($\chi^2 = 30.30$, $p < 0.01$).

Next, respondents were asked to share how satisfied they have been with their Black Bass fishing experience in North Carolina in the last 12 months (**Figure 9**). Most respondents indicated they were somewhat satisfied with their experience.

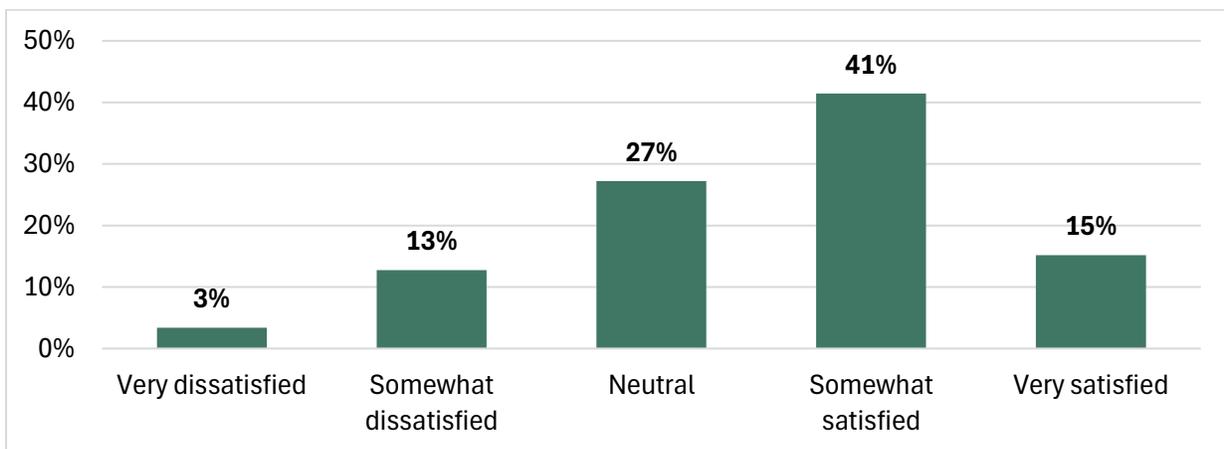


Figure 9. Respondent satisfaction with Black Bass fishing in North Carolina (n = 2,410)

There were no statistically significant differences between satisfaction and preferred species, but there were with regions ($\chi^2 = 21.15$, $p = 0.05$, **Appendix A.25**). Anglers who fished in the piedmont and mountain regions selected they were somewhat dissatisfied more often than other anglers. Further, there was a statistically significant difference with experience satisfaction and whether respondents fished in lakes or reservoirs or not (**Appendix A.26**). Respondents who indicated they fished in lakes or reservoirs were less satisfied than anglers who did not fish in lakes or reservoirs ($\chi^2 = 20.89$, $p < 0.01$).

Respondents were also asked if they felt, since they began Black Bass fishing in North Carolina, if the number of bass caught per trip had increased, decreased, or stayed the same (**Appendix A.27**). The largest proportion of respondents indicated the number of Black Bass caught has stayed the same (51%), while 37% believe it had decreased. Notably, only 12% of anglers indicated they have caught more Black Bass since they began fishing. There was not a statistically significant relationship with their opinion of Black Bass caught and region, but there was with preferred species. Anglers who preferred fishing for Alabama or Spotted Bass indicated the number of Black Bass caught has increased since they started fishing ($\chi^2 = 29.79$, $p < 0.01$, **Appendix A.28**). There was also a statistically significant difference with respondent opinion of Black Bass caught and

whether respondents fished in lakes or reservoirs or not (**Appendix A.29**). Respondents who fished in lakes or reservoirs were more likely to indicate the number of bass they caught had decreased, while respondents who did not fish in lake or reservoirs were more likely to indicate the number of Black Bass they caught had stayed the same ($\chi^2 = 34.51, p < 0.01$).

To gauge how often anglers were harvesting Black Bass species, respondents were asked if they mostly took home the fish they caught, mostly released them, or practiced both about equally (**Figure 10**). The majority of respondents indicated they mostly released the fish they caught.

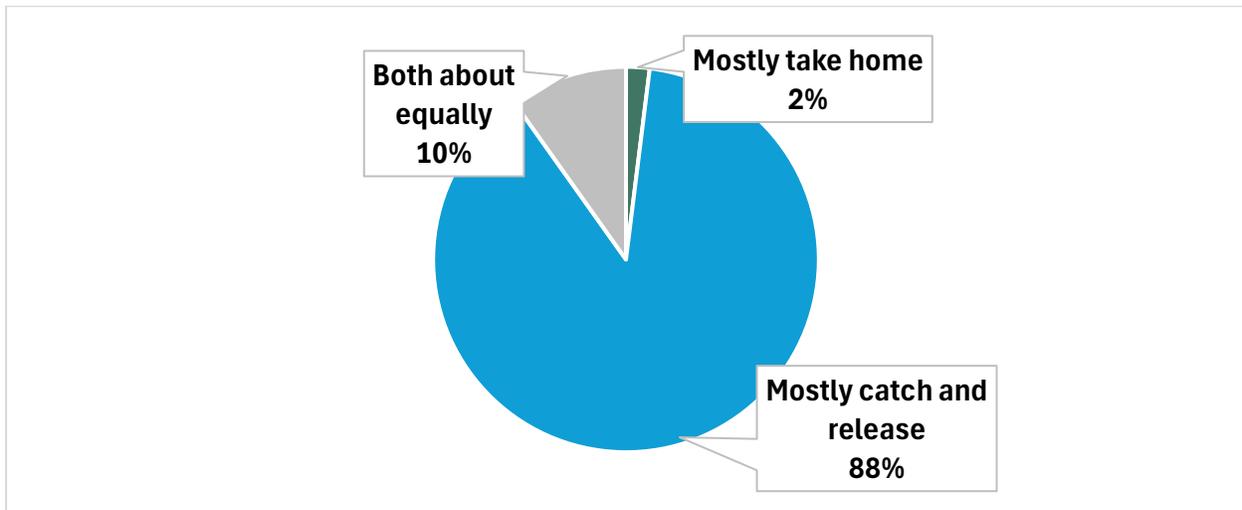


Figure 10. Whether respondents took home the fish they caught (n = 2,391)

There was not a statistically significant difference between releasing and harvesting fish and the region fished most often, but there was with preferred species (**Appendix A.30**). Anglers who prefer Alabama or Spotted Bass selected “Both about equally” more often ($\chi^2 = 46.69, p < 0.01$). There was also a statistically significant difference between releasing and harvesting fish and whether or not respondents fished for Black Bass in lakes or reservoirs (**Appendix A.31**). Respondents who fished in lakes or reservoirs selected “Both about equally” more often ($\chi^2 = 7.96, p = 0.02$).

There are a number of different structures that can be installed into waterbodies for fish to reside in, including artificial reefs, aquatic vegetation, cut and cable trees, submerged woody debris and boat docks. Respondents were given this list and asked to rank each type of structure with “1” being the most preferred to fish on and “5” being the least preferred. Respondents rated submerged woody debris the most preferred, followed by aquatic vegetation and boat docks (**Table 5**).

Table 5. Respondents' ranking of their preference of structure to Black Bass fish on (n = 2,112)

Structure	Average Ranking
Submerged woody debris	2.0
Aquatic vegetation	2.4
Boat docks	3.0
Cut and cable trees	3.5
Artificial reefs	4.1
<i>Note: Options ranked from 1-5 (1= most preferred; 5= least preferred)</i>	

A series of ordered logistic regression models were run to determine if preferred species had an impact on structure rankings (**Table 6**). In comparing anglers who preferred Largemouth and Smallmouth Bass, those who preferred Smallmouth Bass were 21% less likely to rate submerged woody debris lower ($p = 0.05$), 34% more likely to rate aquatic vegetation lower ($p = 0.01$), 52% more likely to rate boat docks lower ($p < 0.01$), and 42% less likely to rate cut and cable trees lower ($p < 0.01$). Anglers who preferred Alabama or Spotted Bass were 160% more likely to rate aquatic vegetation lower ($p < 0.01$), and 48% less likely to rate boat docks lower than anglers who preferred Largemouth Bass ($p = 0.01$). There were no differences in ranking of artificial reefs and preferred species.

Table 6. Rankings of structure during Black Bass fishing compared to preferred species

	Largemouth Bass	Smallmouth Bass			Alabama or Spotted Bass		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Submerged woody debris	1.98	1.89	-0.23 (0.12)	0.05*	1.92	-0.08 (0.27)	0.76
Aquatic vegetation	2.39	2.60	0.29 (0.11)	0.01*	3.04	0.96 (0.26)	<0.01*
Boat docks	2.96	3.26	0.42 (0.11)	<0.01*	2.49	-0.65 (0.26)	0.01*
Cut and cable trees	3.51	3.20	-0.55 (0.11)	<0.01*	3.37	-0.24 (0.26)	0.35
Artificial reefs	4.15	4.04	-0.21 (0.12)	0.06	4.18	0.19 (0.30)	0.52
<i>Note: Preference for Largemouth Bass was the reference type for analysis. * = P < 0.05; Scale: 1 = most preferred to fish on and 5 = least preferred</i>							

Rankings of structure were also compared to region fished most often (**Table 7**). In comparing piedmont and coastal anglers, piedmont anglers were 26% more likely to rate submerged woody debris lower ($p = 0.05$), 48% more likely to rate aquatic vegetation lower ($p < 0.01$), 24% less likely to rate cut and cable trees lower ($p = 0.02$), and 28% less likely to rate artificial reefs lower than coastal anglers ($p = 0.01$). In comparing mountain and coastal anglers, mountain anglers were three times more likely (200%) to rate aquatic vegetation lower ($p < 0.01$), 56% less likely to rate cut and cable trees lower ($p < 0.01$), and 29% less likely to rate artificial reefs lower ($p = 0.02$). Anglers who fished most in waterbodies that spanned multiple regions were 150% more likely than coastal anglers to rate boat docks lower ($p < 0.01$) and 54% less likely to rate cut and cable trees lower ($p < 0.01$).

Table 7. Rankings of structure preferred during Black Bass fishing compared to region fished most often

	Coast	Piedmont			Mountains			Multiple Regions		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Submerged woody debris	1.89	2.04	0.23 (0.12)	0.05*	1.83	-0.16 (0.14)	0.25	1.99	0.08 (0.25)	0.74
Aquatic vegetation	2.17	2.43	0.39 (0.11)	<0.01*	2.91	1.10 (0.14)	<0.01*	2.09	-0.10 (0.23)	0.66
Boat docks	2.96	2.91	-0.08 (0.11)	0.46	2.92	-0.06 (0.13)	0.61	3.65	0.92 (0.23)	<0.01*
Cut and cable trees	3.64	3.49	-0.28 (0.12)	0.02	3.18	-0.82 (0.14)	<0.01*	3.23	-0.77 (0.23)	<0.01*
Artificial reefs	4.35	4.13	-0.33 (0.13)	0.01*	4.15	-0.35 (0.15)	0.02*	4.04	-0.38 (0.26)	0.15

*Note: Anglers who fished the most in the coastal region was the reference type for analysis. * = P < 0.05*

Finally, rankings of structure were compared to whether respondents fished in lakes or reservoirs or not (**Appendix A.32**). Anglers who fished for Black Bass in lakes or reservoirs were 58% more likely to rate aquatic vegetation lower than anglers who didn't fish in lakes or reservoirs ($p < 0.01$). Further, anglers who fished for Black Bass in lakes or reservoirs were 48% less likely to rate boat docks lower than anglers who did not fish in lakes or reservoirs.

Next, respondents were asked to indicate how important and how satisfied they were with attributes of fishing for Black Bass (**Table 8**). "Being outdoors" had both the highest mean importance and mean satisfaction. "Being close to the water" and "relaxation" were the second and third highest mean importance and satisfaction. "Fishing for food" and "Fishing Black Bass tournaments" were the second lowest and lowest importance and satisfaction scores, respectively.

Table 8. Importance and satisfaction rankings for attributes of Black Bass fishing

Attribute	Importance		Satisfaction	
	Mean	n	Mean	n
Being outdoors	4.45	2,334	4.54	2,270
Being close to the water	4.12	2,329	4.37	2,269
Relaxation	4.07	2,322	4.26	2,256
The experience of the catch	3.98	2,314	3.1	2,292
The challenge or sport	3.81	2,334	3.9	2,278
Family recreation	3.76	2,328	4.02	2,262
Catching a trophy fish	2.95	2,330	3.21	2,272
Being alone	2.47	2,314	3.43	2,248
Catching the most fish possible	2.35	2,335	3.06	2,252
Fishing for food	1.63	2,330	3.03	2,252
Fishing Black Bass tournaments	1.44	2,327	2.83	2,223

Note: Importance was ranked on a scale from 1 (Not at all important) to 5 (Extremely important); Satisfaction was ranked on a scale from 1 (Very dissatisfied) to 5 (Very satisfied)

A series of ordered logistic regressions were run to determine if there were differences with importance and satisfaction and preferred species, region fished most often and if anglers fished in lakes or reservoirs or not. Importance of attributes of Black Bass fishing was compared to anglers' preferred species (**Table 9**). There were no significant relationships between preferred species and the importance of being outdoors, being close to the water, relaxation, the experience of the catch or with the challenge or sport.

In comparing anglers who preferred Smallmouth Bass and Largemouth Bass, anglers who preferred Largemouth Bass were 34% more likely to indicate catching a trophy fish was as

important ($p < 0.01$) when compared to Smallmouth Bass anglers. Anglers who preferred Smallmouth bass were 48% more likely to indicate being alone was more important ($p < 0.01$), 36% more likely to indicate fishing food was more important ($p = 0.01$), and 51% less likely to rate fishing Black Bass tournaments as important as anglers who prefer Largemouth Bass ($p < 0.01$).

In comparing anglers who preferred Alabama or Spotted Bass to those who preferred Largemouth Bass, anglers who preferred Alabama or Spotted Bass were 43% less likely to indicate family recreation was as important ($p = 0.02$), 43% less likely to indicate catching a trophy fish was as important ($p = 0.03$), twice as likely to indicate catching the most fish possible was more important when compared to anglers who preferred Largemouth Bass ($p = 0.01$), and almost four times as likely (282%) to indicate fishing for food was more important than anglers who preferred Largemouth Bass ($p < 0.01$).

Table 9. Importance of attributes of Black Bass fishing by anglers preferred species

	Largemouth Bass	Smallmouth Bass			Alabama or Spotted Bass		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Being outdoors	4.44	4.66	0.06 (0.11)	0.61	4.49	0.14 (0.29)	0.61
Being close to the water	4.11	4.13	0.04 (0.11)	0.71	4.26	0.31 (0.26)	0.24
Relaxation	4.06	4.09	0.08 (0.11)	0.49	4.18	0.21 (0.25)	0.41
The experience of the catch	3.98	4.00	0.05 (0.11)	0.63	4.10	0.24 (0.26)	0.37
The challenge or sport	3.81	3.81	0.02 (0.11)	0.86	3.78	0.10 (0.26)	0.70
Family recreation	3.76	3.77	-0.03 (0.10)	0.80	3.46	-0.56 (0.24)	0.02*
Catching a trophy fish	2.99	2.70	-0.41 (0.10)	<0.01*	2.62	-0.56 (0.25)	0.03*
Being alone	2.42	2.70	0.39 (0.10)	<0.01*	2.47	0.07 (0.25)	0.77
Catching the most fish possible	2.33	2.37	0.08 (0.10)	0.46	2.80	0.70 (0.25)	0.01*
Fishing for food	1.59	1.77	0.31 (0.11)	0.01*	2.42	1.34 (0.27)	<0.01*
Fishing Black Bass tournaments	1.47	1.23	-0.70 (0.17)	<0.01*	1.67	0.18 (0.32)	0.59

*Note: Anglers who preferred Largemouth Bass was the reference type for analysis. * = $P < 0.05$*

Importance of attributes of Black Bass fishing were compared to region fished most often (**Table 10**). Only a few significant relationships were found. Piedmont anglers were 71% more likely to indicate catching the most fish possible was more important than coastal anglers ($p < 0.01$). Mountain anglers were 99% more likely to indicate catching the most fish possible was more

important to them than coastal anglers ($p < 0.01$). However, anglers who fished most often in a water body that spanned multiple regions were 33% less likely to rate catching a trophy fish as important as coastal anglers ($p = 0.05$). Finally, anglers who fished most often in a waterbody that spanned multiple regions were 70% less likely to rate fishing Black Bass tournaments as important as coastal anglers ($p < 0.01$).

Table 10. Importance of attributes of Black Bass fishing by region fished most often

	Coast	Piedmont			Mountains			Multiple Regions		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Being outdoors	4.43	4.46	0.02 (0.12)	0.89	4.43	-0.04 (0.14)	0.77	4.51	0.24 (0.25)	0.32
Being close to the water	4.17	4.15	-0.06 (0.11)	0.60	4.08	-0.18 (0.13)	0.16	4.10	-0.09 (0.23)	0.69
Relaxation	4.07	4.07	-0.06 (0.11)	0.62	4.06	-0.07 (0.13)	0.62	4.14	0.11 (0.23)	0.62
The experience of the catch	3.95	4.00	0.06 (0.11)	0.51	4.06	0.23 (0.13)	0.08	3.88	-0.16 (0.23)	0.49
The challenge or sport	3.86	3.85	-0.01 (0.11)	0.89	3.81	-0.08 (0.13)	0.56	3.75	-0.20 (0.22)	0.38
Family recreation	3.76	3.75	-0.04 (0.11)	0.73	3.69	-0.16 (0.13)	0.22	3.84	0.07 (0.22)	0.74
Catching a trophy fish	2.94	3.01	0.08 (0.11)	0.48	2.98	0.05 (0.13)	0.69	2.65	-0.41 (0.21)	0.05*
Being alone	2.39	2.45	0.08 (0.11)	0.46	2.50	0.17 (0.13)	0.18	2.57	0.28 (0.22)	0.19
Catching the most fish possible	2.1	2.43	0.54 (0.11)	<0.01*	2.53	0.69 (0.13)	<0.01*	2.18	0.22 (0.22)	0.32
Fishing for food	1.72	1.58	-0.23 (0.12)	0.06	1.74	0.00 (0.14)	0.99	1.56	-0.38 (0.25)	0.13
Fishing Black Bass tournaments	1.48	1.53	0.23 (0.15)	0.12	1.47	0.13 (0.17)	0.46	1.13	-1.20 (0.44)	0.01*

*Note: Anglers who fished the most in the coastal region was the reference type for analysis. * = P < 0.05*

Important of attributes of Black Bass fishing were compared to if respondents fished for Black Bass in lakes or reservoirs or not through a series of ordered logistic regressions (**Appendix A.33**).

Anglers who fished for Black Bass in lakes or reservoirs were 22% more likely to rate the experience of the catch as more important ($p = 0.02$), 39% more likely to rate the challenge or sport as more important ($p < 0.01$), 35% more likely to rate catching a trophy fish as more important ($p < 0.01$), 19% less likely to rate being alone as more important ($p = 0.02$), 94% more likely to rate catching the most fish possible as more important ($p < 0.01$), and over three times more likely to rate fishing in Black Bass tournaments as more important ($p < 0.01$).

Satisfaction with attributes of Black Bass fishing was compared to preferred species (**Table 11**).

Again, only a few significant relationships were found. Anglers who preferred Smallmouth Bass were 26% less likely to be as satisfied with catching a trophy fish ($p = 0.01$), and 40% more likely to be more satisfied with fishing for food than anglers who preferred Largemouth Bass ($p < 0.01$).

Anglers who preferred Alabama or Spotted Bass were 52% less likely to be as satisfied with catching a trophy fish than anglers who preferred Largemouth Bass ($p = 0.01$).

Table 11. Satisfaction of attributes of Black Bass fishing by preferred species

	Largemouth Bass	Smallmouth Bass			Alabama or Spotted Bass		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Being outdoors	4.54	4.54	<-0.01 (0.12)	0.98	4.65	0.33 (0.31)	0.28
Being close to the water	4.37	4.35	-0.05 (0.11)	0.66	4.56	0.46 (0.28)	0.10
Relaxation	4.27	4.23	-0.14 (0.11)	0.20	4.37	0.28 (0.27)	0.29
The experience of the catch	3.90	3.90	-0.05 (0.11)	0.67	3.98	0.08 (0.25)	0.74
The challenge or sport	3.90	3.92	-0.03 (0.11)	0.75	3.83	-0.01 (0.26)	0.96
Family recreation	4.02	4.01	-0.05 (0.11)	0.67	3.87	-0.31 (0.25)	0.22
Catching a trophy fish	3.24	3.10	-0.30 (0.11)	0.01*	2.87	-0.73 (0.27)	0.01*
Being alone	3.41	3.51	0.16 (0.11)	0.13	3.55	0.29 (0.26)	0.26
Catching the most fish possible	3.07	3.05	-0.06 (0.11)	0.62	2.94	-0.20 (0.28)	0.49
Fishing for food	3.00	3.17	0.34 (0.12)	<0.01*	3.00	0.09 (0.29)	0.76
Fishing Black Bass tournaments	2.83	2.84	-0.05 (0.12)	0.71	2.69	-0.33 (0.31)	0.29

*Note: Anglers who preferred Largemouth Bass was the reference type for analysis. * = P < 0.05*

Satisfaction of attributes of Black Bass fishing was also compared to region fished most often (**Table 12**). There were no statistically significant relationships with level of satisfaction and region fished most often with being outdoors or relaxation. In comparing piedmont and coastal anglers, piedmont anglers were 21% less likely to be as satisfied with being close to the water ($p = 0.05$), 25% less likely to be as satisfied with the experience of the catch ($p = 0.01$), 20% less likely to be as satisfied with the challenge or sport ($p = 0.05$), 24% less likely to be as satisfied with family recreation ($p = 0.01$), 23% less likely to be as satisfied with being alone ($p = 0.03$), and 23% less likely to be as satisfied with fishing for food than coastal anglers ($p = 0.04$). In comparing mountain and coastal anglers, mountain anglers were 39% less likely to be as satisfied with being close to the water ($p < 0.01$), 37% less likely to be as satisfied with the challenge or sport ($p < 0.01$), 36% less likely to be as satisfied with family recreation ($p < 0.01$), and 35% less likely to be as satisfied with catching a trophy fish ($p < 0.01$). Further, anglers who fished most in a waterbody that spanned multiple regions were 37% less likely to be as satisfied with catching the most fish possible ($p = 0.04$), and 46% less likely to be as satisfied with fishing Black Bass tournaments than coastal anglers ($p = 0.01$).

Table 12. Satisfaction of attributes of Black Bass fishing by region fished most often

	Coast	Piedmont			Mountains			Multiple Regions		
	Mean	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z	Mean	Coeff (SE)	P>Z
Being outdoors	4.58	4.53	-0.20 (0.13)	0.13	4.50	-0.23 (0.15)	0.12	4.65	0.19 (0.26)	0.47
Being close to the water	4.47	4.38	-0.24 (0.12)	0.05*	4.28	-0.50 (0.14)	<0.01*	4.41	-0.10 (0.24)	0.70
Relaxation	4.32	4.27	-0.16 (0.12)	0.18	4.21	-0.23 (0.14)	0.09	4.28	-0.18 (0.22)	0.42
The experience of the catch	4.02	3.85	-0.29 (0.11)	0.01*	3.88	-0.22 (0.13)	0.09	3.83	-0.31 (0.23)	0.17
The challenge or sport	4.02	3.90	-0.22 (0.11)	0.05*	3.79	-0.46 (0.13)	<0.01*	3.96	-0.15 (0.22)	0.51
Family recreation	4.14	4.00	-0.28 (0.11)	0.01*	3.92	-0.45 (0.13)	<0.01*	4.10	-0.09 (0.23)	0.69
Catching a trophy fish	3.27	3.25	-0.04 (0.11)	0.73	3.25	-0.43 (-.13)	<0.01*	3.10	-0.38 (0.23)	0.09
Being alone	3.51	3.38	-0.26 (0.11)	0.03*	3.44	-0.15 (0.13)	0.26	3.38	-0.22 (0.23)	0.34
Catching the most fish possible	3.10	3.04	-0.11 (0.12)	0.36	3.06	-0.11 (0.14)	0.44	2.87	-0.47 (0.23)	0.04*
Fishing for food	3.12	3.00	-0.26 (0.12)	0.04*	3.01	-0.24 (0.15)	0.10	3.02	-0.15 (0.26)	0.56
Fishing Black Bass tournaments	2.92	2.83	-0.15 (0.13)	0.25	2.86	-0.13 (0.15)	0.38	2.62	-0.62 (0.25)	0.01*

*Note: Anglers who fished the most in the coastal region was the reference type for analysis. * = P < 0.05*

Satisfaction with attributes of Black Bass fishing was compared to whether respondents fished for Black Bass in lakes or reservoirs or not (**Appendix A.34**). When compared to non-lake or reservoir anglers, anglers who fished in lakes or reservoirs were 23% less likely to be as satisfied with family recreation ($p = 0.01$), 21% less likely to be as satisfied with being alone (0.01), but 31% more likely to be more satisfied with fishing Black Bass tournaments ($p = 0.01$).

Mean satisfaction and importance were plotted against each other in a Satisfaction-Importance Matrix (**Figure 11**). The attributes with high importance and high satisfaction are in the “Keep up the good work” category (top-right, Wade and Eagles, 2003). Those attributes were being outdoors, being close to the water, relaxation, the experience of the catch, the challenge or sport and family recreation. Attributes with high satisfaction and low importance are in the “Possible overkill” category in the bottom-right. These attributes were catching a trophy fish, being alone, catching the most fish possible, and fishing for food. Attributes with low importance and low satisfaction are in the “Low priority” category in the bottom-left, and fishing Black Bass tournaments was the only attribute in this category. Attributes with low satisfaction but high importance were considered to be in the “Concentrate here” category, but there were not any in this matrix.

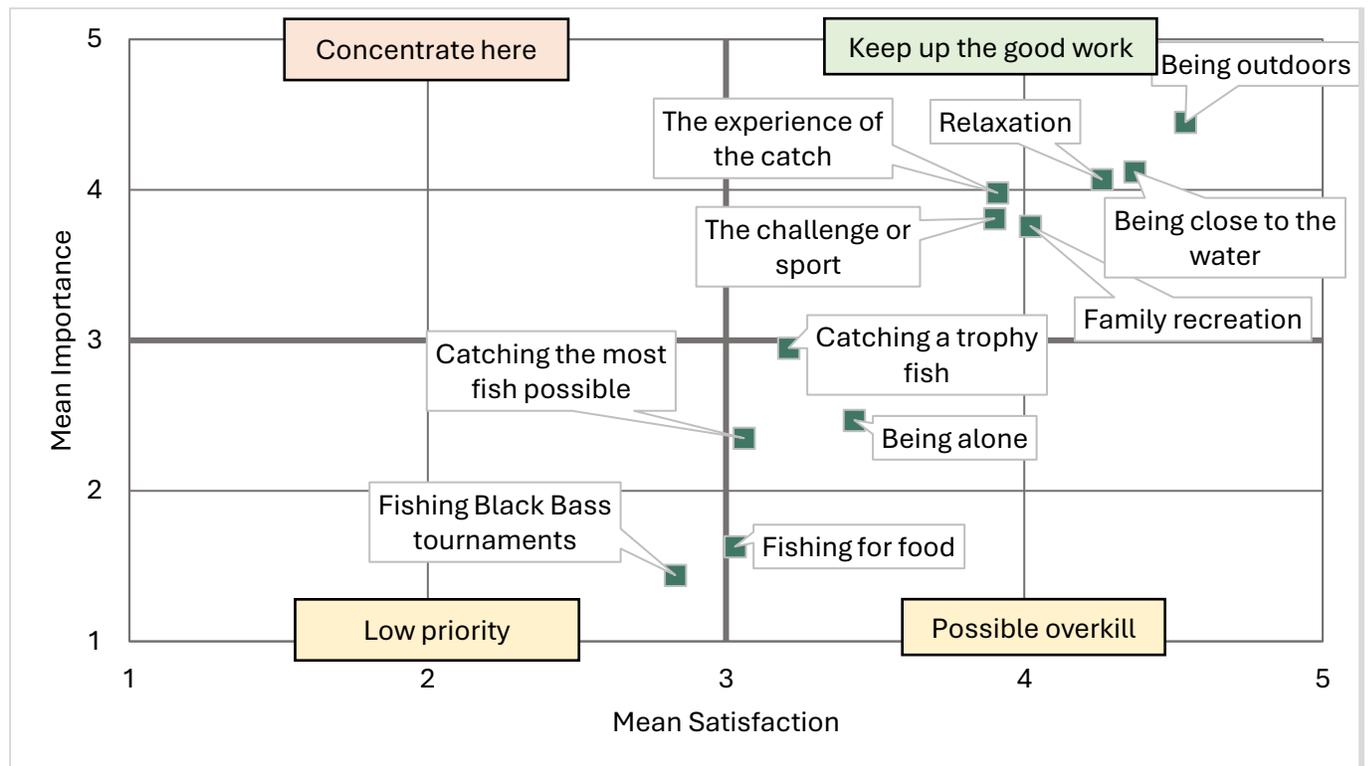


Figure 11. Satisfaction – Importance Matrix for attributes of Black Bass fishing

Respondents were asked to select the technology they used, if any, while they were Black Bass fishing (**Figure 12**). Of the respondents who use technology, the majority reported using down scan sonar, followed by side scan sonar. Only 20% of respondents reported using forward facing sonar. With the respondents who reported using forward facing sonar, 57% fished most in the piedmont, 27% fished most in the mountains, 14% fished most on the coast, and 2% fished most in a waterbody that spanned multiple regions. Other technologies respondents wrote in included depth finders (n = 8), polarized glasses (n = 4), maps (n = 3) and fish finders (n = 3, **Appendix A.35**).

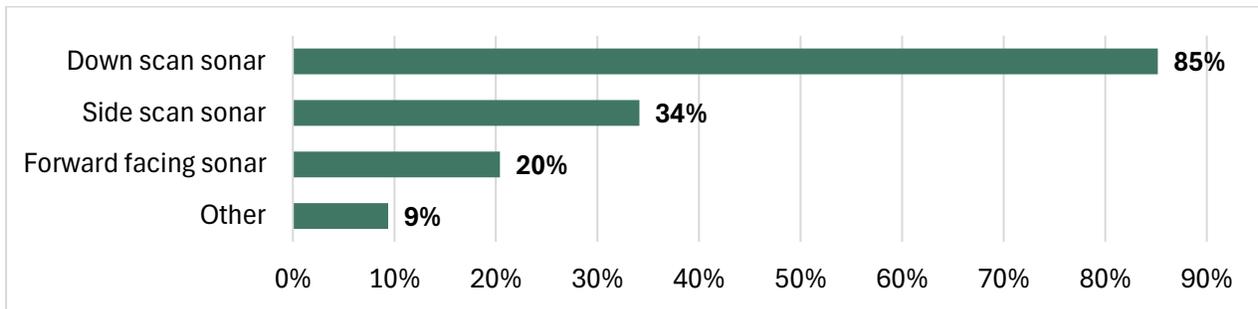


Figure 12. What kind of technology respondents who use technology utilize while Black Bass fishing (n = 1,564)

There were no statistically significant differences with any of the technologies and preferred species or how respondents responded to the survey, and nor were there any statistical significant differences with forward facing sonar, side scan sonar and other technologies with region fished most often, but there was a statistical significant difference with region fished most often and down scan sonar (**Appendix A.36**). Individuals who indicated they fished most in a waterbody that spanned multiple regions were less likely to indicate they used down scan sonar ($\chi^2 = 17.90$, $p < 0.01$). However, each kind of technology was compared to whether anglers fished for Black Bass in lakes or reservoirs or not, and there was a statistically significant difference with each kind of technology (**Appendix A.37**). Respondents who fished for Black Bass in lakes or reservoirs were more likely to use down scan sonar ($\chi^2 = 36.97$, $p < 0.01$), side scan sonar ($\chi^2 = 18.59$, $p < 0.01$), and forward facing sonar ($\chi^2 = 18.09$, $p < 0.01$). However, respondents who did not fish for Black Bass in lakes or reservoirs were more likely to indicate they use another kind of technology ($\chi^2 = 33.61$, $p < 0.01$). There was also a statistically significant difference on the use of side scan sonar and age (**Appendix A.38**). Respondents between 25 and 44 years old were more likely to indicate using side scan sonars while Black Bass fishing ($\chi^2 = 19.99$, $p = 0.01$).

Respondents were asked if, before taking the survey, they knew there were fish consumption advisories in North Carolina (**Appendix A.39**). Most respondents (86%) knew about the advisories, and there were not significant differences in knowledge with region fished most often, preferred species or if they fished in lakes or reservoirs or not. Respondents were also asked if, before taking the survey, they were aware that it was illegal for people to release or stock any fish into public waters, unless they were taken from those same waters (**Appendix A.40**). Again, most respondents (84%) indicated they knew that it was illegal to stock fish into public waters from other waters. There was a statistically significant difference with knowing stocking fish into public waters was illegal and preferred Black Bass species to fish for in that nearly all anglers who preferred Alabama

or Spotted Bass knew it was illegal (95%), while anglers who preferred Largemouth Bass (83%) and Smallmouth Bass (86%) were around the overall average ($\chi^2 = 7.56$, $p = 0.02$, **Appendix A.41**).

Finally, respondents were asked to write in two things that the NCWRC could do to improve Black Bass fishing in North Carolina (**Table 13**). There were three themes that arose from these ideas: stocking more, changing regulations and adding more habitat or structure to waterbodies.

Table 13. Respondents’ ideas for what the NCWRC could do to improve Black Bass fishing in North Carolina (n = 2,599)

Theme	Description	n
Stocking more	Respondents indicated they would like the NCWRC to stock more. Some respondents listed specific locations or species they would like to see stocked.	645
Install more habitat or structure	Respondents indicated they would like more structure or habitat in the areas where they fished.	378
Changing regulations	Respondents shared they would like some regulations to change, including more catch and release and changing the size and creel limits.	322

Black Bass Tournament and Fishing Club Participation

Only 18% of respondents indicated they had participated in a Black Bass fishing tournament in North Carolina (**Appendix A.42**). While this does not seem like a large percentage, when extrapolated to the estimated Black Bass angler population (711,593), an estimated 128,087 anglers have participated in a Black Bass fishing tournament. There were statistically significant differences in participation by preferred species (**Appendix A.43**) and region fished most often (**Appendix A.44**). Anglers who preferred Alabama or Spotted Bass listed they participated in Black Bass fishing tournaments the most often (32%), followed by anglers who preferred Largemouth Bass (19%) and anglers who preferred Smallmouth Bass (10%, $\chi^2 = 21.97$, $p < 0.01$). Further, anglers who fished most in waterbodies in multiple regions rarely indicated they fished in Black Bass tournaments (3%) when compared to the other regions (18-22%, $\chi^2 = 16.45$, $p < 0.01$). There was also a statistically significant difference between respondents who have participated in a Black Bass fishing tournament and whether they fish in lakes and reservoirs or not (**Appendix A.45**). Respondents who fish in lakes and reservoirs were more likely to have participated in a Black Bass tournament ($\chi^2 = 88.35$, $p < 0.01$).

Very few respondents (6%) indicated they were members of a Black Bass fishing club (**Appendix A.46**). When extrapolated to the estimated Black Bass angler population, this represents 42,696 anglers. Those who were members were asked to name the club, and the largest proportion of these respondents belonged to a chapter of Bassmaster (n = 42). There was a statistically significant difference between respondents’ fishing club participation and preferred species (**Appendix A.47**). Anglers who were members of a fishing club preferred to fish for Largemouth

Bass or Alabama or Spotted Bass more often than anglers who were not members of a Black Bass fishing club ($\chi^2 = 17.79$, $p < 0.01$). Additionally, respondents that were not members of a fishing club were more likely to prefer to fish for Smallmouth Bass than respondents who were members of a fishing club. There was also a statistically significant difference in fishing club membership and if respondents fished for Black Bass in lakes or reservoirs (**Appendix A.48**). Respondents who fished in lakes or reservoirs were more likely to be a member of a fishing club ($\chi^2 = 27.46$, $p < 0.01$).

Black Bass Communication Preferences

To gauge how best to communicate with anglers, and what information they would like to receive, respondents were asked a series of questions about their communication preferences and habits. First, respondents selected how they would like to receive information about Black Bass fishing in North Carolina (**Figure 13**). Most respondents would like to get information from the Regulations Digest, NCWRC website and NCWRC emails, all publications the NCWRC controls. Other communication channels listed included through the mail, Wildlife in North Carolina magazine, other anglers, and emails (**Appendix A.49**).

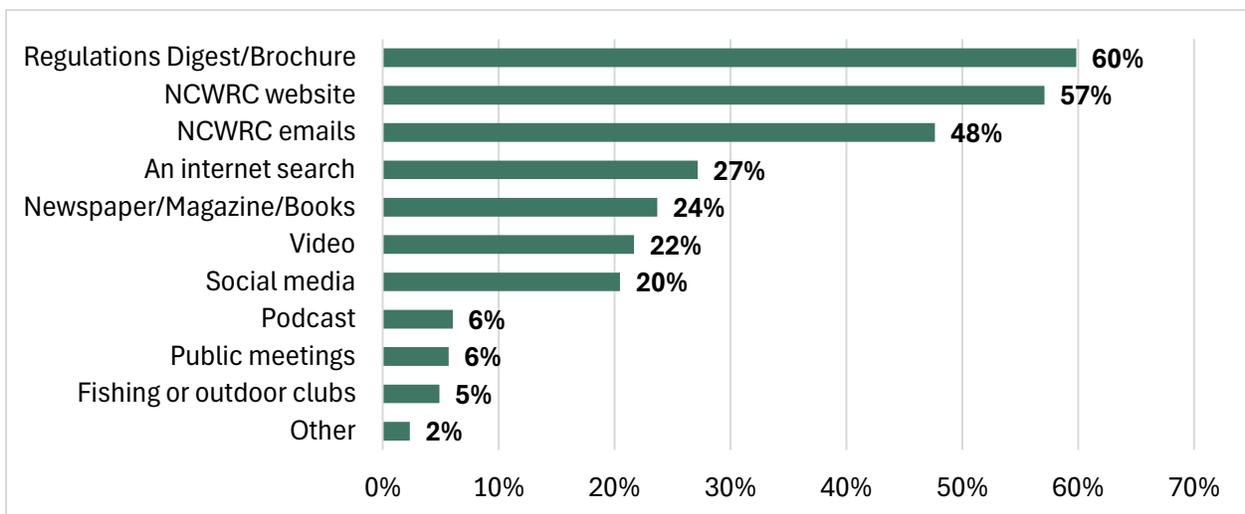


Figure 13. Respondents' preferred communication channels (n = 2,002)

Communication channel selections were compared with preferred species (**Appendix A.50**) and regions fished most often (**Appendix A.51**). There were some statistically significant differences with both preferred species and regions. Anglers who preferred Alabama or Spotted bass were less likely to select the regulations digest as a preferred communication channel ($\chi^2 = 6.75$, $p = 0.03$), and anglers who preferred Smallmouth Bass were less likely to select fishing clubs as a preferred communication channel ($\chi^2 = 6.19$, $p = 0.05$). Anglers who fished most often in a waterbody that spanned multiple regions were less likely to choose fishing clubs as a communication channel ($\chi^2 = 9.11$, $p = 0.03$), and anglers who fished the most on the coast were more likely to write in another kind of communication channel ($\chi^2 = 8.28$, $p = 0.04$).

Communication channel selections were also compared with age (**Appendix A.52**). Respondents between 35 and 64 years old were more likely to select the NCWRC website for information ($\chi^2 = 22.72$, $p < 0.01$). Respondents between 25-34 were less likely to select NCWRC emails ($\chi^2 = 18.16$, $p = 0.01$). Respondents between 18 and 24 years old were more likely to select videos ($\chi^2 = 38.08$, $p < 0.01$), social media ($\chi^2 = 121.30$, $p < 0.01$), podcasts ($\chi^2 = 49.61$, $p < 0.01$), and fishing or outdoor clubs ($\chi^2 = 17.57$, $p = 0.01$) than other age groups.

Communication preferences were also compared with whether respondents were lake or reservoir anglers or not (**Appendix A.53**). Respondents who fished in lakes or reservoirs were more likely to select the NCWRC website ($\chi^2 = 5.52$, $p = 0.02$), an internet search ($\chi^2 = 5.27$, $p = 0.02$), newspaper/magazines/books ($\chi^2 = 9.99$, $p < 0.01$), videos ($\chi^2 = 10.53$, $p < 0.01$), social media ($\chi^2 = 11.10$, $p < 0.01$), and fishing or outdoor clubs ($\chi^2 = 4.12$, $p = 0.04$).

Respondents were also asked to share what information they would like to receive from the NCWRC (**Table 14**). Respondents indicated wanting more information about regulations and when they change, where to fish, research results and population estimations, stocking information, fishing tips and education and any pertinent information about Black Bass fishing.

Table 14. What information respondents would like to receive about Black Bass fishing (n = 1,001)

Information Topic	n
Regulations	231
Where to fish	201
Research results	151
Stocking information	128
Fishing tips	128
Any pertinent information	106

Respondents to the online survey were asked an additional question about specific communication channels or accounts from which they get their fishing information (**Figure 14**). The most common communication channels selected were TV shows and social media influencers.

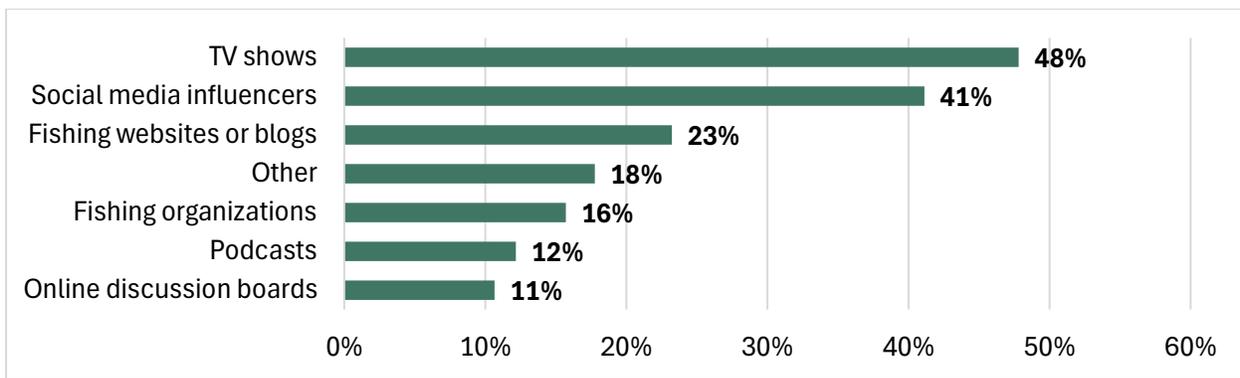


Figure 14. Other communication channels respondents get fishing information from (n = 732)

There were no statistically significant differences between these communication channels with preferred species or region fished most often. However, there were statistically significant differences with additional communication channels and whether respondents fished in lakes or reservoirs or not (**Appendix A.54**). Respondents who fished in lakes or reservoirs were more likely to indicate they get information from fishing websites ($\chi^2 = 6.60, p = 0.01$), fishing organizations ($\chi^2 = 8.86, p < 0.01$), and online discussion boards ($\chi^2 = 4.82, p = 0.03$).

For each of the other communication channels, respondents were asked to list what accounts or brands they get fishing information from. Respondents listed Bassmaster (n = 40), Major League Fishing (n = 29), Bill Dance (n = 23), Outdoors NC (n = 20) and the Carolina Outdoor Journal (n = 19) as the TV shows they watch to get fishing information. The social media influencers listed included Bassmaster (n = 6), Ben Milliken (n = 5), and Mike Iaconelli (n = 4). Respondents also listed the kinds of social media they get information from, and the top two were Facebook (n = 67) and YouTube (n = 31). Fishing websites or blogs listed included the NCWRC (n = 11), YouTube (n = 9), and Bass Boat Central forums (n = 4). Respondents who selected “other” were given the opportunity to write in what other communication outlets they get information from, and they wrote in communication outlets including friends and family (n = 30), magazines (n = 24), YouTube (n = 20), and other anglers on the lake (n = 16). The fishing organizations listed included Bassmasters (n = 64) and Major League Fishing (n = 28). Podcasts listed included Two Bald Biologists (n = 27) and Bass Talk Live (n = 3). Finally, the online discussion boards listed included Bass Boat Central (n = 8), and NC Hunt & Fish (n = 5).

Black Bass Crowding Concerns

Respondents were asked a series of questions about crowding while Black Bass fishing. The first question asked respondents to share how often they experience crowding while Black Bass fishing in North Carolina (**Figure 15**). The majority of respondents indicated they “Sometimes” or “Rarely” experienced crowding.

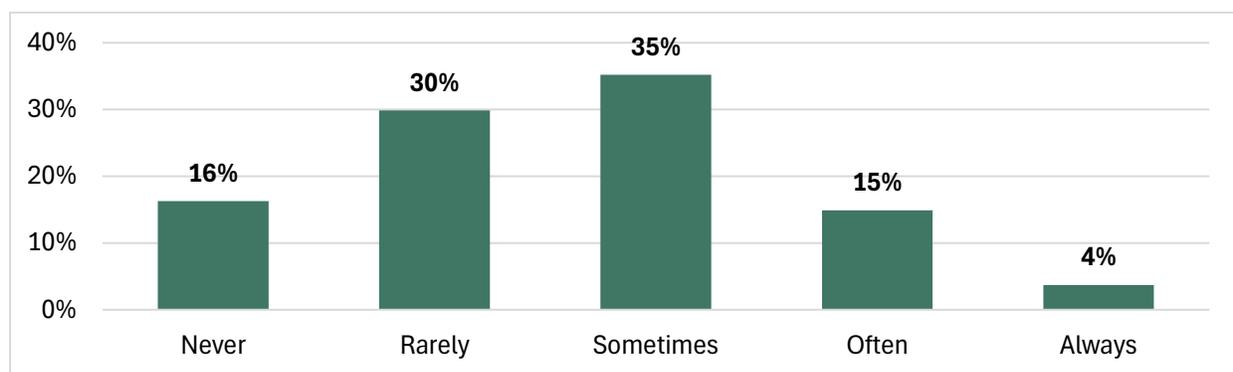


Figure 15. How often respondents experience crowding while Black Bass fishing in North Carolina (n = 2,104)

When compared to species preferred, there were no statistically significant relationships with frequency of crowding, but there was with region fished most often. Respondents who fished the most in the piedmont or mountains rated experiencing crowding more often than anglers who

fished most on the coast or in a waterbody that spanned multiple regions ($\chi^2 = 39.53$, $p < 0.01$, **Appendix A.55**). There was also a statistically significant difference between frequency of crowding and whether respondents fish in lakes or reservoirs (**Appendix A.56**). Respondents who fished in lakes or reservoirs were more likely to indicate experiencing crowding more often than angler who did not fish in lakes or reservoirs ($\chi^2 = 152.34$, $p < 0.01$).

Respondents who indicated they “Never” experience crowding were not shown the remainder of the questions for this section. The next question asked respondents to rate if the crowding they had experienced had gotten better or worse over time (**Figure 16**). Most respondents indicated crowding has gotten a little worse or stayed the same.

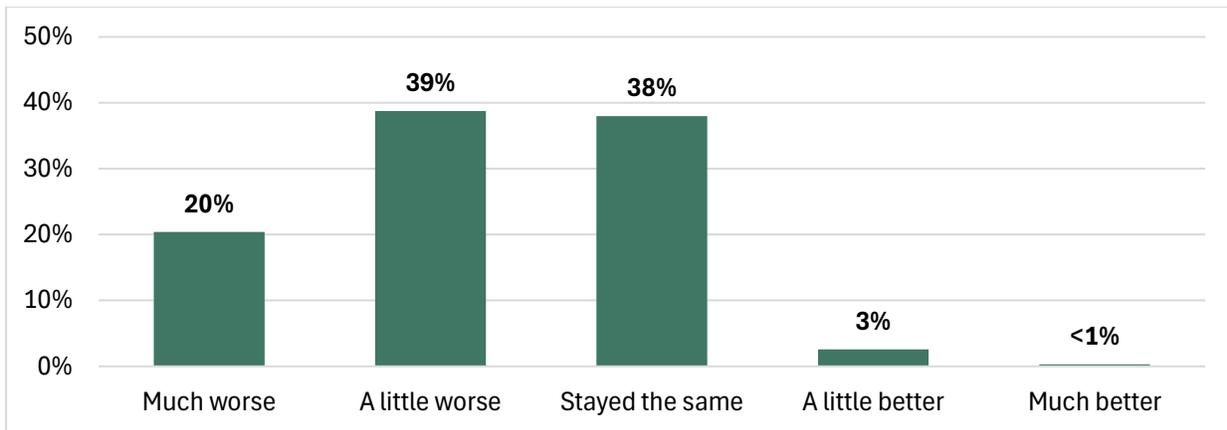


Figure 16. Respondents’ indication if crowding has gotten better or worse over time (n = 1,736)

When change of crowding over time is compared to preferred species, there was not a statistically significant difference, but there was when compared to region fished most often. Respondents who fished most in the mountains and piedmont were more likely to report crowding getting worse over time ($\chi^2 = 32.81$, $p < 0.01$, **Appendix A.57**). Additionally, respondents who fished in lakes and reservoirs indicated crowding had gotten worse more often than respondents who didn’t fish in lakes or reservoirs ($\chi^2 = 18.79$, $p < 0.01$ **Appendix A.58**).

Respondents were also asked about the type of impacts they have experienced from crowding while Black Bass fishing in North Carolina (**Figure 17**). “Crowded access areas” was the most selected option, followed by “trash or litter,” “fish are harder to catch” and “too many anglers in one place.” Respondents who selected “other” described impacts such as conflicts with recreational boaters, jet skis, wake boats, and other boats partaking in water sports (**Appendix A.59**).

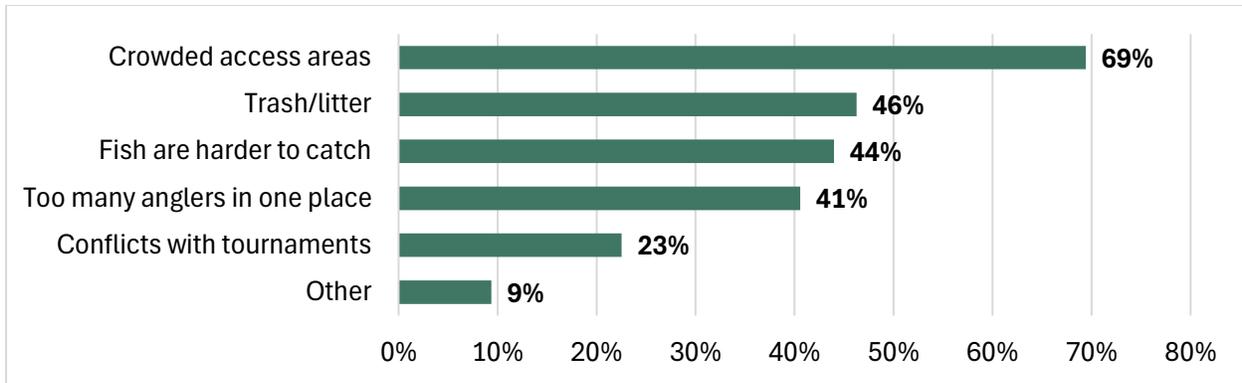


Figure 17. Impacts from crowding respondents experienced while Black Bass fishing in North Carolina (n = 1,664)

Impacts of crowding were compared to preferred species (**Appendix A.60**) and region fished most often (**Appendix A.61**). Anglers who preferred Alabama or Spotted Bass were less likely to indicate trash and litter as an impact of crowding ($\chi^2 = 7.98$, $p = 0.02$). Anglers who preferred Alabama or Spotted Bass were more likely to indicate they experienced conflicts with tournaments ($\chi^2 = 18.89$, $p < 0.01$). Anglers who fished mostly in the coastal region indicated trash or litter impacted them less often than anglers from other regions ($\chi^2 = 8.87$, $p = 0.03$). Anglers who fished the most in the coastal region or in a waterbody that spanned multiple regions were less likely to indicate fish were harder to catch ($\chi^2 = 10.29$, $p = 0.02$). Finally, anglers who fished most often in a waterbody that spanned multiple regions were less likely to indicate they encountered conflicts with tournaments ($\chi^2 = 17.19$, $p < 0.01$). Additionally, respondents who fished in lakes or reservoirs were more likely to report crowded access areas ($\chi^2 = 11.32$, $p < 0.01$), fish being harder to catch ($\chi^2 = 11.90$, $p < 0.01$), and conflicts with tournaments ($\chi^2 = 10.15$, $p < 0.01$, **Appendix A.62**).

Respondents were also asked to share if they have made any changes to their fishing habits due to crowding (**Figure 18**). Most respondents indicated they avoid weekends or holidays, followed by avoiding certain times and certain waterbodies. Respondents who selected “other” wrote in responses included fishing at different times, fishing less but not stopping, and avoiding certain areas on waterbodies (**Appendix A.63**).

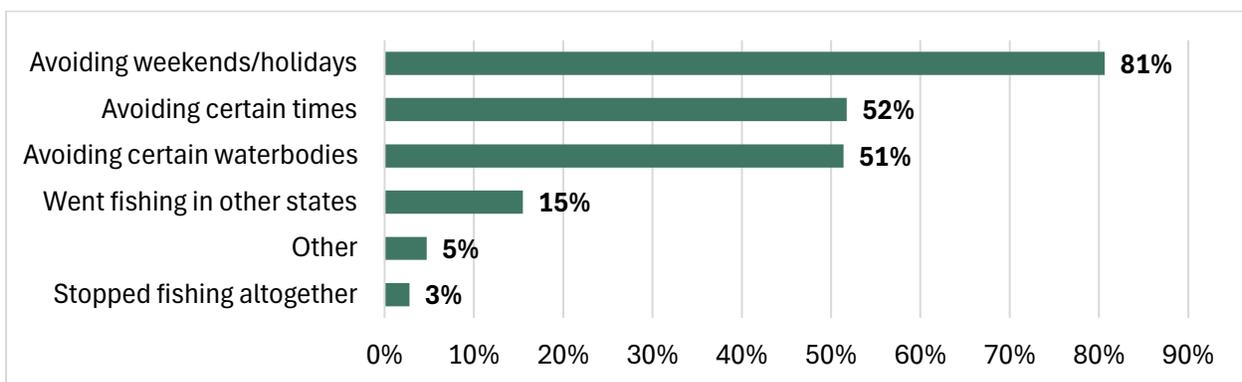


Figure 18. Changes to respondent fishing habits due to crowding (n = 1,615)

Changes respondents have made were compared to their preferred species (**Appendix A.64**) and region fished most often (**Appendix A.65**). Anglers who preferred Alabama or Spotted Bass were more likely to indicate they avoid weekends and holidays ($\chi^2 = 8.34$, $p = 0.02$). Anglers who preferred Smallmouth Bass were more likely to indicate they go fishing in other states ($\chi^2 = 48.74$, $p < 0.01$). Anglers who fished the most in the coastal region were less likely to indicate they avoid fishing on weekends and holidays ($\chi^2 = 12.80$, $p = 0.01$). Anglers who fish the most in the coast were less likely to indicate they avoid fishing certain times, but anglers who fish the most in the piedmont indicated they avoid fishing certain times more ($\chi^2 = 7.89$, $p = 0.05$). Anglers who fish the most in a waterbody that spans multiple regions or the mountains more often indicated they fished in other states ($\chi^2 = 47.79$, $p < 0.01$). Anglers in the mountains were more likely to indicate they had stopped fishing altogether ($\chi^2 = 8.88$, $p = 0.03$). Finally, respondents who fished in lakes or reservoirs were more likely to indicate they avoided weekends and holidays ($\chi^2 = 13.81$, $p < 0.01$), avoided certain times ($\chi^2 = 10.29$, $p < 0.01$), and avoided certain waterbodies ($\chi^2 = 7.62$, $p = 0.01$, **Appendix A.66**).

Respondents were then asked to list if there was a particular waterbody they experienced crowding on more than others (**Table 15**). While respondents listed numerous waterbodies, the top three were Lake Norman, Jordan Lake and Falls of Neuse.

Table 15. Most frequent responses for waterbodies on which respondents experienced crowding (n = 852)

Waterbody	n
Lake Norman	177
Jordan Lake	109
Falls of Neuse	83

Further, respondents were asked to share if there was a particular time of year they experienced crowding on more than others (**Table 16**). Most respondents chose to write in a season and mentioned summer and spring. Respondents also indicated July, weekends and the month of June were also crowded times.

Table 16. Most frequent responses for times of the year respondents experience crowding (n = 955)

Time of year	n
Summer	488
Spring	213
July	134
Weekends	109
June	101

Fishing Bait Usage

All respondents, regardless of whether they were Black Bass anglers or not, were asked what kind of bait or lures they typically use. If they used live crayfish as bait, they were asked to share more about their habits. Nearly all respondents indicated they used artificial lures and/or flies (**Figure 19**). Notably, only 2% of anglers indicated they used live crayfish.

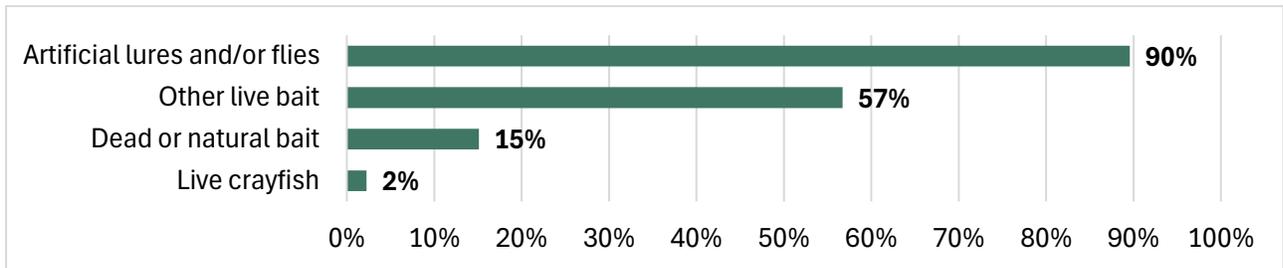


Figure 19. What kind of baits or lures anglers reported fishing with, in general (n = 3,351)

The remainder of questions in this section were directed towards the respondents who indicated they used live crayfish. Respondents who used live crayfish were asked to share how often they used live crayfish while they were fishing (**Figure 20**). Most respondents indicated they sometimes use live crayfish. None of the respondents indicated they always used live crayfish.

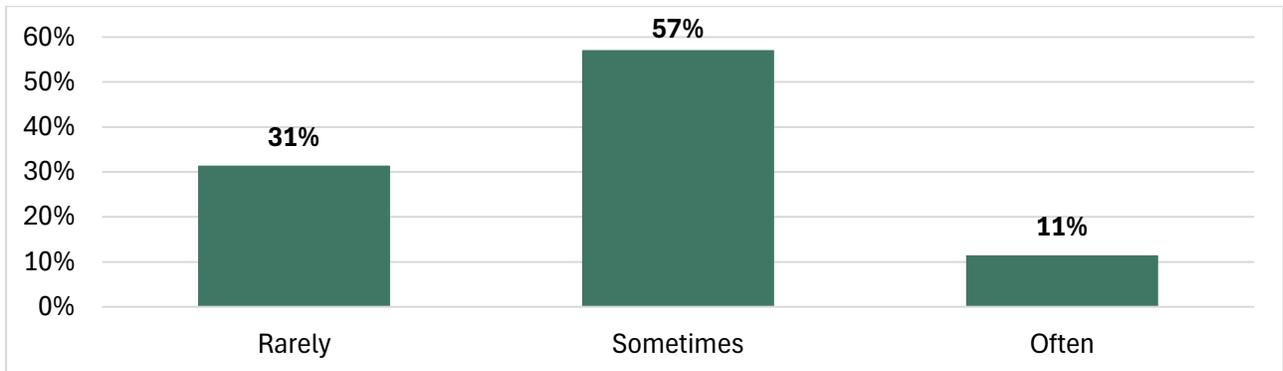


Figure 20. How often respondents use live crayfish as bait (n = 71)

Respondents were also asked to share from where they get their live crayfish (**Figure 21**). Most respondents selected they caught their own, either from where they went fishing or another waterbody. Other write-in responses included getting the crayfish from their property (n = 2) or from someone else (n = 1).

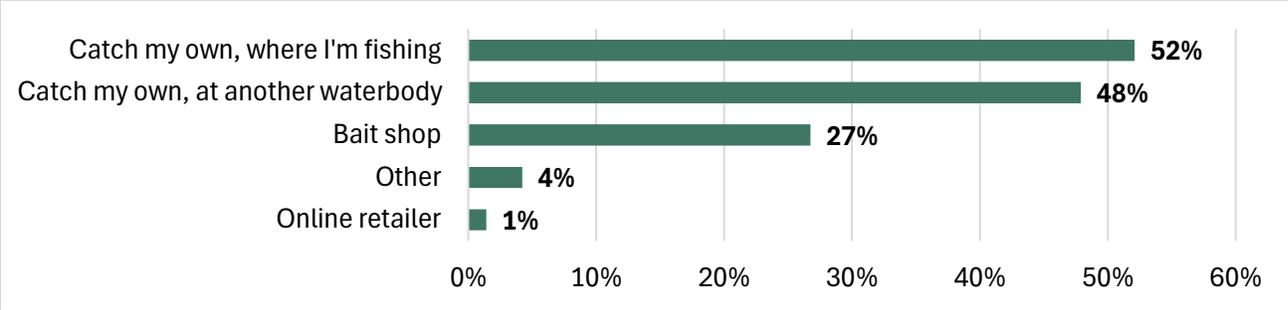


Figure 21. Where respondents get their live crayfish from (n = 71)

Next, respondents were asked to share what they do with any leftover crayfish after they are done fishing (**Figure 22**). Most respondents indicated they released the remaining live crayfish into the waterbody where they were fishing.

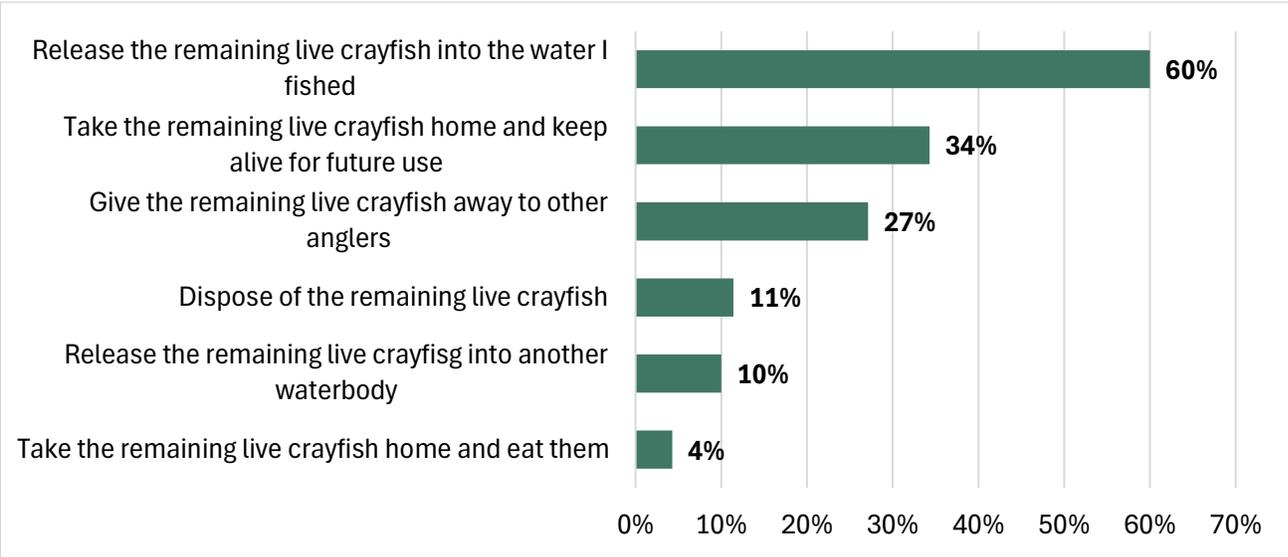


Figure 22. What respondents do with live crayfish when they are done fishing (n = 70)

The NCWRC has discussed implementing a regulation that would require only the use of crayfish parts as bait (**Figure 23**). Most respondents indicated they would oppose such a regulation. Notably, only 9% of respondents indicate they would at least somewhat support such a regulation.

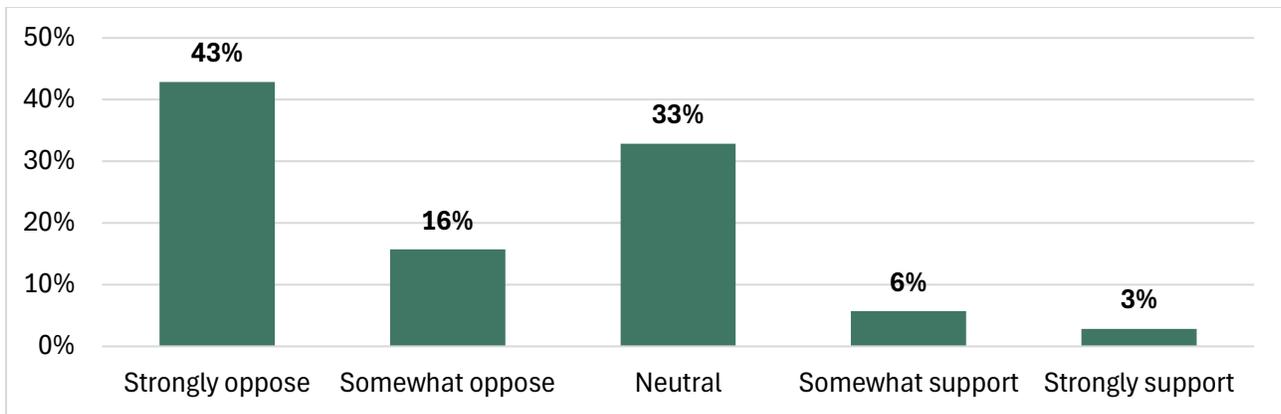


Figure 23. Respondents’ support or opposition of a potential crayfish parts as bait regulation (n = 70)

Finally, respondents were asked what changes they would make to their fishing if a crayfish parts regulation was implemented (**Figure 24**). Most respondents would use other kinds of baits or lures. Respondents who selected “other” were given the opportunity to write in what changes they would make, and they wrote in changes such as keep using them anyways (n = 2), using other live bait (n = 1), and one comment indicating that regulation needs to stop (n = 1).

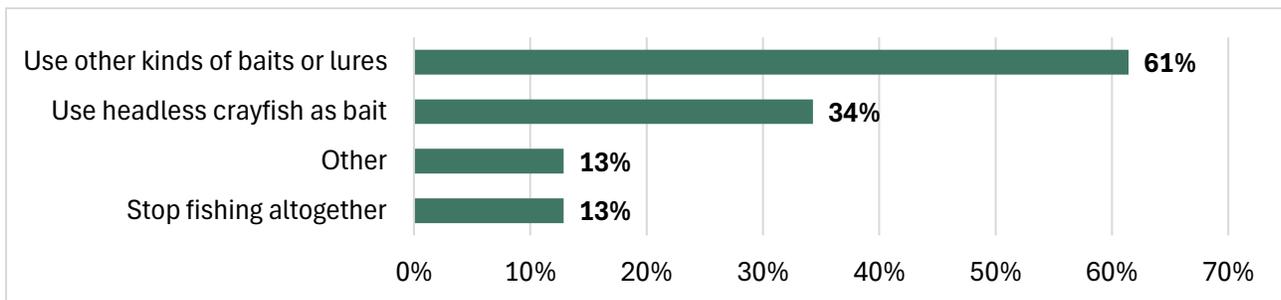


Figure 24. What changes respondents would make to their fishing if a crayfish parts regulation was implemented (n = 70)

Conclusion

In conclusion, Black Bass anglers represent a significant portion of inland anglers (65%). When compared to trout anglers, Black Bass anglers spent more money annually (\$2.4 Billion vs. \$1.34 Billion), but were less satisfied with their fishing experience than trout anglers (56% Black Bass anglers vs. 76% trout anglers). This difference in economic contributions is likely due to a higher number of anglers fishing for Black Bass.

The majority of Black Bass anglers have spent most of their lives fishing for Black Bass and rated themselves as proficient Black Bass anglers. This is unsurprising given Black Bass species are present in most waterbodies throughout the state. Most Black Bass anglers were not active members of fishing clubs, and less than 20% have participated in a fishing tournament. Black Bass anglers primarily practice catch and release (88%), and fishing for food is relatively unimportant for these anglers (avg. importance 1.63, with “1” being not at all important). This indicates Black Bass

anglers were not harvest-oriented, and while Black Bass anglers represent a large portion of anglers, Black Bass species were not being removed from the ecosystems.

Anglers who prefer fishing for Largemouth Bass differ from anglers who prefer fishing for Smallmouth Bass in a number of ways. Anglers who preferred fishing for Smallmouth Bass were more confident than Largemouth Bass anglers in identifying the different Black Bass species (54% completely confident versus 45% completely confident). They also differ in where they were primarily fishing. Anglers who preferred fishing for Smallmouth Bass fished more in rivers (70% vs. 45% anglers who preferred Largemouth Bass), and streams (29% vs. 10% anglers who preferred Largemouth Bass). Conversely, anglers who preferred Largemouth Bass fished more in ponds (61%) than anglers who preferred Smallmouth Bass (36%). The data collected in this survey provide useful insights into the opinions and participation of Black Bass anglers, and provide context for future management.

References

- Alamanza, B. A., Jaffe, W., & Lin, L. (1994). Use of the service attribute matrix to measure consumer satisfaction. *Hospitality Research Journal*, 17(2), 63-75.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method*. John Wiley & Sons.
- Jewell, K., Watkins, C., Rash, J., & Besler, D. (2023). Evaluation of North Carolina trout anglers' opinions, participation, and socioeconomic impact. A Report for the North Carolina Wildlife Resources Commission.
- Jewell, K., Watkins, C., Joubert, C., & Roberts, K. (2024). Understanding North Carolina Reservoir Striped Bass and Bodie Bass Anglers. A Report for the North Carolina Wildlife Resources Commission.
- Linehan, K. (2013). North Carolina resident freshwater angler survey. A Report for the North Carolina Wildlife Resources Commission.

Appendix

Appendix A: Selected Tables & Figures

Appendix A.1: Results of chi-square test on age of respondents and method of submission

	Online – Email	Online – Mailed	Mailed In
18 – 24 years old	9 (1%)	30 (2%)	8 (1%)
25 – 34 years old	9 (1%)	83 (4%)	16 (3%)
35 – 44 years old	62 (8%)	202 (10%)	24 (4%)
45 – 54 years old	131 (16%)	367 (19%)	53 (9%)
55 – 64 years old	252 (31%)	518 (27%)	121 (21%)
65 – 74 years old	253 (31%)	549 (28%)	208 (37%)
75 – 84 years old	103 (13%)	194 (10%)	124 (22%)
85 years or older	2 (<1%)	6 (<1%)	11 (2%)
$\chi^2 = 165.30, p < 0.01$			

Appendix A.2: Other freshwater fish species respondents targeted (n = 181)

Species	n
Saltwater species	110
Perch	14
Carp	12
Shad	12

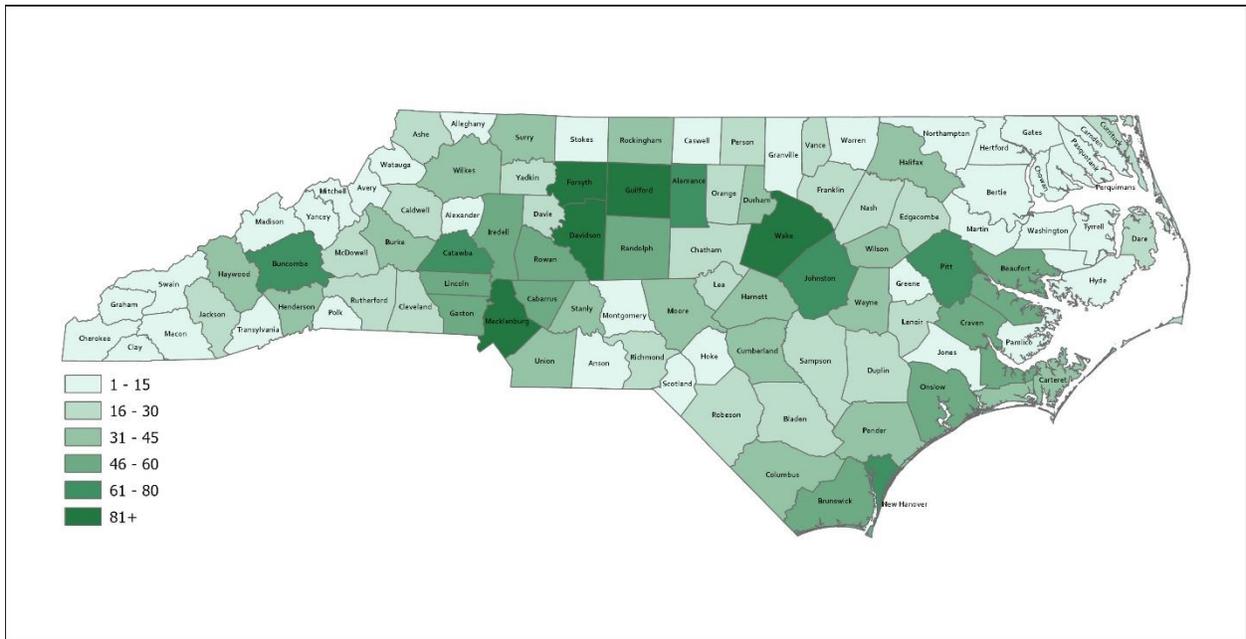
Appendix A.3: Demographic characteristics of survey respondents

		Black Bass anglers n (%)	Non-Black Bass anglers n (%)	Overall respondents n (%)
Gender*	Male	2,042 (98%)	1,156 (97%)	3,260 (98%)
	Female	33 (2%)	37 (3%)	71 (2%)
Race	White	1,979 (97%)	1,123 (93%)	3,161 (95%)
	Black or African American	43 (2%)	35 (3%)	78 (2%)
	American Indian or Alaskan Native	34 (2%)	17 (1%)	51 (2%)

	Asian	3 (<1%)	5 (<1%)	8 (<1%)
	Native Hawaiian or another Pacific Islander	1 (<1%)	1 (<1%)	2 (<1%)
	Other*	6 (<1%)	11 (1%)	17 (1%)
Ethnicity	Hispanic, Latino/a, or Spanish	9 (<1%)	8 (1%)	17 (1%)
	Not Hispanic, Latino/a, or Spanish	1,958 (99%)	1,115 (99%)	3,125 (99%)
Age*	18-24	38 (2%)	9 (1%)	47 (1%)
	25-34	80 (4%)	26 (2%)	107 (3%)
	35-44	191 (9%)	92 (8%)	288 (9%)
	45-54	367 (18%)	179 (15%)	551 (17%)
	55-64	567 (27%)	312 (26%)	891 (27%)
	65-74	597 (29%)	396 (33%)	1,010 (30%)
	75-84	222 (11%)	178 (15%)	421 (13%)
	85+	12 (1%)	5 (<1%)	19 (<1%)
Education*	Less than high school	18 (1%)	23 (2%)	42 (1%)
	High school diploma	381 (19%)	258 (22%)	649 (20%)
	Some college or associate degree	833 (41%)	426 (36%)	1,276 (39%)
	Bachelor's or 4-year degree	546 (27%)	294 (25%)	857 (26%)
	Graduate or professional degree	274 (13%)	177 (15%)	466 (14%)
Income*	Less than \$20,000	22 (1%)	29 (3%)	52 (2%)
	\$20,000 - \$39,999	130 (8%)	86 (9%)	219 (8%)
	\$40,000 - \$59,999	216 (13%)	147 (15%)	368 (14%)
	\$60,000 - \$79,999	281 (17%)	172 (17%)	465 (17%)
	\$80,000 - \$99,999	211 (13%)	111 (11%)	327 (12%)
	\$100,000 - \$119,999	243 (15%)	120 (12%)	372 (14%)

	\$120,000 or more	559 (34%)	319 (32%)	890 (33%)
<i>Note: *difference between Black Bass anglers and non-Black Bass anglers (p≤0.05)</i>				

Appendix A.4: Map of North Carolina where all respondents live



Appendix A.5: Results of chi-square test on whether respondents were black bass anglers and the region in which they live

	Coast (n = 780)	Piedmont (n = 1,399)	Mountain (n = 844)	Out of State (n = 222)
Black Bass Angler	413 (53%)	968 (69%)	553 (66%)	122 (55%)
Non-Black Bass Angler	367 (47%)	431 (31%)	291 (34%)	100 (45%)
$\chi^2 = 65.37, p < 0.01$				

Appendix A.6: Results of chi-square test on whether respondents fished for Black Bass in lakes or reservoirs and how long they have been fishing for Black Bass in North Carolina

	Lake or Reservoir Angler (n = 1,888)	Non-Lake or Reservoir Angler (n = 521)
5 years or less	219 (12%)	95 (18%)
6 – 10 years	60 (3%)	22 (4%)
11 – 20 years	132 (7%)	36 (7%)
21 – 30 years	282 (15%)	56 (11%)
More than 30 years	1,195 (63%)	312 (60%)
<i>X² = 20.97, p < 0.01</i>		

Appendix A.7: Results of chi-square test on whether respondents fished for Black Bass in lakes or reservoirs and what Black Bass species they targeted

	Lake or Reservoir Angler (n = 1,906)	Non-Lake or Reservoir Angler (n = 532)
Largemouth Bass	1,861 (98%)	487 (92%)
Non-Largemouth Bass	45 (2%)	45 (8%)
<i>X² = 43.50, p < 0.01</i>		
Smallmouth Bass	819 (43%)	179 (34%)
Non-Smallmouth Bass	1,087 (57%)	353 (66%)
<i>X² = 14.95, p < 0.01</i>		
Alabama or Spotted Bass	470 (25%)	23 (4%)
Non-Alabama or Spotted Bass	1,436 (75%)	509 (96%)
<i>X² = 106.62, p < 0.01</i>		

Appendix A.8: Results of chi-square test on respondents' preferred Black Bass species and region fished the most often

	Largemouth Bass (n = 1,656)	Smallmouth Bass (n = 342)	Alabama or Spotted Bass (n = 53)
Coastal	352 (21%)	15 (4%)	0 (0%)
Piedmont	1,021 (62%)	89 (26%)	31 (58%)
Mountains	253 (15%)	182 (53%)	22 (42%)
Multiple Regions	30 (2%)	56 (16%)	0 (0%)
$\chi^2 = 457.37, p < 0.01$			

Appendix A.9: Results of chi-square test on respondents' preferred Black Bass species and whether they were a lake or reservoir angler or not

	Lake or Reservoir Angler (n = 1,885)	Non-Lake or Reservoir Angler (n = 525)
Largemouth Bass	1,573 (83%)	414 (79%)
Smallmouth Bass	259 (14%)	109 (21%)
Alabama or Spotted Bass	53 (3%)	2 (<1%)
$\chi^2 = 24.94, p < 0.01$		

Appendix A.10: Results of chi-square test on respondents' self-rated expertise and whether they were a lake or reservoir angler or not

	Lake or Reservoir Angler (n = 1,907)	Non-Lake or Reservoir Angler (n = 532)
Beginner	85 (4%)	39 (7%)
Competent	469 (25%)	173 (33%)
Proficient	760 (40%)	210 (39%)
Advanced	488 (26%)	90 (17%)
Expert	105 (6%)	20 (4%)
$\chi^2 = 32.37, p < 0.01$		

Appendix A.11: Results of chi-square test on respondents' confidence to identify the different Black Bass species and preferred species

	Largemouth Bass (n = 1,989)	Smallmouth Bass (n = 366)	Alabama or Spotted Bass (n = 55)
Not confident at all	37 (2%)	3 (1%)	0 (0%)
Slightly confident	121 (6%)	29 (8%)	3 (5%)
Somewhere confident	310 (16%)	41 (11%)	2 (4%)
Fairly confident	620 (31%)	97 (27%)	16 (29%)
Completely confident	901 (45%)	196 (54%)	34 (62%)
$\chi^2 = 22.78, p < 0.01$			

Appendix A.12: Results of chi-square test on respondents' confidence to identify the different Black Bass species and region fished the most often

	Coast (n = 371)	Piedmont (n = 1,150)	Mountain (n = 462)	Multiple Regions (n = 87)
Not confident at all	2 (1%)	19 (2%)	5 (1%)	3 (3%)
Slightly confident	23 (6%)	82 (7%)	21 (5%)	3 (3%)
Somewhere confident	49 (13%)	173 (15%)	47 (10%)	11 (13%)
Fairly confident	118 (32%)	347 (30%)	129 (28%)	33 (38%)
Completely confident	179 (48%)	529 (46%)	260 (56%)	37 (43%)
$\chi^2 = 26.68, p = 0.01$				

Appendix A.13: Results of chi-square test on respondents' confidence to identify the different Black Bass species and whether they were lake or reservoir anglers

	Lake or Reservoir Angler (n = 1,905)	Non-Lake or Reservoir Angler (n = 531)
Not confident at all	28 (1%)	12 (2%)
Slightly confident	106 (6%)	48 (9%)
Somewhat confident	260 (14%)	100 (19%)
Fairly confident	575 (30%)	166 (31%)
Completely confident	936 (49%)	205 (39%)
$\chi^2 = 27.05, p < 0.01$		

Appendix A.14: Other kinds of waterbodies in which respondents fished (n = 39)

Waterbody	n
Sounds	16
Creeks	8
Specific lakes	4
Canals	4

Appendix A.15: Results of chi-square test on waterbodies fished and preferred species

	Largemouth Bass (n = 1,987)	Smallmouth Bass (n = 368)	Alabama or Spotted Bass (n = 55)
Lake or Reservoir	1,573 (79%)	259 (70%)	53 (96%)
Non-Lake or Reservoir	414 (21%)	109 (30%)	2 (4%)
<i>$\chi^2 = 24.94, p < 0.01$</i>			
Ponds	1,207 (61%)	132 (36%)	7 (13%)
Non-Ponds	780 (39%)	236 (64%)	48 (87%)
<i>$\chi^2 = 120.37, p < 0.01$</i>			
Rivers	905 (45%)	259 (70%)	16 (29%)
Non-Rivers	1,082 (55%)	109 (30%)	39 (71%)
<i>$\chi^2 = 85.53, p < 0.01$</i>			
Streams	204 (10%)	108 (29%)	6 (11%)
Non-Streams	1,783 (90%)	260 (71%)	49 (89%)
<i>$\chi^2 = 98.95, p < 0.01$</i>			

Appendix A.16: Results of chi-square test on waterbodies fished and region fished most often

	Coast (n = 371)	Piedmont (n = 1,151)	Mountain (n = 465)	Multiple Regions (n = 87)
Lake or Reservoir	190 (51%)	1092 (95%)	406 (87%)	36 (41%)
Non-Lake or Reservoir	181 (49%)	59 (5%)	59 (13%)	51 (57%)
<i>$\chi^2 = 496.49, p < 0.01$</i>				
Ponds	211 (57%)	642 (56%)	154 (33%)	37 (43%)
Non-Ponds	160 (43%)	509 (44%)	311 (67%)	50 (57%)
<i>$\chi^2 = 77.24, p < 0.01$</i>				
Rivers	306 (82%)	450 (39%)	225 (48%)	82 (94%)
Non-Rivers	65 (18%)	701 (61%)	240 (52%)	5 (6%)
<i>$\chi^2 = 278.79, p < 0.01$</i>				
Streams	59 (16%)	102 (9%)	85 (18%)	27 (31%)
Non-Streams	312 (84%)	1,049 (91%)	380 (82%)	60 (69%)
<i>$\chi^2 = 56.03, p < 0.01$</i>				

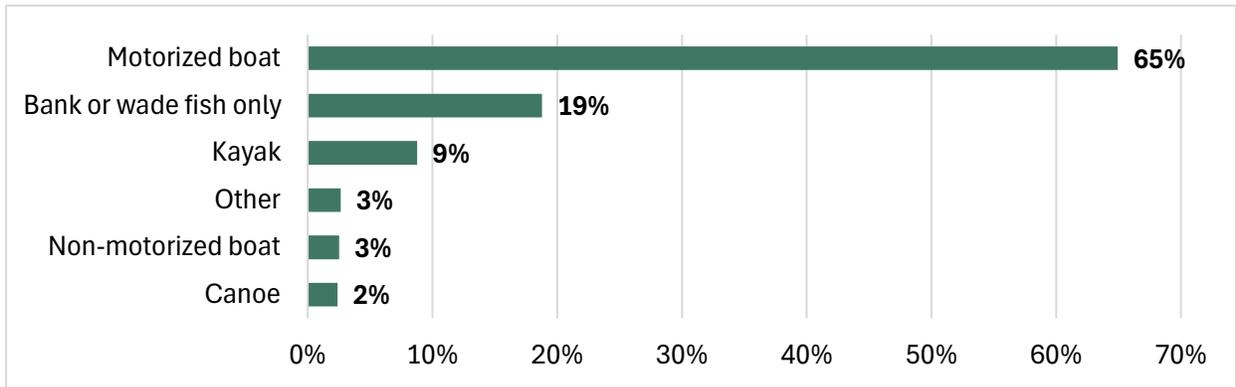
Appendix A.17: Ranking of Black Bass fishing participation by district

	...the most? (n = 2,075)	...the second most? (n = 1,802)	...the third most? (n = 1,397)	...the fourth most? (n = 1,011)
District 1	141 (7%)	131 (7%)	126 (9%)	99 (10%)
District 2	118 (6%)	118 (7%)	105 (8%)	56 (6%)
District 3	397 (19%)	331 (18%)	245 (18%)	171 (17%)
District 4	79 (4%)	75 (4%)	69 (5%)	46 (5%)
District 5	262 (13%)	244 (14%)	159 (11%)	132 (13%)
District 6	480 (23%)	355 (20%)	290 (21%)	213 (21%)
District 7	124 (6%)	135 (7%)	103 (7%)	53 (5%)
District 8	170 (8%)	144 (8%)	94 (7%)	81 (8%)
District 9	150 (7%)	127 (7%)	108 (8%)	89 (9%)
Multiple Districts	154 (7%)	142 (8%)	98 (7%)	71 (7%)

Appendix A.18: Ranking of Black Bass fishing participation by management regions

	...the most? (n = 2,075)	...the second most? (n = 1,802)	...the third most? (n = 1,397)	...the fourth most? (n = 1,011)
Coastal	372 (18%)	359 (20%)	321 (23%)	215 (21%)
Piedmont	1,151 (55%)	949 (53%)	711 (51%)	526 (52%)
Mountains	465 (22%)	437 (24%)	325 (23%)	243 (24%)
Multiple Regions	87 (4%)	57 (3%)	40 (3%)	27 (3%)

Appendix A.19: Vessels used by respondents for Black bass fishing (n = 2,350)



Appendix A.20: Results of chi-square test on vessel used most often compared to preferred species

	Largemouth Bass (n = 1,914)	Smallmouth Bass (n = 355)	Alabama or Spotted Bass (n = 54)
Bank or wade fish only	351 (18%)	84 (24%)	2 (4%)
Kayak	133 (7%)	67 (19%)	4 (7%)
Canoe	33 (2%)	21 (6%)	1 (2%)
Motorized boat	1,300 (68%)	160 (45%)	47 (87%)
Non-motorized boat	47 (2%)	11 (3%)	0 (0%)
Other	50 (3%)	12 (3%)	0 (0%)
$\chi^2 = 114.41, p < 0.01$			

Appendix A.21: Results of chi-square test on vessel used most often compared to region fished the most often

	Coast (n = 363)	Piedmont (n = 1,121)	Mountain (n = 454)	Multiple Regions (n = 81)
Bank or wade fish only	49 (13%)	146 (13%)	72 (16%)	17 (2%)
Kayak	18 (5%)	83 (7%)	48 (11%)	27 (33%)
Canoe	11 (3%)	15 (1%)	13 (3%)	8 (10%)
Motorized boat	266 (73%)	829 (74%)	303 (67%)	22 (27%)
Non-motorized boat	11 (3%)	18 (2%)	7 (2%)	5 (6%)
Other	8 (2%)	30 (3%)	11 (2%)	2 (2%)
$\chi^2 = 132.08, p < 0.01$				

Appendix A.22: Results of chi-square test on vessel used most often compared to if anglers fish in lakes or reservoirs

	Lake or Reservoir Angler (n = 1,843)	Non-Lake or Reservoir Angler (n = 505)
Bank or wade fish only	255 (14%)	185 (37%)
Kayak	160 (9%)	46 (9%)
Canoe	31 (2%)	25 (5%)
Motorized boat	1,313 (71%)	212 (42%)
Non-motorized boat	37 (2%)	22 (4%)
Other	47 (3%)	15 (3%)
$\chi^2 = 189.00, p < 0.01$		

Appendix A.23: Results of chi-square test on vessel used most often compared to anglers' age

	18 – 24 years old (n = 37)	25 – 34 years old (n = 76)	35 – 44 years old (n = 186)	45-54 years old (n = 356)	55 – 64 years old (n = 551)	65 – 74 years old (n = 574)	75 – 84 years old (n = 211)	85 years or older (n = 10)
Bank or wade fish only	8 (22%)	23 (30%)	59 (32%)	72 (20%)	78 (14%)	95 (17%)	37 (18%)	0 (0%)
Kayak	2 (5%)	13 (17%)	24 (13%)	43 (12%)	58 (11%)	34 (6%)	3 (1%)	1 (10%)
Canoe	0 (0%)	0 (0%)	1 (1%)	12 (3%)	14 (3%)	13 (2%)	5 (2%)	0 (0%)
Motorized boat	25 (68%)	38 (50%)	95 (51%)	216 (61%)	379 (69%)	400 (70%)	148 (70%)	7 (70%)
Non-motorized boat	1 (3%)	1 (1%)	6 (3%)	9 (2%)	12 (2%)	17 (3%)	6 (3%)	0 (0%)
Other	1 (3%)	1 (1%)	1 (1%)	5 (1%)	10 (2%)	15 (3%)	12 (6%)	2 (20%)
<i>$\chi^2 = 117.84, p < 0.01$</i>								

Appendix A.24: Results of chi-square test on vessel used most often compared to how respondents took the survey

	Online – Email	Online – Mailed	Survey Packet
Bank or wade fish only	117 (20%)	279 (19%)	45 (14%)
Kayak	54 (9%)	139 (10%)	13 (4%)
Canoe	13 (2%)	37 (3%)	6 (2%)
Motorized boat	379 (64%)	903 (63%)	244 (77%)
Non-motorized boat	21 (4%)	35 (2%)	3 (1%)
Other	12 (2%)	44 (3%)	6 (2%)
$\chi^2 = 30.30, p < 0.01$			

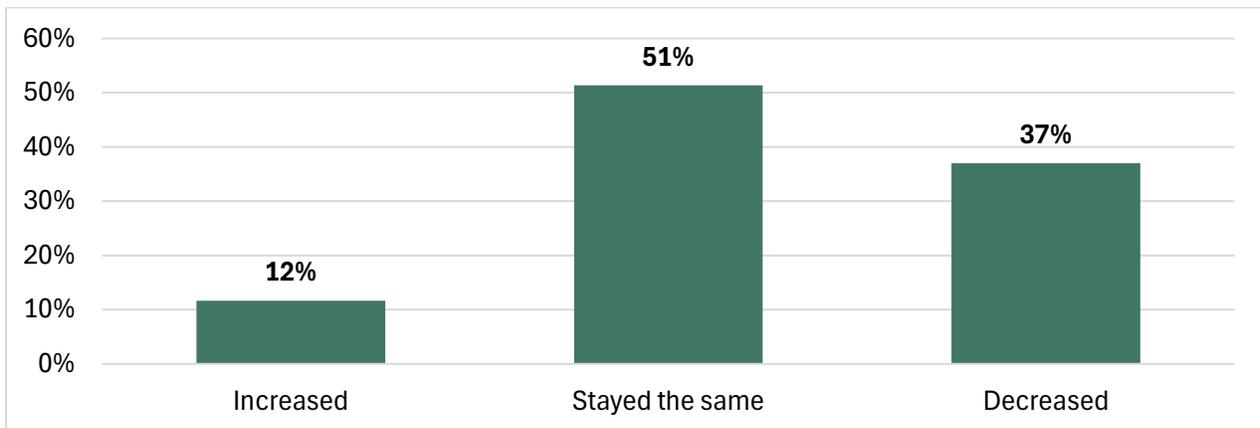
Appendix A.25: Results of chi-square test on satisfaction of Black Bass fishing experience and region they fished the most often

	Coast (n = 369)	Piedmont (n = 1,147)	Mountain (n = 464)	Multiple Regions (n = 87)
Very dissatisfied	10 (3%)	37 (3%)	22 (5%)	3 (3%)
Somewhat dissatisfied	32 (9%)	163 (14%)	80 (17%)	9 (10%)
Neutral	114 (31%)	303 (26%)	114 (25%)	25 (29%)
Somewhat satisfied	149 (40%)	477 (42%)	187 (40%)	38 (44%)
Very satisfied	64 (17%)	167 (15%)	61 (13%)	12 (14%)
$\chi^2 = 21.15, p = 0.05$				

Appendix A.26: Results of chi-square test on satisfaction of Black Bass fishing experience and whether respondents fished in lakes or reservoirs or not

	Lake or Reservoir Angler (n = 1,889)	Non-Lake or Reservoir Angler (n = 521)
Very dissatisfied	65 (3%)	17 (3%)
Somewhat dissatisfied	268 (14%)	39 (7%)
Neutral	493 (26%)	163 (31%)
Somewhat satisfied	788 (42%)	211 (41%)
Very satisfied	275 (15%)	91 (17%)
$\chi^2 = 20.89, p < 0.01$		

Appendix A.27: Whether the number of Black Bass caught has increased, decreased or stayed the same (n = 2,397)



Appendix A.28: Results of chi-square test on how Black Bass numbers caught have changed over time and preferred species

	Largemouth Bass (n = 1,947)	Smallmouth Bass (n = 365)	Alabama or Spotted Bass (n = 55)
Increased	216 (11%)	42 (12%)	19 (35%)
Stayed the same	1,015 (52%)	180 (49%)	23 (24%)
Decreased	716 (37%)	143 (39%)	13 (42%)
$\chi^2 = 29.79, p < 0.01$			

Appendix A.29: Results of chi-square test on how Black Bass numbers caught have changed over time and whether respondents fish in lakes or reservoirs or not

	Lake or Reservoir Angler (n = 1,879)	Non-Lake or Reservoir Angler (n = 518)
Increased	230 (12%)	49 (9%)
Decreased	743 (40%)	144 (28%)
Stayed the same	906 (48%)	325 (63%)
$\chi^2 = 34.51, p < 0.01$		

Appendix A.30: Results of chi-square test on whether respondents took home or released the fish they caught and preferred species

	Largemouth Bass (n = 1,941)	Smallmouth Bass (n = 365)	Alabama or Spotted Bass (n = 55)
Mostly take home	26 (1%)	15 (4%)	5 (9%)
Both about equally	169 (9%)	52 (14%)	11 (20%)
Mostly catch and release	1,746 (90%)	298 (82%)	39 (71%)
$\chi^2 = 46.69, p < 0.01$			

Appendix A.31: Results of chi-square test on whether respondents took home or released the fish they caught and whether they fished in lakes or reservoirs or not

	Lake or Reservoir Angler (n = 1,877)	Non-Lake or Reservoir Angler (n = 514)
Mostly take home	44 (2%)	3 (1%)
Mostly catch and release	1,642 (87%)	467 (91%)
Both about equally	191 (10%)	44 (9%)
$\chi^2 = 7.96, p = 0.02$		

Appendix A.32: Rankings of structure during Black Bass fishing compared to whether anglers fish in lakes or reservoirs or not

	Non-Lake or Reservoir Angler	Lake or Reservoir Angler		
	Mean	Mean	Coeff (SE)	P>Z
Submerged woody debris	1.99	1.97	0.02 (0.10)	0.85
Aquatic vegetation	2.19	2.51	0.46 (0.10)	<0.01*
Boat docks	3.38	2.89	-0.65 (0.09)	<0.01*
Cut and cable trees	3.40	3.47	0.14 (0.10)	0.14
Artificial reefs	4.04	4.16	0.12 (0.10)	0.27

*Note: Not fishing in lakes or reservoirs was the reference type for analysis. * = P < 0.05; Scale: 1 = most preferred to fish on and 5 = least preferred*

Appendix A.33: Importance of attributes of Black Bass fishing by whether respondents fished for Black Bass in lakes or reservoirs or not

	Non-Lake or Reservoir Angler	Lake or Reservoir Angler		
	Mean	Mean	Coeff (SE)	P>Z
Being outdoors	4.44	4.45	-0.03 (0.10)	0.78
Being close to the water	4.06	4.14	0.16 (0.09)	0.08
Relaxation	4.09	4.06	-0.06 (0.09)	0.53
The experience of the catch	3.89	4.01	0.22 (0.09)	0.02*
The challenge or sport	3.67	3.85	0.33 (0.09)	<0.01*
Family recreation	3.80	3.74	-0.11 (0.09)	0.22
Catching a trophy fish	2.78	2.99	0.30 (0.09)	<0.01*
Being alone	2.58	2.44	-0.21 (0.09)	0.02*
Catching the most fish possible	2.01	2.44	0.66 (0.09)	<0.01*
Fishing for food	1.59	1.65	0.08 (0.10)	0.45
Fishing Black Bass tournaments	1.12	1.53	1.45 (0.18)	<0.01*

*Note: Not fishing in lakes or reservoirs was the reference type for analysis. * = P < 0.05*

Appendix A.34: Satisfaction of attributes of Black Bass fishing by whether respondents fished for Black Bass in lakes or reservoirs or not

	Non-Lake or Reservoir Angler	Lake or Reservoir Angler		
	Mean	Mean	Coeff (SE)	P>Z
Being outdoors	4.53	4.53	-0.04 (0.11)	0.74
Being close to the water	4.35	4.37	0.01 (0.10)	0.92
Relaxation	4.29	4.26	-0.06 (0.09)	0.51
The experience of the catch	3.99	3.88	-0.16 (0.09)	0.10
The challenge or sport	3.91	3.90	0.03 (0.10)	0.75
Family recreation	4.11	3.99	-0.26 (0.10)	0.01*
Catching a trophy fish	3.21	3.21	0.05 (0.09)	0.57
Being alone	3.51	3.41	-0.24 (0.10)	0.01*
Catching the most fish possible	3.06	3.07	0.02 (0.10)	0.82
Fishing for food	3.04	3.03	-0.03 (0.10)	0.75
Fishing Black Bass tournaments	2.74	2.85	0.27 (0.11)	0.01*

*Note: Not fishing in lakes or reservoirs was the reference type for analysis. * = P < 0.05*

Appendix A.35: Other technologies listed by respondents (n = 30)

Technology	n
Depth finder	8
Polarized glasses	4
Maps	3
Fish finders	3

Appendix A.36: Results of chi-square test on use of down scan sonar and region fished most often

	Coast (n = 241)	Piedmont (n = 851)	Mountain (n = 319)	Multiple Regions (n = 30)
Uses down scan sonar	199 (83%)	754 (89%)	267 (84%)	20 (67%)
Does not use down scan sonar	42 (17%)	97 (11%)	52 (16%)	10 (33%)
$\chi^2 = 17.90, p < 0.01$				

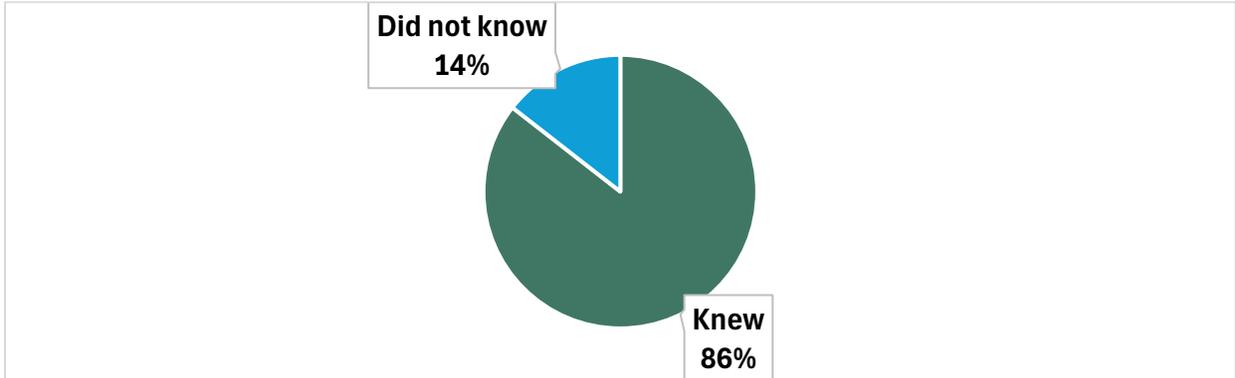
Appendix A.37: Results of chi-square test on use of technology and whether anglers fished for Black Bass in lakes or reservoirs or not

	Non-Lake or Reservoir Angler	Lake or Reservoir Angler
Uses down scan sonar	141 (71%)	1,191 (87%)
Does not use down scan sonar	58 (29%)	174 (13%)
$\chi^2 = 36.97, p < 0.01$		
Uses side scan sonar	41 (21%)	493 (36%)
Does not use side scan sonar	158 (79%)	872 (64%)
$\chi^2 = 18.59, p < 0.01$		
Uses forward facing sonar	18 (9%)	301 (22%)
Does not use forward facing sonar	181 (91%)	1,064 (78%)
$\chi^2 = 18.09, p < 0.01$		
Uses another technology	41 (21%)	106 (8%)
Does not use another technology	158 (79%)	1,259 (92%)
$\chi^2 = 33.61, p < 0.01$		

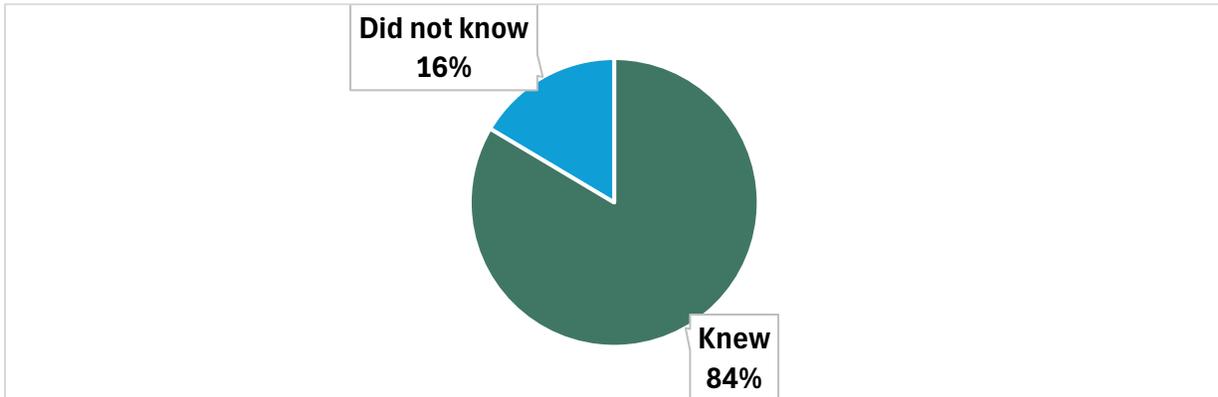
Appendix A.38: Results of chi-square test on use of side scan sonar and respondents' age

	18 – 24 years old (n = 37)	25 – 34 years old (n = 76)	35 – 44 years old (n = 186)	45-54 years old (n = 356)	55 – 64 years old (n = 551)	65 – 74 years old (n = 574)	75 – 84 years old (n = 211)	85 years or older (n = 10)
Uses side scan sonar	6 (22%)	23 (49%)	43 (40%)	79 (35%)	141 (36%)	140 (34%)	37 (24%)	0 (0%)
Does not use side scan sonar	21 (78%)	24 (51%)	64 (60%)	148 (65%)	247 (64%)	270 (66%)	115 (76%)	9 (100%)
$\chi^2 = 19.99, p = 0.01$								

Appendix A.39: Respondent knowledge about fish consumption advisories in North Carolina (n = 2359)



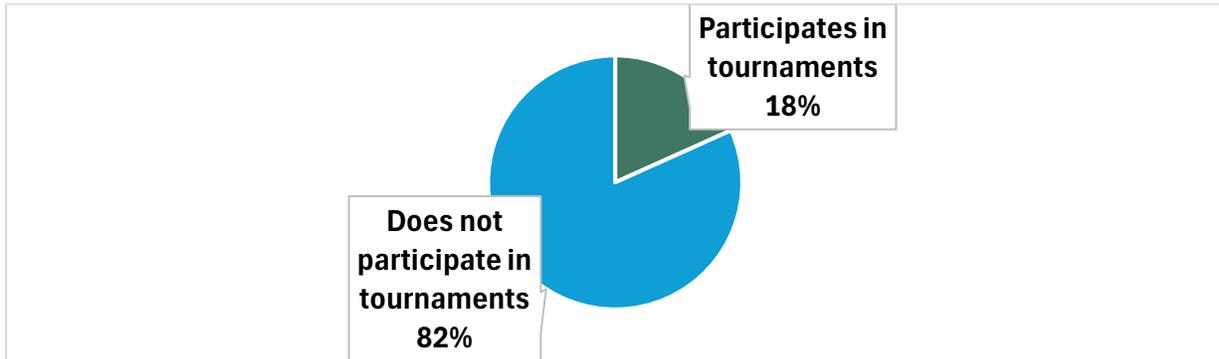
Appendix A.40: Respondent knowledge that it was illegal to stock fish into public waters (n = 2,358)



Appendix A.41: Results of chi-square test on respondent knowledge that it was illegal to stock fish into public waters and preferred species

	Largemouth Bass (n = 1,918)	Smallmouth Bass (n = 355)	Alabama or Spotted Bass (n = 55)
Knew stocking was illegal	1,587 (83%)	306 (86%)	52 (95%)
Did not know stocking was illegal	331 (17%)	49 (14%)	3 (5%)
$X^2 = 7.56, p = 0.02$			

Appendix A.42: Respondent participation in Black Bass fishing tournaments in North Carolina (n = 2,151)



Appendix A.43: Results of chi-square test on Black Bass fishing tournament participation and preferred species

	Largemouth Bass (n = 1,751)	Smallmouth Bass (n = 323)	Alabama or Spotted Bass (n = 53)
Participates	337 (19%)	33 (10%)	17 (32%)
Does not participate	1414 (81%)	290 (90%)	36 (68%)
$\chi^2 = 21.97, p < 0.01$			

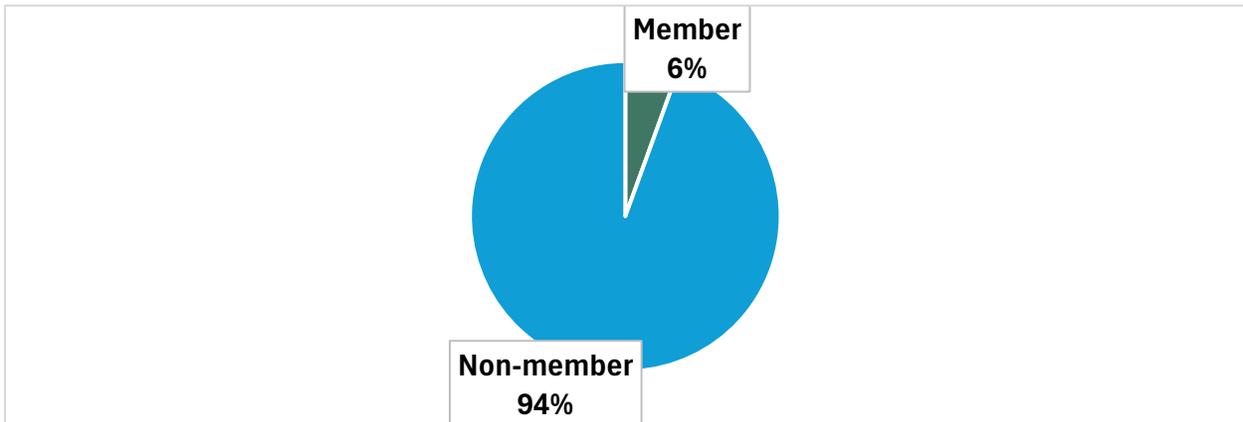
Appendix A.44: Results of chi-square test on Black Bass fishing tournament participation and region fished most often

	Coast (n = 326)	Piedmont (n = 1,030)	Mountain (n = 418)	Multiple Regions (n = 76)
Participates	58 (18%)	230 (22%)	88 (21%)	3 (4%)
Does not participate	268 (82%)	800 (78%)	330 (79%)	73 (96%)
$\chi^2 = 16.45, p < 0.01$				

Appendix A.45: Results of chi-square test on Black Bass fishing tournament participation and whether they fish for Black Bass in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 444)	Lake or Reservoir Angler (n = 1,705)
Participates	13 (3%)	380 (22%)
Does not participate	431 (97%)	1,325 (77%)
$\chi^2 = 88.35, p < 0.01$		

Appendix A.46: Respondent membership in Black Bass fishing clubs (n = 2,134)



Appendix A.47: Results of chi-square test on Black Bass fishing club membership and preferred species

	Member of Black Bass fishing club (n = 116)	Not a member of Black Bass fishing club (n = 1,996)
Largemouth Bass	107 (92%)	1,631 (82%)
Smallmouth Bass	3 (3%)	318 (16%)
Alabama or Spotted Bass	6 (5%)	47 (2%)
$\chi^2 = 17.79, p < 0.01$		

Appendix A.48: Results of chi-square test on Black Bass fishing club membership and whether they fish for Black Bass in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 441)	Lake or Reservoir Angler (n = 1,691)
Participates	2 (<1%)	116 (7%)
Does not participate	439 (99%)	1,575 (93%)
$\chi^2 = 27.46, p < 0.01$		

Appendix A.49: Other ways respondents would like to receive information about Black Bass fishing (n = 24)

Communication channel	n
Mail	5
Wildlife in North Carolina magazine	4
Other anglers	3
Emails	3

Appendix A.50: Results of chi-square test on preferred communication channels and preferred species

	Largemouth Bass (n = 1,639)	Smallmouth Bass (n = 298)	Alabama or Spotted Bass (n = 46)
Regulations digest	989 (60%)	178 (60%)	19 (40%)
Not regulations digest	650 (40%)	120 (40%)	27 (60%)
$\chi^2 = 6.75, p = 0.03$			
Fishing clubs	88 (5%)	6 (2%)	2 (4%)
Not fishing clubs	1,551 (95%)	292 (98%)	44 (96%)
$\chi^2 = 6.19, p = 0.05$			

Appendix A.51: Results of chi-square test on preferred communication channels and region fished most often

	Coast (n = 301)	Piedmont (n = 962)	Mountain (n = 394)	Multiple Regions (n = 73)
Fishing clubs	25 (8%)	43 (4%)	22 (6%)	1 (1%)
Not fishing clubs	276 (92%)	919 (96%)	372 (94%)	72 (99%)
$\chi^2 = 9.11, p = 0.03$				
Other	13 (4%)	15 (2%)	8 (2%)	2 (3%)
Not other	288 (96%)	947 (98%)	386 (98%)	71 (97%)
$\chi^2 = 8.28, p = 0.04$				

Appendix A.52: Results of chi-square test on preferred communication channels and respondent age

	18 – 24 years old (n = 37)	25 – 34 years old (n = 72)	35 – 44 years old (n = 175)	45-54 years old (n = 352)	55 – 64 years old (n = 525)	65 – 74 years old (n = 557)	75 – 84 years old (n = 205)	85 years or older (n = 9)
NCWRC website	18 (49%)	32 (44%)	113 (65%)	217 (62%)	315 (60%)	299 (54%)	103 (50%)	7 (78%)
Not NCWRC website	19 (51%)	40 (56%)	62 (35%)	135 (38%)	210 (40%)	258 (46%)	102 (50%)	2 (22%)
<i>$\chi^2 = 22.72, p < 0.01$</i>								
NCWRC emails	15 (41%)	27 (38%)	88 (50%)	182 (52%)	259 (49%)	275 (49%)	76 (37%)	6 (67%)
Not NCWRC emails	22 (59%)	45 (63%)	87 (50%)	170 (48%)	266 (51%)	282 (51%)	129 (63%)	3 (33%)
<i>$\chi^2 = 18.16, p = 0.01$</i>								
Video	18 (49%)	18 (25%)	53 (30%)	82 (23%)	125 (24%)	92 (17%)	33 (16%)	2 (22%)
Not video	19 (51%)	54 (75%)	122 (70%)	270 (77%)	400 (76%)	465 (83%)	172 (84%)	7 (78%)
<i>$\chi^2 = 38.08, p < 0.01$</i>								
Social media	20 (54%)	29 (40%)	63 (36%)	87 (25%)	119 (23%)	61 (11%)	20 (10%)	0 (0%)
Not social media	17 (46%)	32 (60%)	112 (64%)	265 (75%)	406 (77%)	496 (89%)	185 (90%)	9 (100%)
<i>$\chi^2 = 121.30, p < 0.01$</i>								
Podcasts	7 (19%)	2 (3%)	22 (13%)	34 (10%)	32 (6%)	14 (3%)	6 (3%)	0 (0%)
Not podcasts	30 (81%)	70 (97%)	153 (87%)	318 (90%)	493 (94%)	543 (97%)	199 (97%)	9 (100%)
<i>$\chi^2 = 49.61, p < 0.01$</i>								
Fishing or outdoor clubs	5 (14%)	2 (3%)	16 (9%)	18 (5%)	25 (5%)	18 (3%)	9 (4%)	0 (0%)
Not fishing or outdoor clubs	32 (86%)	70 (97%)	159 (91%)	334 (95%)	500 (95%)	539 (97%)	196 (96%)	9 (100%)
<i>$\chi^2 = 17.57, p = 0.01$</i>								

Appendix A.53: Results of chi-square test on preferred communication channels and whether respondents fished in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 406)	Lake or Reservoir Angler (n = 1,595)
NCWRC website	211 (52%)	932 (58%)
Not NCWRC website	195 (48%)	663 (42%)
<i>X² = 5.52, p = 0.02</i>		
An internet search	92 (23%)	452 (28%)
Not an internet search	314 (77%)	1,143 (72%)
<i>X² = 5.27, p = 0.02</i>		
Newspaper/Magazine/Books	72 (18%)	402 (25%)
Not newspaper/magazine/books	334 (82%)	1,193 (75%)
<i>X² = 9.99, p < 0.01</i>		
Video	64 (16%)	370 (23%)
Not videos	342 (84%)	1,225 (77%)
<i>X² = 10.53, p < 0.01</i>		
Social media	59 (15%)	351 (22%)
Not social media	347 (85%)	1,244 (78%)
<i>X² = 11.10, p < 0.01</i>		
Fishing or outdoor clubs	12 (3%)	86 (5%)
Not fishing or outdoor clubs	394 (97%)	1,509 (95%)
<i>X² = 4.12, p = 0.04</i>		

Appendix A.54: Results of chi-square test on additional communication channels and whether anglers fish in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 120)	Lake or Reservoir Angler (n = 612)
Fishing websites or blogs	17 (14%)	153 (25%)
Not fishing websites or blogs	102 (86%)	459 (75%)
$\chi^2 = 6.60, p = 0.01$		
Fishing organizations	8 (7%)	107 (17%)
Not fishing organizations	112 (93%)	505 (83%)
$\chi^2 = 8.86, p < 0.01$		
Online discussion boards	6 (5%)	72 (12%)
Not online discussion boards	114 (95%)	540 (88%)
$\chi^2 = 4.82, p = 0.03$		

Appendix A.55: Results of chi-square test on frequency of experiencing crowding while Black Bass fishing in North Carolina and region fished most often

	Coast (n = 318)	Piedmont (n = 1,013)	Mountain (n = 409)	Multiple Regions (n = 75)
Never	56 (18%)	117 (12%)	43 (11%)	12 (16%)
Rarely	118 (37%)	278 (27%)	115 (28%)	25 (33%)
Sometimes	102 (32%)	402 (40%)	144 (35%)	28 (37%)
Often	35 (11%)	172 (17%)	84 (21%)	9 (12%)
Always	7 (2%)	44 (4%)	23 (6%)	1 (1%)
$\chi^2 = 39.53, p < 0.01$				

Appendix A.56: Results of chi-square test on frequency of experience crowding while Black Bass fishing in North Carolina and whether respondents fished in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 428)	Lake or Reservoir Angler (n = 1,675)
Never	56 (18%)	117 (12%)
Rarely	118 (37%)	278 (27%)
Sometimes	102 (32%)	402 (40%)
Often	35 (11%)	172 (17%)
Always	7 (2%)	44 (4%)
$\chi^2 = 152.34, p < 0.01$		

Appendix A.57: Results of chi-square test on crowding perceptions over time and region fished most often

	Coast (n = 260)	Piedmont (n = 886)	Mountain (n = 362)	Multiple Regions (n = 61)
Much worse	38 (15%)	183 (21%)	102 (28%)	11 (18%)
A little worse	94 (36%)	358 (40%)	131 (36%)	26 (43%)
Stayed the same	114 (44%)	324 (37%)	120 (33%)	21 (34%)
A little better	14 (5%)	17 (2%)	8 (2%)	3 (5%)
Much better	0 (0%)	4 (<1%)	1 (<1%)	0 (0%)
$\chi^2 = 32.81, p < 0.01$				

Appendix A.58: Results of chi-square test on crowding perceptions over time and whether respondents fished in lakes or reservoirs

	Non-Lake or Reservoir Angler (n = 278)	Lake or Reservoir Angler (n = 1,457)
Much worse	43 (15%)	310 (21%)
A little worse	91 (33%)	582 (40%)
Stayed the same	131 (47%)	528 (36%)
A little better	11 (4%)	34 (2%)
Much better	2 (1%)	3 (<1%)
$\chi^2 = 18.79, p < 0.01$		

Appendix A.59: Other impacts of crowding respondents listed (n = 134)

Crowding impact	n
Conflicts with recreational boaters	49
Conflicts with jet skis	37
Conflicts with wake boats	26
Conflicts with water sports	14

Appendix A.60: Results of chi-square test on impacts of crowding and preferred species

	Largemouth Bass (n = 1,349)	Smallmouth Bass (n = 256)	Alabama or Spotted Bass (n = 44)
Trash/Litter	611 (45%)	136 (53%)	15 (34%)
No trash/litter	738 (55%)	120 (47%)	29 (66%)
<i>X² = 7.98, p = 0.02</i>			
Conflicts with tournaments	310 (23%)	42 (16%)	20 (45%)
No conflicts with tournaments	1,039 (77%)	214 (84%)	24 (55%)
<i>X² = 18.89, p < 0.01</i>			

Appendix A.61: Results of chi-square test on impacts of crowding and region fished most often

	Coast (n = 240)	Piedmont (n = 861)	Mountain (n = 350)	Multiple Regions (n = 58)
Trash/litter	91 (38%)	394 (46%)	169 (48%)	32 (55%)
No trash/litter	149 (62%)	467 (54%)	181 (52%)	26 (45%)
<i>$\chi^2 = 8.87, p = 0.03$</i>				
Fish are harder to catch	88 (37%)	387 (45%)	169 (48%)	20 (34%)
Fish aren't harder to catch	152 (63%)	474 (55%)	181 (52%)	38 (66%)
<i>$\chi^2 = 10.29, p = 0.02$</i>				
Conflicts with tournaments	57 (24%)	222 (26%)	72 (21%)	2 (3%)
No conflicts with tournaments	183 (76%)	639 (74%)	278 (79%)	56 (97%)
<i>$\chi^2 = 17.19, p < 0.01$</i>				

Appendix A.62: Results of chi-square test on impacts of crowding and whether respondents fish in lakes or reservoirs

	Not Lake or Reservoir Angler (n = 250)	Lake or Reservoir Angler (n = 1,412)
Crowded access areas	151 (60%)	1,003 (71%)
Not crowded access areas	99 (40%)	409 (29%)
<i>$\chi^2 = 11.32, p < 0.01$</i>		
Fish are harder to catch	85 (34%)	646 (46%)
Not Fish are harder to catch	165 (66%)	766 (54%)
<i>$\chi^2 = 11.90, p < 0.01$</i>		
Conflicts with tournaments	37 (15%)	338 (24%)
Not conflicts with tournaments	213 (85%)	1,074 (76%)
<i>$\chi^2 = 10.15, p < 0.01$</i>		

Appendix A.63: Other way respondents have changed their habits because of crowding (n = 58)

Crowding impact	n
Fishing different times	11
Fishing less	10
Avoiding certain areas on waterbodies	9

Appendix A.64: Results of chi-square test on ways respondents have changed their fishing habits and preferred species

	Largemouth Bass (n = 1,309)	Smallmouth Bass (n = 248)	Alabama or Spotted Bass (n = 44)
Avoids weekends or holidays	1,039 (80%)	210 (85%)	41 (93%)
Does not avoid weekends or holidays	270 (20%)	38 (15%)	3 (7%)
<i>$X^2 = 8.34, p = 0.02$</i>			
Fishes in other states	162 (12%)	73 (29%)	10 (23%)
Does not fish in other states	1,147 (88%)	175 (71%)	34 (77%)
<i>$X^2 = 48.74, p < 0.01$</i>			

Appendix A.65: Results of chi-square test on ways respondents have changed their fishing habits and region fished most often

	Coast (n = 231)	Piedmont (n = 850)	Mountain (n = 331)	Multiple Regions (n = 58)
Avoids weekends or holidays	169 (73%)	694 (82%)	281 (85%)	46 (79%)
Does not avoid weekends or holidays	62 (27%)	156 (18%)	50 (15%)	12 (21%)
<i>$\chi^2 = 12.80, p = 0.01$</i>				
Avoids certain times	106 (46%)	471 (55%)	165 (50%)	30 (52%)
Does not avoid certain times	125 (54%)	379 (45%)	166 (50%)	28 (48%)
<i>$\chi^2 = 7.89, p = 0.05$</i>				
Fishes in other states	27 (12%)	101 (12%)	88 (27%)	16 (28%)
Does not fish in other states	204 (88%)	749 (88%)	243 (73%)	42 (72%)
<i>$\chi^2 = 47.79, p < 0.01$</i>				
Stopped fishing altogether	4 (1%)	19 (2%)	17 (5%)	1 (2%)
Has not stopped fishing	227 (99%)	831 (98%)	314 (95%)	57 (98%)
<i>$\chi^2 = 8.88, p = 0.03$</i>				

Appendix A.66: Results of chi-square test on ways respondents have changed their fishing habits and whether respondents' fish in lakes or reservoirs region fished most often

	Non-Lake or Reservoir Angler (n = 239)	Lake or Reservoir Angler (n = 1,374)
Avoided weekends/holidays	172 (72%)	1,130 (82%)
Didn't avoid weekends/holidays	67 (28%)	244 (18%)
<i>X² = 13.81, p < 0.01</i>		
Avoided certain times	101 (42%)	735 (53%)
Didn't avoid certain times	138 (58%)	639 (47%)
<i>X² = 10.29, p < 0.01</i>		
Avoided certain waterbodies	103 (43%)	725 (53%)
Didn't avoid certain waterbodies	136 (57%)	649 (47%)
<i>X² = 7.62, p = 0.01</i>		

Appendix B: Survey

Black Bass Fisheries Management in North Carolina



**A Survey Conducted by the North
Carolina Wildlife Resources
Commission**

This survey may also be completed online at:

bit.ly/anglersurvey2024

Or by scanning the QR code to the right:



Enter this code to access the survey online: <<**SurveyAccessCode**>>

This survey is designed to help the N.C. Wildlife Resources Commission (NCWRC) learn more about Black Bass (Largemouth, Smallmouth, Spotted & Alabama) fishing participation in North Carolina. **However, we are interested in your responses, even if you do not fish for Black Bass (Largemouth, Smallmouth, Spotted & Alabama).** Before continuing, please know that your participation is voluntary. You may choose to skip any questions or end the survey at any point. The information you provide will only be for research and will not be shared with anyone. By completing the survey, you agree that you are over 18 years of age and understand the voluntary nature of your participation.

SECTION A: FISHING INFORMATION

1. What species of freshwater fish did you fish for in North Carolina the last 12 months? *Select all that apply.*

- | | |
|---|--|
| <input type="radio"/> Largemouth Bass, Smallmouth Bass, Spotted Bass & Alabama Bass (CONTINUE TO PAGE 3) | <input type="radio"/> Muskellunge (Muskie) |
| <input type="radio"/> Bullhead Catfish (White Catfish, Brown, Yellow, and/or Black Bullhead) | <input type="radio"/> Panfish (Bluegill, Shellcracker, Redbreast, Rock Bass, and/or Perch, etc.) |
| <input type="radio"/> Catfish (Blue, Channel, and/or Flathead) | <input type="radio"/> Walleye |
| <input type="radio"/> Crappie (Black and/or White) | <input type="radio"/> White Bass |
| <input type="radio"/> Reservoir Striped Bass or hybrid Striped Bass | <input type="radio"/> Anything I can catch |
| <input type="radio"/> Coastal River Migratory Striped Bass | <input type="radio"/> I did not go fishing in the last 12 months |
| <input type="radio"/> Mountain Trout (Brook, Brown, and/or Rainbow) | <input type="radio"/> Other, please describe: _____ |

IF YOU DO NOT FISH FOR LARGEMOUTH BASS, SMALLMOUTH BASS, SPOTTED BASS OR ALABAMA BASS SKIP TO SECTIONS G AND H ON PAGE 10, TO COMPLETE THE SURVEY.

SECTION B: LARGEMOUTH, SMALLMOUTH, SPOTTED OR ALABAMA BASS ANGLERS

Note: Largemouth, Smallmouth, Spotted or Alabama Bass will be referred to as Black Bass for the rest of the survey, unless otherwise stated.

1. How many years have you been fishing in North Carolina?

- 5 years or less 6-10 years 11-20 years 21-30 years More than 30 years

2. How many years have you been fishing for **Black Bass** in North Carolina?

- 5 years or less 6-10 years 11-20 years 21-30 years More than 30 years

3. Of all the Black Bass species, which one(s) do you fish for? *Select all that apply.*

- Largemouth Bass Smallmouth Bass Alabama or Spotted Bass

4. Which Black Bass species do you prefer to fish for the most?

- Largemouth Bass Smallmouth Bass Alabama or Spotted Bass

5. How would you rate yourself as a Black Bass angler?

- Beginner Competent Proficient Advanced Expert

6. How confident are you in identifying the different Black Bass species (Largemouth vs. Smallmouth, etc.)?

- Not confident at all Slightly confident Somewhat confident Fairly confident Completely confident

7. When Black Bass fishing in North Carolina, where do you typically fish? *Select all that apply.*

- Lakes or reservoirs
 Ponds
 Rivers
 Streams
 Other, please specify: _____

8. Please list up to four waterbodies in North Carolina you fish for Black Bass in order from **most frequently fished to least frequently fished**. (For example: Lake Norman, New River, Rhodes Pond, Contentnea Creek, etc.)

1. _____
2. _____
3. _____
4. _____

9. What type of vessel do you fish from most often when you're fishing for Black Bass?

- None, bank or wade fish only Motorized boat (i.e., bass boat, ski boat, jon boat)
- Kayak Non-motorized boat (i.e., rowboat, dinghy)
- Canoe Other, please specify: _____

10. Overall, how satisfied have you been with your Black Bass fishing experience in North Carolina the last 12 months?

- Very dissatisfied Somewhat dissatisfied Neutral Somewhat satisfied Very satisfied

11. Since you began Black Bass fishing in North Carolina, has the number of bass caught per trip increased, decreased, or stayed the same?

- Increased Decreased Stayed the same

12. When Black Bass fishing in North Carolina, do you mostly take home the fish you catch, mostly release them, or do both about equally?

- Mostly take home Mostly catch and release Both about equally

13. Please rank the following types of structures you prefer while Black Bass fishing in North Carolina, with 1 being the most preferred, and 5 being the least preferred.

- ___ Artificial reefs (plastic/composite)
- ___ Aquatic vegetation
- ___ Cut and cable trees
- ___ Submerged woody debris
- ___ Boat docks

14. Please select how **important** each of the following items is to your Black Bass fishing experience in North Carolina.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
The experience of the catch	<input type="radio"/>				
Fishing for food	<input type="radio"/>				
The challenge or sport	<input type="radio"/>				
Catching a trophy fish	<input type="radio"/>				
Family recreation	<input type="radio"/>				
Being outdoors	<input type="radio"/>				
Being close to the water	<input type="radio"/>				
Being alone	<input type="radio"/>				
Relaxation	<input type="radio"/>				
Catching the most fish possible	<input type="radio"/>				
Fishing Black Bass tournaments	<input type="radio"/>				

15. Please select how **satisfied** you have been with each of the same items in your experience fishing for Black Bass in North Carolina.

	Very dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Very satisfied
The experience of the catch	<input type="radio"/>				
Fishing for food	<input type="radio"/>				
The challenge or sport	<input type="radio"/>				
Catching a trophy fish	<input type="radio"/>				
Family recreation	<input type="radio"/>				
Being outdoors	<input type="radio"/>				
Being close to the water	<input type="radio"/>				
Being alone	<input type="radio"/>				
Relaxation	<input type="radio"/>				
Catching the most fish possible	<input type="radio"/>				
Fishing Black Bass tournaments	<input type="radio"/>				

16. Which of the following technologies do you use while Black Bass fishing? *Select all that apply.*

- Forward facing sonar
- Down scan sonar (traditional or down imaging)
- Side scan sonar
- Other, please specify: _____

17. Before reading this question, were you aware there are fish consumption advisories in North Carolina, such as fish with high levels of mercury?

- Yes
- No

18. Before reading this question, were you aware that it is illegal for people to release or stock any fish into public waters, unless they are taken from those same waters?

- Yes
- No

19. Please list the top two things the NC Wildlife Resources Commission could do to improve Black Bass fishing in North Carolina.

1. _____

2. _____

SECTION C: BLACK BASS FISHING TRIPS & EXPENDITURES

1. How many people (including yourself) do you pay for on a typical Black Bass fishing trip? _____

2. In the last 12 months, how many days did you spend Black Bass fishing in North Carolina?

3. In the last 12 months, how many trips away from your home did you take Black Bass fishing in North Carolina? (A trip can be a single day or several days) _____

4. Approximately how many **miles** one-way, did you travel **on a typical trip** from your residence to go Black Bass fishing? _____

5. On your typical **Black Bass** fishing trip in the last 12 months, approximately how much did you spend for the following? (include the amount that you spent for all persons you covered the costs for or shared the costs with (e.g. children, spouse, etc.))

Food & Beverages	Cost
Meals (Food & drinks) at restaurants (including tips)	\$
Food & drinks purchased at convenience/special food stores	\$
Food purchased at a Grocery Store or Supermarket	\$
Transportation to and from where you fish	Cost
Gasoline & Oil for car	\$
Repair/Service for Automobile, Truck, SUV, or Trailer	\$
Vehicle (Car, RV, ATV, etc.) or boat rental	\$
Other transportation costs, please specify: _____	\$
Activity Expenses	Cost
Fishing gear (clothes, rods, lures, etc.)	\$
Gasoline & Oil for boat	\$
Bait (live, cut, prepared)	\$
Equipment rentals (boats, camping, etc.)	\$
Access & launching fees	\$
Guide/outfitter or charter fees	\$
Camping & outdoor sporting goods supplies	\$
Other, please specify: _____	\$
Lodging	Cost
Hotel or Motel	\$
Other lodging (Bed & Breakfast, cabin, campground)	\$
Other Trip Expenses	Cost
Souvenirs and gifts	\$
Other entertainment expenses during trip (Visiting museums, movies, etc.)	\$

6. If you purchased any of the following items in the last 12 months **specifically for Black Bass fishing**, write how much the total cost for those items were. If not, please write a "0."

Item	Cost	Item	Cost
Rods & reels	\$	Other fishing items (scales, knives, etc.)	\$
Fishing tackle (line, hooks, weights, etc.)	\$	Motorized boat	\$
Fishing gear (tackle box, downriggers, etc.)	\$	Non-motorized boat (kayak, canoe, etc.)	\$
Fly tying equipment	\$	Boat accessories (motor, trailer, etc.)	\$
Electronic fishing equipment	\$	Boat storage	\$
Clothing (vests, waders, etc.)	\$	Vehicle (car, truck, camper, RV, ATV, etc.)	\$
Life Jackets, PFDs	\$	Dues or contributions to clubs	\$
Books and magazines	\$	Taxidermy	\$
Cameras, binoculars	\$	Coolers	\$
Camping equipment (sleeping bags, etc.)	\$	Bug spray, sunscreen	\$
Adaptive fishing gear (easy-grip gloves, etc.)	\$	Other items, please specify: _____	\$

SECTION D: BLACK BASS TOURNAMENT AND CLUB PARTICIPATION

1. Do you ever participate in Black Bass fishing tournaments in North Carolina?

- Yes
- No

2. Are you a member of a Black Bass fishing club?

- Yes (Which one? _____)
- No

3. Would you be willing to share contact information for your fishing club so that we may share the results of the study and future research? If so, please share contact information below: _____

SECTION E: BLACK BASS COMMUNICATION PREFERENCES

1. How would you prefer to receive information about Black Bass fishing in North Carolina? *Select all that apply.*

- Regulations Digest/Brochure
- Newspaper/Magazine/Books
- Public meetings
- Fishing or outdoor clubs
- An internet search
- NCWRC website
- Social media
- Other, please describe:

- NCWRC emails
- Podcast
- Video (YouTube)

2. What kind of information would you like to receive from the NCWRC about Black Bass?

SECTION F: ANGLER CROWDING CONCERNS

1. How often do you experience over-crowding while fishing for Black Bass in North Carolina?

- Never (**SKIP TO SECTION G**)
- Rarely
- Sometimes
- Often
- Always

2. Has the crowding gotten better or worse over time?

- Much worse
- A little worse
- Stayed the same
- A little better
- Much better

3. Which of the following kinds of crowding do you experience? *Select all that apply.*

- Crowded access areas
- Conflicts with tournaments
- Trash/litter
- Too many anglers in one place
- Fish are harder to catch
- Other, please specify: _____

4. Have you made any of the following changes to your fishing behavior due to crowding? *Select all that apply.*

- Avoiding certain waterbodies
- Avoiding weekends/holidays
- Went fishing in other states
- Avoiding certain times
- Stopped fishing altogether
- Other, please specify: _____

5. Is there a specific waterbody you experience crowding on more than others?

6. Is there a specific time or month of the year you experience crowding on more than others?

SECTION G: LIVE CRAYFISH AS BAIT

1. When fishing in general in North Carolina, what kind of bait or lures do you typically use? *Select all that apply.*

- Artificial lures and/or flies Other live bait (fish, worms, etc.)
 Live crayfish Dead or natural bait (animal parts, etc.)

(If you do not use live crayfish as bait, please continue to Section H (next page).)

2. How often do you use live crayfish as bait while fishing in North Carolina?

- Never Rarely Sometimes Often Always

3. Where do you normally get your live crayfish? *Select all that apply.*

- Catch my own, where I'm fishing Online retailer
 Catch my own, at another waterbody Other, please specify: _____
 Bait shop

4. What do you normally do with any live crayfish that may be left over from a fishing trip? *Select all that apply.*

- Dispose of the remaining live crayfish (throw away, etc.)
 Release the remaining live crayfish into the water I fished
 Release the remaining live crayfish into another waterbody
 Take the remaining live crayfish home and keep alive for future use
 Give the remaining live crayfish away to other anglers
 Take the remaining live crayfish home and eat them

Using live crayfish as bait could pose a threat to North Carolina waterbodies. The following questions ask about the impact a crayfish bait regulation might have on you.

5. How much do you support or oppose a regulation requiring the use of only crayfish parts (no whole crayfish) as bait in North Carolina?

- Strongly oppose Somewhat oppose Neutral Somewhat support Strongly support

6. If a headless crayfish regulation was implemented, which of the following changes would you make to your fishing habits? *Select all that apply.*

- Use headless crayfish as bait Stop fishing altogether
 Use other kinds of baits or lures Other, please specify: _____

SECTION H: DEMOGRAPHICS AND PRIZE DRAWING

This last set of questions will help us get to know the people we have the privilege of serving. This information will only be used for internal research purposes and will not be shared with anyone. Your responses are voluntary and confidential.

1. In what zip code is your primary residence? _____

2. What is your gender? Male Female Prefer not to say

3. What is the highest level of formal education you have completed?

- Less than high school Some college or Associates degree Graduate or professional degree
 High school diploma Bachelors or 4-year degree Prefer not to say

4. What is your age?

- 18-24 years old 45-54 years old 75-84 years old
 25-34 years old 55-64 years old 85 years or older
 35-44 years old 65-74 years old Prefer not to say

5. Please select the race(s) with which you most identify. *Select all that apply.*

- White Asian Other
 Black or African American Native Hawaiian or another
 Pacific Islander Prefer not to say
 American Indian or Alaskan
 Native

6. Are you of Hispanic, Latino/a or Spanish origin? Yes No Prefer not to say

7. Which of the following best represents your gross household income before taxes last year?

- Less than \$20,000 \$60,000-\$79,999 \$120,000 or more
 \$20,000-\$39,999 \$80,000-\$99,999 Prefer not to say
 \$40,000-\$59,999 \$100,000-\$119,999

8. If you would like to be entered into a prize drawing for one of five \$50 Bass Pro Shop gift cards, please enter a valid email address so that we may contact you if your name is drawn: _____

If you have any additional comments or questions regarding Black Bass management, please share them below:

If you have any questions about the survey, please contact: surveys@ncwildlife.org, or 919-707-0167

**To learn more about Black Bass fishing in North Carolina, please visit:
<https://www.ncwildlife.org/Fishing/Black-Bass-in-North-Carolina>**

Thank you for your participation!

Please use the enclosed postage-paid envelope or mail the survey to:

**NC Wildlife Resources Commission
Black Bass Management Survey
1701 Mail Services Center
Raleigh, NC 27699-1701**