

The Results of a Survey of Louisiana Residents with Saltwater Fishing Privileges Regarding the Use of Artificial Reefs in 2022

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Introduction

The Louisiana Artificial Reef Program (Program) operates within the Louisiana Department of Wildlife and Fisheries (L.D.W.F.) under the direction of the Artificial Reef Council using funds deposited in the Artificial Reef Trust Fund associated with the decommissioning of oil platforms off the Louisiana coast. Since its creation in 1986, the program has worked with multiple stakeholders, including anglers, divers, charter boat operators, and conservation groups, to enhance fisheries habitat and to provide saltwater fishing opportunities in the Gulf of Mexico.

The Program includes both offshore and inshore components. Its offshore efforts are arguably its best known, the oversight of scores of reefs formed from converted oil platforms and other undersea structure. Its inshore efforts consist of 11 reefs distributed across the Louisiana coast. Program reefs may be found in Lake Pontchartrain, Breton Sound, Barataria Bay, Terrebonne and Timbalier bays, Vermilion and Cote Blanche bays, and Calcasieu Lake.

The 2019 Artificial Reef Survey

In 2019 the L.D.W.F. conducted a mail survey of approximately 3,000 Louisiana residents with saltwater fishing privileges to assess Louisiana anglers' utilization of and perspectives on the state's artificial reefs, especially those in inshore waters. The survey was conducted in part to comply with a request from the Louisiana Trust Implementation Group (LA TIG) to analyze anglers who use reefs in the inshore artificial reef program.

The 2019 survey found that approximately 82 percent of the respondents with saltwater fishing privileges reported fishing in saltwater in 2018 and almost 12 percent reported fishing over artificial reefs within that year. Those who fished over reefs took an average of 5.7 trips over artificial reefs (with a median of three trips.) Most targeted red drum and spotted seatrout over the reefs and approximately 40 percent reported being able to catch what they targeted most or all of the time when fishing over reefs. The majority of respondents reported being strongly or somewhat satisfied with the quality of fishing over artificial reefs, an assessment that includes reefs within the Program and other reefs in Louisiana.

Approximately 87 percent reported using at least one reef managed by the Louisiana Artificial Reef Program. The majority reported using only one reef of the Program's total of 11.

The 2022 Artificial Reef Survey

At the end of 2022 one year after the completion of the Independence Island Reef, the final artificial reef in the LA-TIG-funded project, the L.D.W.F. Socioeconomic Research and Development Section conducted another survey to assess Louisiana anglers' use of inshore artificial reefs, as called for in the project monitoring plan. This 2022 Louisiana Artificial Reef Survey had a similar sample as the 2019 effort (Louisiana residents with saltwater fishing privileges) and asked the same questions in the same order. The principal distinction was one of survey methods. The 2019 survey was conducted through the mail. The 2022 survey (with an interest at reducing costs) used e-mail messages with a link to an online questionnaire.

This report describes the administration of the 2022 Louisiana Artificial Reef Survey and summarizes its results. Comparisons of the responses to individual items from the survey to those from the 2019 survey are made throughout the report.

Survey Sample

The survey population consisted of Louisiana residents who acquired seasonal recreational licenses that granted saltwater fishing privileges, a pool of persons who may potentially fish over artificial reefs. A sample of 3,000 Louisiana residents with saltwater fishing privileges was drawn in October 2022. Almost two-thirds (63.7 percent) held current resident saltwater fishing licenses, 31 percent held resident senior hunt and fish licenses, and 5.2 percent held Sportsman’s Paradise licenses (Figure 1).

The geographic distribution of the sample was categorized according to U.S. Postal Service’s Sectional Center Facilities (S.C.F.) designation, identified by the first three digits of the ZIP code, which divide the state into 13 regions centered around regionally important cities (Map 1). About nine percent of the sample resided in north Louisiana, the Monroe, Shreveport, and Shreveport vicinity S.C.F. (Figure 2) and 6.5 percent in central Louisiana (the Alexandria East and Alexandria West S.C.F.) Sixteen percent resided in Baton Rouge or its vicinity and 12 percent in the parishes on the north side of Lake Pontchartrain (Hammond S.C.F.) About 17 percent lived in southeast Louisiana (New Orleans and Metairie S.C.F.) Nearly 32 percent were in south central (Lafayette and Thibodaux S.C.F.) and 7.2 percent in the Lake Charles S.C.F. in southwestern Louisiana.

The average age of individuals in the survey sample was nearly 49.6 and the median age was 50 (Table 1). About thirty percent were in their twenties or thirties, 35.4 percent in their forties or fifties, and 22.4 percent in their sixties. About 10 percent were 70 or older.

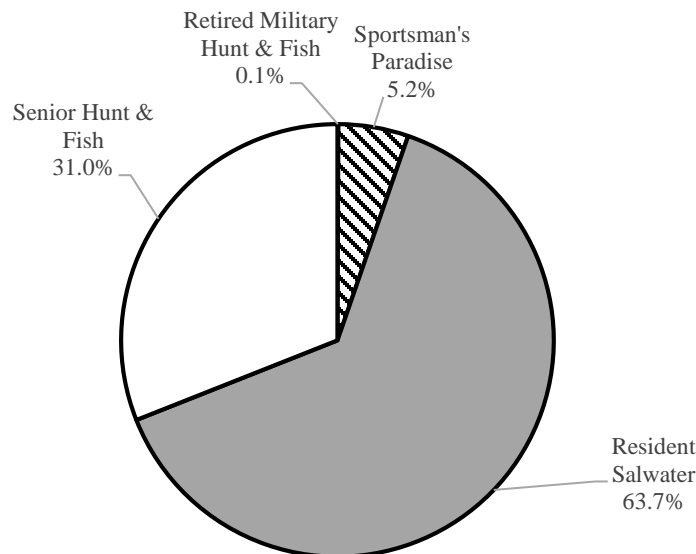
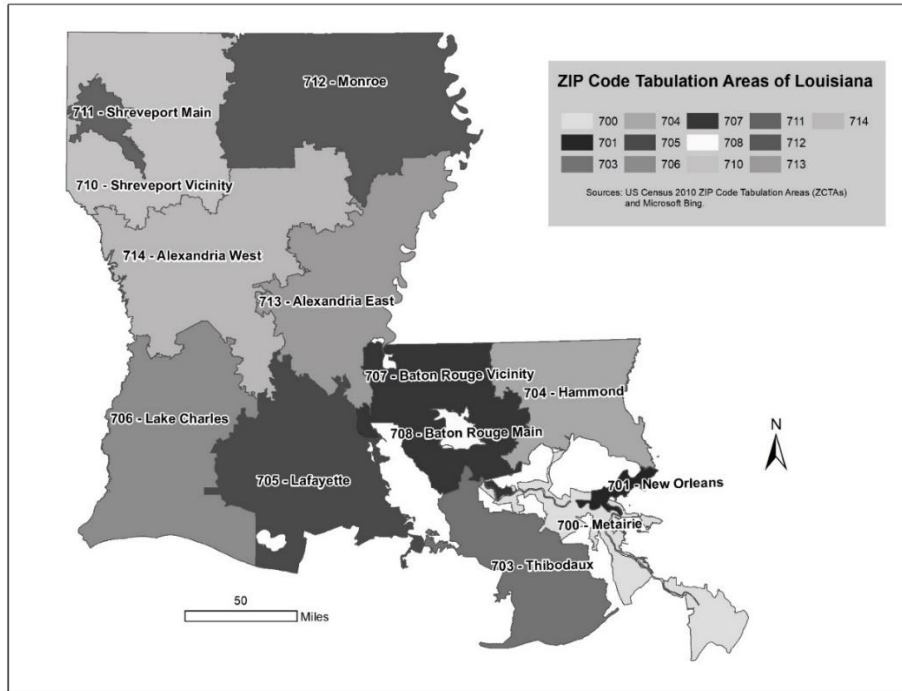


Figure 1. 2022 Louisiana Saltwater Angler Survey Subjects by License Type



Map 1. U.S. Postal System Sectional Center Facility Designations for Louisiana

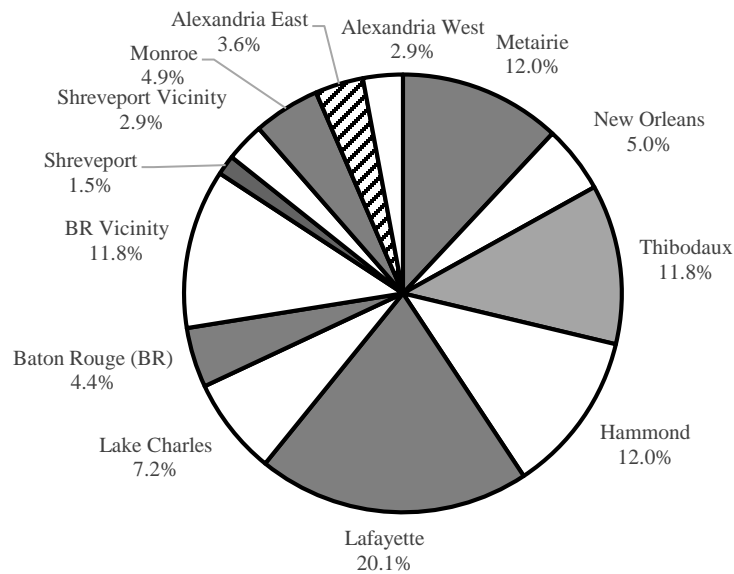
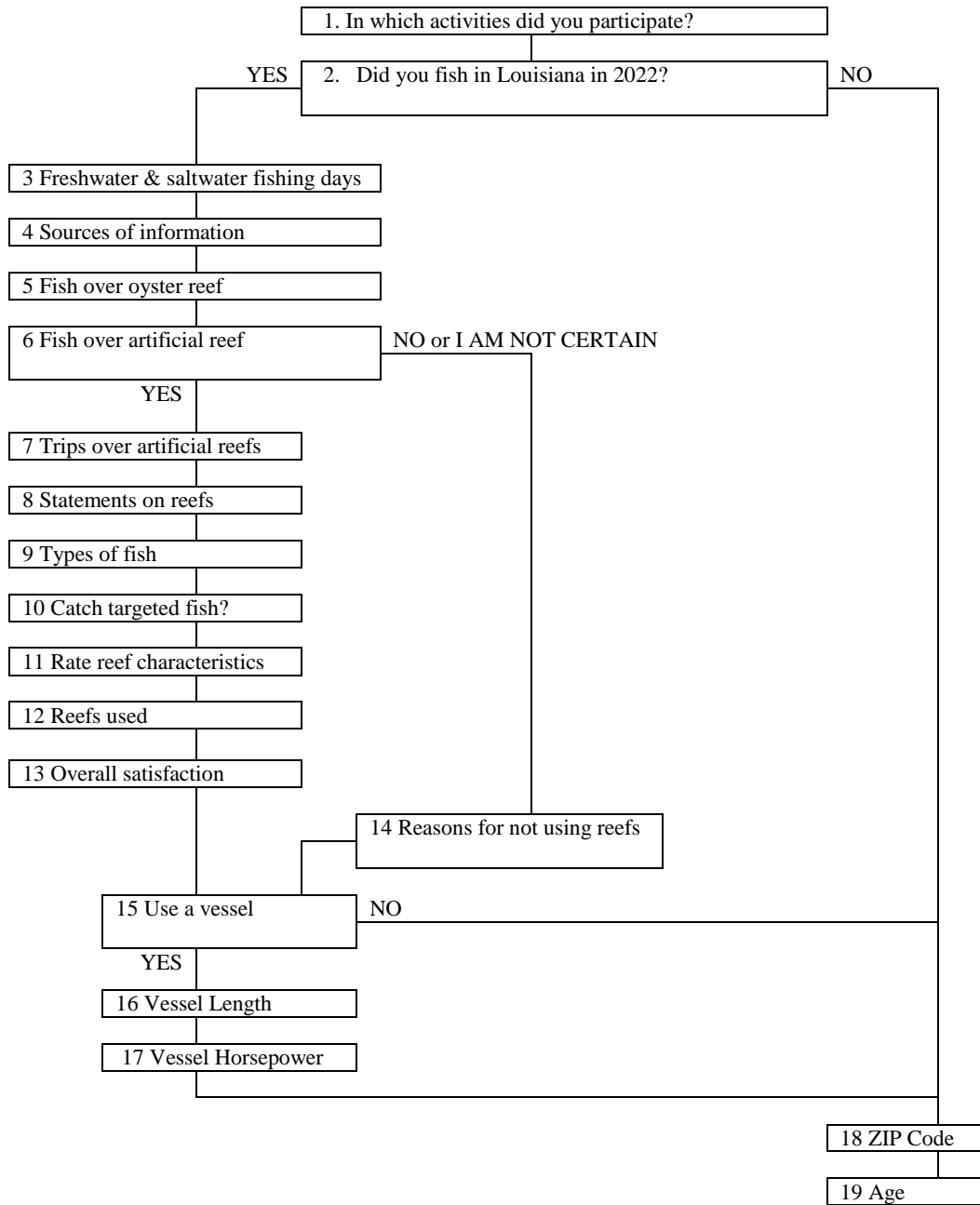


Figure 2. Percentage of 2022 Survey Sample Residing in Specified Sectional Center Facilities

Table 1. Descriptive Statistics for Age of 2022 Survey Sample

Number	Average	Median	Standard Deviation
3,000	49.6	50	16.19

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Survey Administration

Invitations to participate in the survey were sent by e-mail to 2,990 Louisiana residents on October 14, 2022 with a link to the 2022 Louisiana Fishing Survey on the SurveyMonkey platform. Reminders were sent to those who had not responded one week and two weeks after the initial message. One hundred thirty-four packets were returned as undeliverable and subtracted from the survey sample to produce an adjusted sample size of 2,856 (Table 2). After the survey instrument on November 1, 2022, 556 completed surveys were returned to yield an overall raw response rate of 19.5 percent.

Table 2. Survey Sample, Non-Deliverable, and Returned Surveys by License Type

Sent	Non-Deliverable	Adjusted Sample	Returned Surveys	
			Number	Percent of Adjusted Sample
2,990	134	2,856	556	19.4%

Survey Respondents

The geographic distribution of 2022 survey respondents (Figure 4) residing within the U.S. Postal Service S.C.F. for resident respondents was not significantly different from the distribution from the sample of residents with saltwater fishing privileges from which it was drawn (Figure 2). Most respondents resided in southern Louisiana. One-sixth resided in New Orleans (5.1 percent) cities or towns within the Metairie S.C.F. (11.0 percent) (Figure 4). A similar share resided in Baton Rouge (3.9 percent) or its vicinity (13.0 percent). About 11 percent resided in the Hammond S.C.F. north of Lake Pontchartrain. Twenty-seven percent lived in the Lafayette (8.7 percent) or Thibodaux (8.5 percent) S.C.F in south central Louisiana and 8.3 percent in the Lake Charles S.C.F. in southwestern Louisiana.

About six percent lived in the central Louisiana S.C.F.: Alexandria East (3.5 percent) and Alexandria West (2.8 percent). Thirteen percent resided in cities or towns in northern Louisiana within the Monroe S.C.F. (7.1 percent) or Shreveport (2.2 percent) or Shreveport vicinity (4.1 percent) S.C.F.

The average age of the 2022 survey respondents (Table 4), 55.7 years old, was statistically different from the average age (49.0 years old) of the sample (Table a). Approximately 31 percent of the respondents were under 50 years old (Figure 5). About 21 percent were in their fifties' and 32 percent were in their sixties'. About 15 percent were 70 years old or older.

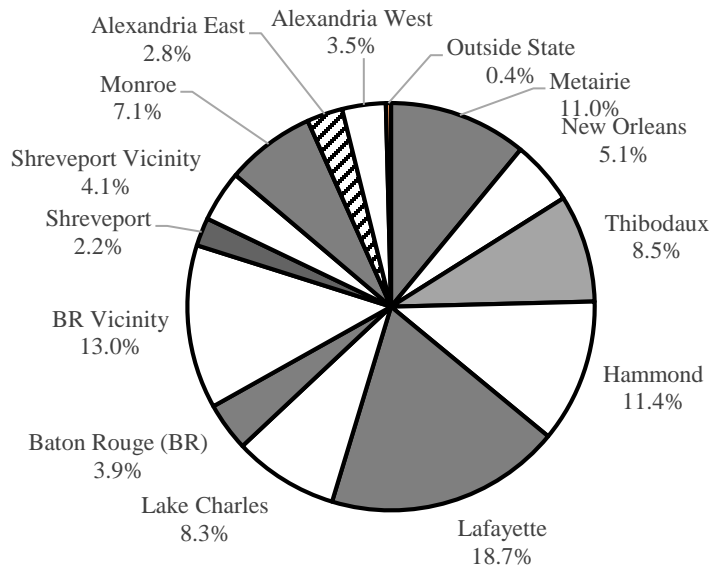
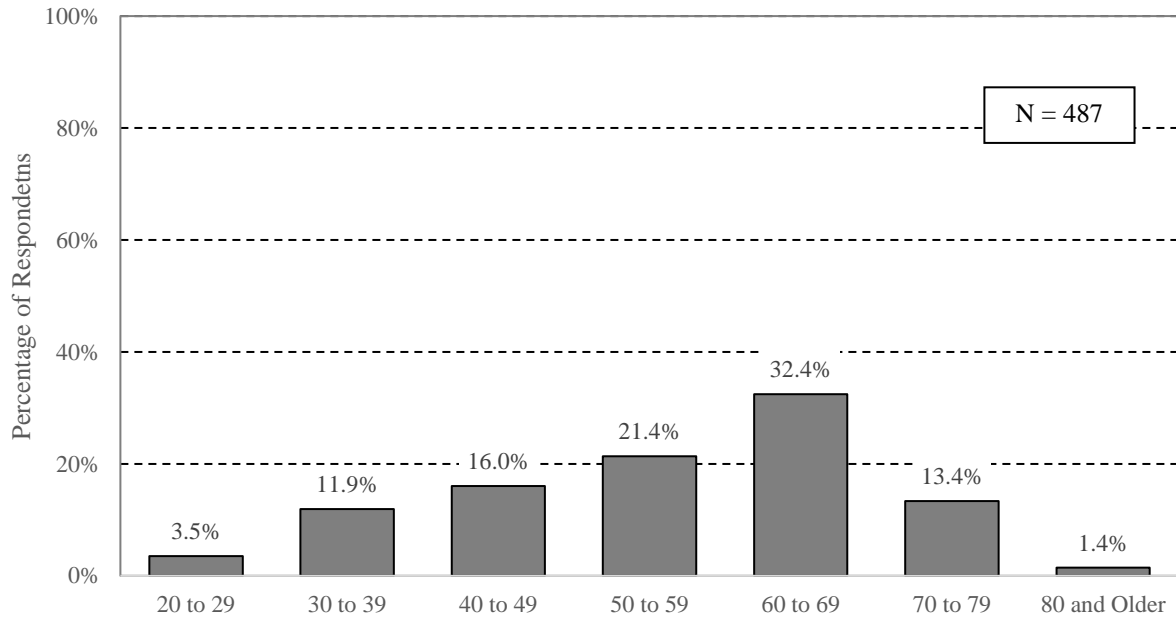


Figure 4. Percentage of Survey Respondents Reporting ZIP Codes in Specified Sectional Center Facilities

Table 4. Descriptive Statistics for Age of 2022 Survey Respondents

Number	Average	Median	Standard Deviation
487	55.7	58	13.38

Figure 5. Age Distribution of Survey Respondents



Box 1. Demographics of Respondents to the 2019 Survey

Percentage of 2019 survey respondents who provided residential ZIP codes in the following S.C.F.:

- Metairie: 13.2%
- New Orleans: 2.7%
- Thibodaux: 10.7%
- Hammond: 11.0%
- Lafayette: 16.2%
- Lake Charles: 8.5%
- Baton Rouge & Vicinity: 15.7%
- Shreveport & Vicinity: 4.8%
- Monroe: 6.3%
- Alexandria East & West: 10.3%

Average age of 2019 survey respondents: 57.7 years old

The geographic distribution of the 2019 survey respondents, as determined by the S.C.F. in which they lived, did not differ significantly from that of the 2022 survey respondents. The average age of the 2019 respondents is not significantly different from the average age of 2022 respondents.

Nature-Based Outdoor Activities

In a pair of related questions, 2022 survey respondents were asked whether they fished or participated in five other nature-based outdoor recreational activities (hunting, bird watching, boating, SCUBA, and skiing or other water sports) in 2022. Over 90 percent said that they had fished during the year (Figure 6) and over 80 percent said they had boated (an activity that may have coincided with fishing for many respondents.) Forty-four percent said they hunted. Thirteen percent claimed to have engaged in bird watching and 12 percent in skiing or other water sports. Just over one percent went SCUBA diving.

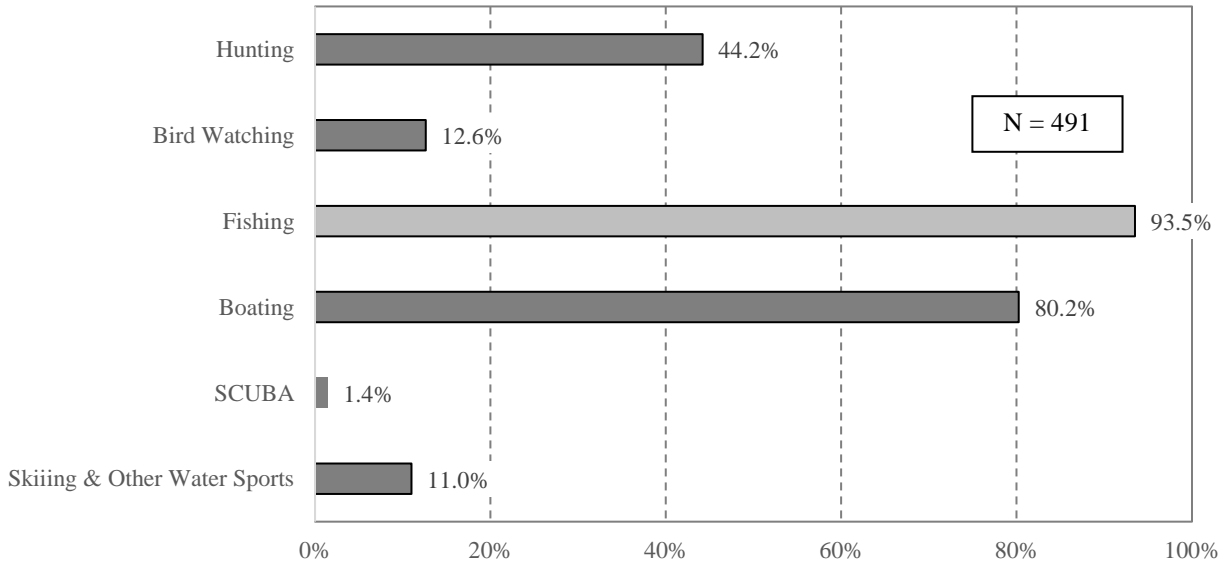


Figure 6. Percentage of Respondents Who Reported Participating in the Following Activities in 2022

Box 2. Nature-Based Activities Participation among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who reported participating in the following activities in 2018:

- Hunting: 45.5%
- Bird Watching: 10.6%
- Fishing: 86.8%
- Boating: 70.0%
- SCUBA: 2.6%
- Skiing & Other Water Sports: 9.5%

The percentage of 2019 survey respondents who participated in fishing and boating in 2018 were somewhat lower than the percentage of 2022 survey respondents who did the same in 2022. The relative rankings of participation rates were comparable between the two periods. Fishing, boating, and hunting had the first, second, and third highest rates of participation, respectively. Relatively small percentages went bird watching, skiing, or SCUBA diving.

Respondents' Use of Motorized Vessels

Respondents to the 2022 survey who fished were asked if they used a motorboat for fishing, hunting, or other recreational purposes in Louisiana in 2022. Eighty-six percent (Figure 8) responded in the affirmative.

Respondents who used a motorboat were asked to describe the length of the vessel they used most frequently and the horsepower of its engine or engines. The average length of the vessel used most frequently was 19.1 feet (Table 5). Eighty-six percent were between 16 and 26 feet long (Figure 9).

The average engine power (Table 6) was 134 horsepower (HP) with a median of 115 HP. Engine power was relatively widely dispersed. Twenty-nine percent reported horsepower of less than 65 HP (Figure 10). Twenty-six percent had engines with horsepower between 65 and 139 HP and 20.9 percent had engines of 215 HP or more.

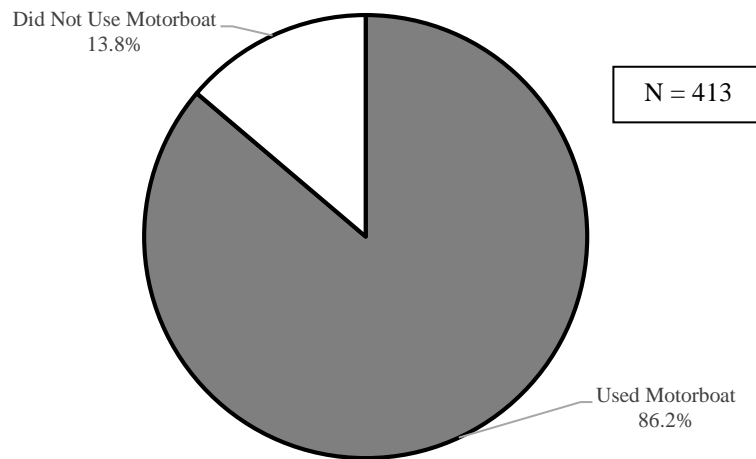


Figure 8. Percentage of Respondents Who Reported Using a Motorboat for Fishing, Hunting, or Other Recreational Purposes in Louisiana in 2022

Table 5. Descriptive Statistics for the Length of the Motorboat Used Most Frequently in Louisiana by 2022 Survey Respondents Who Used Motorboats

Number	Average	Median	Standard Deviation
341	19.1'	18.6'	3.37

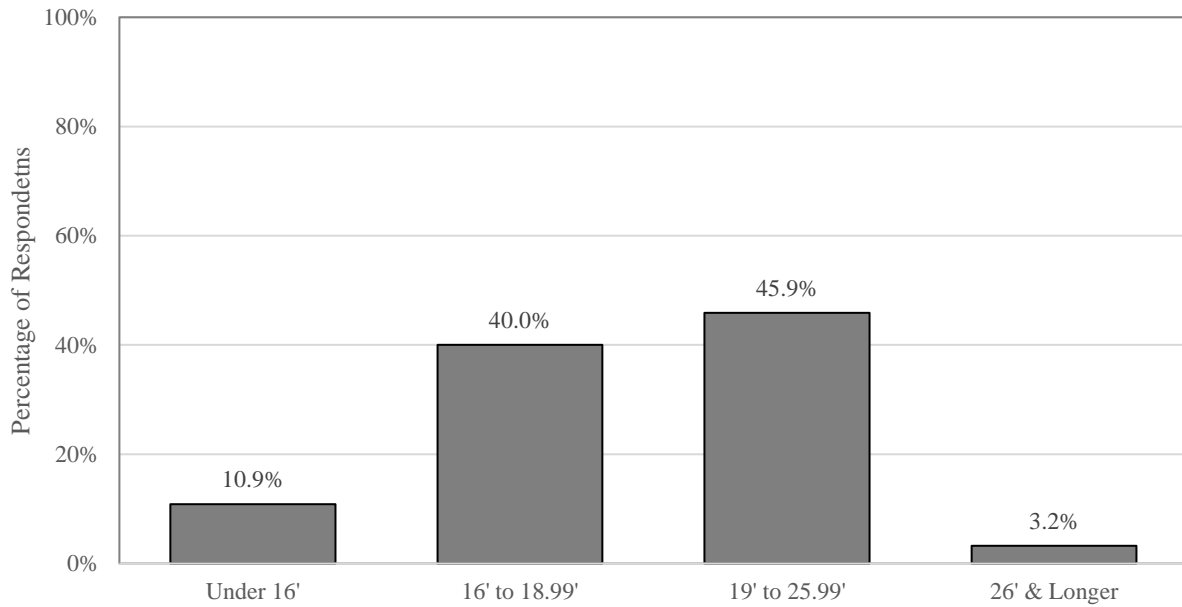


Figure 9. Distribution of the Length of Motorboats Used Most Frequently by 2022 Survey Respondents Who Used Motorboats

Table 6. Descriptive Statistics for the Horsepower of the Engine on the Motorboat Used Most Frequently in Louisiana by Respondents Who Used Motorboats

Number	Average	Median	Standard Deviation
337	134 HP	115 HP	99.17

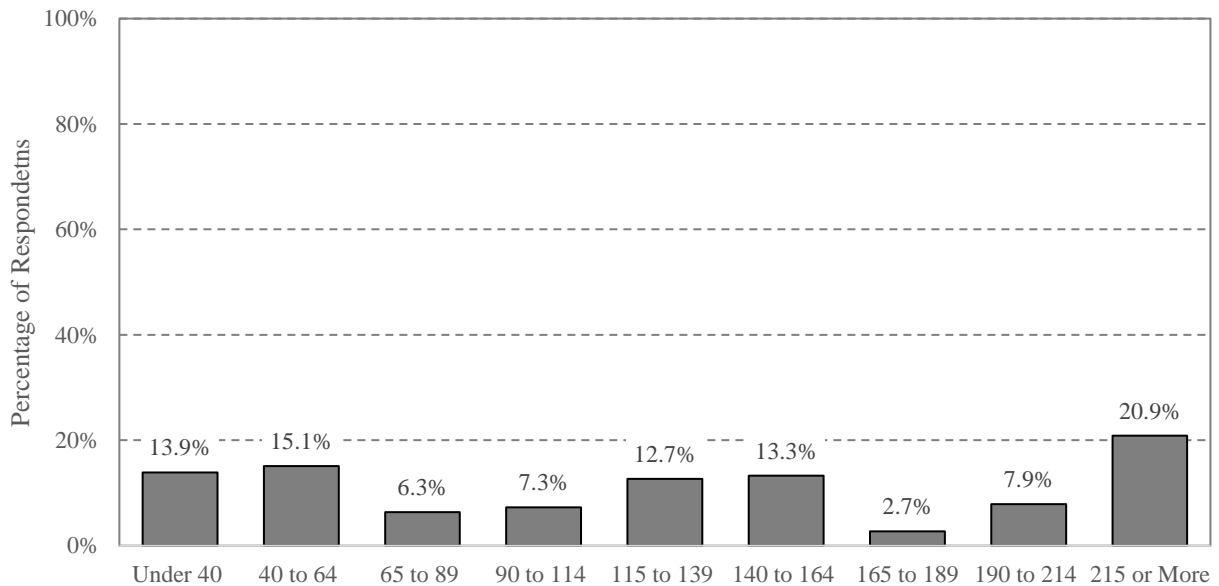


Figure 10. Distribution of Horsepower of the Engine on Motorboats Used Most Frequently by Respondents Who Used Motorboats

Box 2. Motor Boat Use and Characteristics among Respondents to the 2019 Survey

- Percentage of 2019 survey respondents who reported using a motorboat for fishing, hunting, or other recreational purposes in 2018: 85.8%
- Average length of motorboat used most frequently in 2018: 18.8'
- Average horsepower of engine on the motorboat used most frequently in 2018: 126.7 HP

The percentage of 2019 survey respondents who used a motorboat for recreational purposes in 2018 was practically identical to the percentage of 2022 survey respondents using motorboats in 2022.

The average length of the motorboats used most frequently by 2019 survey respondents and the average horsepower of their engines were not significantly different from the average vessel length and horsepower reported by 2022 survey respondents.

Fishing Activity

Survey respondents who reported fishing in 2022 were asked in a follow-up question to provide estimates of the number of days during which they engaged in freshwater or saltwater fishing. Respondents were requested to write the word or digit “zero” if they did not fish in a particular water type during the year. Consequently, observations for those who left either or both items blank were treated as non-responses.

Freshwater Fishing

Of the 387 respondents who provided usable answers to the question soliciting freshwater fishing days (the equivalent of 84.3 percent of the 491 who indicated that they fished in 2022), 82 percent said they spent at least one day in freshwater fishing. Approximately 46 percent in freshwater between one and 10 days in freshwater fishing (Figure 11). About 22 percent fished in freshwater between 11 and 30 days, and 15.6 percent for 31 days or more.

The average number of freshwater fishing days among all who answered the question was 17.1 days (Table 7). Among those who fished at least one day in freshwater, the average was 20.9 days.

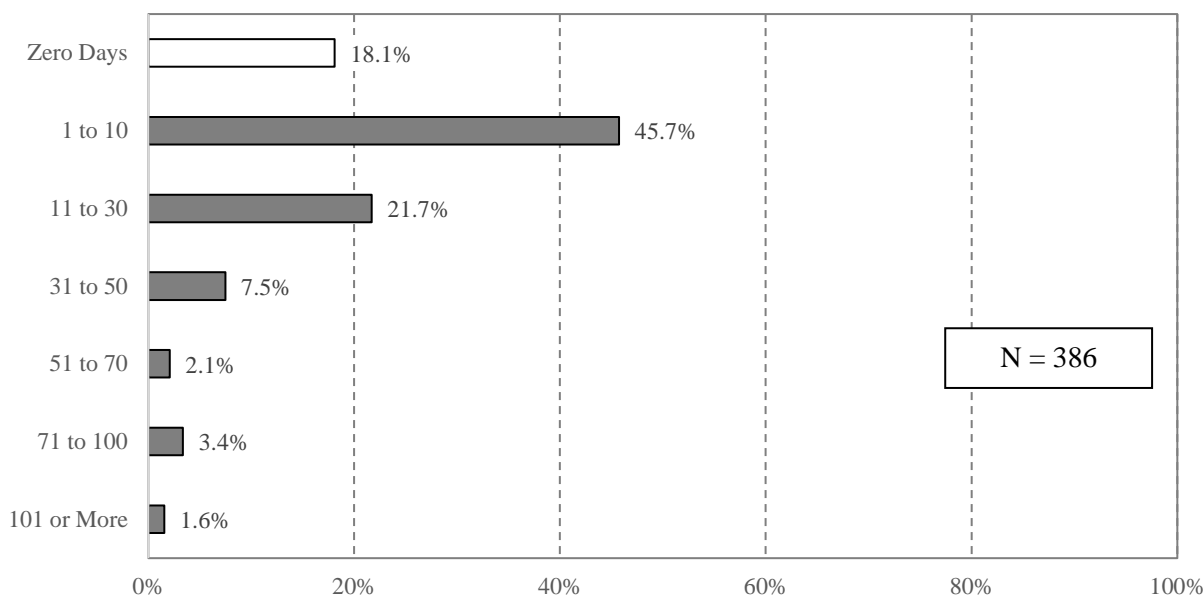


Figure 11. Percentage of Respondents Who Reported Fishing Who Fished in Freshwater for the Specified Number of Days in 2022

Table 7. Descriptive Statistics for the Number of Days of Freshwater Fishing in 2022

	Number	Average	Median	Standard Deviation
All Respondents	484	13.7	4	26.09
Respondents Who Fished	386	17.1	5.5	28.19
Respondents Who Fished in Freshwater	317	20.9	10	29.89

Saltwater Fishing

Of the 403 respondents who provided usable answers for the question regarding the number of saltwater fishing days (roughly 82 percent of those who reported fishing), approximately three-quarters fished at least one day in saltwater. Forty-five percent fished between one and 10 days in saltwater during the year and 20.1 percent between 11 and 30 day (Figure 12).

The average number of saltwater fishing days among all respondents who gave usable numbers of this question was 11.8 days (Table 8). The average among all those who fished at least once in 2022, the average was 15.8 days.

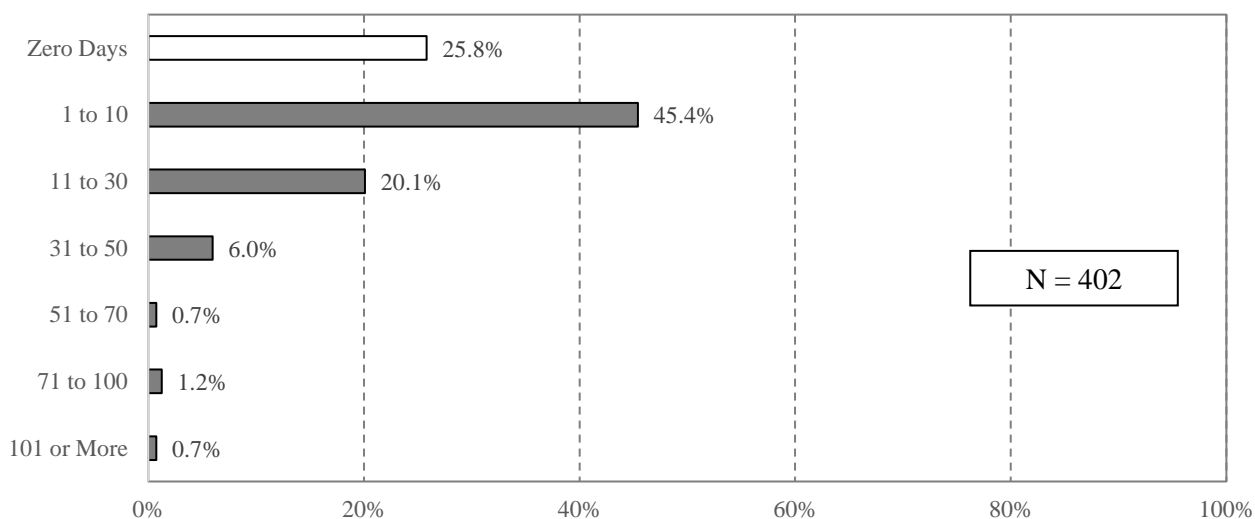


Figure 12. Percentage of Respondents Who Reported Fishing Who Fished in Saltwater for the Specified Number of Days in 2022

Table 8. Descriptive Statistics for the Number of Days of Saltwater Fishing in 2022

	Number	Average	Median	Standard Deviation
All Respondents	500	9.5	2	20.04
Respondents Who Fished	402	11.8	5	21.74
Respondents Who Fished in Saltwater	299	15.8	8	23.87

Box 3. Reported Fishing Activity among Respondents to the 2019 Survey

The percentage of 2019 survey respondents who fished who reported fishing at least once in the specified water type in 2018:

- Percentage of 2019 survey respondents who fished in freshwater in 2018: 84.6%
- Percentage of 2019 survey respondents who fished in saltwater in 2018: 82.7%

Average number of days of freshwater fishing and saltwater fishing among 2019 survey respondents who fished in the specified water type at least once in 2018:

- Average number of days of freshwater fishing in 2018: 19.5 days
- Average number of days of saltwater fishing in 2018: 15.0 days

The percentage of 2019 survey angler respondents who fished in freshwater in 2018 was/was not comparable to the percentage of 2022 survey fishing respondents who did so. The average number of freshwater fishing days among respondents who used freshwater in 2019 was not significantly different from the average in 2022.

The percentage of 2019 survey angler respondents who fished in saltwater in 2018 was somewhat larger than the percentage of 2022 angler-respondents who used saltwater. The average number of saltwater days in 2018 among those who fished in saltwater was not significantly different from the average in 2022.

Place of Residence among 2022 Survey Respondents Who Fished in Saltwater

The geographic distribution of the 2022 survey respondents who fished at least one day in saltwater in 2022 (“saltwater anglers”) demonstrated some differences from the geographic distribution of respondents overall. A larger share of the saltwater anglers (37.3 percent) (Figure 13) than all survey respondents (27 percent) (Figure 4) resided in the New Orleans, Metairie, and Hammond S.C.F. in southeastern Louisiana. In contrast, the share of saltwater anglers of 2022 residing in northern and central Louisiana (8.6 percent) was smaller than the share of all respondents living in these areas (19.7 percent).

Sources of Information about Fishing

Respondents who reported fishing in 2022 were asked to identify which of a list of sources that they used for information about fishing. The listed alternatives included privately-published (local newspaper and the Louisiana Sportsman’s website), government (L.D.W.F. website), and informal social (family and friends) sources.

The most frequently-cited source was family and friends (Figure 14). Over two-thirds of the 2022 survey respondents (68.0 percent) reported obtaining information from people within their personal social networks.

The questionnaire included two specific websites that are believed to have wide utilization among saltwater anglers. Over one-third of the 2022 survey respondents mentioned using the L.D.W.F. website. Thirty-one percent reported using reported using the Louisiana Sportsman’s website. Over one-sixth reported using websites other than the two specified in the survey.

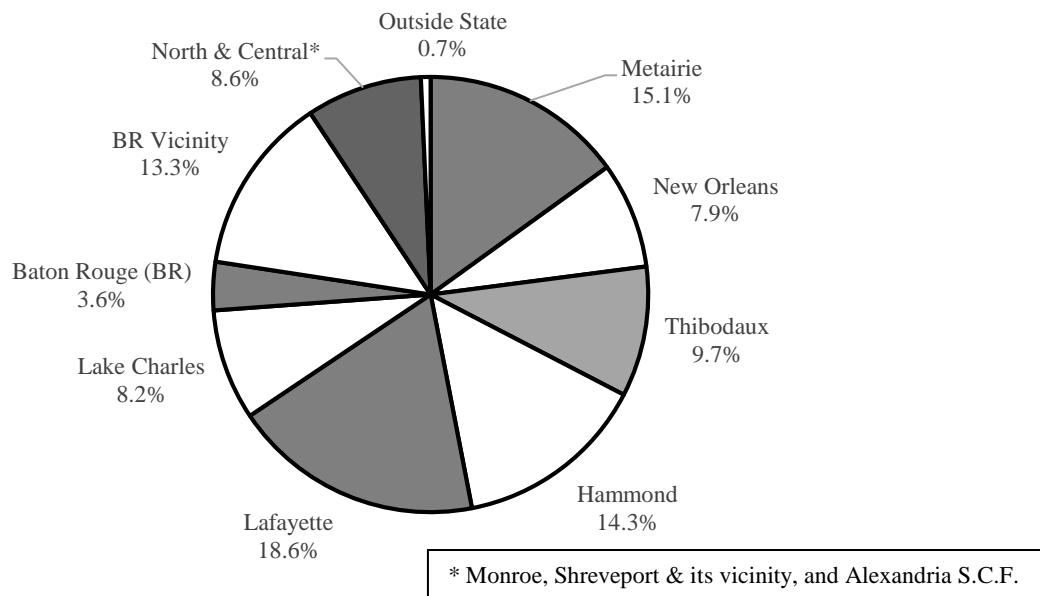


Figure 13. Percentage of Survey Respondents Who Fished in Saltwater in 2022 Reporting ZIP Codes in Specified Sectional Center Facilities

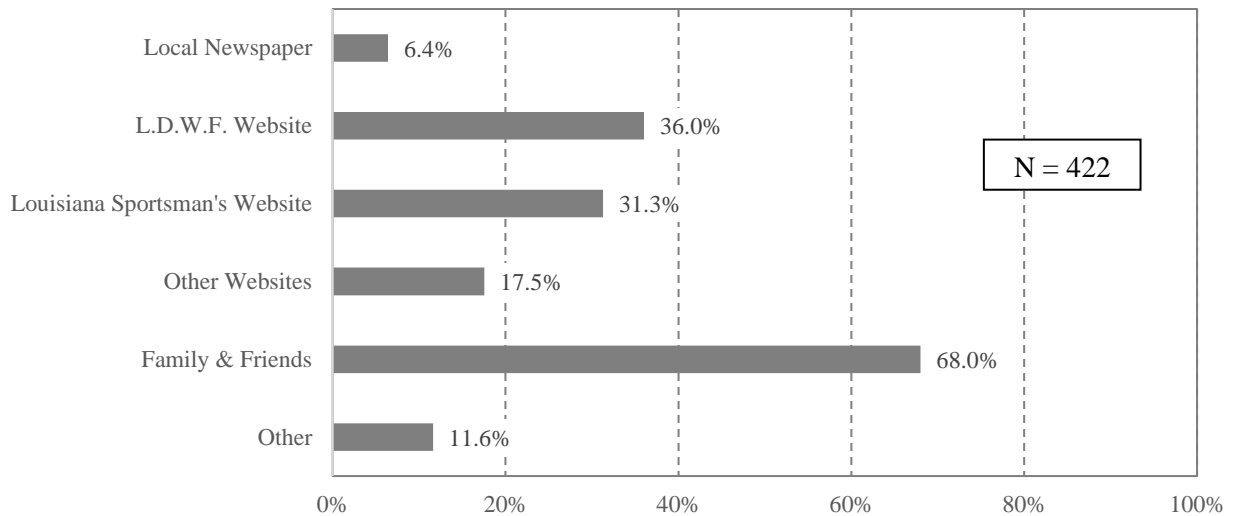


Figure 14. Percentage of Respondents Who Used the Specified Sources to Get Information about Fishing in Louisiana

Tables 9. Other Sources of Fishing Information Identified by Respondents Who Reported Fishing

	Number		Number
Facebook & Other Social Media	22	Weather & Tide Information Sources	5
Google & YouTube	3	Public Pages	1
Radio	4	L.D.W.F. Pamphlet	1
Television	2	Personal Knowledge & Experience	9
C.C.A. Louisiana	2		

Box 4. Reported Use of Specified Information Source among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who reported using the following as sources of information about fishing:

- Local Newspaper: 17.8%
- L.D.W.F. Website: 19.8%
- Louisiana Sportsman's Paradise Website: 31.7%
- Other Websites: 19.6%
- Friends and Family: 81.5%

In the 2019 survey, as in the 2022 survey, friends and family were the most commonly cited sources of information about fishing. The percentage of 2019 survey respondents who obtained information from these familial and personal sources was somewhat higher than the percentage of 2022 survey respondents who did so.

The percentage of 2019 survey respondents who mentioned the L.D.W.F. website as a source of information was lower than the 2022 survey respondents. The percentage of 2019 respondents who used newspapers was higher than the percentage of 2022 respondents who cited newspapers as an information source.

Fishing over Oyster Reefs

Respondents who reported fishing in 2022 were asked if they had fished over oyster reefs during the year. Approximately one in four (23.6 percent) said they fished over an oyster reefs in 2022. Approximately 65 percent said they did not and 11.6 percent were not certain (Figure 15).

Among the subset of 2022 survey respondents who reported fishing at least one day in saltwater in 2022, approximately one-third reported fishing over an oyster reef in the course of the year. Half did not and about 15 percent were not certain whether they did or did not.

The percentage of respondents who reported fishing over oyster reefs in 2022 was lower than the percentage of respondents to the 2019 assessment who reported doing so (29.3 percent) (Box 5). Approximately 59 percent of the respondents said they did not fish over oyster reefs in 2018 and 11 percent were not certain.

Respondents Who Fished over Artificial Reefs

Respondents who reported fishing in 2022 were asked if they fished over artificial reefs (other than oyster reefs) during the year. Fourteen percent of all fishing respondents reported fishing over artificial reefs (Figure 16). Seventy-three percent did not fish over artificial reefs and 13 percent were not certain. (Among the subset of respondents who reported fishing at least one day in saltwater, 19 percent reported utilizing artificial reefs.)

Among respondents who reported fishing over artificial reefs (“reef-angler respondents”), the average number of trips over artificial reefs in 2022 was 6.1 trips. The median was three trips.

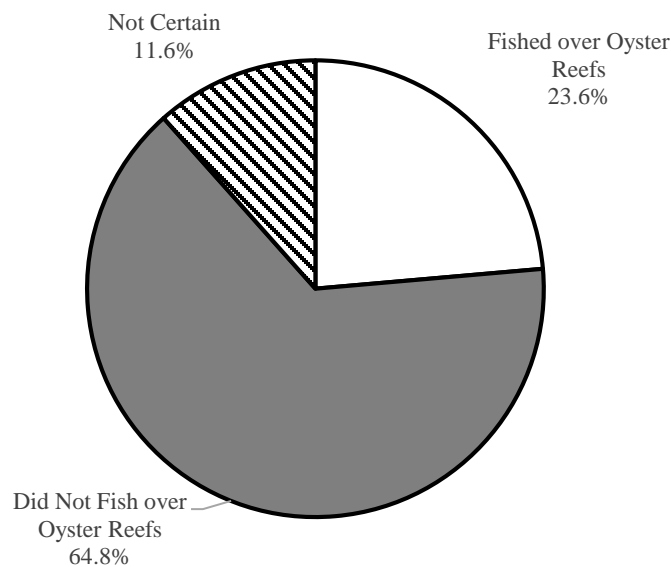


Figure 15. Percentage of Respondents Who Fished over an Oyster Reef in 2022

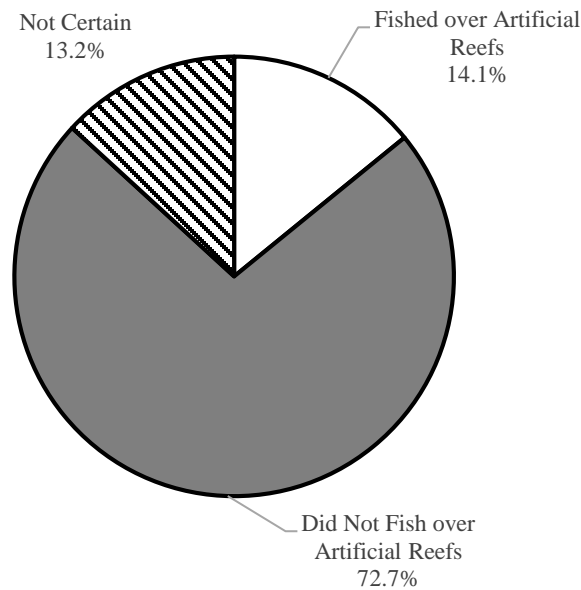


Figure 16. Percentage of Respondents Who Fished over Artificial Reefs in 2022

Reef-angler respondents reported an average of 18.4 days of fishing in freshwater in 2022. The average number of saltwater fishing days (of all kinds) was 26.3. The ratio of reef fishing days over all saltwater fishing days among reef-angler respondents averaged 0.35.

The average length of the most-frequently used vessels used by 2022 survey reef-angler respondents was 21 feet. The average horsepower of the engines on their vessels was 175.2 HP.

The average age of a reef-angler respondent in 2022 was 54.5 years old. Fourteen percent resided in the Metairie and New Orleans S.C.F., 16.3 percent in Baton Rouge or its vicinity, and 8.2 percent in the Hammond S.C.F. (Figure 16). About 10 percent resided in the Thibodaux S.C.F and about 28 percent in the Lafayette S.C.F. about eight percent resided in southwestern Louisiana (the Lake Charles S.C.F. and 12.2 percent in central or northern Louisiana).

Approximately 22 percent of the reef-angler respondents resided in the Metairie, New Orleans, or Hammond S.C.F, (Figure 17). Ten percent resided in the Thibodaux S.C.F., 28.6 percent in the Lafayette S.C.F., and 8.2 percent in the Lake Charles S.C.F. About one-sixth resided in Baton Rouge or its vicinity. Twelve percent resided in central or northern Louisiana. The geographic distribution of reef-angler respondents is not statistically different from the distribution of the survey’s saltwater anglers.

Table 10. Descriptive Statistics for the Number of Trips over Artificial Reefs in 2022 among Respondents Who Reported Visiting Artificial Reefs

Number	Average	Median	Standard Deviation
49	6.12	3	8.80

Box 5. Reported Use of Oyster Reefs and Artificial Reefs among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who reported fishing over the specified reef types in 2018:

- Oyster Reefs: 29.3%
- Artificial Reefs: 11.7%

Number of trips over artificial reefs in 2018 among 2019 survey respondents who visited them

- Average = 5.7 Trips

The percentage of 2019 survey respondents who fished over oyster reefs in 2018 was moderately higher than the percentage of 2022 survey respondents who did so.

The percentage of 2019 respondents who reported fishing over artificial reefs was somewhat lower than the percentage of 2022 respondents who used artificial reefs. The average number of days of fishing over artificial reefs in 2019 was not significantly different from the average number of days over reefs in 2022 among those respondents who utilized artificial reefs.

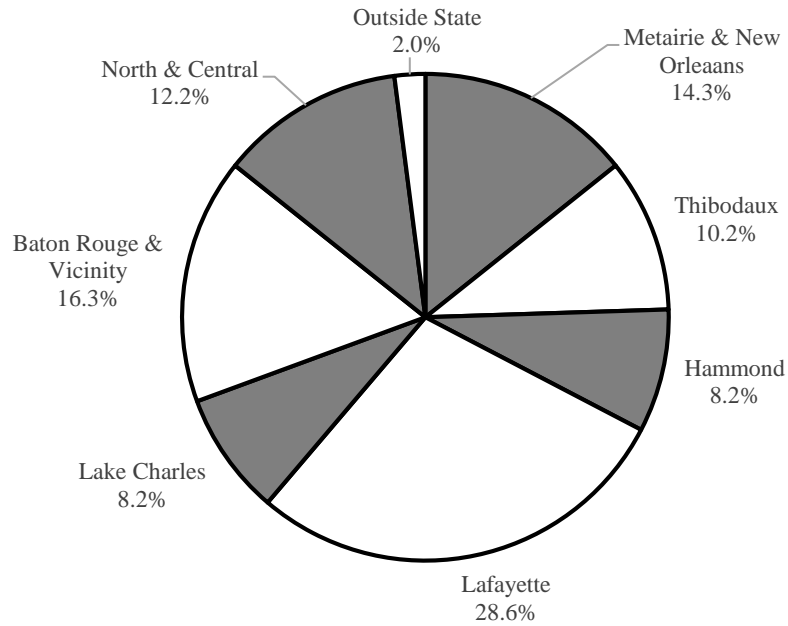
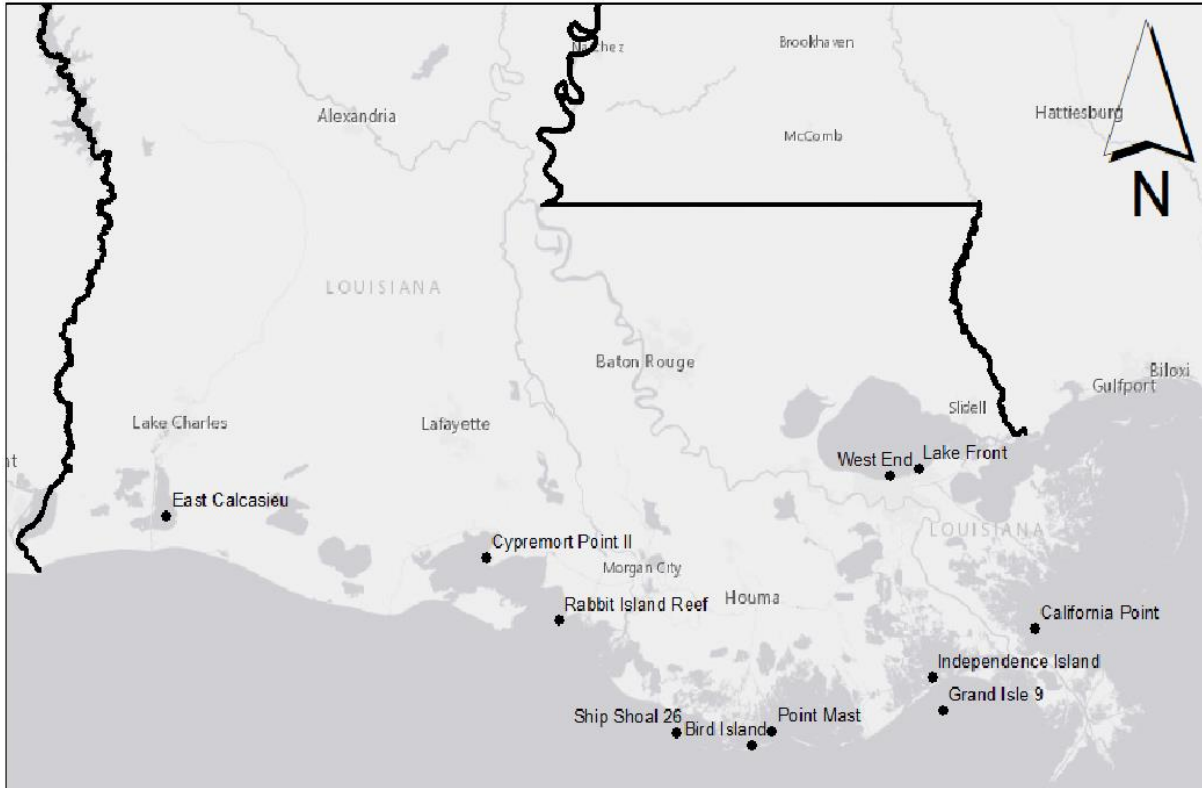


Figure 17. Percentage of Survey Respondents Who Fished over Artificial Reefs in 2022 Reporting ZIP Codes in Specified Sectional Center Facilities

Use of Artificial Reef Program Sites by 2022 Survey Respondents

Respondents who reported fishing over an artificial reef in 2022 were asked to indicate whether they visited any of 11 reefs in Louisiana’s Artificial Reef Program (Map 2). The three most commonly cited locations (Figure 18) were Cypremort Point II (28.0 percent), Grand Isle Number 9 (22.0 percent), and the East Calcasieu Planning Area (20.0 percent).



Map 2. Louisiana Department of Wildlife and Fisheries Artificial Reef Program Sites

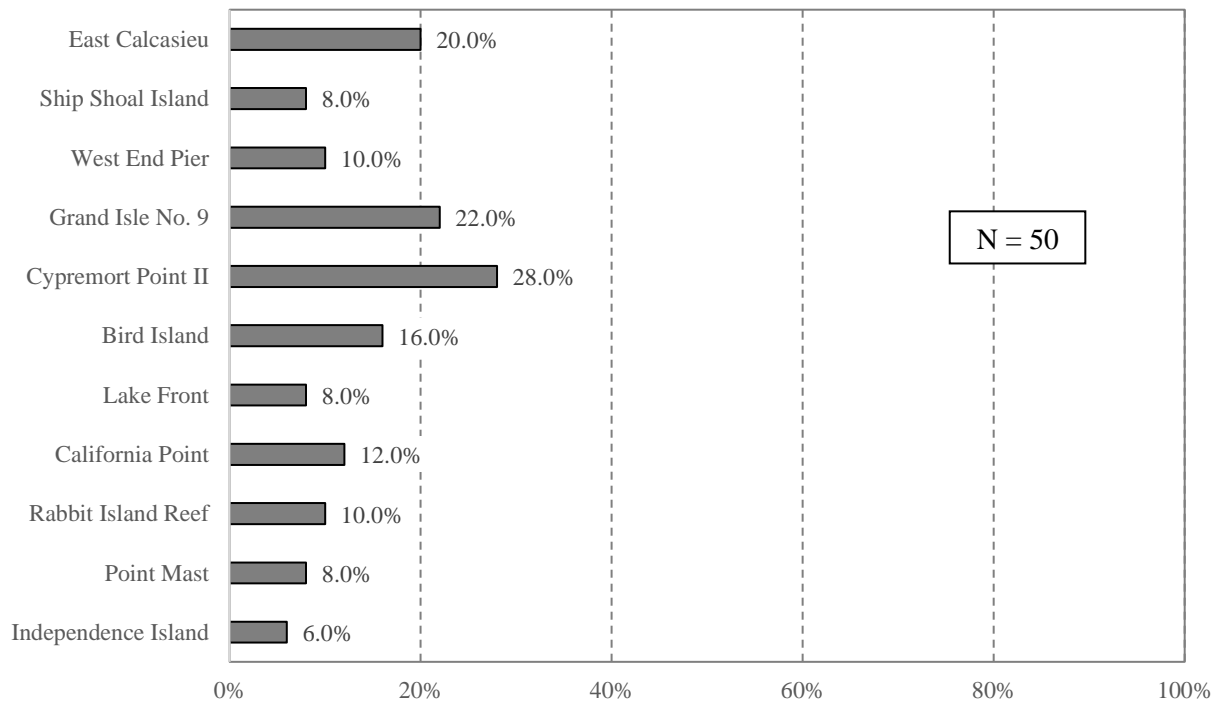


Figure 18. Percentage of Respondents Who Fished over Artificial Reefs Who Visited the Following Sites in 2022

Box 7. Reported Use of Specified Artificial Reefs among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who reported fishing over the specified artificial reefs:

- East Calcasieu: 26.2%
- Ship Shoal Island: 9.2%
- West End Pier: 10.8%
- Grand Isle No. 9: 29.2%
- Cypremort Point II: 13.9%
- Bird Island: 12.3%
- Lake Front: 16.9%
- California Point: 9.2%
- Rabbit Island Reef: 7.7%
- Point Mast: 9.2%
- Independence Island: 12.3%

The three most commonly-cited reefs among 2019 reef-angler respondents (East Calcasieu, Grand Isle Number 9, and Cypremort Point II) were also the most-commonly cited among 2022 respondents. The percentage of 2019 respondents who reported using the reef at Cypremort Point II was half as large as the percentage of 2022 respondents who did so.

A majority (58.0 percent) of the respondents who fished over artificial reefs in 2022 visited a single site among the 11 reefs included in the Artificial Reef Program. Sixteen percent reported using any two reefs and 14.0 percent reported using any three to five reefs. Twelve percent did not report using any of the 11 reefs in the Artificial Reef Program.

Respondents to the 2022 survey who reported fishing over artificial reefs in 2022 were asked to indicate whether they fished any of seven specific species when fishing over inshore artificial reefs. Great majorities reported targeting the most commonly harvested recreational inshore saltwater species in Louisiana: red drum (84.3 percent) and spotted seatrout (92.2 percent) (Figure 19). A majority (54.9 percent) reported fishing for flounder and approximately 30 percent targeted sheepshead or black drum.

Respondents were also given the opportunity to identify other species that were not included in the list provided. Respondents provided single instances of three species (sac-a-lait, crappie, and snapper). One respondent, somewhat incongruously, mentioned “offshore fishing.”

Eighteen percent of the reef-using respondents did not specify any of the seven specific types of fish listed in this question. Thirteen percent marked only one type. About one-third marked any two (14.8 percent) or three (21.3 percent) types and a third marked any four to six types.

Targeting specific types of fish does not imply actually harvesting them. Less than six percent of the 2022 survey respondents said that they always catch what they targeted over artificial reefs (Figure 20) and 35.3 percent said they caught what they targeted most of the time. Forty-three percent caught what they were targeting about half of the time that they fished over the reefs and 15.7 percent rarely or never caught what they were targeting.

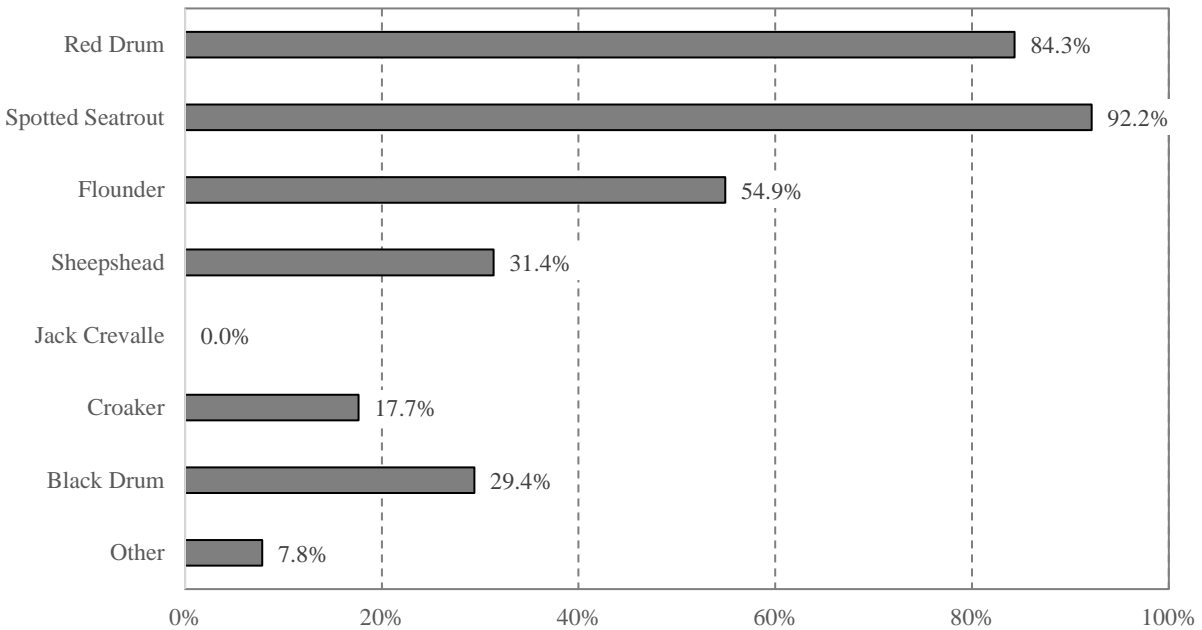


Figure 19. Percentage of Respondents Who Fished over Artificial Who Targeted the Following Species over an Inshore Artificial Reef

Box 8. Fish Pursued over Artificial Reefs among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who reported fishing for the specified species when fishing over artificial reefs:

- Red Drum: 69.2%
- Spotted Seatrout: 83.1%
- Flounder: 32.3%
- Sheepshead: 29.2%
- Jack Crevalle: 3.1%
- Croaker: 12.3%
- Black Drum: 21.5%

Percentage of 2019 survey respondents who said they caught the fish they targeted when fishing over artificial reefs “Most of the Time” or “All of the Time”: 38.5%

Spotted seatrout, red drum, flounder, and sheepshead were the most commonly targeted fished reported by both 2019 reef-angler and 2022 reef-angler respondents. Similar shares of both groups of respondents reported catching what they targeted most or all of the time.

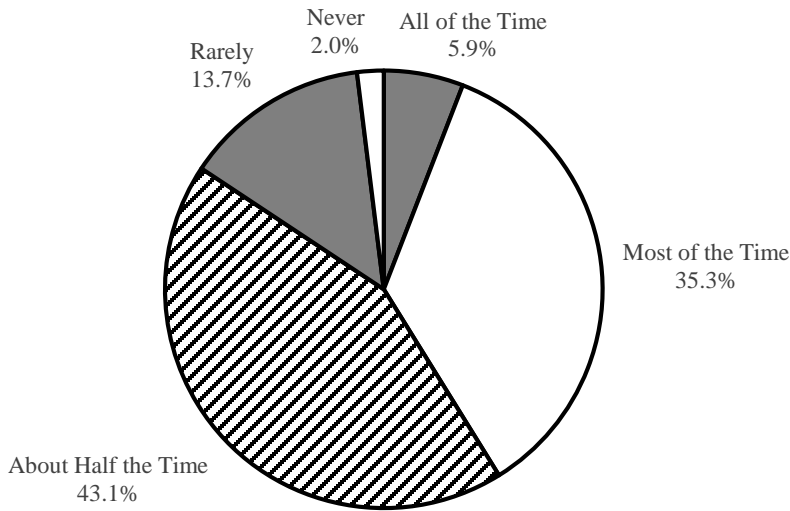


Figure 20. Percentage of Respondents Who Fished over Artificial Reefs Who Caught the Fish They Targeted with the Designated Frequency

Importance of Specific Reef Characteristics

Reef-angler respondents were asked to rate the level of importance of several factors on a five-point scale from “not important at all” to “extremely important.” Factors included the type of fish present on the reefs, location (distance from port) and environmental attributes (depth of water and strength of currents), and design characteristics (reef size, material, and lay-out).

Majorities rated the type of fish found on the reef (60 percent) (Figure 21) and strength of current (54 percent) (Figure 24) as “very important” or “extremely important.” Forty-two percent gave “distance from port” (Figure 22) and forty-four percent gave “depth of water” (Figure 23) ratings of “very” or “extremely important.”

By this measure, there appeared to be somewhat less importance attributed to the various design aspects than to other situational characteristics. Thirty-six percent thought reef size (Figure 25), 40 percent thought reef material (Figure 26), and 34 percent thought design or layout (Figure 27) was “very important” or “extremely important”.

Weighted average (w.a.) estimates were calculated for each factor by assigning a value of five for every “extremely important”, four for every “very important”, three for every “moderately important”, two for every “slightly important”, and one for every “not important at all” response and dividing the summation of these values by the number of responses. By this method, the type of fish (w.a. = 3.62) and strength of currents (w.a. = 3.60) were considered the most important characteristics by reef-angler respondents (Table 20). Reef design (w.a. = 3.18), reef material (w.a. = 3.18), and distance from port (w.a. = 3.16) had the lowest level of importance according to this rubric.

Chi-square tests indicated that the pattern of responses provided by 2022 respondents for fish found on the reef was significantly different from the pattern for reef design or lay-out. There was no statistical difference in the patterns for any other two factors.

Relative Importance of Specific Reef Characteristics to 2022 Survey Respondents Who Reported Fishing over Artificial Reefs in 2022:

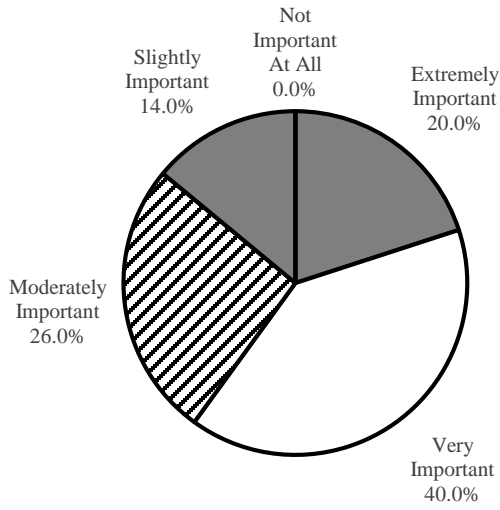


Figure 21. Characteristic: "Type of Fish Found on the Reef"

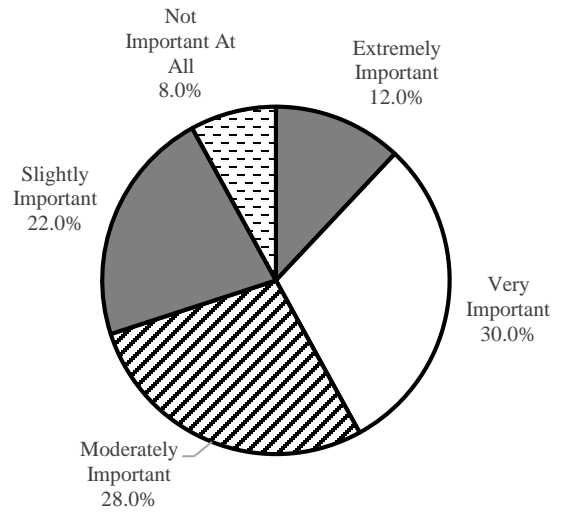


Figure 22. Characteristic: "Distance from Port"

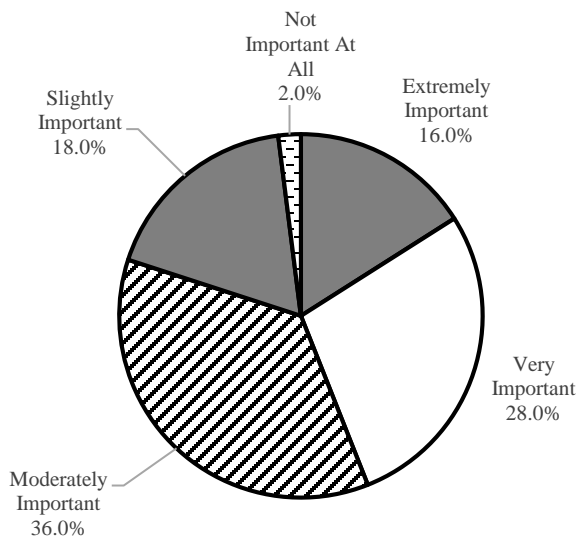


Figure 23. Characteristic: "Depth of Water"

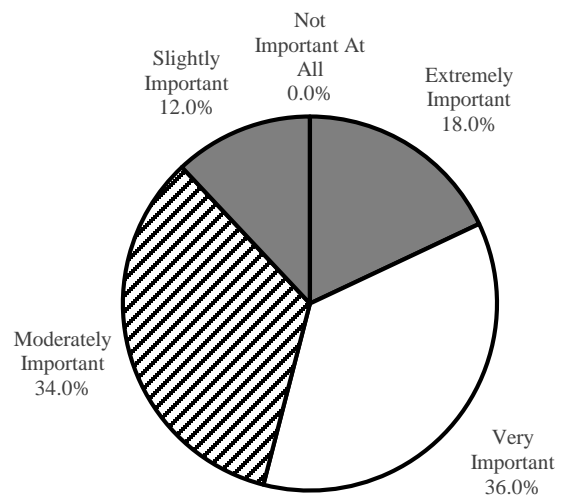


Figure 24. Characteristic: "Strength of Currents"

Relative Importance of Specific Reef Site Characteristics to 2022 Survey Respondents Who Reported Fishing over Artificial Reefs in 2022:

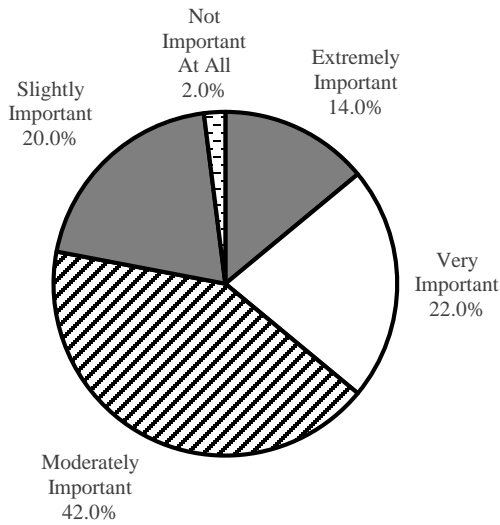


Figure 25. Characteristic: "Reef Size"

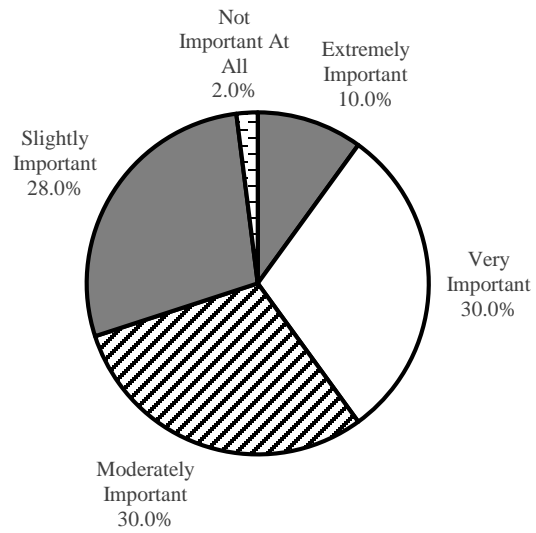


Figure 26. Characteristic: "Type of Reef Material"

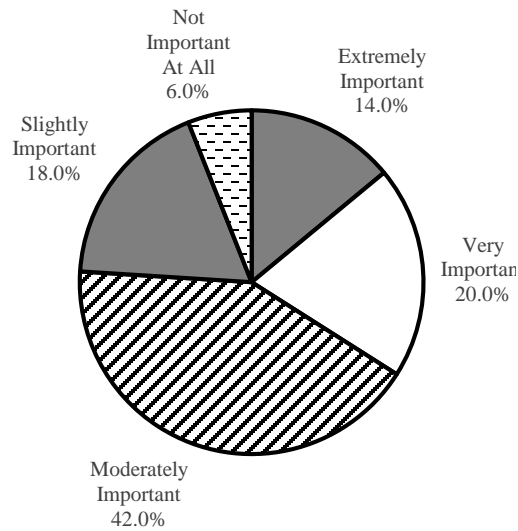


Figure 27. Characteristic: "Reef Design or Layout"

Table 20. Weighted Average Values for Specific Reef Characteristics among Respondents Who Fished over Artificial Reefs

Reef Characteristic	Weighted Average	Reef Characteristic	Weighted Average
Type of fish found on the reef	3.66	Size of reef	3.26
Distance from port	3.16	Type of reef material	3.18
Depth of water	3.38	Reef design or layout	3.18
Strength of currents	3.60		

Box 9. Relative Importance of Artificial Reef Characteristics among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who cited the specified characteristics of artificial reefs as “Very Important” or “Extremely Important”:

- Type of Fish Found on the Reef: 71.9%
- Distance from Port: 56.4%
- Depth of Water: 45.6%
- Strength of Currents: 52.4%
- Reef Size: 40.3%
- Type of Reef Material: 59.7%
- Reef Design or Layout: 30.7%

There is no significant difference in the pattern of responses for any individual factor between 2019 survey respondents and 2022 survey respondents.

Respondents’ Perspective on Artificial Reef Management

Reef-angler respondents were asked to indicate their level of agreement or disagreement on a five-point scale with a series of statements about artificial reef policy or management. Topics included the availability of reefs, their placement and construction, and the dissemination of information about reefs.

Approximately one quarter (27.5 percent) of the reef-angler respondents somewhat or strongly agreed that “it is difficult to find artificial reef locations in Louisiana” (Figure 28). One-third (33.4 percent) somewhat or strongly disagreed (33.4 percent); apparently meaning that they did not believe that it was difficult to find information. Thirty-nine percent were neutral on the statement.

In a related question, reef-angler respondents were asked if they felt they were aware of how to obtain information about artificial reefs. Almost one-half (49.1 percent) (Figure 29) agreed to some extent with the statement, “I know where to find information about artificial reefs.” Approximately 29 percent disagreed with the statement to some extent, an indication that they experienced some difficulty in finding information about artificial reefs.

Reef-angler respondents expressed a strong preference for more information, particularly the location of the reefs. Eighty-four percent somewhat or strongly agreed that the “L.D.W.F. should provide more information about artificial reefs” (Figure 30). Seventy-eight percent were more specific in their preferences, somewhat or strongly agreeing that the Department should “post the G.P.S. coordinates of artificial reefs” (Figure 31). (There is, perhaps unsurprisingly, a strong correlation between these two items. Eighty-eight percent of those who agreed to some extent that the Department should provide more information also agreed to some extent that the Department should publish G.P.S. data.)

Most reef-angler respondents expressed an interest in expanding artificial reef opportunities in Louisiana. Two-thirds somewhat or strongly agreed that “the L.D.W.F. should place more artificial reefs in inshore waters” (Figure 32). A somewhat smaller majority (58.8 percent) somewhat or strongly agreed that the Department “should make existing reefs larger” (Figure 33). (Approximately 49 percent agreed to some extent with both propositions, that is, that the Department should create more reefs and also make current reefs bigger.)

Agreement or Disagreement with the Specified Statement by 2022 Survey Respondents Who Reported Fishing over Artificial Reefs in 2022:

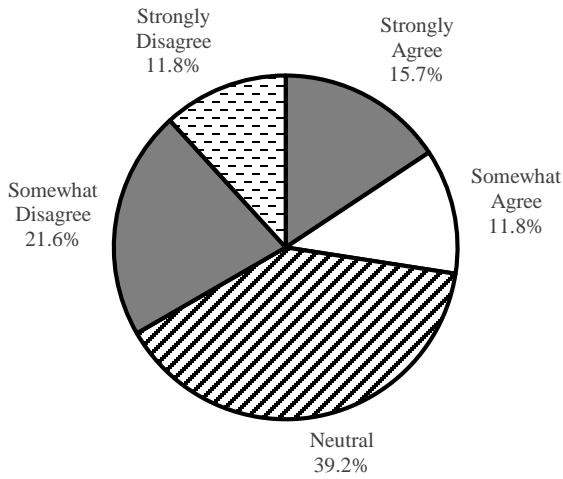


Figure 28. Statement:
"It is difficult to find artificial reefs in Louisiana with the information now available."

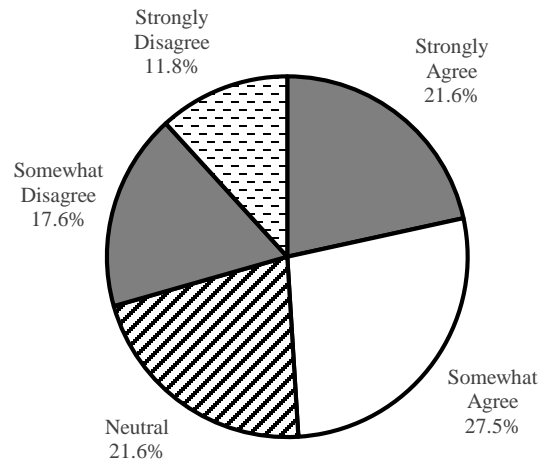


Figure 29. Statement:
"I know where to find information about artificial reefs."

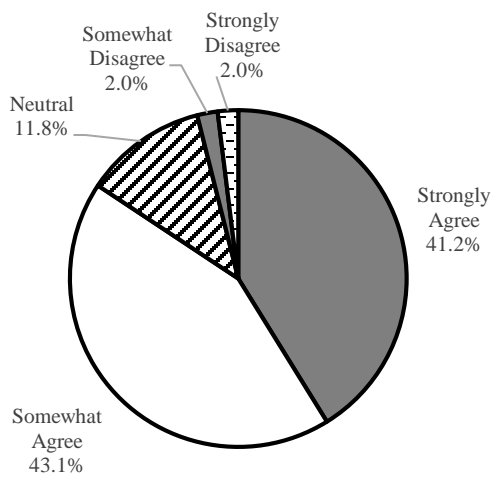


Figure 30. Statement:
"L.D.W.F. should provide more information about artificial reefs."

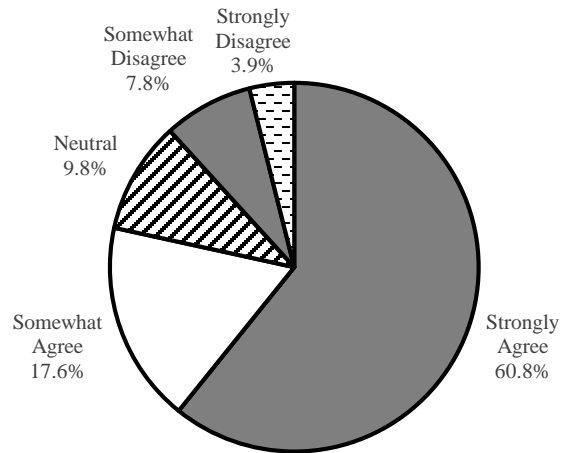


Figure 31. Statement:
"The L.D.W.F. should post the G.P.S. coordinates of artificial reef locations."

Agreement or Disagreement with the Specified Statement by 2022 Survey Respondents Who Reported Fishing over Artificial Reefs in 2022:

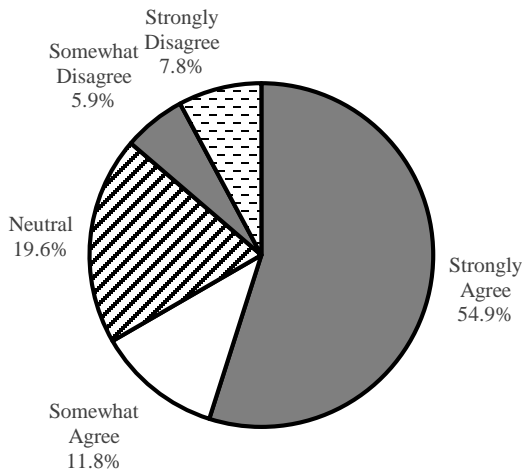


Figure 32. Statement:
"The L.D.W.F. should place more artificial reefs in inshore waters."

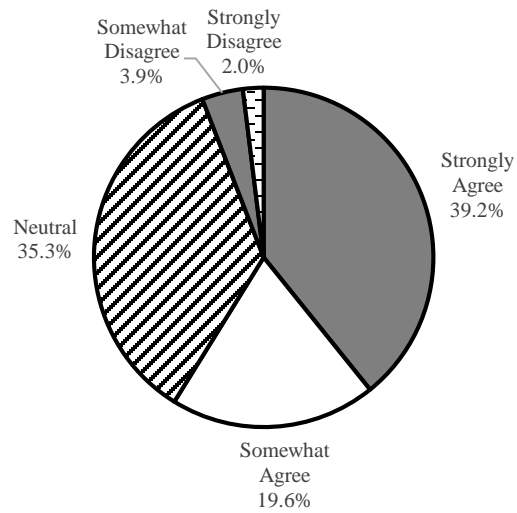


Figure 33. Statement:
"The L.D.W.F. should make existing artificial reefs larger."

Box 10. Agreement with Statements about Artificial Reef Management among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who marked "Somewhat Agree" or "Strongly Agree" in response to the following statements:

- The L.D.W.F. should post the G.P.S. coordinates of artificial reef locations: 93.2%
- The L.D.W.F. should place more artificial reefs in inshore waters: 83.0%
- The L.D.W.F. should provide more information about artificial reefs: 72.3%
- The L.D.W.F. should make existing artificial reefs larger: 67.7%
- I know where to find information about artificial reefs: 41.5%
- It is difficult to find artificial reefs in Louisiana with the information now available: 34.9%

The patterns of responses to this series of questions among 2019 survey respondents was not statistically different from the patterns observed among 2022 survey respondents with one exception. The percentage of 2019 who somewhat or strongly agreed that the L.D.W.F. should place more reefs in inshore waters comprised 83 percent of 2019 respondents but only 66.7 percent of 2022 respondents. Less than two percent of 2019 respondents but nearly 14 percent of 2022 respondents disagreed to some degree with the idea of the Department's creating more artificial reefs.

Overall Satisfaction with Louisiana's Artificial Reefs

Reef-angler respondents were asked to indicate their overall satisfaction with Louisiana's artificial reefs on a five-point scale ranging from strongly dissatisfied to strongly satisfied. (Their assessments may include the consideration of Louisiana Artificial Reef Program sites as well as other reefs in the state.) Half claimed they were strongly (20.0 percent) or somewhat (30.0 percent) satisfied (Figure 34). Thirty-six percent were neutral. Fourteen percent were somewhat dissatisfied and none said they were strongly dissatisfied.

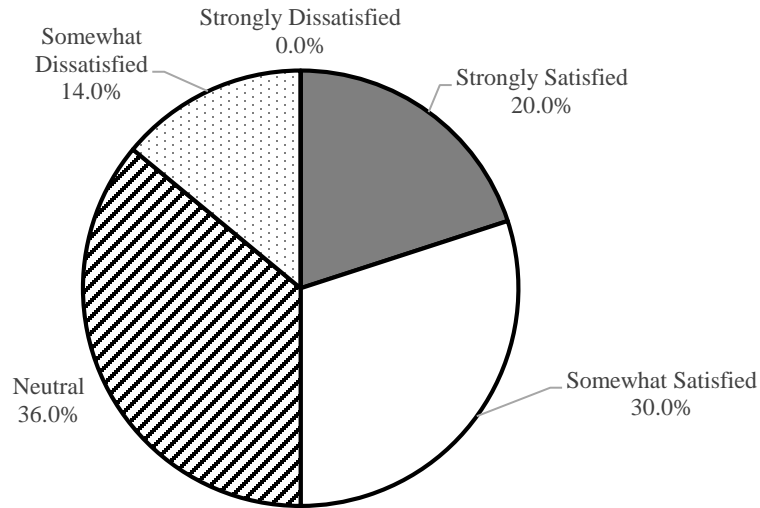


Figure 34. Overall Satisfaction with the Quality of Fishing over Louisiana's Artificial Reefs among Respondents Who Fished over Artificial Reefs

Box 7. Overall Satisfaction among Respondents to the 2019 Survey

Overall satisfaction with the quality of fishing over Louisiana’s artificial reefs among of 2019 survey respondents:

- Strongly Satisfied: 15.9%
- Somewhat Satisfied: 42.9%
- Neutral: 30.2%
- Somewhat Dissatisfied: 9.5%
- Strongly Dissatisfied: 1.6%

Approximately 59 percent of 2018 survey respondents were somewhat or strongly satisfied with Louisiana’s artificial reefs. Roughly 11 percent were dissatisfied to some degree and 30.2 percent were neutral. The pattern of responses for overall satisfaction with reefs in the 2019 survey was not significantly different from the pattern in the 2022 survey.

Reasons for Not Fishing over Artificial Reefs

The 2022 survey respondents who fished in 2022 but did not use artificial reefs (“non-users”) were presented a series of statements describing possible reasons for not doing so. The list of reasons presented to the subjects was identical to the list used in the 2019 survey, ranging from the location of the reefs and factors affecting the quality of fishing over them.

Over one quarter of the non-users (27.2 percent) claimed they did not fish over artificial reefs because there were no reef where they fish (Figure 35). Approximately 21 percent cited this factor as a minor or moderate reason. It is unclear how many of these do not use artificial reefs out of site preference and how many of them might use reefs if more reefs were present near the places where they fish.

Reasons for Not Fishing over Artificial Reefs by 2022 Survey Respondents Who Did Not Report Fishing over Artificial Reefs in 2022:

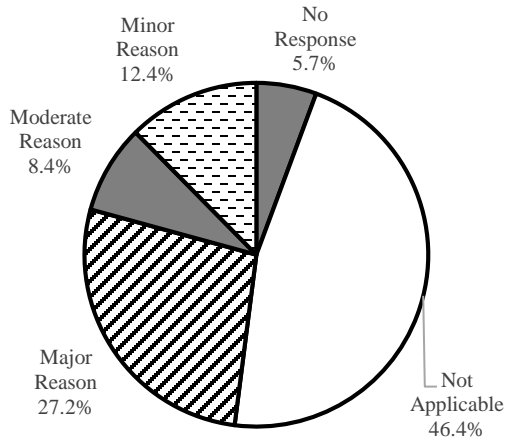


Figure 35. Reason: "There are no reefs where I fish."

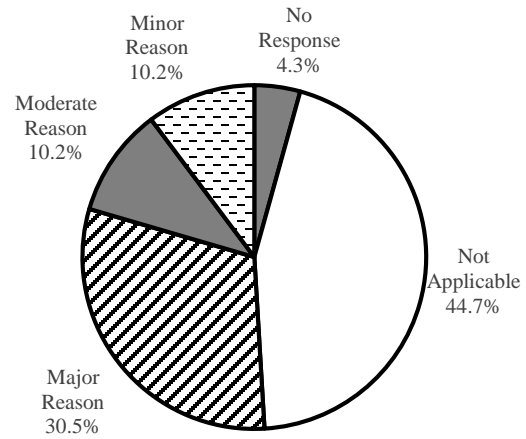


Figure 36. Reason: "I don't know where they are."

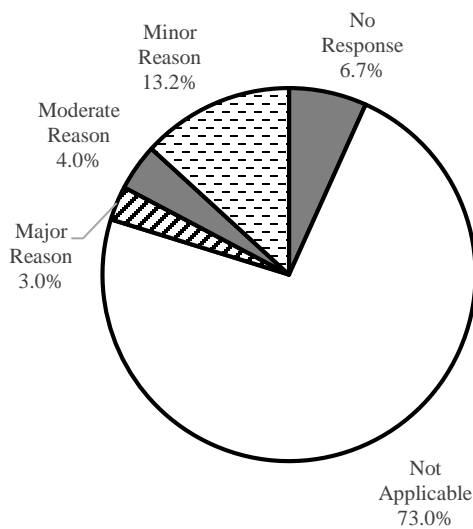


Figure 37. Reason: "The reefs are too crowded."

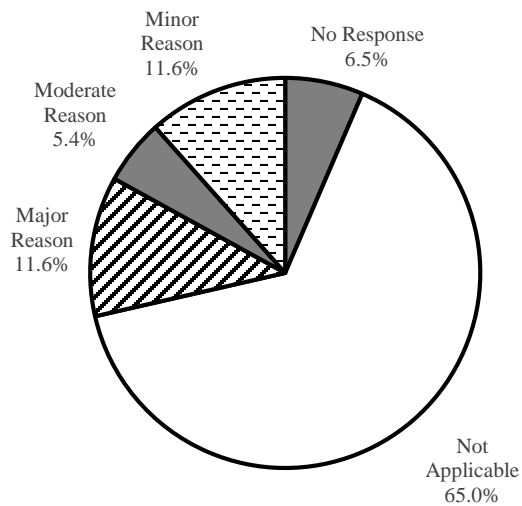


Figure 38. Reason: "The fish I like to catch are not found there."

A lack of awareness of the location of reefs appear to be a significant explanatory factor for many anglers who do not use them. Thirty percent of the non-users said they did not fish over artificial reefs because they did not know where they are (Figure 36). Ten percent cited an unawareness of the reefs' locations as a moderate factor and 10 percent as a minor reason for not using them. (Not knowing where the reefs are is the only factor among the four provided that was cited as a minor, moderate, or major reason for not using artificial reefs.)

Relatively few of the non-users mentioned quality issues as reasons for not fishing over artificial reefs. Approximately three quarters rated crowding (Figure 37) and two-thirds cited an absence of preferred fish species (Figure 38) as non-applicable in their choices not to fish over artificial reefs.

Non-response rates were relatively low for this series of questions.

Over one quarter (26.5 percent) of the non-users who answered all four questions marked each of the specified reasons provided as “not applicable.”

Box 6. Reasons for Not Fishing over Artificial Reefs among Respondents to the 2019 Survey

Percentage of 2019 survey respondents who cited the following as a major reason for not fishing over artificial reefs or as not applicable

- There are no reefs where I fish:
 - Major reason: 57.3%
 - Not applicable: 28.4%
- I do not know where they are:
 - Major reason: 50.8%
 - Not applicable: 34.2%
- The reefs are too crowded:
 - Major reason: 6.9%
 - Not applicable: 69.7%
- The fish I like to catch are not found there:
 - Major reason: 20.5%
 - Not applicable: 56.4%

Comparisons of the four items listed as possible reasons for not fishing suggest that fewer reef-angler respondents in 2022 than in 2019 did not use reefs because there were not any reefs in their preferred fishing areas or because they did not know where the reefs were.

The percentage of 2019 survey respondents citing the absence of reefs where they fish as a major reason for not fishing over artificial reefs was about twice as high as the percentage of 2022 survey respondents. The percentage of 2019 respondents identifying a lack of knowledge of artificial reefs as a major reason for not fishing over them was 20 percent higher than the percentage of 2022 respondents who cited this as a major reason.

One fifth of 2019 survey respondents claimed that the absence of the fish they preferred to catch was a major reason for not fishing over artificial reefs. Between 11 and 12 percent of 2022 respondents marked this a major reason.

The pattern of responses for the item regarding crowding on artificial reefs among 2019 respondents was not significantly different from the pattern among 2022 respondents. About seven percent of 2019 respondents and three percent of 2022 respondents mentioned crowding as a major reason for not fishing over artificial reefs.

Conclusion

The 2022 survey of Louisiana residents with saltwater fishing privileges reinforces the conclusion from the 2019 survey that artificial reefs are widely used by saltwater anglers as recreational fishing venues. Applying the percentage of respondents who fished over an artificial reef in 2022 to the estimated number of residents with saltwater fishing privileges who fished in saltwater that year suggests that approximately 44,000 Louisianans spent time fishing over an artificial reef somewhere in Louisiana. This estimate is roughly equivalent to the number estimated in the 2018.

Most of the reef users took one to three trips over artificial reefs and rated the type of fish present as an important factor in their decisions to utilize specific reefs. Large majorities pursued red drum and spotted seatrout when over the reefs. Approximately 40 percent said they were able to catch what they targeted most or all of the time when fishing over a reef and 43 percent said they could do so about half the time.

Many of the respondents who reported no use of artificial reefs in 2022 said they did not do so because there were no reefs where they fished. Similar numbers cited not knowing the location of artificial reefs as major reasons for not using them.

A slim majority of reef-using respondents said they were somewhat or strongly satisfied with the quality of fishing over Louisiana's artificial reefs. Thirty-six percent said they were neutral. Great care should be exercised in applying these statistics to the Artificial Reef Program as a whole. For one, it is likely that respondents' level of satisfaction applies to all artificial reefs present in the state, not only those built and maintained by the Program itself. Further, most respondents may not be able to assess the program as a whole because they have experience with only a small part of it. Seventy percent of the reef-using respondents reported using only one (58 percent) or none (12 percent) of the 11 reefs within the Program.

Further examination of the Artificial Reef Program may choose to study the use of and perspectives on individual reefs. Methods other than a broad, statewide survey of the sort deployed in this research may be more appropriate for such efforts.