

**Use of R3 recommended actions in addressing minority participation in recreational
freshwater fishing in Alabama**

by

Emily K. Nichols

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
May 7, 2022

Keywords: angler R3, minority participation, outdoor recreation

Copyright 2022 by Emily K. Nichols

Approved by

Wayde Morse, Chair, Professor of Forestry, Wildlife, and Environment
Terry Hanson, Professor of Fisheries, Aquaculture, and Aquatic Sciences
Eve Brantley, Professor of Crop, Soil, and Environmental Sciences
David Cline, Associate Extension Professor of Fisheries, Aquaculture, and Aquatic Sciences

Abstract

Recreational fishing license sales and expenditures fund aquatic resource operations and provide education and outreach services. With declines in participation, as measured by license sales, managers and researchers alike are interested in finding ways to secure future support for recreational fishing. Understanding fishing user groups and learning how to recruit, retain, and reactivate (R3) anglers is an example of such efforts. There is a particular interest in examining user groups who may be underserved by recreation providers. Historic participation in recreational freshwater fishing in Alabama has been low amongst minority groups, for example, and there is a need to understand demographic implications for recreational fishing participation. The purpose of this project was to gain a better understanding of angler participation behaviors across different population segments and address any outreach and education needs by identifying their 1) fishing related experiences, values, and motivations, 2) constraints that may prevent them from fishing in public water, and 3) constraint negotiation strategies that may enable them to increase their participation. The project used a combination of qualitative and quantitative methods to collect and analyze data. In spring 2018, we conducted nine semi-structured focus group meetings with African American and Latinx community members in seven urban and rural locations across the state. In spring 2019, we conducted statewide bilingual survey sampling of African American, Latinx, and White anglers who purchased freshwater fishing licenses in 2012-2017 and lapsed as of 2018. In summer 2019, we conducted a focus group with Latinx stakeholders in central Alabama concerning their fishing information related needs. In fall 2020, we conducted statewide bilingual survey sampling of individuals belonging to African American, Latinx, and White population segments who purchased freshwater fishing licenses in 2019 and 2020. We found important similarities and differences in the fishing histories, experiences, and behaviors of the three population segments. Fishing was culturally important to all segments, and they felt it should be passed down through the generations. We identified motivations (relaxation), constraints (lack of time), and negotiation strategies (improved access) that are characteristic of Alabama angler experiences. Some were significantly more important to minority segments than Whites and vice versa. Our findings can help managers to develop targeted education and outreach for fishing R3 to attract and retain Alabama fishing participation.

Acknowledgments

I am grateful to my family members and friends for their support, encouragement, and belief in me. I am especially grateful to my parents, Laura and Claude Nichols, who taught me the value of education and provided me with countless opportunities to learn and grow. They have made many investments in me and hopefully will see that some of them have paid off. I am most appreciative of my daughter, Emma Claire, who has learned alongside me throughout this process and has been my biggest cheerleader. I am grateful to Patrick Thompson for being there for me, inspiring me, and helping me to reach the finish line. I would like to say a special thank you to Wayde Morse for his enthusiasm for this project and his knowledge and experience that has guided me. I am also thankful for my committee members, Terry Hanson, Eve Brantley, and David Cline, for their time, support, and confidence in me. I thank Sondra Parmer for the time and attention she dedicated to my dissertation by serving as an outside reader. I am grateful to Mona Dominguez, Sergio Ruiz-Cordova, and Carolina Ruiz-Cordova for their collaboration with this research project, many important contributions, and immense support. I am appreciative of all of the participants who took part in the study. Their willingness to share about their fishing experiences made it all possible. Above all else, I thank God for this opportunity and for all the blessings of this life.

Table of Contents

Abstract..... 2

Acknowledgments..... 3

List of Tables 5

List of Figures..... 7

Chapter 1 Capturing minority voices: a focus group approach to understanding fishing behavior in Alabama..... 8

Chapter 2 R3 interventions for recreational fishing 37

Chapter 3 Characteristics of lapsed anglers 44

Chapter 4 Catch and non-catch characteristics of licensed recreational anglers in Alabama..... 80

References 114

Appendix 1 R3 interventions to address multicultural angling information needs 123

 Print Material: Do I Qualify as a Resident?/ ¿Califico como residente? 124

 Print Material: Everyone Can Fish Alabama 126

 Print Material: Todos Podemos Pescar en Alabama..... 132

 Video: Everyone Can Fish Alabama..... 138

 Video: Todos Podemos Pescar Alabama 139

 Video: Our Fish Our Water..... 140

 Video: Nuestros Peces y Nuestras Aguas 141

 Web Content: OutdoorAlabama.com Translated Web Content 142

Appendix 2 Survey instruments..... 160

 Questions about why you stopped fishing 161

 Fishing in Alabama public waters..... 171

List of Tables

Chapter 1:

Table 1 Guiding questions and probes used to facilitate focus-group discussion for Latinx and African American anglers at nine focus-group meetings at seven locations in Alabama	17
Table 2 Description of focus-group meetings and representation of minority population segments at nine focus-group meetings at seven locations in Alabama	20
Table 3 Motivations for recreational freshwater fishing reported by African American ($n = 4$) and Latinx ($n = 5$) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each theme.....	22
Table 4 Constraints to participation in recreational freshwater fishing reported by African American ($n = 4$) and Latinx ($n = 5$) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each constraint	23
Table 5 Negotiations to the constraints to recreational freshwater fishing participation reported by African American ($n = 4$) and Latinx ($n = 5$) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each negotiation theme.....	26

Chapter 3:

Table 1 Nonresponse test of lapsed angler population and sample	57
Table 2 Demographic profile of lapsed angler survey respondents.....	58
Table 3 Preferences and fishing history of lapsed Alabama anglers	60
Table 4 Percentage of anglers placing cultural importance on recreational fishing.....	61

Table 5 Lapsed angler recruitment motivations to start fishing	62
Table 6 Lapsed angler constraints to going fishing	64
Table 7 Proportion of the ethnic segments that experienced constraints	67
Table 8 Lapsed angler constraint negotiation strategies	68
Chapter 4:	
Table 1 Nonresponse test of licensed angler population and sample	90
Table 2 Demographic profile of lapsed angler survey respondents.....	90
Table 3 Fishing history of currently licensed recreational freshwater anglers in Alabama.....	92
Table 4 Motivations for getting involved in fishing	93
Table 5 Percentage of anglers placing cultural importance on recreational fishing	95
Table 6 Percentage of individuals within segment-Centrality to Lifestyle.....	95
Table 7 Catch orientation of licensed Alabama anglers by population segment.....	96
Table 8 Preferences for fish species, fishing type, and water bodies, within population segments	97
Table 9 Angler fishing participation in Alabama public waters in 2019	98
Table 10 Angler satisfaction with the overall quality of fishing in Alabama public waters in 2019	100
Table 11 Constraints preventing licensed anglers from fishing more often	101
Table 12 Negotiation strategies licensed anglers identified would help them to go fishing more often in Alabama public waters	103

List of Figures

Figure 1 Locations of study sites in urban and rural areas across Alabama and the proportions of African American and Latinx residents at the city and county level 16

Chapter 1 Capturing minority voices: a focus group approach to understanding fishing behavior in Alabama

Emily K. Nichols^{a*} and Wayde Morse^b

^aAlabama Cooperative Extension System, Auburn University, Auburn, USA; ^bCollege of Forestry, Wildlife, and Environment, Auburn University, Auburn, USA

Emily Nichols, ekn0001@auburn.edu, Alabama Cooperative Extension System, Auburn University, Auburn, 219 Duncan Hall, Auburn University, AL 36849

Abstract

Recreational fisheries planning and management relies on an engaged public with support in the form of fishing license sales and expenditures that fund operations and provide education and outreach services. To improve our understanding of two minority population segments with low historic participation in freshwater recreational fishing in Alabama, we examined their fishing participation and non-participation behaviors using focus groups. The objectives of the study were to gather information about 1) African American and Latinx fishing-related experiences, values, and motivations, 2) constraints that may prevent individuals of these population segments from fishing in public waters, and 3) constraint negotiation strategies that may enable them to increase their participation. In spring 2018, we conducted nine semi-structured focus group meetings with African American and Latinx community members in seven urban and rural locations across the state. We found that fishing is culturally relevant and valuable to both segments though perceived and encountered constraints such as information regarding fishing licenses, knowledge and skills, time, work, and access points influenced their participation. Purchasing a fishing license was the most significant constraint communicated by the Latinx segment. Latinx participants emphasized social connection as a motivation for fishing while relaxing and escaping stressors was highlighted by African American participants. General awareness about opportunities, basic fishing information, and regulations was low, while a desire for education, outreach, and opportunities to fish was high. Our study initiated dialogue between the state agency and an underrepresented audience and is a first step in understanding the latter's behavior regarding freshwater recreational fishing. These findings have important implications for recruiting and retaining diverse participants.

Key words: recreation, angler, R3, underrepresented groups

Introduction

Recreational freshwater fishing plays an important role in connecting community members to their natural resources and supporting personal health and well-being (McManus et al., 2011) while contributing to local and state economies (Southwick Associates, 2019). Fishing-related expenditures and license sales fund state agency fishery management operations and education and outreach services (Tufts et al., 2015) that are vital to the public. A growing concern about fishing participation became more prevalent in the mid to late 1990s (Fedler et al., 1998).

Although nationwide fishing license purchases declined from 2016 to 2019, they are currently trending upward (Southwick Associates, 2020).

Fishing recruitment, retention, and reactivation (R3) strategic programming efforts have increasingly become a focus for state agencies and partner organizations to address concerns about participation in recreational fishing (Fedler and Ditton, 2000; Responsive Management and National Shooting Sports Foundation, 2017). Understanding and responding to the needs of a diverse statewide audience is an important part of the R3 process. With a mandate to educate, inspire, and serve communities statewide, extension programs can aid these efforts and help foster awareness of resource use (Borisova et al., 2016).

The recreation experience model suggests that recreationists are motivated to conduct an activity in a preferred setting to achieve desired experiential benefits or outcomes (Moore and Driver, 2005). Examples of fishing motivations include getting away from daily routines, being outdoors, being with family and friends, and the challenge of catching a fish (Fedler and Ditton 1994; Hunt et al., 2019). Experiential outcomes for the individual comprise psychological (self-esteem, new skills, relaxation), psychophysiological (quality of life, fitness, reduced anxiety), and social/cultural (community identity, family bonding, cultural appreciation) components

(Moore and Driver, 2005). Furthermore, recreation and tourism benefits also accrue for local communities such as environmental conservation and economic development (Moore and Driver, 2005; Lupoli et al., 2015). However, barriers or constraints can limit or preclude an individual's recreation activity or choice (Jackson, 1993). Constraints that influence participation can be intrapersonal (stress, shyness, lack of skill, language), interpersonal (lack of others to go with, discrimination, lack of family support), and structural (access, lack of facilities, transportation, lack of information) (Crawford and Godbey, 1987; Godbey et al., 2010). All individuals face constraints to some degree, but they often can overcome or negotiate through them and continue to participate. Minority groups have been consistently documented to face higher constraints than other groups (Sharaievska et al., 2010; Stodolska, 1998; Stodolska et al., 2020). Ultimately, participation in outdoor recreational activities like fishing is the product of interactions among constraints, motivations, and negotiation strategies (Hubbard and Mannell, 2001). Motivation levels and ability of individuals to negotiate or work through constraints will determine participation (Jackson, 2000; White, 2008).

Although nationwide participation in recreational freshwater fishing has been at a steady rate the past couple of years, only 19% of participation was represented by non-White individuals (Recreational Boating and Fishing Foundation and Outdoor Foundation, 2020). Low historic participation, cultural patterns, education, and financial resources are among the factors believed to influence minority exposure to recreational fishing (Hunt and Ditton, 2002). Some reports have suggested that lower disposable incomes (Anderson and Loomis, 2005) and costs (Recreational Boating and Fishing Foundation and Aquatic Resources Education Association, 2016) associated with fishing may deter angling participation by underrepresented groups. Stodolska et al. (2020) claim that not only do minorities experience constraints that Whites do

not, such as language barriers and discrimination, they experience these constraints more strongly.

Schroeder et al. (2008) identified strategies that could facilitate minority participation in fishing, such as culturally relevant communication, educational opportunities, urban fishing programs, and placing an emphasis on social benefits. Having social support or a family history of fishing was characteristic of African American survey participants in Serenari and Peterson's (2018) evaluation of cultural relevance to minorities in fishing. Hunt and Ditton (2002) found that African Americans and especially Latinxs typically fish with friends and family more than do Whites, but African Americans were more likely to fish alone than Latinxs and Whites. Efforts in R3 to understand and respond to a diverse statewide audience should account for the cultural experiences and history of these groups while exploring interactions between fishing motivations and constraints to participation (Schneider and Wynveen, 2015). Shores et al. (2007) suggest that while it may be difficult to make a wide range of sociodemographic considerations in planning, it is necessary to increase participation in recreational activity. Serenari and Peterson (2018) stress that minority perspectives should directly inform recreational planning, rather than "assimilating minorities into the dominant sportsperson culture."

Because minority participation in fishing is lower compared to traditionally over-represented groups, random sampling does not typically provide adequate minority-associated data to adequately inform recreational fisheries planning (Hunt and Ditton, 2002). Moreover, a random sample approach to stakeholder data collection limits the ability to examine specific population segments for differences and similarities, thus increasing the chance to miss important details about their participation (Toth and Brown, 1997). Rather, we should examine them independently with respect and attention to detail. Qualitative research is a scientific form

of investigation designed to collect in-depth contextual information as it applies to a particular issue and population (Creswell, 2007). Qualitative research is frequently applied to topics where there has been little previous research, where the audience under study is a small subset of the overall population, and/or a deep understanding of the topic is required from the participant perspective. Data collection is designed to give participants a voice to share their own insights, interpretations, and experiences in their own words. It involves a form of textual analysis where participant quotes are the units of analysis.

In this form of research, the researcher is responsible for systematically analyzing the data, drawing inferences, and ensuring quality of the research (Creswell, 2007; Morse et al., 2002). The researcher analyzes the data to look for consistent themes. Themes are common ideas, or categorization of participant answers, which are then coded in an iterative manner throughout the data collection and analysis phase (Miles and Huberman, 1994). More colloquially, themes can be thought of as search terms on the internet where the word or phrase you search will lead you to similar content. If the content found is not exactly what is desired, then search terms can be adjusted in an iterative fashion to find desired content. The reverse process is used in thematic development; content is examined to find those key themes or ideas that best represent what is being said by the participants. Themes are organized with sub-themes; for example, under a motivation theme could be different types of motivations such as social connection, consumption, and escaping stressors. The goal is understanding a range of ideas within or across populations rather than make generalizations about individuals within that population (Krueger and Casey, 2009). Purposive, instead of random, sampling is used to identify participants that can best inform the research (Creswell, 2007; Krueger and Casey, 2009). Additional data is collected until no new information is being provided by each

subsequent effort, to the point of what is termed saturation (Morse et al., 2002; Morse et al., 2014). Validity and reliability are developed through techniques such as peer checking to ensure that the themes are consistently coded throughout the data set and saturation to ensure that the full range of ideas have been documented (Creswell, 2007).

Similar to other states, historic participation in recreational freshwater fishing in Alabama has been low amongst minority population segments. Approximately 11% of the state's White population purchased fishing licenses between 2012 and 2017 whereas only 3% or less of minority populations purchased licenses (Alabama Department of Conservation and Natural Resources, Fisheries license database 2011–2017, unpublished raw data). The purpose of this study was to gain a better understanding of outreach and education needs of African American and Latinx population segments in Alabama. Specifically, our objectives were to identify 1) fishing related experiences, values, and motivations, 2) constraints that may prevent individuals of these segments from fishing in public water, and 3) constraint negotiation strategies that may enable them to increase their participation.

Methods

We used focus groups, or small group interviews with focused discussion, to collect qualitative data for this research, since focus groups can target specific, often underrepresented, user groups (Krueger and Casey, 2009). Homogeneous focus groups formed of 5–10 individuals are recommended as those have been shown to provide an environment where participants are the most comfortable and willing to share their perspectives (Krueger and Casey, 2009). Topical, open-ended questions were used to avoid a constrained set of answers as well as to elicit participant perspectives without leading the discussion. Questions were designed to facilitate

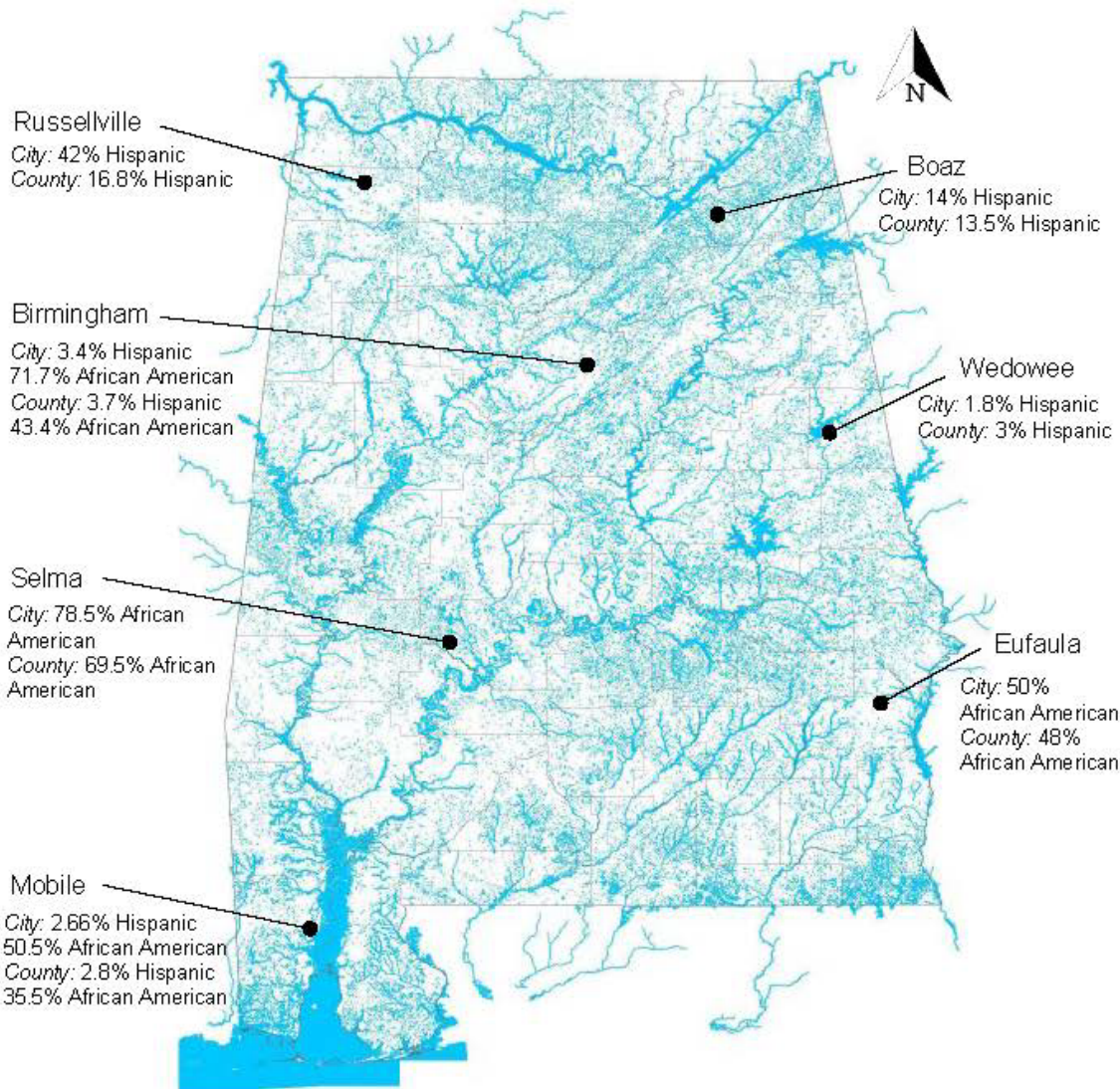
participant interaction and dialogue, with follow-up probes used to prompt more detailed explanations (i.e., “Could you elaborate on what you mean by that?”).

Our study collected data separately from African American and Latinx stakeholders in seven urban and rural areas across Alabama (Figure 1). Latinx is used in this study as a means to group all individuals with a historical background in Latin America, including those countries where the languages of Spanish, Portuguese, and French are spoken. To improve our understanding of angling preferences, we designed the sampling to provide a range of contexts that we believed might influence minority fishing experiences and constraints. We selected communities with ranging proportions of minority segments, a history of freshwater fishing purchases, and nearby public fishing areas; exceptions were one urban area (Birmingham) and one rural area (Boaz), both of which required more than 25 km of travel to desirable fishing sites.

With the help of county Extension program officials, we identified key contacts who were trusted community members with community development experience and had access to local anglers. We provided in-person training to these selected focus-group organizers to prepare them to assist with the groups and recruit participants. Focus-group organizers used snowball sampling to recruit participants for focus group meetings in their respective areas. This technique involves participants identifying other participants for a study, creating a snowball effect (Onwuegbuzie and Collins, 2007). Target participants were individuals self-identifying as African American or Latinx, aged 19 years and older, who were Alabama residents, and interested or engaged in recreational freshwater fishing. Each organizer sought participant diversity in age, gender, and fishing interest. Fear surrounding participation limited our ability to form Latinx groups in some areas of interest (Eufaula, Athens, and Albertville) and made it difficult to recruit participants in all locations where we conducted groups. Participant

availability and the organizer’s ability to coordinate the meeting ultimately determined the group size.

Figure 1. Locations of study sites in urban and rural areas across Alabama and the proportions of African American and Latinx residents at the city and county level (U.S. Census Bureau, 2017).



Focus Group Meeting Administration and Question Development

We conducted focus-group meetings in spring 2018 at convenient times and mutually agreeable community locations that organizers identified as comfortable and familiar for participants

(Morgan et al., 1998). These locations included a community center, library, church, residential home, and extension office. We conducted additional focus groups until the point of saturation, or until further data collection did not provide additional insight about minority fishing behavior (Glaser and Strauss, 1967; Morse et al., 2014).

African American meetings were led by trained organizers, while a bilingual Latinx member of the research team moderated the Latinx meetings in Spanish. Focus-group discussion proceeded according to our list of scripted questions following the fishing R3 path (Table 1). The questions were designed to identify attitudes and beliefs about fishing and how they see themselves in the sport, what motivated them to fish, the constraints they face and how they would work through them, and information and service related needs. We asked additional probing questions if needed to facilitate dialogue (Table 1). The probes addressed specific attitude, belief, motivation, constraint, and negotiation items that had been identified in previous studies to influence recreation participation. Social connection motives (White 2008), cultural relevance (Serenari and Peterson, 2018), and racial discrimination and bias constraints (Schroeder et al., 2008; Stodolska et al., 2020) are among these. The guiding questions and probes were open-ended allowing participants to elaborate in their own words on the topic.

Table 1. Guiding questions and probes used to facilitate focus-group discussion.

Questions	Probes
How did you get started with fishing?	Where were you when you first learned to fish? What did you catch? Who were you with/did someone introduce you?
What are your reasons for going fishing?	Do any of these motivations apply to you: being outside in a natural environment, spending time with friends and family, to relax, for fun, fishing is an important part of my culture? How is fishing perceived by your culture?
How have you been made aware of fishing opportunities or received fishing related information in the past?	How would you prefer to receive information? Is language ever an issue for you?

<p>What has prevented you from going fishing, or going as often as you would like?</p>	<p>Do any of these constraints apply to you: not having fishing skills or abilities, living in an urban area, lack of bodies of water or clean water/natural surroundings, no knowledge of fishing or where to go, lack of fishing equipment, cost of fishing equipment? Is race or discrimination ever an issue for you? How do you feel about the costs?</p>
<p>What would increase the chance of you fishing more in the future? What activities are you taking part in instead of fishing? What has kept you, or people that you know, active in going fishing, and why? Alternatively, why have you or people that you know, stopped fishing?</p>	<p>Do any of these apply: fishing opportunities- places to go, access to equipment and/or boats, mobile fishing guides? How do you benefit from those activities? What makes it easiest to participate in those activities?</p>

Data Analyses

The meetings were audio recorded then translated and transcribed using Microsoft Word. The data were exported to NVivo qualitative data analysis software (QSR International, 2018) which allows the researcher to identify and highlight text that is associated with different ideas or themes. All of the text from each focus group was categorized according to the different themes that emerged from the discussions during the focus groups. These themes were listed as codes (i.e., search terms) and given a definition. New themes were defined (i.e., with an idea that was not discussed at an earlier focus group) or revised (i.e., grouped together into a bigger idea or divided to identify separate ideas) in an iterative process until all the focus groups had been coded consistently. Eventually, we were able to search all of the text from all of the focus groups by individual coded themes. The text associated with each code was the unit of analysis and was presented as a quote. Examples of themes from our study include: being in nature as a motivation for fishing, availability of time as a constraint to participation, and having access to a boat as a constraint negotiation. The primary researcher searched all the text from all the focus groups

associated with each code and a peer researcher independently checked the coding for consistency. Additionally, peer researchers used the codebook of themes and their definitions to independently code uncoded text to look for consistency. Both of these methods were used in this research to ensure reliability. In addition to understanding and analyzing the different coded themes, themes were analyzed by focus group characteristics (urban, rural, African American, Caucasian) for more detailed understanding.

While over a hundred motivations (Moore and Driver, 2005) and many dozen constraints (Godbey et al., 2010) are identified in the literature, the lists in our tables depict the range of discussion of important factors as they were perceived by our study participants. Thus, the short list of motivations and constraints we identified as important to these populations in Alabama is the first key finding from this research. We report the percentage of focus groups that discussed each motivation, constraint, and constraint negotiation theme if it was mentioned at least once. A theme mentioned by only one group it is not necessarily less important than a theme reported by a higher percentage of the groups. However, a theme reported by only one population segment and not the other does demonstrate a difference.

Results

Nine group meetings were conducted before we reached the point of saturation. Data were collected from a total of 69 participants (Table 2). Each group was comprised of 5–10 minority participants. We conducted one meeting per rural area with either African Americans or Latinxs, and one meeting with each of them per urban area. Five of the groups were comprised of Latinx participants and four were represented by African Americans. Focus-group discussion lasted between 80 and 120 min and all 69 participants or sources contributed to the discussions, though not necessarily to each question or prompt. The focus-group discussions resulted in 133 codes

fitting major themes related to recreational fishing R3 such as recruitment (childhood, groups or clubs, self-taught), motivations (consumption, relaxation, social connection), constraints (time, access, fishing license), and constraint negotiations (social support, physical ability, knowledge and skills).

Our overall results indicated that participants had varying levels of interest and engagement in fishing, but all deemed it a worthwhile and beneficial activity or sport. Both population segments expressed that fishing is important to their culture, and that teaching the next generation to fish is valuable. African Americans emphasized these sentiments more than Latinxs. Both segments agreed that more opportunities for young people to learn how to fish are necessary and that it is now more important to do things together as a family and minimize time on electronic devices. Therefore, we found that angling was culturally important across the range of geographic and demographic contexts.

Table 2. Description of focus-group meetings and representation of minority population segments at nine focus-group meetings at seven locations in Alabama.

Location	Group type	Number of participants	Duration (min)	Meeting location
Boaz	Latinx	10	100	library
Birmingham	African American	5	82	community center
Birmingham	Latinx	8	87	community center
Eufaula	African American	7	80	church
Mobile	African American	5	120	Extension office
Mobile	Latinx	7	87	church
Russellville	Latinx	10	90	community center
Selma	African American	7	82	Extension office
Wedowee	Latinx	10	90	private residence

Participants were largely recruited, or introduced, to fishing by family members and friends. Most were introduced in youth or childhood, but experiences described by Latinxs in many of the groups differed from African Americans in that they took place outside of the

United States and often were in a coastal setting. A small number of participants reported becoming involved in fishing by way of a group or club; some African Americans learned on their own, but no Latinxs reported being self-taught. Many participants indicated that they had never received fishing related information or information introducing them to fishing in Alabama by means such as print media, social media, TV, word of mouth, signage, radio, or mail/email.

Both minority segments indicated fish consumption, enjoyment, social connection, relaxation, and escaping stressors as significant motivations or reasons for going fishing (Table 3). A greater emphasis was placed on relaxation and escaping stressors or “clearing your head” among the African American groups; whereas, social connection was emphasized more in Latinx groups. In every focus group conducted, participants talked about being motivated by wanting to teach the children in their lives, whether for enjoyment or to feed themselves: “I go to spend time with my family and to catch fish so that we can eat fresh fried fish.” “My daughters like to go, and that’s the main reason I go.” The significance of fish consumption was not limited to themselves or their families, as many groups made comments about sharing with others as a way of life. “Seeing the smile on the elder’s face when you bring them fish” is what one participant described as the most enjoyable part of fishing—giving back to those that gave them their skills. Being out in nature and engaging in learning and developing skills were mentioned frequently across groups of both segments. Excitement or the “thrill of it,” feeling hooked or “addicted” to the activity, competition, and saving money, were fishing motivations less frequently cited by the participants.

Table 3. Motivations for recreational freshwater fishing reported by African American (n = 4) and Latinx (n = 5) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each theme.

Motivation theme	%	%
	African American	Latinx
Competition and achievement	100	100
Consumption	100	75
Enjoyment	100	25
Escaping stressors	100	80
Excitement	100	100
Knowledge and skills	75	60
Nature	100	40
Physical activity	25	0
Relaxation	100	80
Saving money	25	20
Social connection	100	100

When asked about retention or motivations for continuing participation, spending time with family and friends was the most frequently mentioned reason, followed by enjoyment. African Americans reported physical activity to be a retention motive but Latinxs did not. Other retention motives for African Americans and Latinxs were relaxation and feeling at ease, being outside and in nature, finding common ground and comradery with others, escaping stressors, excitement, and competition. African Americans in multiple groups referred to the competitive nature of fishing that entices them to stay involved in the sport (i.e., “to earn bragging rights.”) We found fishing information, education, outreach, and general awareness to be significant areas of need for both segments. Participants mentioned a range of structural, intrapersonal, and interpersonal constraints to going fishing (Table 4). The most frequently communicated constraints were fishing licenses, knowledge and skills, time, work, and access points—themes that were more prevalent in discussion across the Latinx groups. While purchasing a fishing

license was mentioned in some of the African American groups, it was the most significant constraint to participation in fishing communicated by the Latinx segment. Catch constraints were not reported by African American groups but were reported in one Latinx group, while physical ability and safety constraints were only reported in African American groups.

Table 4. Constraints to participation in recreational freshwater fishing reported by African American (n = 4) and Latinx (n = 5) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each constraint.

Constraint type	Constraint theme	%	
		African American	Latinx
Structural	Access	75	80
	Boat	25	40
	Costs	75	20
	Fishing license	50	100
	Regulations	25	20
Intrapersonal	Catch	0	20
	Equipment	25	20
	Knowledge and skills	75	100
	Language	0	100
	Physical ability	25	0
	Safety	50	0
	Swimming	25	20
	Time	100	100
	Weather	75	40
	Wildlife	75	40
	Work	100	100
Interpersonal	Discrimination	100	100
	Home life	25	100
	Social support	50	80

The topic of fishing licenses dominated discussion across all five Latinx meetings.

Knowing where to get a license, the requirements for a license, and what the license permits, are key pieces of information that they felt were not being communicated effectively. “There isn’t information about where you can get the license, what you need to be able to get a license, and

people are afraid” was one such reply. Furthermore, the majority of Latinx participants stressed the importance of having “permission” to fish and feeling confident that they are “allowed” to participate in such an activity: “I don’t know where fishing is allowed and we don’t want to have problems with the law.” Outreach recruitment and retention efforts are invitations to participate. Historically, these efforts have not been specifically targeted at common sources for the Latinx community nor in the Spanish language.

Leisure time availability and work commitments were widely communicated in the groups as intrapersonal constraints, with time referred to as a general feeling of not “having time to go.” These are closely related themes, but participants mentioned them separately. Additionally, knowledge and skills related to equipment and gear, how to fish, where to go, and how to get involved in fishing, present significant challenges to them going fishing. For example, a Latinx participant replied, “I don’t know where to go, when you can fish, if you can fish from a bridge, the shore, in a boat. Because I don’t know where and don’t know how to find information, I don’t go.”

Language constraints further complicated going fishing according to the Latinx groups. When discussing a lack of knowledge about purchasing a license, some participants indicated that even completing the application was a deterrent, and commented, “Sometimes it is translated into Spanish, but the questions are complicated and some people still misunderstand.” Others mentioned unsuccessful attempts at retailers: “I tried to get one at Walmart with a passport and they told me I needed a [driver’s] license. Online I could not enter the passport numbers because there weren’t the right number of digits.” Most frequently, Latinx participants indicated they did not “hear anything in Spanish” and are lacking basic fishing information.

In addition to the structural constraint posed by fishing licenses, access to bank fishing sites and not having a boat constrained many African Americans and Latinxs. Participants indicated that without knowing people who have private access (pond, dock, or bank), they were significantly limited due to few bank-fishing spots on public waters. African American groups emphasized this more strongly. These responses related to structural constraints were consistent across the urban-rural landscapes.

All groups talked about racial discrimination and bias as a constraint to their fishing participation but did not emphasize it as strongly as the previously mentioned constraints. Conversation in several of the groups indicated that discrimination, or race, was not an issue, or that sources had not personally experienced any issues. However, once probed, other groups described experiencing uncomfortable situations or perceiving different treatment. Whereas some participants did not experience different treatment firsthand, they reported experiences of others that had. For instance,

“One time I found out that in [local town] there was prejudice and when Latinxs came or other ethnic group I heard they wanted to get them out. Sometimes someone caught the fish, and they were Latinx and if there were others who had not caught anything—there would be conflict. People were afraid to go. They tried to make it so that people did not want to go. This has not happened to me, but to others.”

Other participants cited direct experiences where they were treated differently or encountered mistreatment. These experiences kept some families from going fishing, fishing in particular spots, or feeling welcome. In one case, a participant noted, “I have felt discriminated against. The day my husband got a ticket for fishing, there were other Americans and the authorities didn’t go to them.” An African American participant recalled that while fishing at a public body

of water “golf balls (were) hit in my direction” by a White man in an apparent attempt of intimidation.

When asked about negotiations to the intrapersonal, interpersonal, and structural constraints to fishing participation, Latinxs most frequently replied that if they could get a fishing license, they would go fishing or go more often (Table 5). “If I had a license, I would spend more time fishing with my family.” Having more fishing knowledge and skills was one of the most communicated constraint negotiation themes for both minority segments. Additionally, having time, access to fishing spots or a boat, and social support were frequently mentioned across all groups as negotiation strategies.

Table 5. Negotiations to the constraints to recreational freshwater fishing participation reported by African American (n = 4) and Latinx (n = 5) minority population segments in nine focus-group discussions in seven locations in Alabama. Numbers in each column are percentages of each population segment that mentioned each negotiation theme.

Constraint negotiation type	Constraint negotiation theme	% African American	% Latinx
Structural	Access	100	100
	Boat	100	100
	Fishing license	100	25
Intrapersonal	Equipment	50	0
	Knowledge and skills	100	100
	Language	0	100
	Physical ability	25	0
	Time	100	100
Interpersonal	Work	60	70
	Home life	25	20
	Safety	25	0
	Social support	100	100

Latinx groups often commented, “I work a lot, but if I had a license, I would make time to go.” However, African Americans more commonly emphasized access as a constraint negotiation. “I would like being able to fish more in ponds, and also to have a kayak so I could

go to locations I can't reach by walking on the bank" was a typical response across multiple groups. Both segments also mentioned an alleviation of familial obligations and just "making it happen." African American participants differed from Latinx in reporting physical ability, increased safety, and equipment negotiations. Aside from those who are not actively participating in fishing due to license constraints, other participants indicated that they would reactivate in fishing if family member obligations were resolved or life circumstances changed.

Latinxs wanted information offered in both English and Spanish, and advertised via print, radio, TV, and social media. "I would like to have brochures/flyers in Spanish that we can understand." They suggested these types of efforts would be effective in their communities and could increase participation in fishing, "Everyone needs to know this info, not just us. There are newspapers in Spanish here in stores, and probably all over the state. With newspapers, one person reads the information and then shares the information with others in their communities." Many indicated a desire for one-on-one communications and believed that a point of contact could facilitate participation. For instance,

"It would be good to give out brochures/papers at the school so that the parents could receive them. Using social media, such as Facebook or Twitter, would reach the general public. There needs to be a contact person provided so that people can ask questions easily through email. Make sure their questions are promptly answered."

Both segments brought up free fishing days and participants showed a high level of interest in having these types of opportunities, "It would be good if there were somewhere that they announced that there are open days that you could fish—when you don't need a license. More people would go on these days. It could be announced on radio, TV, so the community would know." Many felt that educational opportunities would be beneficial. For instance, "an

education or seminar about informing people about where they can fish and where they can't fish and how to find that information." As one participant stated, "education is everything." They said it was a way to "bring it to the people so they can learn" and open doors for them.

Ultimately, they would be able to "encourage the next generation to fish."

Discussion

The focus-group approach to our study allowed for relationship building among participants and researchers that we believe would not have been possible through other collection methods.

During the meetings, participants fully engaged and exhibited pride about sharing their experiences and having their voices heard.

Focus-group discussion themes indicated that the two minority segments view recreational fishing as an activity or sport that is culturally relevant and valuable, but perceived and encountered intrapersonal, interpersonal, and structural constraints that influenced their participation. Further, lack of fishing exposure may be a limiting factor. These are important implications for recruiting and retaining participants.

We found many similarities across African American and Latinx discussions, but some themes were emphasized more strongly by one segment than the other. Apart from physical activity, motivations to fish were consistent across groups. Latinxs emphasized social connection more, whereas African Americans mentioned relaxing and escaping stressors more frequently. General awareness about opportunities, basic fishing information, and regulations was low for both segments. However, all participants exhibited a great desire for education, outreach, and opportunities to fish. This indicates a gap in minority outreach and education often exists. Both Latinx and African American segments reported that increased general awareness about how to get information, where to go, and fishing mentors or companions would encourage greater

participation. Structural constraints pertaining to information and awareness should be a strategic focus area in R3. Stodolska et al. (2020) regarded this as a shared responsibility, and not solely the individual's responsibility to figure out, as some constraints are a result of how providers serve public users. Using minority perspectives to inform R3 efforts will strengthen the ability to target them directly through recruitment marketing such as bilingual materials and locations or sources for disseminating information (Serenari and Peterson, 2018).

Schroeder et al. (2008) reported race and discrimination presented strong interpersonal barriers to participation. Both segments in our study discussed discrimination, including selective law enforcement, but did not describe it as a significant constraint to their participation. However, similar to the findings of Stodolska et al. (2020), a fear among Latinxs with respect to government-affiliated interactions exists, especially surrounding profiling, language barriers, and not understanding the rules and regulations. The general concern is to avoid getting in trouble for anything.

Fishing licenses as potential barriers to participation dominated all aspects of Latinx recruitment, retention, and reactivation. They would also like to feel welcome or invited (i.e. targeted marketing and outreach) to participate in fishing of public water, and communication in Spanish. These lacks have negatively influenced their participation. Schroeder et al. (2008) reported limitations in participation among Latinx focus group participants due to fishing license concerns and a lack of fishing related information in Spanish. Serenari and Peterson (2018) suggested that appealing to and building a community among prospective participants is warranted in minority recruitment to recreation. As such, fishing programs and communications provided in their own language will be more effective in helping Latinxs to work through some of their intrapersonal constraints.

Contrary to what other studies have identified as a strong barrier to minority participation, we did not find that equipment (Recreational Boating and Fishing Foundation, 2019) or participation costs (Stodolska et al., 2020) seriously constrained participants. For African Americans, the topic of access to public water was prevalent in their responses. Given the variation in availability of opportunities for recreation, urban and rural differences can occur in factors associated with constraints and interests (Schroeder et al., 2008) . However, urban and rural differentiation did not appear to play a significant role in the responses that we received from either segment. Participants frequently discussed access to public water as a constraint but indicated a willingness to travel to attractive access points. This contrasts with Burns et al. (2008) findings that transportation represented a significant constraint in Latinx outdoor recreation activities.

In the current political and social climate, with ongoing debates about citizenship and immigration, the fear surrounding participation in our study limited our ability to develop groups in some sites and to recruit participants. We also found that group size influenced discussion. In larger groups, individuals were more likely to say that they agreed with what others said and contributed little new to a specific question. The thematic insight we gained through the groups is a first step in exploring minority fishing behavior and cannot be generalized to the population of Alabama.

Out of the many possible motivations (Moore and Driver, 2005) and constraints (Godbey et al., 2020; Stodolska et al., 2020) identified in the literature, our study identified 11 primary motivations and 19 constraints for African American and Latinx anglers in Alabama. There were a few notable differences where one population identified a theme (e.g., language as a constraint) that the other did not. Administrators should take note of these specific motivations and

constraints and of the significant overlap of these minority populations as they develop their recruitment, retention, and reactivation materials. Management and messages targeted at these specific populations should reflect these findings to help alleviate the constraints and to make them feel welcome and invited through outreach and extension, publications, license applications, and the website.

Our study initiated dialogue between the Wildlife and Freshwater Fisheries Division, Extension, and a minority audience. Solutions to the interpersonal, intrapersonal, and structural recreational fishing constraints identified by the participants include 1) making fishing related information more readily available 2) promoting awareness of rules, regulations, and license purchasing 3) providing opportunities for families to be involved, and 4) improving access to public fishing waters. We have used the information obtained in this study to inform the development of a statewide survey to collect quantitative data on participation, motivations, constraints, and constraint negotiations of all licensed anglers—including these minority groups. By addressing education and outreach needs of these segments and the tools necessary to remove barriers to participation, we are better equipped to address R3 efforts in Alabama and beyond.

Acknowledgments

This article is based on a study supported by the Alabama Cooperative Extension System, the Alabama Department of Conservation and Natural Resources Wildlife and Freshwater Fisheries Division (WFF) and the Sport Fish Restoration Program.

References

Anderson, L. E. and D. K. Loomis. 2005. Underrepresented groups in recreational fishing: a literature review. Human Dimensions Research Unit, Department of Natural Resources Conservation, University of Massachusetts, Amherst, USA.

- Borisova, T., X. Bi, S. Larkin, and J. Longanecker. 2016. Assessing nature-based recreation to support economic development and environmental sustainability extension programs. *Journal of Extension* 54:Article 5RIB1.
- Burns, R. C., E. Covelli, and A. Graefe. 2008. Outdoor recreation and non-traditional users: results of focus group interviews with racial and ethnic minorities. Pages 123–137 in D. J. Chavez, P. L. Winter, and J. D. Absher, editors. *Recreation visitor research: studies of diversity*. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station PSW- GTR-210, Albany, California, USA.
- Crawford, D. W. and G. Godbey. 1987. Reconceptualizing barriers to family leisure. *Leisure Sciences* 9:119–127.
- Creswell, J. W. 2007. *Qualitative inquiry and research design*, 3rd edition. Thousand Oaks, California,, USA.
- Fedler, A. J. and R. B. Ditton. 1994. Understanding angler motivations in fisheries management. *Fisheries* 19:6–13.
- Fedler, A. J. and R. B. Ditton. 2000. Developing a national outreach strategy for recreational fishing and boating. *Fisheries* 25:22–28.
- Fedler, A. J., R. B. Ditton, and M. D. Duda. 1998. Factors influencing recreational sportfishing and boating participation. Report to the Sport Fishing and Boating Partnership Council, Alexandria, Virginia, USA.
- Glaser, B. G. and A. L. Strauss. 1967. *The discovery of grounded theory*. Chicago, Illinois.
- Godbey, G., D. W. Crawford, and X. S. Shen. 2010. Assessing hierarchical leisure constraints theory after two decades. *Journal of Leisure Research* 42:111–134.

- Hubbard, J. and R. Mannell. 2001. Testing competing models of the leisure constraint and negotiation process in a corporate employee recreation setting. *Leisure Sciences* 23:145–163.
- Hunt, L. M., E. Camp, B. van Pooten, and R. Arlinghaus. 2019. Catch and non-catch determinants of where anglers fish: a review of three decades of site choice related research in recreational fisheries. *Reviews in Fisheries Science and Aquaculture* 27:261–286.
- Hunt, K. M. and R. B. Ditton. 2002. Freshwater fishing participation patterns of racial and ethnic groups in Texas. *North American Journal of Fisheries Management* 22:52–65.
- Jackson, E. L. 1993. Recognizing patterns of leisure constraints: results from alternative analyses. *Journal of Leisure Research* 25:129–149.
- Jackson, E. L. 2000. Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research* 32:62–68.
- Krueger, R. and M. Casey. 2009. *Focus groups: a practical guide for applied research*. Sage Publications, Thousand Oaks, California, USA.
- Lupoli, C., W. C. Morse, C. Bailey, and J. Schelhas. 2015. Indicator development methodology for volunteer tourism in host communities: creating a low-cost, locally applicable, rapid assessment tool. *Journal of Sustainable Tourism* 23:726–747.
- McManus A., W. Hunt, J. Storey, and J. White. 2011. Identifying the health and well-being benefits of recreational fishing. Fisheries Research and Development Corporation FRDC 2011/217, Perth, Australia.
- Miles, M. B. and A. M. Huberman. 1994. *Qualitative data analysis*, 2nd edition. Sage Publications, Thousand Oaks, California, USA.

- Moore, R. L. and B. L. Driver. 2005. Introduction to outdoor recreation: providing and managing resource based opportunities. Venture Publishing, Inc., State College, Pennsylvania, USA.
- Morgan, D. L., R. A. Krueger, and J. A. King. 1998. The focus group kit, volumes 1–6. Sage Publications, Inc., Thousand Oaks, California, USA.
- Morse, J. M., M. Barrett, M. Mayan, K. Olson, and J. Spiers. 2002. Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods* 1(2):13–22.
- Morse, W. C., D. R. Lowery, and T. Steury. 2014. Exploring saturation of themes and spatial locations in qualitative public participation geographic information systems research. *Society and Natural Resources* 27:557–571.
- Onwuegbuzie, A. J. and K. M. Collins, 2007. A typology of mixed methods sampling designs in social science research. *Qualitative Report* 12:281–316.
- QSR International. 2018. NVivo Qualitative Data Analysis Software, version 12. QSR International, Burlington, Massachusetts, USA.
- Recreational Boating and Fishing Foundation. 2019. U.S. multicultural quantitative research regarding fishing participation opportunities. www.takemefishing.org/getmedia/aadce2b3-af6d-48f7-b207-43b027f9a961/Multi-cultural-Fishing-Research-Final.pdf. Accessed 5 January 2020.
- Recreational Boating and Fishing Foundation and Aquatic Resources Education Association. 2016. Highlights of angler recruitment, retention, and reactivation (R3) literature. Prepared by Bob Byrne Consulting. www.take-mefishing.org/getmedia/b18711d8-874c-

- 4714-8a50-7188a6d08bc9/High lights-of-Angler-Recruitment,-Retention-and-
Reactivation-(R3)-Litera ture_March-2016. Accessed 17 December 2019.
- Recreational Boating and Fishing Foundation and The Outdoor Foundation. 2020. Special report
on fishing. Alexandria, Virginia. [www.takemefishing
.org/getmedia/eb860c03-2b53-4364-8ee4-c331bb11ddc4/2020-Special
-Report-on-Fishing_FINAL_WEB.pdf](http://www.takemefishing.org/getmedia/eb860c03-2b53-4364-8ee4-c331bb11ddc4/2020-Special-Report-on-Fishing_FINAL_WEB.pdf). Accessed 15 October 2020.
- Responsive Management and National Shooting Sports Foundation. 2017. Hunting, fishing, sport
shooting, and archery recruitment, retention, and reactivation: a practitioner's guide.
Responsive Management and National Shooting Sports Foundation, Harrisburg, Virginia,
USA.
- Schneider, I. E. and C. Wynveen. 2015. Exploring outdoor recreation conflict's role in evolving
constraints models. *Journal of Outdoor Recreation and Tourism* 9:37–43.
- Schroeder, S. A., M. L. Nemeth, R. E. Sigurdson, and R. J. Walsh. 2008. Untangling the line:
constraints to fishing participation in communities of color. *American Fisheries Society
Symposium* 67:97–112.
- Serenari, C. and M. N. Peterson. 2018. Evaluating the cultural fit of hunting and angling among
minority sportspersons in North Carolina. *Leisure Sciences DOI:*
10.1080/01490400.2018.1458262 .
- Sharaievska, I., M. Stodolska, K. J. Shinew, and J. Kim. 2010. Perceived discrimination in
leisure settings in Latino urban communities. *Leisure* 34:295– 326.
- Shores, K. A., D. Scott, and M. F. Floyd. 2007. Constraints to outdoor recreation: a multiple
hierarchy stratification perspective. *Leisure Sciences* 29:227–246.

- Stodolska, M. 1998. Assimilation and leisure constraints: dynamics of constraints on leisure in immigrant populations. *Journal of Leisure Research* 30:521–551.
- Stodolska, M., K. J. Shinew, and L. N. Camarillo. 2020. Constraints on recreation among people of color: toward a new constraints model. *Leisure Sciences* 42:533–551.
- Southwick Associates. 2019. Economic contributions of recreational fishing within U.S. states and congressional districts. Report to the American Sportfishing Association, Alexandria, Virginia, USA.
- Southwick Associates. 2020. A dashboard view of hunting and fishing metrics in the United States: 2010–2020. Report to the American Sportfishing Association, Alexandria, Virginia. asafishing.org/data-dashboard/. Accessed 15 November 2020.
- Toth, J. F. and R. B. Brown. 1997. Racial and gender meanings of why people participate in recreational fishing. *Leisure Sciences* 19:129–146.
- Tufts, B. L., J. Holden, and M. DeMille. 2015. Benefits arising from sustainable use of North America’s fishery resources: economic and conservation impacts of recreational angling. *International Journal of Environmental Studies* 72:850–868.
- U.S. Census Bureau. 2017. 2013–2017 American Community Survey 5-Year Estimates. factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed 9 January 2018.
- White, D. D. 2008. A structural model of leisure constraints negotiation in outdoor recreation. *Leisure Sciences* 30:342–359.

Ch 2 R3 interventions to address multicultural angling information needs

Emily K. Nichols^{a*}, Wayde Morse^b, and Sergio Ruiz Cordova^c

^aAlabama Cooperative Extension System, Auburn University, Auburn, USA; ^bCollege of Forestry, Wildlife, and Environment, Auburn University, Auburn, USA; ^cWater Resources Center, Auburn University, Auburn, USA

Emily Nichols, ekn0001@auburn.edu, Alabama Cooperative Extension System, Auburn University, Auburn, 219 Duncan Hall, Auburn University, AL 36849

Abstract

Participation in recreational freshwater fishing in Alabama has been low amongst minority population segments in the past and concerted efforts to address the factors that influence their involvement are necessary. Between 2012 and 2017, approximately 11% of the state's White population purchased recreational freshwater fishing licenses, whereas only 3% or less of African American and Latinx populations made purchases (Alabama Department of Conservation and Natural Resources, Fisheries license database 2011–2017, unpublished raw data). Moreover, the retention rate of anglers from these two segments was low during this period as well. Other studies have identified differences in fishing motivations (Fedler and Ditton, 1994), constraints (Stodolska, 1998), and constraint negotiations (Blahna, 1992) across race and ethnicity. As such, gaps in services and outreach may exist for particular minority audiences (Stodolska et al., 2020) and targeted efforts such as bilingual messaging (Serenari and Peterson, 2018) may help to close the gaps. We used qualitative inquiry to explore the specific outreach and information needs of African American and Latinx population segments in Alabama in relation to their participation in recreational freshwater fishing. Our findings guided the development of 8 fishing R3 (recruitment, retention, and reactivation) bilingual outreach interventions to positively influence the engagement of minority fishing participants in Alabama.

Background

Results from our 2018 statewide focus groups in rural and urban Latinx and African American communities indicated that while interest and engagement in fishing varied, all individuals deemed it a worthwhile and beneficial activity or sport. Recreational fishing was culturally important across the range of geographic and demographic contexts we explored. However, constraints related to a lack of information regarding fishing licenses, knowledge and skills, time,

work, and access points influenced people's participation. It was apparent that general awareness fishing information, regulations, and opportunities to go fishing was low. However, the desire for fishing opportunities, education, and outreach was high. The process of purchasing a fishing license was the most significant constraint communicated by the Latinx segment. Latinxs also indicated a preference for information offered in both English and Spanish, and advertised via print, radio, TV, and social media, "I would like to have brochures/flyers in Spanish that we can understand (in common language)." They suggested these types of efforts would be effective in their communities and could increase participation in fishing, "Everyone needs to know this info, not just us. There are newspapers in Spanish here in stores, and probably all over the state. With newspapers, one person reads the information and then shares the information with others in their communities." Many indicated a desire for one-on-one communications and believed that a point of contact could facilitate participation. Ultimately, they would be able to "encourage the next generation to fish."

As a follow up to the statewide focus groups conducted in 2018, we conducted a focus group meeting in 2019 solely with Latinx stakeholders in a central Alabama community to collect additional data concerning their information related needs related to accessing recreational fishing information and purchasing a fishing license. The meeting was conducted in Spanish and the questions were designed to identify what would help them to purchase a license, what type of information they are looking for on the web and other sources and enlist their feedback on the OutdoorAlabama.com content about fishing and licensing. We displayed OutdoorAlabama.com's content for the focus group participants on a projector screen in both English (as the page appears) and Spanish (using Google Translate). In addition, we provided paper copies of the non-resident and resident license applications to participants for review. We

found that the participants were happy overall with the types of fishing information that they can access through the Outdoor Alabama website, but that it was not easy for them to navigate the site. They mentioned frequently that the dropdown menus were confusing, and that it was problematic to view basic fishing information because is scattered across numerous pages. Furthermore, we found that the language barrier is a deterrent for viewing information, and tools such as Google Translate do not do the webpages justice. The level of accuracy was inadequate, and much of the meaning was lost in translation i.e. 'fish stocking' translated to the Spanish word for 'pantyhose'. This further complicated their ability to comprehend basic information being presented.

The participants indicated that purchasing a fishing license is problematic because of the information and language barriers, as well as a lack of awareness. The topic of fishing license residency proved to be complex. Hispanics expressed that the information about determining residency for fishing license purposes was very confusing. Because they reside in the state, they consider themselves residents. Seeking out information or fishing privileges for non-residents is not something they said they would have thought to do.

Upon review of the online and paper applications for fishing license privileges in English and Spanish (participants preferred Spanish), participants indicated that both the resident and non-resident applications are troublesome. Not knowing which options to select for the items (anything from residence to privileges), what the items represent (acronyms, language about heritage, etc.), or what they have 'permission' to choose, prevented them from successfully completing an application.

Lastly, the group expressed feeling that discrimination/bias exists towards people without US citizenship. The concern was in having to pay for an expensive non-resident license, while

having a valid AL driver's license, residing in the state, and paying taxes in state. One participant described the embarrassment that her husband felt when he was denied a resident license, and others chimed in with similar stories.

Recommendations for streamlining the information and purchasing process included making resources available in their preferred language of Spanish, displaying clear and concise information on the web (in one spot), and providing guidance on how and why to purchase a fishing license and what is included. The group expressed a need for feeling included, and a desire to receive more information from us in the future so that they may increase their involvement and tell others.

R3 Interventions

Using the recruitment and retention information gathered through our qualitative inquiry, we developed R3 outreach materials (Appendix) to address some of the specific needs that we identified:

- We designed a bilingual residency infographic titled *Do I Qualify as a Resident?/ ¿Califico como residente?* to address the complexity and confusion surrounding determining residency for the purpose of purchasing a recreational freshwater fishing license.
- We designed a fishing license instructional brochure titled *Everyone Can Fish Alabama: How to Purchase an Alabama Recreational Freshwater Fishing License* to aid our statewide audience in purchasing a recreational freshwater fishing license as this was identified as problematic for people who are interested in being involved with fishing.
- We designed a Spanish version fishing license instructional brochure titled *Todos Podemos Pescar en Alabama: Como Comprar Licencias de Pesca Recreativa en Agua*

Dulce to aid our statewide audience who prefers Spanish in purchasing a recreational freshwater fishing license as this was identified as problematic for people who are interested in being involved with fishing, along with a strong desire for information in a language more easily understood-Spanish.

- We developed a video titled *Everyone Can Fish Alabama* highlighting the content of the fishing license instructional brochure and residency infographic and promoting a message that fishing in Alabama public waters is for everyone.
- We developed a Spanish version video titled *Todos Podemos Pescar Alabama* highlighting the content of the fishing license instructional brochure and residency infographic and promoting a message that fishing in Alabama public waters is for everyone.
- We developed a video titled *Our Fish Our Water* as a follow up to the *Everyone Can Fish Alabama* video to promote awareness of our state's aquatic resources, public fishing waters, biodiversity, and provide basic information about where to go fishing to address stakeholders' low level of general awareness and strong desire for opportunities and information.
- We developed a Spanish version video titled *Nuestros Peces y Nuestras Aguas* as a follow up to the *Todos Podemos Pescar Alabama* video to promote awareness of our state's aquatic resources, public fishing waters, biodiversity, and provide basic information about where to go fishing to address stakeholders' low level of general awareness and strong desire for opportunities and information.

- Lastly, to address the difficulty with navigating the Outdoor Alabama website for fishing related information and license purchasing, we developed basic fishing content in Spanish for users accessing the state agency website.

The goal of the R3 interventions is to positively influence the participation of minority segments while addressing their information and outreach service related needs. These materials are congruent with our findings that fishing related information should be more readily available, awareness of rules, regulations, and license requirements should be promoted, and everyone should feel welcome and invited.

Ch 3 Characteristics of lapsed anglers

Emily K. Nichols^{a*}, Wayde Morse^b, Terry Hanson^{ac}, Eve Brantley^{ad}, and David Cline^{ac}

^aAlabama Cooperative Extension System, Auburn University, Auburn, USA; ^bCollege of Forestry, Wildlife, and Environment, Auburn University, Auburn, USA; ^cSchool of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, Auburn, USA;

^dDepartment of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, USA

Emily Nichols, ekn0001@auburn.edu, Alabama Cooperative Extension System, Auburn University, Auburn, 219 Duncan Hall, Auburn University, AL 36849

Abstract

Numerous factors cause individuals to enter, continue, discontinue, and/or re-engage into recreational fishing with culture shaping their preference setting, constraints, and engagement in fishing. To better understand the factors that cause individuals to drop out and the strategies that may reactivate their participation, we explored recreational freshwater fishing behaviors of people who lapsed from fishing in Alabama public waters. We examined their motivations, constraints, and constraint negotiations according to race and ethnicity which has been shown to influence fishing behaviors. In spring 2019, we conducted a statewide bilingual survey sampling individuals belonging to African American, Latinx, and White population segments who purchased freshwater fishing licenses in 2012-2017 and lapsed as of 2018. Results revealed fishing was culturally important to all segments, although it was significantly less important to the culture of origin of Latinxs. We found that Latinxs and African Americans started fishing at significantly older ages than Whites, though the African American segment had fished longer in Alabama than the others. White anglers lived significantly closer, i.e. proximity to fishing sites with fewer of them dwelling in urban areas. A lack of time due to family commitments and work was the most constraining on average and was significantly stronger for Whites and Latinxs. Developing access to fishing sites, attending family fishing activities, awareness about where to go fishing, social support from friends who fish, and receiving an invitation to go fishing were the strongest negotiation strategies that respondents indicated would help them to get back into fishing. African American respondents expressed significantly higher willingness to negotiate constraints than White respondents. Anglers lapsed more than one year were significantly more constrained than those lapsed within the past six months. Managers can apply this knowledge of angler's fishing behavior of different population segments to develop outreach and messaging

materials to retain and reactivate anglers. cause individuals to enter, continue, discontinue, and/or re-engage into recreational fishing with culture shaping their preference setting, constraints, and engagement in fishing. To better understand the factors that cause individuals to drop out and the strategies that may reactivate their participation, we explored recreational freshwater fishing behaviors of people who lapsed from fishing in Alabama public waters. We examined their motivations, constraints, and constraint negotiations according to race and ethnicity which has been shown to influence fishing behaviors. In spring 2019, we conducted a statewide bilingual survey sampling individuals belonging to African American, Latinx, and White population segments who purchased freshwater fishing licenses in 2012-2017 and lapsed as of 2018. Results revealed fishing was culturally important to all segments, although it was significantly less important to the culture of origin of Latinxs. We found that Latinxs and African Americans started fishing at significantly older ages than Whites, though the African American segment had fished longer in Alabama than the others. White anglers lived significantly closer, i.e. proximity to fishing sites with fewer of them dwelling in urban areas. A lack of time due to family commitments and work was the most constraining on average and was significantly stronger for Whites and Latinxs. Developing access to fishing sites, attending family fishing activities, awareness about where to go fishing, social support from friends who fish, and receiving an invitation to go fishing were the strongest negotiation strategies that respondents indicated would help them to get back into fishing. African American respondents expressed significantly higher willingness to negotiate constraints than White respondents. Anglers lapsed more than one year were significantly more constrained than those lapsed within the past six months. Managers can apply this knowledge of angler's fishing behavior of different population segments to develop outreach and messaging materials to retain and reactivate anglers.

Introduction

Cultural and societal values play an important role in outdoor leisure or recreation participation and related perceptions of how natural resources are managed (Arlinghaus et al., 2020). As individuals we are motivated to participate in recreational activities to experience desired benefits or outcomes related to our psychological (relaxation), psychophysiological (physical health), and social/cultural (identity) well-being (Moore and Driver, 2005). Understanding leisure characteristics of diverse audiences and the influence of social and cultural factors requires examination beyond simply observing participation rates (Toth and Brown, 1997). Ultimately our participation in leisure is a result of the interactions between motivations, constraints, and constraint negotiation strategies (Hubbard and Mannell, 2001). Outdoor leisure participation has consistently occurred at lower rates amongst minority population segments compared to Whites (USFWS, 2012; USFWS, 2018).

Barriers or constraints are factors that alter or limit an individual's participation in leisure (Jackson and Rucks, 1995). Some studies have found evidence that the perception of constraints negatively influences leisure participation (Ditton and Hunt, 1996; Carroll and Alexandris, 1997). The hierarchical leisure constraints model suggests that participation can be influenced by intrapersonal (i.e., internal processes such as perceived skill level), interpersonal (i.e., relating to interactions with others such as lack of others to go with, discrimination, lack of family support), and structural (i.e. directly interfering such as lack of access, costs, lack of information) constraints (Crawford and Godbey, 1987; Godbey, Crawford, and Shen, 2010). Godbey et al. (2010) asserts that culture provides the foundation from which each constraint type is formed, that is, that an individual's participation may be dictated by religious norms, gender roles, and social values that are specific to their culture.

Participating in recreational activities can also be an expression of culture (Hunt and Ditton, 2001) and cultural importance of fishing has been linked to those who fish for recreation (Arlinghaus, Tillner, and Bork, 2015). Serenari and Peterson (2018) found that fishing fits within the culture of ethnic and racial minority groups better than hunting and contributed more to well-being. Race and ethnicity have been shown to influence fishing participation and non-participation behaviors. Historically, participation in recreational fishing has been low amongst minority groups (Hunt and Ditton, 2002; Thunberg and Fulcher, 2006). However, states such as Georgia have experienced increasing proportions of minority participation in consumptive outdoor recreation, while observing declining proportions of White participants (Roop, Poudyal, and Jennings, 2021). Some studies have found that Latinx anglers had less fishing experience than other African American and White anglers (Ditton and Hunt, 1996). Roop et al. (2021) found that minority anglers in a largemouth bass fishery were distinct from White anglers due to differences in preferences, fishing behaviors, and demographics. Ditton and Hunt (1996) found that African Americans were more likely to be shore based anglers than White anglers. Race and ethnicity were the strongest drivers of fishing site preference in one angler diversity study (Valdez, Drake, Burke, Peterson, Serenari, and Howell, 2019). Although most studies equate sociodemographic variables such as race and ethnicity, education, and income with lower fishing participation, one found that lower socioeconomic status was associated with higher density of fishing license sales (Zhang, Landon, and Miller, 2021).

R3 (recruitment, retention, and reactivation) is an approach to address and positively influence participation in recreational fishing. Different factors cause individuals to start fishing, stay or leave, and even re-engage. Those who stop making fishing license purchases or participating in fishing for any length of time are considered 'lapsed' (RBFF, 2016). Fedler and

Ditton (2001) found that one fourth of the angler pool any given year will become lapsed within 1 to 2 years. Efforts to reactivate and retain lapsed anglers in fishing are important to increasing participation rates and fishing license sales and are lacking in many R3 initiatives (RBFF, 2016). Fishing license sales are vital to supporting fisheries management, outreach, and education through the Federal Aid in Sportfish Restoration program. Declines in participation also have implications for benefits in health and well-being (Sutton, 2007). Meanwhile, there is diminishing recreational fishing interest in developed nations, where the majority of the variance in participation rates have been linked to sociodemographic and cultural factors (Arlinghaus et al., 2015). Further, urban dwelling, which is commonly associated with minority segments, has been strongly and negatively associated with license purchasing and participation (Hunt, Bannister, Drake, Fera, and Johnson, 2017).

Previous participation research has identified catch and non-catch related motives for fishing such as providing fish to eat, escaping stressors, being outdoors, spending time with others, and developing skills (Fedler and Ditton, 1994; Hunt et al., 2017). Individuals are often more motivated by the non-catch aspects of fishing (Arlinghaus, 2006). For example, Fedler and Ditton's (1994) review of 17 fishing motivation studies revealed that relaxation, escaping stressors, and being outdoors were important motivation factors across different angler types (e.g., freshwater, saltwater, black bass) and localities. Some studies have found significant differences in fishing motivations between Whites and minority segments. Hunt and Ditton (2001) found that escaping stressors and being in a natural environment were stronger motives for White anglers than Latinx. Blahna (1992) found that African American and Latinx angling participants were more motivated by the social aspect than Whites.

Individuals may experience different strengths and combinations of constraints according to their preferences, anticipated benefits, avidity in fishing, presence of other constraints, and sociodemographics (Jackson, 2000; Sutton, 2007). For instance, anglers who are more catch oriented may be more constrained by fishing site preferences than those who place less importance on catch (Sutton, 2007). Anglers who have difficulty speaking or understanding English (intrapersonal) may then experience constraints related to complications with purchasing fishing licenses and accessing fishing information (structural). Because the constraint types may interact or have common underlying causes, they can be strongly correlated while still theoretically distinct (Godbey et al., 2010). Motivations reflect the anticipated outcomes of fishing and affect the type and number of constraints (Fedler and Ditton, 1994; Sutton, 2007). They have also been shown to negatively correlate with overall constraint levels (Carroll and Alexandris, 1997).

When examining constraints, it is important to remember that constraints do not necessarily equate to non-participation. In fact, there are cases where active fishing participants have reported higher levels of constraints than non-participants (Aas, 1995). All individuals face constraints to some degree, but they can often overcome or negotiate through them and continue to participate (Jackson, 1993). Constraints may influence participation and should be navigated sequentially from proximal to distal (intrapersonal, interpersonal, structural) to proceed (Godbey et al., 2010). Motivation levels and ability of individuals to negotiate or work through constraints will determine participation (Jackson, 2000; White 2008). Examining the process of constraint negotiation in individual's meeting their fishing goals will provide us with insight to addressing reactivation (Jackson, 2000).

Hearing directly from individuals who have recently lapsed from fishing to gain insight into how constraints relate to the declines that we have experienced in fishing participation is important (Sutton, 2007). This provides an opportunity to inquire about their reasons for stopping fishing and to identify any negotiation strategies that would help them to return to fishing. Influences of race and ethnicity and the characteristics of minority experiences that are associated with different constraints has a long way to go in understanding what has happened in the past and what needs to happen in the future (Floyd, 2007). Though previous studies indicate that minority segments perceive or experience more constraints than Whites (Stodolska, 1998; Sharaievska et al., 2010; Stodolska, Shinew, and Camarillo, 2020), they have not been specifically examined in many studies (Ghimire, Green, Poudyal, and Cordell, 2014) or are not well represented in sample populations (Roop et al., 2021).

Ultimately, understanding how constraints differ across sociodemographic variables like race and ethnicity will help inform fishing R3 efforts to target specific population segments (Sutton, 2007). R3 programmatic efforts that are tailored to population segments at the local level have been successful in increasing angler recruitment while engaging minorities (Wightman, Sutton, Matthews, Gillis, Colman, and Samuelson, 2008). The purpose of this study was to gain a better understanding of why people stop fishing and what may help them to reactivate. The objectives of the study were to 1) examine the participation of people who lapsed from fishing, and 2) explore similarities and differences in motivations, constraints, and constraint negotiations based on race and ethnicity.

Methods

Sampling design

Alabama requires its residents who are 16-64 years old to have a valid fishing license to fish in public waters. We selected a random sample of 5,000 license purchasers from the Alabama Department of Conservation and Natural Resources (ADCNR) Wildlife and Freshwater Fisheries Division (WFF) fishing license purchase electronic database in spring 2019. Individuals who purchased freshwater fishing licenses in 2012-2017 but were not current license holders as of 2018 were invited to participate in the study. This included those who were ages 19 to 64, of whom 4,000 were lapsed less than 3 years, and 1,000 were 3 to 5 years lapsed. We stratified the sample by race and ethnicity and oversampled for African American (n=2,000) and Latinx (n=2,000) anglers while sampling fewer White (n=1,000) anglers for comparison. We did so in order to explore differences across population segments and achieve sufficient representation of minorities to make comparisons. Invalid mailing addresses were eliminated from the sample using CDX Technologies CDXStreamer software (CDXStreamer Level 4).

We used the modified Tailored Design Method (Dillman, Smyth, and Christian, 2009) to design and administer the survey instrument for this study. It was developed by research project personnel in both English and Spanish and was administered in spring 2019 (May-June) using a three contact method including (a) an initial survey packet with the questionnaire, information letter, a postage-paid return envelope, and an incentive (\$2 Dairy Queen gift card), (b) a follow-up reminder post card with a link to the online survey, and (c) a final thank you/reminder letter. The survey materials were provided in both English and Spanish to Latinx participants. The mailed postcard reminder included a link to the online survey and survey code to provide an opportunity for invitees to complete the survey online if chosen. In addition to the mailed

materials, individuals with available email addresses were also sent an electronic invitation to complete the survey online as well as an emailed copy of the final thank you/reminder letter. We generated survey codes according to the race/ethnicity strata and applied them to the outgoing survey packet envelopes, survey questionnaires, and reminder post cards.

Questionnaire

We developed the survey to gain information about anglers' past participation in Alabama freshwater fishing in public waters, site preferences, attitudes, values, and the factors associated with their recruitment, retention, and reactivation to fishing. Because ethnicity has been shown to predict fishing site preferences (Valdez et al., 2019), we first asked participants about their general fishing behavior and preferences so we could understand these characteristics across the three segments. This included their age the first time they went fishing, years of experience fishing in Alabama, favorite type of water body to fish, from where they prefer to do their fishing (i.e., dock/pier, bank, in the water, non-motorized boat, motorized boat), their proximity to the nearest fishing spot, the type of fishing license they last purchased, and when they last went fishing. Next, we presented them with 15 items on a 5 point Likert scale (from "not at all important" to "extremely important") asking about their recruitment motivations or how they originally got involved with fishing. Some of the items were adapted from previous research (Fedler and Ditton, 1994; Hunt and Ditton, 2001; Schuett, Lu, Ditton, and Tseng, 2010) and others were drawn from the recreation experience preference (REP) scales (Ajzen and Driver, 1991; Manfredo, Driver, and Tarrant, 1996; Moore and Driver, 2005).

Other studies have looked at the importance of fishing across ethnic groups (Toth and Brown, 1997; Serenari and Peterson, 2018). We were interested in the role that fishing played in participants' cultural identity and asked them to rate their level of agreement to 4 items on a 5

point Likert scale (from “strongly disagree” to “strongly agree”) about how they relate to fishing. In addition to asking if fishing was important to them, we asked if it was an important part of the culture where they came from as well as where they live now, and if fishing should be passed down from generation to generation.

To measure constraints, we asked participants to rate the extent to which they disagreed or agreed with 21 items on a 5 point Likert scale (from “strongly disagree” to “strongly agree”) about what had kept them from going fishing. Some of the items (e.g., it is too expensive to fish, I do not have enough time due to work) were adapted from previous research (Aas, 1995; Ghimire et al., 2014; RBFF, 2016) and the others (e.g., it is too complicated to purchase a fishing license) from constraints research related to minority angling (Nichols and Morse, 2020). The constraint items are categorized as either intrapersonal (e.g., ‘I do not feel welcome at the fishing areas’), interpersonal (e.g., ‘people I know cannot get a license to fish with me’), or structural (e.g., ‘I do not have access to a boat’).

To identify possible solutions to the intrapersonal, interpersonal, and structural constraints the participants perceive or experience, we presented them with 16 items on a 5 point Likert scale (from “strongly disagree” to “strongly agree”) about what would help them continue to fish, fish more often, or to start fishing again. These constraint negotiation strategies were adapted from previous research (Hubbard and Mannell, 2001; White, 2008; Nichols and Morse, 2020). As a follow up question on constraint negotiation strategies to get back into fishing, participants were asked if they planned to purchase a freshwater fishing license within the next 5 years. To see if any media outlets and information sources were specific to particular segments, we also asked where they got information (i.e., from other people, email, social media) about

Alabama fishing opportunities and fishing related information in the past using a multiple answer format.

The survey instrument concluded with a demographic section. This included asking the year of birth, gender, household size, retirement status, race/ethnicity, marital status, highest level of school or degree completed, household income, and location (i.e., city, rural, town) of participants. These variables were important for comparing angling participant behavior.

Data analysis

The mailed survey questionnaire data were added to the Qualtrics software data set where electronic survey responses were submitted by participants. We analyzed the data using the Statistical Package for Social Sciences (SPSS 26.0) to conduct descriptive statistics, reliability, linear regression, analysis of variance, and post-hoc tests. We compared all survey items across the African American, Latinx, and White respondent segments. The motivation, constraint, and constraint negotiation items were analyzed individually as well as in composite form. Additionally, constraints were analyzed by composite scores by type- intrapersonal, interpersonal, and structural.

We first conducted descriptive statistics on all of the survey questionnaire items. For motivation, constraint, and constraint negotiation constructs, we looked at mean differences across ethnicity by conducting one-way ANOVA and Tukey post-hoc tests for each associated item. These items were treated as continuous variables as they were Likert scale responses. We then measured the internal consistency of the motivation, constraint, and constraint negotiation constructs, using Cronbach's alpha reliability coefficient. Then, totaled the response scores for each to create composite variables to represent the overall strength or level of the construct. Using linear regression, we tested for significant relationships between ethnicity (categorical),

age (continuous), gender (categorical), and the level of (composite) motivation, constraint, and constraint negotiation (continuous). In addition to these demographic variables, we looked at the years of experience with fishing in Alabama public waters (continuous), level of education (categorical), age of fishing recruitment (continuous), and the level of motivation as predictors of the level of constraints (continuous). For constraint negotiations, we also looked at the level of motivations and constraints (continuous), and the interaction of the two, as predictors. For motivation strength, we also looked at the age when they began fishing as a predictor.

To look specifically at constraints by type, we totaled scores for constraint items we specified as intrapersonal to create a composite variable (continuous), then did the same for interpersonal and structural items. Using linear regression we assessed intrapersonal and interpersonal composite variables as predictors of structural composite variable, as well as intrapersonal composite as a predictor of interpersonal composite. Lastly, we used crosstabs for descriptive statistics of constraint type by ethnicity.

We addressed the potential for survey non-response bias by comparing age (under 40, 40 to 60, and over 60) and gender of survey respondents to the sample population, according to ethnicity (African American, Latinx, and White). We calculated the mean percentages for each segment and conducted paired sample t-tests using SPSS to determine if they were significantly different.

Results

We received 401 valid responses to the survey, yielding a 10.21% response rate (1,073 non-deliverables and 3,526 non-respondents). Our comparison of the sample population to the survey respondents indicated that there were no statistically significant differences across the African American, Latinx, and White segments (Table 1). Thus, our sample was well representative of

the proportion of individuals belonging to each age group and gender classification in the sample population and not biased by the non-respondents.

Table 1. Nonresponse test of lapsed angler population and sample

	Lapsed Population			Lapsed Sample			<i>P</i> -value
	African American	Latinx	White	African American	Latinx	White	
<i>n</i>	2000	2000	1000	196	95	110	
Mean age	50	40	46	55	40	46	0.553
< 40 yrs (%)	29	52	29	11	52	33	0.080
40-60 yrs (%)	58	44	55	5	40	43	0.166
>60 yrs (%)	13	4	15	38	9	24	0.239
Female (%)	26	18	27	26	26	31	0.166
Male (%)	74	82	73	72	72	69	0.391

African Americans comprised 49% of the sample, while 24% were Latinx and 27% were White (Table 2). The average respondent was 49 years old, male (84%), married (70%), non-retired (74%), and African American (49%). African American (mean=54.55) and White (mean=46.29) respondents were significantly older than Latinxs (mean= 40.10) ($F_{2, 393} = 39.37$, $P < 0.000$). More Latinxs were single compared to the other segments, and far fewer were retired. In addition, their household sizes were larger and a higher percentage of them did not complete high school.

Table 2. Demographic profile of lapsed angler survey respondents

		African American <i>n</i> =196	Latinx <i>n</i> =95	White <i>n</i> =110	Total <i>n</i> =401
Age	Average age (yrs.)	55	40	46	49
Gender	Female (%)	26	26	31	27
	Male (%)	72	72	69	71
Retirement	Not retired (%)	61	88	78	72
	Retired (%)	35	11	22	26
Marital status	Single (never married) (%)	13	24	19	17
	Married (%)	69	65	72	69
	Divorced (%)	13	7	8	11
	Widowed (%)	4	1	1	2
Education	Did not complete high school (%)	7	10	5	7
	High school diploma (%)	30	25	25	27
	Some college, but no degree (%)	21	26	28	25
	Associate degree (2-year degree) (%)	13	7	9	11
	Bachelor's degree (4-year degree) (%)	14	16	18	16
	Graduate or professional degree (%)	8	12	13	10
	Other (%)	1	5	2	2
Location	Rural (Less than 1,000 people) (%)	19	18	34	23
	Town (1,000 to 20,000 people) (%)	31	41	35	34
	Large town (20,000 to 100,000 people) (%)	14	13	9	13
	City (100,000 to 300,000 people) (%)	35	27	22	29
Household size	Mean household size (# people)	3	4	3	3
Household income	Less than \$14,999 (%)	13	11	7	11
	\$15,000 to \$24,999 (%)	11	10	7	10
	\$25,000 to \$34,999 (%)	11	7	12	11
	\$35,000 to \$49,999 (%)	15	18	8	14
	\$50,000 to \$74,999 (%)	20	12	25	19
	\$75,000 to \$99,999 (%)	11	10	7	10
	\$100,000 to \$149,999 (%)	12	16	18	15
	\$150,000 or more (%)	4	10	11	7

Fishing Behavior and Preferences

While the average respondent lived within 10 miles to the nearest fishing spot, White respondents lived significantly closer in proximity to fishing sites than African Americans and Latinxs with fewer of them dwelling in urban areas ($F_{2, 395} = 4.87, P = 0.008$). The majority of the lapsed angler respondents purchased annual resident freshwater fishing licenses the last time they purchased a license. Half of them reported they had fished within the past 6 months while 20% had not fished in more than 2 years (Table 3). It had been significantly longer for Latinxs than African Americans since the last time they went fishing ($F_{2, 392} = 3.64, P = 0.027$). When we asked respondents where they received information about Alabama fishing opportunities and fishing related information, the majority (83%) indicated they obtained it “from other people”. Other information sources selected were television (31%), signs (20%), social media (18%), and radio (7%). Latinx respondents reported receiving fishing information from television ($F_{2, 400} = 3.71, P = 0.025$) and letter/brochures ($F_{2, 400} = 3.26, P = 0.039$) mailed to their homes significantly more than African Americans.

Most respondents began to fish at an early age, with a mean of 9 years ($SD = 6.97$), had fished an average of 28 years ($SD = 18.69$) in Alabama, and had family members (93%) who also fish. We found that Latinxs and African Americans began fishing at a significantly older age than Whites, who mostly started by the age of 5 ($F_{2, 394} = 17.33, P < 0.000$). African American anglers had a significantly longer fishing history in Alabama than the other two segments. They fished on average 6 years more in Alabama waters than Whites (95% CI [4.80], $P = 0.009$) and 20 years more than Latinxs (95% CI [3.16], $P < 0.000$).

Table 3. Preferences and fishing history of lapsed Alabama anglers

Variables	African American	Latinx	White	P-value
Age started fishing (%)				< 0.000
5 and under	9	8	16	
6 to 10	27	9	10	
11 to 15	8	2	0	
16 to 19	3	2	1	
20 to 30	1	3	0	
Over 30	1	1	0	
AL freshwater fishing (%)				< 0.000
5 and under	4	8	3	
6 to 10	3	5	1	
11 to 20	6	7	9	
More than 20	35	4	15	
Last time fishing (%)				0.027
0-6 months	27	10	14	
6-12 months	7	3	4	
1-2 years	6	4	5	
More than 2 years	9	7	5	
Do family members fish (%)	45	21	27	0.036
Proximity to nearest fishing spot (%)				0.008
1 mile or less	10	5	10	
2 to 5	12	6	7	
5 to 10	11	4	4	
11 to 15	6	3	4	
More than 15	11	6	4	
Preferences				
Bank fishing	36	12	13	< 0.000
Dock/pier fishing	27	12	13	0.423
Motorized boat fishing	21	13	20	< 0.000
Non-motorized boat fishing	5	5	6	0.019
In-the-water fishing	12	4	7	0.478
Lakes/reservoirs	22	14	16	0.030
Rivers, creeks, streams	27	12	12	0.199
Ponds	15	4	5	0.006
Below reservoir dams	8	2	2	0.020

Bank fishing was the preferred style of fishing by angler respondents while non-motorized boat fishing (e.g. kayak or canoe) was the least preferred. African Americans preferred bank fishing significantly more than the other segments. White respondents preferred motorized boat fishing significantly more than African Americans and Latinxs. Although non-

motorized boat fishing was only reported as a preference by 16% of respondents, Latinxs and Whites preferred it significantly more than African Americans.

On average, respondents preferred to fish lakes/reservoirs and rivers, creeks, and streams more than fishing in ponds and below reservoir dams. The majority of them indicated that they do not prefer in-the-water fishing (78%). Many respondents reported a preference for dock-pier fishing (52%), and while more of them were African American, we did not find any statistically significant differences across the segments for this item.

Cultural importance of fishing

On average, respondents indicated that fishing was personally important to them, to their culture of origin, and an important part of the culture where they live now. In general, fishing was important to 80% respondents, while 18% were indifferent, and 2% felt it was not important. Fishing was significantly more important on average to the culture of origin of White and African American anglers than Latinx. Similarly, although fishing was important to them personally, Latinx respondents regarded fishing as significantly less important than African Americans and Whites. Respondents of all three population segments strongly felt that “fishing should be passed down from generation to generation.”

Table 4. Percentage of anglers placing cultural importance on recreational fishing

	African American	Latinx	White	P-value
Fishing is important to me (%)	85	65	87	< 0.000
Where I come from, fishing is an important part of the culture (%)	66	55	67	0.014
Where I live now, fishing is an important part of the culture (%)	62	60	63	0.488
Fishing should be passed down from generation to generation (%)	88	85	94	0.062

Angler motivations

Angler respondents indicated that relaxation/stress relief that fishing provides and the opportunity to be in nature were the strongest motivations to their start in fishing (Table 5). They also indicated agreement that the following played a role in their recruitment: having a family member/relative who taught/mentored them, spending time outdoors in their youth, experience excitement/adventure, to do something with their family, having confidence in their outdoor abilities, having friends who also fish, to learn more about fishing, and fishing being a part of their family tradition.

White respondents placed a significantly greater importance rating than African Americans on the “spending time outdoors in my youth” item ($F_{2, 383} = 4.08, P = 0.018$). African American respondents placed a significantly greater importance rating on “the desire to provide fish for myself/family to eat” than Latinx and White respondents ($F_{2, 383} = 10.00, P < 0.000$).

Table 5. Lapsed angler recruitment motivations to start fishing

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
The relaxation/stress relief fishing provides	4.39	0.90	189	4.12	1.10	94	4.21	1.03	106
Experience excitement/adventure	4.03	1.02	186	4.01	1.00	91	4.06	1.03	107
Having confidence in my abilities outdoors	3.72	1.14	187	3.48	1.30	90	3.85	1.14	106
Interpersonal									
A family member/relative who taught/mentored me	3.98	1.20	193	4.17	1.10	90	4.29	1.09	110
To do something with my family	3.96	1.17	185	4.10	1.10	91	3.88	1.18	106
Having friends who also fish	3.63	1.24	192	3.52	1.20	93	3.85	1.13	108
Fishing is a part of my family tradition	3.60 ^b	1.42	187	3.07 ^{ac}	1.40	92	3.70 ^b	1.38	107

The desire to provide fish for myself/family to eat	3.16 _c	1.48	190	2.53	1.4	90	2.49 _a	1.35	106
Having a neighbor, or close family friend who taught/mentored me	3.02	1.44	184	3.08	1.3	88	3.01	1.48	107
To show others I can do it	2.61 _b	1.43	185	2.16 _a	1.3	90	2.36	1.36	107
Participating in groups like Scouts & 4-H	2.46	1.41	182	2.17	1.3	88	2.43	1.50	106
Summer outdoor youth camps	2.26	1.36	178	2.2	1.4	88	2.35	1.46	106
Structural									
The opportunity to be in nature	4.08	1.09	186	4.33	0.8	93	4.28	0.94	108
Spending time outdoors in my youth	3.91 _c	1.20	189	3.95	1.2	91	4.30	1.07	106
To learn more about fishing	3.67	1.22	184	3.51	1.3	88	3.44	1.19	106
Other	3.59	1.37	34	3.57	1.5	14	3.68	1.60	19

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

a Statistically significantly different from African American segment

b Statistically significantly different from Latinx segment

c Statistically significantly different from White segment

The motivation composite variable ($\alpha = 0.86$) representing the overall level or strength of motivation consisted of 16 items. Race, ethnicity, age, and gender did not statistically predict respondents' overall level of motivation. The level of educational attainment did not significantly influence the overall level of motivation either. However, there was a statistically significant relationship between the age of first starting fishing and the level of motivation. As the level of motivation increased, the age of recruitment decreased ($R^2 = 0.03$, $F(1,344) = 10.90$, $P = 0.001$).

Constraints to fishing

On average, a lack of time due to other family commitments and work was the most constraining factor explaining a lapse in angling activity. We found many statistically significant differences in constraint ratings between the three population segments (Table 6). Overall, the least number of differences existed between White and Latinx anglers.

Time constraints due to family commitments and work were significantly stronger for White and Latinx than African Americans. White and Latinx anglers were also significantly more constrained by choosing other activities other than fishing than African American anglers. Latinx respondents placed a significantly higher constraint rating on not having enough information about fishing, people they know being unable to get a license to fish with them, and not being interested in fishing any more than White respondents.

The most strongly indicated constraint difference was between African American and White respondents concerning Racial discrimination/bias. More items that African Americans indicated as stronger barriers than Whites were ‘I do not have a convenient place to go fishing’, ‘limits on amount and size of what I can catch and keep’, ‘the distance I have to travel to fish’, and ‘I do not feel welcome at the fishing areas’.

Table 6. Lapsed angler constraints to going fishing

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
I worry that the water and/or fish are not healthy	2.65	1.24	185	2.65	1.19	92	2.35	1.16	105
I have other activities I choose to do instead of fishing	2.27 _{bc}	1.06	187	2.96 _a	1.17	91	2.70 _a	1.14	105
Health related issues	2.10 _b	1.05	189	1.77 _a	0.96	91	2.02	1.17	106
I do not feel welcome at the fishing areas	2.04 _c	1.02	185	1.92	1.08	91	1.69 _a	0.88	106
I do not understand the rules about fishing	1.91	0.91	186	2.08	0.96	91	1.82	0.96	106
I am not interested in fishing anymore	1.66 _b	0.83	183	2.02 _{ac}	1.04	91	1.65 _b	0.81	106
I cannot speak and/or understand the language	1.63	0.80	187	1.62	0.82	90	1.51	0.80	106
Interpersonal									
Safety concerns	2.60 _{bc}	1.20	184	1.95 _a	0.97	91	1.99 _a	0.96	106
Racial discrimination/bias	2.41 _{bc}	1.16	183	1.86 _a	1.01	90	1.60 _a	0.81	106

I do not have anyone to go with	2.12	1.11	187	2.44	1.27	91	2.15	1.15	106
People I know cannot get a license to fish with me	1.9	1.00	187	2.14 _c	1.20	92	1.67 _b	0.79	106
Structural									
Other family commitments limit my time to fish	2.88 _{bc}	1.27	185	3.52 _a	1.06	92	3.46 _a	1.22	107
I do not have enough time due to work	2.88 _{bc}	1.27	185	3.52 _a	1.06	92	3.46 _a	1.22	107
I do not have a convenient place to go fishing	2.88 _{bc}	1.28	188	2.48 _a	1.14	91	2.34 _a	1.25	106
Limits on amount and size of what I can catch and keep	2.69 _{bc}	1.24	187	2.13 _a	1.10	91	2.20 _a	1.07	106
The distance I have to travel to fish	2.55 _c	1.17	187	2.41	1.11	91	2.20 _a	1.03	106
It is too expensive to fish	2.46	1.18	188	2.47	1.03	92	2.4	1.05	106
My preferred fishing sites are too crowded	2.46	1.06	188	2.37	1.02	91	2.5	0.99	106
I do not have access to a boat	2.41	1.32	187	2.66	1.30	92	2.61	1.36	107
It is too complicated to purchase a fishing license	2.09	1.08	187	2.03	1.09	91	1.93	0.98	105
I do not have enough information about fishing	1.98	0.97	184	2.22 _c	1.09	89	1.78 _b	0.95	106
Other	2.83	1.69	29	2.56	1.67	9	3.07	1.54	14

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

a Statistically significantly different from African American segment

b Statistically significantly different from Latinx segment

c Statistically significantly different from White segment

Other items (provided as write-in answers) that respondents identified as barriers or constraints to going fishing as often as they would like include a lack of follow through, other people committing to going with them, not knowing how to purchase a disabled person fishing license, climate change, inability to swim, the expiration date of the annual licenses, complications with license and ID requirements, and choosing to fish in private waters.

Though we found many significant differences in constraint item ratings across the three population segments, race and ethnicity was not a statistically significant predictor of the level to

which the respondents experienced constraints as a whole (as measured by total constraint composite variable, $\alpha=0.87$), though it did influence the type of constraints experienced. Age and gender were not statistically significant predictors of the total constraint level either. The age at which they were recruited to fishing did however significantly affect their overall constraint level. As the recruitment age increased, so did the level of constraints ($R^2= 0.01$, $F(1,348)=4.84$, $P = 0.028$).

Respondents' amount of experience fishing in Alabama (years), and level of recruitment motivation (as measured by total motivation composite variable) were not statistically significant predictors of the total constraint level either. The length of time that they had been lapsed from fishing, however, did significantly influence their overall level of constraints. Respondents who were lapsed more than one year were significantly more constrained than those who were lapsed within the past six months ($F_{3, 346} = 4.30$, $P = 0.005$). Their proximity to the nearest fishing spot also significantly influenced their level of constraints. Respondents who lived one mile or less from the nearest fishing spot were significantly less constrained than respondents who lived farther out ($F_{4, 348} = 3.77$, $P = 0.005$).

The intrapersonal subscale consisted of the 7 items related to preference and cognition ($\alpha=0.70$), the interpersonal subscale consisted of 4 items related to interactions with others ($\alpha=0.70$), and the structural subscale consisted of 10 items related to the external environment ($\alpha=0.76$). Using composite scores by constraint type, we found that both intrapersonal and interpersonal constraint levels were statistically significant predictors of structural constraint levels. Structural constraint levels increased by 0.54 Likert rating points (95% CI [0.16], $P < 0.000$) for every point increase in intrapersonal constraints and increased by 0.93 points (95% CI [0.22], $P < 0.000$) for every point increase in interpersonal constraints. However, interpersonal

constraints account for the majority of that variation in structural constraints ($R^2= 0.45$, $F(1,346)=286.50$, $P < 0.000$). We also found that the level of intrapersonal constraints explained a significant proportion of variance in the level of interpersonal constraints ($R^2= 0.48$, $F(1,358)=323.97$, $P < 0.000$). African Americans experienced significantly more interpersonal constraints than Whites ($F_{2, 369} = 9.09$, $P < 0.000$) (Table 7).

Table 7. Proportion of the ethnic segments that experienced constraints

	African American	Latinx	White	P- value
Intrapersonal (%)	5	7	4	0.083
Interpersonal (%)	15	9	3	> 0.000
Structural (%)	22	23	20	0.707

We also found that proximity to fishing sites influenced the types of constraints respondents experienced. Those living one mile or less from the nearest fishing spot were significantly less constrained by structural constraints than those living 5 or more miles away ($F_{4, 358} = 4.17$, $P=0.003$). They were also significantly less constrained by interpersonal constraints than those who lived 5 to 10 miles away as well as those living more than 15 miles away ($F_{4, 362} = 3.96$, $P=0.004$).

Constraint negotiation strategies

Respondents identified strategies that would help them to work through their constraints to fishing. The top 5 strongest constraint negotiation strategies they reported were having access to better fishing sites, participating in family fishing activities or events, knowing where to go fishing, having friends who also fish, and receiving an invitation to go fishing (Table 8). Access to fishing was significantly more important to African Americans than Latinxs, while knowing where to go fishing was significantly more important to African Americans than Whites.

Although getting information in my language was the least popular negotiation strategy, it was rated higher by the minority segments than Whites.

Seeing more people like themselves fishing, participating in a fishing class, seeing advertisements, and receiving information were significantly stronger negotiation strategies to African Americans than Whites. Further, knowing more about different types of fish was significantly more desired by African American and Latinx anglers than White in the sample.

Table 8. Lapsed angler constraint negotiation strategies

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
Understanding the rules about fishing	2.82	1.25	188	2.78	1.22	91	2.38	1.22	104
Getting information in my language	2.57 _c	1.28	187	2.35 _c	1.29	91	1.90 _{ab}	1.05	105
Interpersonal									
Family fishing activities or events	3.53	1.17	191	3.62	1.13	92	3.45	1.21	105
Having friends who also fish	3.32	1.24	192	3.51	1.18	91	3.36	1.14	107
An invitation to go fishing	3.32	1.24	188	3.41	1.17	92	3.26	1.25	107
Seeing more people like me fishing	3.28 _c	1.27	190	3.01	1.27	91	2.90 _a	1.26	106
Participating in a fishing class or group	2.91 _c	1.21	187	2.78	1.27	91	2.45 _a	1.14	106
Someone to teach or help me improve	2.51	1.16	187	2.68	1.26	91	2.54	1.23	106
If people I know were able to get a fishing license	2.50 _c	1.17	187	2.4	1.21	91	2.14 _a	1.00	106
Structural									
Knowing where to go	3.63 _c	1.24	188	3.35	1.35	92	3.15 _a	1.34	107
Seeing advertisements and receiving information about fishing	3.10 _c	1.26	189	2.84	1.26	91	2.62 _a	1.28	106
Knowing more about different types of fish	3.08 _c	1.28	189	3.10 _c	1.30	92	2.57 _{ab}	1.14	107

Knowing where to find information about fishing and where to go	3.06 _c	1.35	189	2.87	1.28	91	2.57 _a	1.26	107
If I did not have to travel so far to fishing sites	2.92	1.33	191	2.69	1.21	91	2.59	1.08	106
Understanding the fishing license process	2.80 _c	1.23	189	2.55	1.24	91	2.30 _a	1.10	106
Other	3.41	1.68	22	3.13	1.89	8	3.81	1.42	16

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

a Statistically significantly different from African American segment

b Statistically significantly different from Latinx segment

c Statistically significantly different from White segment

Upon examining the constraint negotiation composite variable ($\alpha = 0.94$) we found a statistically significant relationship between the level of motivations and constraints experienced by the respondents and their level of constraint negotiation. As the levels of constraints and motivations increased, so did strategies to negotiate ($R^2 = 0.27$, $F(3,309) = 38.05$, $P < 0.000$). The interaction effect of overall motivations and constraints was not statistically significant in this model ($P = 0.27$). Constraint levels accounted for the majority of the variation in the negotiation level. African American respondents expressed significantly higher willingness to negotiate constraints than White respondents ($F_{2, 370} = 4.00$, $P = 0.019$). Respondents who lived one mile or less from the nearest fishing spot had significantly less constraint negotiation strength than those who lived more than 15 miles from the nearest fishing spot ($F_{4, 367} = 2.66$, $P = 0.032$). Age and gender did not present a statistically significant influence on the respondents' constraint negotiation level. Though the recruitment age did significantly influence the level of constraints that respondents reported, it did not have a statistically significant effect on the level of constraint negotiations. The level of educational attainment of the respondent was also a significant predictor of constraint negotiation strength. People who had a high school diploma or GED, some college, but no degree, and bachelor's degree (4-year degree), were statistically

significantly stronger in constraint negotiation level than those with Graduate or professional degree ($F_{6, 356} = 3.45, P = 0.003$).

Discussion

Understanding the characteristics of lapsed anglers will help in developing strategies to influence future angling participation, as will applying knowledge of their race and ethnicity segments in targeting approaches toward these groups. As Serenari and Peterson (2018) pointed out, minority fishing preferences, behavior, and participation may both match and differ from the characteristics of White anglers (Ditton and Hunt 1996; Valdez 2019; Roop et al. 2021). Areas where there are significant differences between these groups may present opportunities for developing targeted marketing or recruitment, retention, and reactivation efforts. Because retention of individuals belonging to minority segments has been lower (RBFF 2016), managers should focus on the motives and the negotiation strategies that these groups have indicated, while addressing their constraints. Further, fishing participation and non-participation behaviors of African American, Latinx, and White stakeholders who have not purchased fishing licenses or formed a preference for fishing should be studied in the future as their needs may differ from the licensed angler population.

Half of the respondents reported that they had not been lapsed for very long- though significantly longer for Latinxs than African Americans- and the length of time lapsed did influence the level of constraints they experienced. The age at which they were recruited to fishing did however significantly affect their overall constraint level. As the recruitment age increased, so did the level of constraints. They were more motivated to start fishing as recruitment age decreased. Thurnberg and Fulcher (2006) found that fishing preferences are formed at an early age and suggest that lower participation rates from individuals under 24 may

lead to lower participation rates from that cohort as they age. Alternatively, Zhang et al. (2020) found that license sales significantly increased with age (in a one county study in Illinois). Roop et al. (2021) found that non-white anglers were significantly older than White anglers, however, their Latinx sample was too low and those individuals were combined with African Americans in the 'non-white' group. We found that African American and White respondents were significantly older than Latinxs, and though the majority of participants recruited to fishing at an early age, the minority segments recruited at significantly older age than Whites. This tells us that we need to focus on recruitment efforts at early age. African American and Latinx anglers recruiting to fishing at significantly older ages than Whites could be related to their higher lapse rate.

Time constraints due to family and work commitments were most constraining to the lapsed anglers and were significantly more constraining for White and Latinx than African American. Although we found many significant differences in constraint item ratings across the three population segments, race and ethnicity was not a statistically significant predictor of the level to which the respondents experienced constraints as a whole. Likewise for proximity to fishing sites, it did influence the type of constraints experienced. Contrary to what other studies found (Godbey 2010; Ghimire et al. 2014), minorities in this study did not experience stronger intrapersonal constraints than Whites. African Americans did however experience significantly more interpersonal constraints than Whites, which differed from another study's findings that interpersonal constraints were more problematic for Whites (Roop et al. 2021). Both intrapersonal and interpersonal constraint levels significantly influenced the level of structural constraints, and intrapersonal constraint levels were significant predictors of interpersonal constraint levels. This may support the hierarchical constraint negotiation model, in that

constraints are negotiated from proximal to distal in a sequence (Godbey 2010). People with more intrapersonal and interpersonal constraints may have not worked through them yet which means that their structural constraints remain. Floyd et al. (2006) recommended that R3 fishing efforts with African American and Latinxs should focus on addressing intrapersonal and interpersonal constraints. Strategies we found that could help anglers to negotiate through interpersonal constraints include providing social support such as family fishing and fishing groups or classes, inviting them to go fishing, and building relationships with others who fish.

In agreement with Krogman and Stubbs (2021), we found that on average respondents did not rate constraint items as being strong barriers. As reported by Stodolska et al. (2019), Hubbard and Mannell (2001) found that leisure constraints triggered a higher level of constraint negotiation use, which supports our finding that the level of fishing constraints positively influenced the level of negotiation strategies. They also found that stronger motivations resulted in increased negotiation efforts, which supports our finding that the overall motivation level was significantly related to the overall level of negotiation. In our study, African Americans expressed a significantly higher willingness to negotiate than Whites. Strategies that were significantly more important to helping them go fishing such as accessing information about fish and where to go fishing, knowing where to go fishing, and seeing advertisements and more people like themselves fishing, present opportunities for focused R3 marketing and outreach.

While addressing negotiation strategies to retain or to help individuals reactivate in fishing, managers also should keep in mind the motivational factors that are important to their participation (Finn and Loomis 2001). For instance, spending time outdoors and being in nature reveal important expected outcomes for these participants and resource managers should consider this type of recreational fishing-environmental quality connection when making

management decisions (Fedler and Ditton 1994). Reactivation strategies implemented within a 3-year period of becoming lapsed are more likely to be successful than those targeting longer-term lapsed anglers (RBFF 2016).

Managers can also make considerations for site preferences as they apply to different segments when retaining and reactivating anglers. The majority of our respondents from all three segments preferred to fish lakes/reservoirs and rivers, creeks, and streams over ponds and below reservoir dams. Roop et al. (2021) found that fewer minority anglers preferred boat fishing than White anglers and were more likely to bank fish or do so from a dock/pier. African Americans in our study preferred bank fishing significantly more than the other segments, while White anglers preferred motorized boat fishing significantly more than the other segments. Although Latinxs did regard fishing as important to them personally, it was significantly less so than for African Americans and Whites. It was also significantly less important to their culture of origin. All three segments felt that fishing should be passed down through the generations and have family members who also fish; Valdez et al. (2019) suggested that family friendly fishing sites may support and encourage fishing as a cultural practice intergenerationally.

Arlinghaus et al. (2020) suggested that the cultural importance of fish and fishing positively influence participation in recreational fishing on a broad scale. We found that fishing was personally and culturally important to lapsed anglers and perhaps further inquiry could be made to the societal and cultural influences on fishing behavior of angler subpopulations in Alabama. Godbey et al. (2010) also posits that intrapersonal, interpersonal, and structural constraints are all very much shaped by culture. Expanding on the discussion of race and ethnicity in recreational fishing behavior should include more review of the overarching role of culture in the way that the individual forms their motivations, constraints, and negotiations.

Acknowledgements

This article is based on a study supported by the Alabama Cooperative Extension System, the Alabama Department of Conservation and Natural Resources Wildlife and Freshwater Fisheries Division (WFF) and the Sport Fish Restoration Program.

References

- Aas, Ø. 1995. Constraints on sportfishing and effect of management actions to increase participation rates in fishing. *North American Journal of Fisheries Management* 15(3):631–638.
- Ajzen, I., and B. L. Driver. 1991. Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure sciences* 13(3):185-204.
- Arlinghaus, R. 2006. On the apparently striking disconnect between motivation and satisfaction in recreational fishing: The case of catch orientation of German anglers. *North American Journal of Fisheries Management* 26(3):592–605.
- Arlinghaus, R., Tillner, R., and M. Bork. 2015. Explaining participation rates in recreational fishing across industrialised countries. *Fisheries Management and Ecology* 22(1): 45–55.
- Arlinghaus, R., Aas, Ø., Alós, J., Arismendi, I., Bower, S., Carle, S., Czarkowski, T., Freire, K. M. F., Hu, J., Hunt, L. M., Lyach, R., Kapusta, A., Salmi, P., Schwab, A., Tsuboi, J., Trella, M., McPhee, D., Potts, W., Wołos, A., and Z. J. Yang. 2020. Global participation in and public attitudes toward recreational fishing: International perspectives and developments. *Reviews in Fisheries Science & Aquaculture* 1–38.
- Blahna, D. J. 1992. Comparing the preferences of Black, Asian, Latino, and White fishermen at Moraine Hills State Park, Illinois. In D. J. Chavez (Ed.), *Proceedings of the Symposium*

- on Social Aspects and Recreation Research (General Tech. Rep. PSW-132, pp. 42–43).
Albany, CA: USDA, Forest Service, Pacific Southwest Research Station.
- Carroll, B., and K. Alexandris. 1997. Perception of constraints and strength of motivation: Their relationship to recreational sport participation in Greece. *Journal of Leisure Research* 29(3):279–299.
- Crawford, D., and G. Godbey. 1987. Reconceptualizing barriers to family leisure. *Leisure Sciences* 9:119–127.
- Ditton, R. B., and K. M. Hunt. 1996. Demographics, participation, attitudes, management preferences and trip expenditures of Texas Anglers. *Human Dimensions Fisheries Research Laboratory Report # HD-605*. Texas A&M University, College Station. 62.
- Fedler, A. J., and R. B. Ditton. 1994. Understanding angler motivations in fisheries management. *Fisheries* 19(4):6–13.
- Fedler, A. J., and R. B. Ditton. 2001. Dropping out and dropping in: A study of factors for changing recreational fishing participation. *North American Journal of Fisheries Management* 21(2).
- Finn, K. L., and D. K. Loomis. 2001. The importance of catch motives to recreational anglers: The effects of catch satiation and deprivation. *Human Dimensions of Wildlife* 6(3):173–187.
- Floyd, M. F. 2007. Research on race and ethnicity in leisure: Anticipating the fourth wave. *Leisure*, 31(1):245–254.
- Ghimire, R., Green, G. T., Poudyal, N. C., and H. K. Cordell. 2014. An analysis of perceived constraints to outdoor recreation. *Journal of Park and Recreation Administration* 32(4).

- Godbey, G., Crawford, D. W., and X. S. Shen. 2010. Assessing hierarchical leisure constraints theory after two decades. *Journal of Leisure Research* 42(1):111–134.
- Hubbard, J., and R. C. Mannell. 2001. Testing competing models of the leisure constraint negotiation process in a corporate employee recreation setting. *Leisure Sciences* 23(3): 145–163.
- Hunt, L. M., Bannister, A. E., Drake, D. A. R., Fera, S. A., and T. B. Johnson. 2017. Do fish drive recreational fishing license sales? *North American Journal of Fisheries Management* 37(1):122–132.
- Hunt, K. M., and R. B. Ditton. 2001. Perceived benefits of recreational fishing to Hispanic-American and Anglo anglers. *Human Dimensions of Wildlife* 6(3):153–172.
- Hunt, K. and R. B. Ditton. 2002. Freshwater fishing participation patterns of racial and ethnic groups in Texas. *North American Journal of Fisheries Management* 22: 52–65.
- Jackson, E. L. 1993. Recognizing patterns of leisure constraints: results from alternative analyses. *Journal of Leisure Research* 25:129–149.
- Jackson, E. L., and V. C. Rucks. 1995. Negotiation of leisure constraints by junior-high and high-school students: An exploratory study. *Journal of leisure research* 27(1):85-105.
- Jackson, E. L. 2000. Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research* 32(1):62–68.
- Krogman, R. M., and T. J. Stubbs. 2021. Factors affecting interest in fishing, program preferences, and constraints by potential, lapsed, and active anglers in urban areas of Iowa. *Human Dimensions of Wildlife* 1–17.

- Lee, K. J., D. Scott, M. F. Floyd, and M. B. Edwards. 2016. Social stratification in fishing participation in the United States: a multiple hierarchy stratification perspective. *Journal of Leisure Research* 48:245–263.
- Manfredo, M. J., Driver, B. L., and M. A. Tarrant. 1996. Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research* 28(3):188–213.
- Moore, R. L. and B. L. Driver. 2005. *Introduction to outdoor recreation: providing and managing resource based opportunities*. Venture Publishing, Inc., State College, Pennsylvania.
- Nichols, E. K., and W. C. Morse. 2020. Capturing minority voices: A focus group approach to understanding fishing behavior in Alabama. *Journal of Southeastern Fish and Wildlife Agencies* 8:65–74.
- RBFF (Recreational Boating and Fishing Foundation). 2016. *Recommendations and strategic tools for effective angler recruitment, retention, and reactivation (R3) efforts*. RBFF, Alexandria, Virginia.
- Roop, H. J., Poudyal, N. C., and C. A. Jennings. 2021. Fishing preferences, angling behavior, and attitudes toward management: A comparison between White and Nonwhite anglers. *Human Dimensions of Wildlife* 26(1):84–89.
- Serenari, C. and M. N. Peterson. 2018. Evaluating the cultural fit of hunting and angling among minority sportspersons in North Carolina. *Leisure Sciences* 44(1):22–35.
- Schuett, M. A., Lu, J., Ditton, R. B., and Y. P. Tseng. 2010. Sociodemographics, motivations, and behavior: the case of Texas anglers 1989–2004. *Human Dimensions of Wildlife* 15(4):247–261.

- Sharaievska, I., M. Stodolska, K. J. Shinew, and J. Kim. 2010. Perceived discrimination in leisure settings in Latino urban communities. *Leisure* 34:295–326.
- Stodolska, M. 1998. Assimilation and leisure constraints: dynamics of constraints on leisure in immigrant populations. *Journal of Leisure Research* 30(4):521–551.
- Stodolska, M., Shinew, K. J., and L. N. Camarillo. 2019. Constraints on recreation among people of color: toward a new constraints model. *Leisure Sciences* 42(5-6):533–551.
- Sutton, S. G. 2007. Constraints on recreational fishing participation in Queensland, Australia. *Fisheries* 32(2):73–83.
- Thunberg, E. M., and C. M. Fulcher. 2006. Testing the stability of recreational fishing participation probabilities. *North American Journal of Fisheries Management* 26(3):636–644.
- Toth, J. F., and R. B. Brown. 1997. Racial and gender meanings of why people participate in recreational fishing. *Leisure Sciences* 19(2):129–146.
- U.S. Fish and Wildlife Service (USFWS). 2012. *2011 national survey of fishing, hunting, and wildlife-associated recreation*.
- U.S. Fish and Wildlife Service (USFWS). 2018. *2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. FHW/16-NAT (RV).
- Valdez, R. X., Drake, M. D., Burke, C. R., Peterson, M. N., Serenari, C., and A. Howell. 2019. Predicting development preferences for fishing sites among diverse anglers. *Urban Ecosystems* 22(1):127–135.
- White, D. D. 2008. A structural model of leisure constraints negotiation in outdoor recreation. *Leisure Sciences* 30(4):342–359.

Wightman, R., Sutton, S., Matthews, B. E., Gillis, K., Colman, J., and J. R. Samuelsen. 2008.

Recruiting new anglers: driving forces, constraints and examples of success. In Ø. Aas (Ed.), *Global Challenges in Recreational Fisheries* (pp. 303–323). Blackwell Publishing Ltd.

Zhang, X., Landon, A. C., and C. A. Miller. 2021. The influence of aggregate sociodemographic characteristics on fishing license sales in Cook County, Illinois. *North American Journal of Fisheries Management* 41(2):344–354.

Ch 4 Catch and non-catch characteristics of licensed recreational anglers in Alabama

Emily K. Nichols^{a*}, Wayde Morse^b, Terry Hanson^{ac}, Eve Brantley^{ad}, and David Cline^{ac}

^aAlabama Cooperative Extension System, Auburn University, Auburn, USA; ^bCollege of Forestry, Wildlife, and Environment, Auburn University, Auburn, USA; ^cSchool of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, Auburn, USA; ^dDepartment of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, USA

Emily Nichols, ekn0001@auburn.edu, Alabama Cooperative Extension System, Auburn University, Auburn, 219 Duncan Hall, Auburn University, AL 36849

Abstract

Anglers anticipate catch and non-catch related outcomes from participating in recreational fishing. Their motives, preferences, and centrality of lifestyle influence the way that they participate and experience and perceive constraints. To better understand the characteristics of Alabama anglers, we examined behaviors of people currently licensed to fish in Alabama public waters, according to race and ethnicity. In fall 2020, we conducted statewide bilingual survey sampling of individuals belonging to African American, Latinx, and White population segments who purchased freshwater fishing licenses in 2019 and 2020. Findings show divergence and commonalities between the segments surveyed. Understanding the characteristics of anglers and the needs of specific population segments will help managers tailor their management and outreach efforts accordingly. Satisfying current anglers to retain them in fishing while recruiting new anglers is important to sustaining fishing license sales and associated support for fishery resource management and conservation.

Keywords: R3, minority angling, fishing preferences, recreation, public waters

Introduction

Declines in fishing participation as defined by license sales have been a nationwide concern in recent decades but have trended upward the past couple of years (Southwick Associates, 2020). African American and Latinx population segments for example, have historically participated in Alabama recreational fishing at a much lower rate than Whites (Alabama Department of Conservation and Natural Resources, Fisheries license database 2011–2017, unpublished raw data). Further, only 14% of the non-white U.S. population engaged in fishing in 2016 (USFWS, 2016). Participation in recreational fishing is expected to positively relate to how central it is to an individual's lifestyle (Sutton, 2003).

Minorities participate at lower rates in fishing than Whites and have lower retention rates. Hunt and Ditton (2002) found that Latinx and African American anglers were recruited to fishing at older ages than White anglers and had fewer years of fishing experience. Urban dwellers tend to be exposed to fewer fishing opportunities which can negatively influence the proportion of those who participate as well as the days of fishing participation (Hunt and Ditton, 2002). This may influence minority groups' participation as they are often concentrated in urban areas as opposed to rural areas (USDA, 2018). Having a family tradition of fishing has been documented to increase angling participation for both White and African American anglers (Serenari and Peterson, 2018), and passing fishing knowledge down from one generation to the next is a priority (Beeher et al., 2001).

Catch orientation refers to the importance that an individual places on the consumptive aspect of fishing (Graefe, 1980; Anderson et al., 2007). How central fishing is to an individual's lifestyle has been shown to have a positive relationship with being catch oriented (Sutton and Oh, 2015), and both of these attributes have been linked to an increased likelihood of experiencing fishing constraints (Sutton, 2007). As avidity and expectations increase, so do the prevalence of barriers. Participation often occurs at a lower rate due to experiencing constraints (Sutton, 2007). A lack of time due to work and family obligations has consistently been found to be a top limiting factor of fishing participation (Aas, 1995; RBFF, 2016; Sutton, 2007; Stodolska, 1998). Constraints that influence participation can be intrapersonal, interpersonal, and structural (Crawford and Godbey, 1987) and minority segments have been shown to experience not only more of them, but at higher levels (Stodolska, 2020; Sharaievska et al., 2010; Stodolska, 1998; Schroeder et al., 2008).

Melstrom (2018) suggests that changes in catch and non-catch factors have largely contributed to license purchasing declines, as sales have not been congruent with increasing populations and incomes. The importance of catching fish, keeping fish, and the numbers of fish caught can influence fishing participation, site preferences, and social/psychological (e.g., relaxation, skills, family bonding) motivations (Fedler and Ditton, 1986; Arlinghaus, 2006; Kyle et al., 2007; Koemle et al., 2021). Fedler and Ditton (1986) first linked low catch orientation with high motivation for non-catch related factors like relaxation and being outdoors experiencing nature. Further, they found that angler satisfaction with the fishing experience was higher for those who were less catch oriented. Similarly, another study (Arlinghaus, 2006) suggested that the expectation of catching fish influenced satisfaction with the fishing experience, not the actual catch. Another found that satisfaction with fishing trips was higher when more than one species was targeted as opposed to a single one (Beardmore, Hunt, Haider, Dorow, and Arlinghaus, 2015). As Beardmore et al. (2015) stated, “effective fisheries management requires actions that address and ideally increase the satisfaction of anglers.” This requires detail and attention to catch and non-catch experience outcomes across a diverse angler audience.

Preferences and behavior have been shown to differ by race and ethnicity. For example, Hunt et al. (2007) found that African American anglers, across 4 years of Texas angler survey data, significantly preferred keeping their fish catch over other population segments. Roop et al. (2021) found that largemouth bass and catfish were preferred catch species for White anglers, while minority anglers preferred crappie and panfish. They also found that bank or dock/pier fishing was more strongly associated with minority participation. Other studies have found that African American and Latinx anglers fish more frequently from banks than from boats (Hunt and

Ditton, 2002). Creating opportunities for public access to bank and dock/pier fishing, especially in close proximity to urban areas is an example of a negotiation strategy that may address constraints faced by minority segments (Finn and Loomis, 1998; Blahna, 1992).

Roop et al. (2021) asserted that minority fishing participant preferences for fish species has not been well studied. As Finn and Loomis (2001) pointed out, addressing the catch motives of a diverse audience is plausible by managers because they “correspond with factors that are easily adjusted or managed by fishery management agencies through techniques such as manipulating stocking levels, creel limits, or protecting wild fish”. Hunt and Ditton (2002) urged that investments need to be made in understanding the differences among different population segments so that managers may be able to meet the needs of a diverse angler audience. Hunt and Ditton (2007) emphasized that managers need to focus on satisfying the non-catch fishing experience desired outcomes by minorities, in addition to catch related factors. As satisfaction hinges on catch and non-catch related factors, the quality of both aspects will be essential to maintaining a satisfactory angling experience (Birdsong et al., 2021).

Anglers anticipate catch and non-catch related outcomes from participating in recreational fishing. Their motives, preferences, and centrality of lifestyle influence the way that they participate, experience, and perceive constraints. Satisfying current anglers to retain them in fishing while recruiting new anglers is important to sustaining fishing license sales and associated support for fishery resource management and conservation. Understanding the characteristics of anglers and the needs of specific population segments will help managers tailor their management and outreach efforts accordingly. The purpose of this study was to gain a better understanding of angler characteristics across race and ethnicity. The objectives of the study were to 1) examine the participation of people who are licensed to fish, and 2) explore

similarities and differences in catch and non-catch values, motivations, preferences, satisfaction, constraints, and constraint negotiations based on race and ethnicity.

In summer 2020 we randomly sampled 5,000 license purchasers ages 19 to 64 from the Alabama Department of Conservation and Natural Resources (ADCNR) Wildlife and Freshwater Fisheries Division (WFF) fishing license purchase electronic database. Individuals who purchased freshwater fishing licenses in 2019 and 2020 were invited to participate in the study. To obtain adequate representation from minority segments, we stratified the sample by race and ethnicity and oversampled for African American (n=2,000) and Latinx (n=2,000) anglers while sampling fewer White (n=1,000) anglers. We tried to eliminate invalid mailing addresses from our sample using CDX Technologies CDXStreamer software (CDXStreamer Level 4).

Research project personnel developed the survey materials for this study in both English and Spanish in an effort to accommodate invitees. We designed and administered the survey instrument following the modified Tailored Design Method (Dillman, Smyth, and Christian, 2009) and provided Latinx participants with English and Spanish versions of the materials. We generated codes according to the participant race/ethnicity strata and applied them to our outgoing survey packet envelopes, the survey questionnaires, and the reminder post cards.

The three contact methods we used to administer the survey in fall 2020 included (a) a survey packet with the questionnaire, an information letter, a postage-paid return envelope, and \$2 Dairy Queen gift card incentive, (b) a follow-up post card reminder providing an online link to access the survey, and (c) a final letter to say thank you and remind them to complete the survey. We also sent electronic versions of the invitation to complete the survey online as well as the final thank you/reminder letter to individuals who had available email addresses.

Questionnaire

We developed the survey to gain information about anglers' participation, preferences, and satisfaction with Alabama freshwater fishing in public waters and the factors associated with their retention in fishing. Moreover, we wanted to understand how this varied across population segments with low historic (African American and Latinx) and high historic (White) participation. To capture characteristics of their fishing history, we asked respondents what age they started fishing, how many years they have fished in Alabama waters, how long it had been since the last time they went fishing, which type of fishing license they last purchased, if their family members fish, and how close in proximity they live to the nearest fishing spot.

To better understand the experience outcomes desired by licensed anglers, we presented them with 15 items on a 5 point Likert scale (from "not at all important" to "extremely important") asking about the catch and non-catch motives that got them involved with fishing. The items were either adapted from previous research (Fedler and Ditton, 1994; Hunt and Ditton, 2001; Schuett, Lu, Ditton, and Tseng, 2010) or drawn from the recreation experience preference (REP) scales (Ajzen and Driver, 1991; Manfredo, Driver, and Tarrant, 1996; Moore and Driver, 2005). The motivation items are categorized as either intrapersonal (e.g., relaxation/stress relief fishing provides), interpersonal (e.g., having friends who also fish), or structural (e.g., the opportunity to be in nature).

We enlisted feedback about the importance of fishing in their lives as measured by cultural importance and centrality to lifestyle items. First, to capture the role that fishing played to participants' cultural identity, we asked them to rate their level of agreement on a 5 point Likert scale (from "strongly disagree" to "strongly agree") to items about fishing being important to them, an important part of the culture where they come from as well as where they live now,

and fishing being passed down generationally. We then used the centrality of recreation to lifestyle scale (Kim, Scott, and Crompton, 1997) that was modified for fishing by Sutton (2003), to ask anglers about their level of commitment to fishing. They rated their level of agreement on a 5 point Likert scale (from “strongly disagree” to “strongly agree”) with statements about their perception of their fishing expertise, how their life is organized around fishing, if their friends are connected to fishing, and how other leisure activities relate.

We measured the importance of consumption to the respondents’ fishing experience using a catch orientation scale. The 5 item scale was adapted from previous research (Graefe, 1980; Aas and Vitters, 2000). The items encompass attitude and behavior- satisfaction related to catch, and if they are releasing fish. For example, “the more fish I catch, the better the day” and “I release most of the fish I catch”.

To identify preferences that characterize anglers’ fishing behavior, we asked participants to make choices from multiple answer options. This included their favorite type of water body to fish i.e., rivers/creeks/streams, lakes/reservoirs, ponds, below reservoir dams (single answer format), from where they prefer to do their fishing (i.e., dock/pier, bank, in the water, non-motorized boat, motorized boat) (select all that apply format), which fish are their favorite to fish for in freshwater (text entry format), and which freshwater fish are their favorite for consumption (select all that apply format).

To identify angler participation in Alabama public waters, we first asked participants to indicate which fish species they caught in 2019 (select all that apply format), and how many days they spent fishing in 2019 in each water body type i.e., rivers/creeks/streams, lakes/reservoirs, ponds, below reservoir dams (text entry format). We then asked them to rate the overall quality of their fishing experience in Alabama in 2019 on a 7 point Likert scale (from “very poor” to

“very good”). We also asked them to compare their 2020 participation to 2019 by selecting from multiple choice answers- “I fished less than last year”, “About the same”, or “I fished more than last year”. And in light of the ongoing global pandemic, we asked how the COVID-19 pandemic affected their participation this year (multiple choice). Lastly, to gauge retention, we asked respondents if they planned to purchase a freshwater fishing license within the next 2-years.

To measure factors that kept participants from going fishing, we asked them to rate the extent to which they disagreed or agreed with 18 constraint items on a 5 point Likert scale (from “strongly disagree” to “strongly agree”). The constraint items are categorized as either intrapersonal (e.g., I do not know where to go), interpersonal (e.g., people I know can’t get a license to fish with me), or structural (e.g., my preferred fishing sites are too crowded). Some of the items (e.g., it is too expensive to fish, I do not have enough time due to work) were adapted from previous research (Aas, 1995; Ghimire et al., 2014; RBFF, 2016) and others (e.g., people I know cannot get a license to fish with me) developed from constraints research related to minority population segments (Nichols and Morse, 2020).

To identify possible strategies that would help anglers to continue to fish or go fishing more often, we presented them with 23 items on a 5 point Likert scale (from “strongly disagree” to “strongly agree”) about working through intrapersonal, interpersonal, and structural constraints they experience. These constraint negotiation strategies were adapted from previous research (Hubbard and Mannell, 2001; White, 2008; Nichols and Morse, 2020) and are categorized as either intrapersonal (e.g., better personal health), interpersonal (e.g., family fishing activities or events), or structural (e.g., having access to fishing piers or bank fishing).

The survey instrument concluded with a demographic section. This included asking the year of birth, gender, household size, retirement status, race/ethnicity, marital status, highest

level of school or degree completed, household income, and location (i.e., city, rural, town) of participants. These variables were important for comparing angling participant behavior.

Data analysis

The mailed survey questionnaire data were input to the Qualtrics software platform where electronic survey responses were submitted by participants. We analyzed the data using the Statistical Package for Social Sciences (SPSS 26.0) to conduct descriptive statistics, analysis of variance, and post-hoc tests. We compared all survey items across the African American, Latinx, and White respondent segments.

We first conducted descriptive statistics on all of the survey questionnaire items. We looked at mean differences across ethnicity by conducting one-way ANOVA and Tukey post-hoc tests for the items associated with fishing history, motivations, importance, catch orientation, preferences, participation, constraints, and constraint negotiation strategies. These items were treated as continuous variables as they were Likert scale responses.

We addressed the potential for survey non-response bias by comparing the gender and age (under 40, 40 to 60, and over 60) of survey respondents to the sample population, according to race and ethnicity segment (African American, Latinx, and White). We calculated the mean percentages for each segment and conducted paired sample t-tests using SPSS to determine if they were significantly different.

Results

We received 801 valid participant responses to the survey, resulting in a 16% response rate. Results of our comparison of the licensed angler sample population to the respondents of the survey revealed that there were no statistically significant differences across the African American, Latinx, and White angler population segments (Table 1). This indicates that our

sample was well representative of the proportion of African American, Latinx, and White individuals belonging to each age group and gender classification in the sample population and was not biased by the survey non-respondents.

Table 1. Nonresponse test of licensed angler population and sample

	Lapsed Population			Lapsed Sample			P-value
	African American	Latinx	White	African American	Latinx	White	
n	2000	2000	1000	327	213	261	
Mean age	46	38	43	50	40	48	0.061
< 40 yrs (%)	29	56	38	14	50	25	0.055
40-60 yrs (%)	61	39	53	67	46	56	0.049
>60 yrs (%)	10	5	9	18	4	20	0.224
Female (%)	11	23	20	16	28	21	0.093
Male (%)	89	77	80	83	72	79	0.104

African American anglers comprised 41% of the sample, while 27% were Latinx and 33% White (Table 2). The average respondent was 48.8 years old, male (79%), not retired (79%), and married (76%). Latinx respondents (mean=39.60) were significantly younger than African American and White respondents ($F_{2, 781} = 57.73, P < 0.000$). A higher percentage of them were single, did not complete high school, and had larger household sizes compared to the other segments.

Table 2. Demographic profile of licensed angler survey respondents

		African American <i>n</i> =327	Latinx <i>n</i> =213	White <i>n</i> =261	Total <i>n</i> =801
Age	Average age (yrs.)	50	40	48	49
Gender	Female (%)	16	27	21	21
	Male (%)	83	71	79	79
Retirement	Not retired (%)	72	88	81	79
	Retired (%)	28	10	19	20
Marital status	Single (never married) (%)	14	23	12	15
	Married (%)	75	67	85	76
	Divorced (%)	9	8	3	7
	Widowed (%)	2	1	1	1

Education	Did not complete high school (%)	1	6	2	3
	High school diploma (%)	22	20	22	21
	Some college, but no degree (%)	21	18	23	21
	Associate degree (2-year degree) (%)	14	10	12	12
	Bachelor's degree (4-year degree) (%)	21	24	24	23
	Graduate or professional degree (%)	18	15	15	16
	Other (%)	4	7	2	4
Location	Rural (Less than 1,000 people) (%)	17	19	34	23
	Town (1,000 to 20,000 people) (%)	29	29	36	32
	Large town (20,000 to 100,000 people) (%)	17	26	16	19
	City (100,000 to 300,000 people) (%)	36	24	14	26
Household size	Mean household size (# people)	3	4	3	3
Household income	Less than \$14,999 (%)	7	10	8	8
	\$15,000 to \$24,999 (%)	6	8	3	6
	\$25,000 to \$34,999 (%)	8	7	6	7
	\$35,000 to \$49,999 (%)	10	9	9	9
	\$50,000 to \$74,999 (%)	21	21	15	19
	\$75,000 to \$99,999 (%)	17	18	17	17
	\$100,000 to \$149,999 (%)	21	19	20	20
\$150,000 or more (%)	11	8	22	13	

Fishing history

The majority of respondents were Annual Resident Freshwater Fishing License holders and had been fishing within the last 6-months (Table 3). They began fishing at an early age (77% before age 10) and the majority have family members who also fish (91%). We did find that the recruitment age varied significantly between White and minority anglers. Latinxs ($M=11.03$, $SD=10.50$) and African Americans ($M=8.92$, $SD=6.69$) were significantly older than Whites ($M=5.39$, $SD=2.66$) when they first started fishing ($F_{2, 787} = 39.10$, $P < 0.000$). Respondents fished an average of 28.18-years in Alabama. However, this experience also significantly varied by population segment ($F_{2, 779} = 174.43$, $P < 0.000$). White anglers fished 4 years more than African Americans and 24 years more than Latinxs on average. Latinxs reported the least amount of fishing experience in Alabama waters. African American anglers fished 20 years more in

Alabama than Latinxs. Some respondents (21%) lived within a mile of a fishing spot, while others (22%) were further than 15-miles out. Most respondents (58%) lived between 2 and 15-miles from the nearest fishing spot. White respondents indicated that they live significantly closer in proximity than African Americans and Latinxs ($F_{2, 794} = 14.18, P < 0.000$).

Table 3. Fishing history of currently licensed recreational freshwater anglers in Alabama

Variables	African American	Latinx	White	P-value
Age started fishing (%)				< 0.000
5 and under	28	33	62	
6 to 10	54	38	35	
11 to 15	9	8	2	
16 to 19	3	7	1	
20 to 30	3	8	0	
Over 30	3	6	0	
Years of AL freshwater fishing (%)				< 0.000
5 and under	6	38	4	
6 to 10	9	16	4	
11 to 20	14	29	12	
More than 20	72	17	81	
Last time fishing (%)				0.172
0-6 months	87	81	86	
6-12 months	8	13	10	
1-2 years	4	4	3	
More than 2 years	2	2	1	
Do family members fish (%)	90	87	97	0.001
Proximity to nearest fishing spot (%)				< 0.000
1 mile or less	13	19	31	
2 to 5	23	26	25	
6 to 10	22	20	14	
11 to 15	17	13	13	
More than 15	26	22	17	

Motivations

When asked about what played an important role to their start in fishing, respondents identified on average that the relaxation/stress relief that fishing provides and opportunity to be in nature were the strongest motivating factors (Table 4). Relaxation/stress relief was a

significantly stronger motive for White and Latinx anglers to go fishing than African Americans ($F_{2, 792} = 16.49, P < 0.000$). Being taught or mentored by a family member/relative, experiencing excitement, spending time outdoors in youth, and being able to do something together with family were also important motives. Having confidence in their outdoor abilities, having friends who also fish, learning more about fishing, and fishing being a part of the family tradition were moderate motivational factors.

Table 4. Motivations for getting involved in fishing

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
The relaxation/stress relief fishing provides	4.59 _{bc}	0.74	326	4.14 _a	1.2	207	4.32 _a	0.92	260
Experience excitement/adventure	4.24 _b	0.94	323	3.96 _a	1.2	207	4.14	0.92	259
Having confidence in my abilities outdoors	3.95 _b	1.11	321	3.59 _{ac}	1.2	206	3.96 _b	1.1	260
Interpersonal									
A family member/relative who taught/mentored me	4.25 _b	1.14	325	3.83 _{ac}	1.3	206	4.39 _b	1.02	261
To do something with my family	4.07	1.15	322	3.94	1.2	206	4.09	1.01	257
Having friends who also fish	3.83 _b	1.21	322	3.49 _{ac}	1.3	207	3.93 _b	1.11	260
Fishing is a part of my family tradition	3.71 _b	1.45	325	2.90 _{ac}	1.6	203	3.86 _b	1.3	259
The desire to provide fish for myself/family to eat	3.21 _{bc}	1.48	322	2.48 _a	1.4	205	2.72 _a	1.39	260
Having a neighbor, or close family friend who taught/mentored me	3.10 _b	1.5	319	2.74 _a	1.5	203	2.98	1.41	257
To show others I can do it	2.45 _{bc}	1.48	319	2.05 _a	1.4	206	2.12 _a	1.36	260
Participating in groups like Scouts & 4-H	2.15 _b	1.4	315	1.71 _{ac}	1.1	200	2.09 _b	1.33	258
Summer outdoor youth camps	1.99 _b	1.32	313	1.63 _{ac}	1	200	2.02 _b	1.29	256

Structural									
The opportunity to be in nature	4.33	0.92	325	4.18 _c	1.1	207	4.42 _b	0.8	260
Spending time outdoors in my youth	4.17 _{bc}	1.11	324	3.72 _{ac}	1.3	205	4.41 _{ab}	1.11	259
To learn more about fishing	3.83 _{bc}	1.17	320	3.53 _a	1.3	206	3.53 _a	1.14	260
Other	3.31	1.64	51	3.29	1.7	38	3.52	1.64	25

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

_a Statistically significantly different from African American segment

_b Statistically significantly different from Latinx segment

_c Statistically significantly different from White segment

Participating in groups like Scouts and 4-H ($F_{2, 772} = 7.81, P < 0.000$) and summer outdoor youth camps ($F_{2, 768} = 7.05, P = 0.001$) were not strong motivators on average for getting involved in fishing and were significantly less so for Latinxs than the other segments. Similarly, having teaching/mentorship from either a neighbor/family friend ($F_{2, 776} = 3.78, P = 0.023$) or a family member/relative ($F_{2, 791} = 14.71, P < 0.000$) was significantly less motivating to Latinxs than the others. Further, fishing as a part of their family tradition was significantly less important compared to African American and White anglers ($F_{2, 786} = 28.59, P < 0.000$). Spending time outdoors in youth was a strong motivator for all segments on average, but significantly more for White anglers than the others ($F_{2, 787} = 21.97, P < 0.000$).

Other items that respondents identified (reported as write-in answers) as motivations or factors playing an important role to their start to fishing were to meet other people, to teach others to fish, tournaments, where they were raised, and competition.

Importance of fishing

We found that fishing was culturally important and relevant to all three population segments (Table 5). Respondents indicated on average that fishing was important to them personally, to the cultures where they come from and where they live now, and that it is

something that should be passed down from generation to generation. However, Latinx anglers rated all of these statements significantly lower than African Americans and Whites; especially that fishing is important to their culture of origin.

Table 5. Percentage of anglers placing cultural importance on recreational fishing

	African American	Latinx	White	P-value
Fishing should be passed down from generation to generation (%)	90	82	97	<0.000
Fishing is important to me (%)	80	79	90	<0.000
Where I come from, fishing is an important part of the culture (%)	69	49	74	<0.000
Where I live now, fishing is an important part of the culture (%)	63	55	70	<0.000

On average, fishing was not reported to be central to the lifestyles of the angler respondents (Table 6). The highest percentage of respondents agreed with the statement “I would rather go fishing than do most anything else” (M=3.11, SD=1.24), followed by “most of my friends are in some way connected with fishing” (M=2.84, SD=1.25). They agreed the least that fishing prevents them from having time to spend on other leisure activities (M=1.97, SD=0.97). Latinx anglers rated every centrality to lifestyle item significantly lower than African American and White anglers. African American anglers felt significantly stronger than White anglers that they consider themselves to be somewhat of an expert at fishing ($F_{2, 786} = 23.03, P < 0.000$), and that they would rather go fishing than do most anything else ($F_{2, 788} = 15.39, P < 0.000$).

Table 6. Percentage of individuals within segment-Centrality to Lifestyle

	African American n=324	Latinx n=205	White n=261	P-value
I would rather go fishing than do most anything else	51	32	48	<0.000
Most of my friends are in some way connected with fishing	39	27	36	<0.000
I consider myself to be somewhat expert at fishing	40	21	27	<0.000

Other leisure activities don't interest me as much as fishing	37	19	28	<0.000
If I couldn't go fishing, I am not sure what I would do	32	15	22	<0.000
I find that a lot of my life is organized around fishing	23	10	19	<0.000
If I stopped fishing, I would probably lose touch with a lot of my friends	16	6	16	<0.000
Because of fishing, I don't have time to spend participating in other leisure activities	9	4	5	0.011

Catch orientation

We found that anglers across all segments were not strongly catch oriented (Table 7). Though the majority agreed with “the more fish I catch, the better the day”, they also agreed that they viewed a fishing trip successful even if they did not catch anything. African American anglers were significantly less likely to release most of the fish that they catch than the other segments ($F_{2, 788} = 56.39, P < 0.000$). Further, White anglers agreed significantly less that they would be just as happy if they did not catch a fish ($F_{2, 790} = 11.53, P < 0.000$). On average, respondents agreed the least with the statement “when I go fishing, I am not satisfied unless I catch at least something”.

Table 7. Catch orientation of licensed Alabama anglers by population segment

	African American <i>n</i> =325	Latinx <i>n</i> =206	White <i>n</i> =260	P-value
A fishing trip can be successful to me even if no fish are caught (%)	74	69	71	0.361
The more fish I catch, the better the day (%)	70	64	70	0.317
When I'm fishing, I am just as happy if I do not catch a fish (%)	67	63	52	<0.000
I release most of the fish I catch (%)	33	63	69	<0.000
When I go fishing, I am not satisfied unless I catch at least something (%)	31	24	29	0.081

Preferences for species, water body, type of fishing

When asked what their favorite fish to fish for in freshwater was, the highest percentage of African American, Latinx, and White respondents indicated black and temperate basses (including largemouth, smallmouth, spotted, striped, and hybrid) as their top choice. Crappie (61%) and catfish (58%) were the top favorite freshwater fish to eat, followed by bream (45%) and largemouth bass (34%) (Table 8). None of the segments reported wanting to eat bowfin or carp. Latinxs preferred to eat bream, catfish, and crappie significantly less than the others. African Americans preferred hybrid striped bass, smallmouth bass, striped bass, and bream significantly more than Whites.

Table 8. Preferences for fish species, fishing type, and water bodies, within population segments

Variables	African American	Latinx	White	P-value
Species for consumption (%)				
bowfin	0	0	0	0.485
bream (bluegill and other sunfish)	62	21	43	<0.000
carp	0	3	0	0.008
catfish	62	52	60	0.065
crappie	70	42	66	<0.000
gar	2	1	1	0.434
hybrid striped bass	9	5	3	0.007
largemouth bass	40	24	35	0.001
smallmouth bass	15	7	7	<0.000
spotted bass	10	6	12	0.129
striped bass	19	12	9	0.002
Fishing type (%)				
Bank fishing	15	24	18	0.039
Dock/pier fishing	52	48	30	<0.000
Motorized boat fishing	70	62	36	<0.000
Non-motorized boat fishing	61	57	82	<0.000
In-the-water fishing	21	22	22	0.090
Water body type (%)				
Lakes/reservoirs	41	42	46	0.502
Rivers, creeks, streams	40	40	36	0.619
Ponds	13	12	16	0.361
Below reservoir dams	6	4	2	0.031

Participation in 2019

Anglers spent approximately 47 days (SD=70.62) fishing Alabama public waters in 2019, though participation varied across the African American (M=54.64, SD=72.51), Latinx (M=37.08, SD=77.59), and White (M=45.42, SD=60.72) segments. On average, respondents fished the most in lakes/reservoirs, followed by rivers/creeks/streams, ponds, and below reservoir dams (Table 9). They spent the most time fishing lakes/reservoirs (17-days), the least time (5-days) below reservoir dams, and an average of 15-days in 2019 fishing Alabama rivers, creeks, and streams. Although the least amount of fishing days were spent below reservoir dams, African American anglers fished those sites significantly more than White anglers ($F_{2, 800} = 4.80, P = 0.009$). They also fished significantly more days in rivers, creeks, and streams than Latinxs ($F_{2, 788} = 2.80, P = 0.048$). Overall, Latinx anglers had significantly fewer fishing days on Alabama waters than African Americans ($F_{2, 800} = 4.11, P = 0.017$).

Table 9. Angler fishing participation in Alabama public waters in 2019

Variables	African American	Latinx	White	P-value
Species caught in 2019 (%)				
bowfin	2	2	5	0.050
bream (bluegill and other sunfish)	80	45	72	<0.000
carp	4	9	8	0.086
catfish	73	54	69	<0.000
crappie	67	47	62	<0.000
gar	8	9	16	0.005
hybrid striped bass	17	12	13	0.204
largemouth bass	66	54	82	<0.000
smallmouth bass	30	24	23	0.105
spotted bass	22	22	34	0.001
striped bass	41	32	25	<0.000

Days in lakes/reservoirs (%)				
10 and under	59	79	60	<0.000
11 to 25	19	10	20	
26 to 40	9	6	9	
41 to 60	6	2	5	
61 to 100	4	1	3	
More than 100	4	2	2	
Days in rivers, creeks, streams (%)				
10 and under	64	75	72	0.012
11 to 25	16	15	13	
26 to 40	9	4	7	
41 to 60	6	3	3	
61 to 100	4	2	3	
More than 100	2	1	2	
Days in ponds (%)				
10 and under	75	87	83	0.017
11 to 25	12	5	11	
26 to 40	6	2	3	
41 to 60	5	4	2	
61 to 100	2	1	0	
More than 100	0	1	2	
Days below reservoir dams (%)				
10 and under	87	91	95	0.003
11 to 25	6	6	3	
26 to 40	2	1	1	
41 to 60	3	1	0	
61 to 100	1	1	1	
More than 100	1	1	0	

When asked how their fishing participation in 2020 compared to 2019, 40% of anglers indicated that they fished less, while 35% felt it was about the same, and 25% fished more.

White anglers reported that the COVID-19 pandemic increased their participation significantly more than African American respondents ($F_{2, 794} = 9.68, P < 0.000$).

Largemouth bass (68%) and bream (68%) were the most reported catches of 2019, followed by catfish (67%) and crappie (60%). Bowfin was the least reported catch (3%). Latinxs caught significantly less largemouth bass, bream, crappie, and catfish than the other segments

(Table 9). White anglers caught the most largemouth and spotted bass, while African American anglers caught significantly more striped bass than White anglers. There were no significant differences in the catch of hybrid striped bass, carp, gar, smallmouth bass, and bowfin catch across segments.

Anglers were satisfied on average with the overall quality of fishing in Alabama public waters in 2019 (Table 10). Catching their preferred fish species was rated the highest, while the facilities (boat ramp, pier, restroom, concessions) were rated the lowest. Latinx anglers were significantly less satisfied with the catch than the other segments- the species, the number of fish they caught, and the size of the fish they caught. White anglers were significantly less satisfied with the size of the fish they caught than African American anglers.

The vast majority (96%) of respondents indicated that they were definitely planning to purchase a freshwater fishing license within the next 2-years.

Table 10. Angler satisfaction with the overall quality of fishing in Alabama public waters in 2019

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Species of fish preferred	5.31 _b	1.27	327	4.57 _{ac}	1.57	213	5.32 _b	1.37	261
Number of fish caught	5.24 _b	1.47	327	4.37 _{ac}	1.67	213	5.14 _b	1.49	261
Size of fish caught	5.13 _{bc}	1.32	327	4.32 _{ac}	1.53	213	4.84 _{ab}	1.35	261
Facilities (boat ramp, pier, restroom, concessions)	4.73	1.57	327	4.67	1.46	213	4.87	1.48	261

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

_a Statistically significantly different from African American segment

_b Statistically significantly different from Latinx segment

_c Statistically significantly different from White segment

Constraints

Angler respondents did not report strong constraints to their participation (Table 11). A lack of time due to work and other family commitments was most constraining, however. Health

related issues, racial discrimination/bias, not having the skills, and other people not getting a license to fish with them were on average the least important factors affecting fishing participation.

Table 11. Constraints preventing licensed anglers from fishing more often

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
I have other activities I choose to do instead of fishing	2.46 _{bc}	1.06	319	3.09 _a	1.08	206	2.99 _a	1.02	260
I worry that the water and/or fish are not healthy	2.31 _b	1.08	321	2.58 _a	1.16	205	2.34	1.18	259
I do not know where to go	2.29 _c	1.18	321	2.46 _c	1.26	204	1.99 _{ab}	0.96	261
Health related issues	1.97 _b	0.95	320	1.77 _a	0.86	205	1.91	0.98	261
I do not have the skills	1.68 _b	0.85	318	2.15 _{ac}	1.15	205	1.64 _b	0.77	259
Interpersonal									
Safety concerns	2.43 _c	1.09	321	2.32	1.04	206	2.17 _a	0.99	259
Racial discrimination/bias	2.25 _{bc}	1.13	321	1.73 _{ac}	0.96	205	1.50 _{ab}	0.75	259
I do not have anyone to go with	2.08	1.06	322	2.22 _c	1.14	205	1.97 _b	1	259
People I know cannot get a license to fish with me	1.73 _{bc}	0.79	322	2.03 _{ac}	1.16	206	1.55 _{ab}	0.74	260
Structural									
I do not have enough time due to work	3.09 _c	1.22	323	3.3	1.19	208	3.44 _a	1.05	261
Other family commitments limit my time to fish	2.87 _{bc}	1.07	321	3.37 _a	1.03	204	3.34 _a	0.98	259
The distance I have to travel to fish	2.67 _c	1.13	322	2.57 _c	1.09	206	2.31 _{ab}	1.01	260
I do not have access to a boat	2.60 _c	1.35	322	2.76 _c	1.43	206	1.95 _{ab}	1.12	261
My preferred fishing sites are too crowded	2.54 _c	1	323	2.72	1.06	205	2.76 _a	0.97	259
I do not have a convenient place to go fishing	2.48 _c	1.18	323	2.57 _c	1.21	206	2.08 _{ab}	1.04	260
Limits on amount and size of what I can catch and keep	2.27	1	322	2.12	0.9	206	2.1	0.93	259
It is too expensive to fish	2.2	0.95	323	2.34	0.98	206	2.31	0.86	261

I do not have enough information about fishing	2.01 _{bc}	0.96	321	2.32 _{ac}	1.07	206	1.81 _{ab}	0.77	260
Other	2.89	1.56	26	3.04	1.5	29	3.72	1.39	22

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

^a Statistically significantly different from African American segment

^b Statistically significantly different from Latinx segment

^c Statistically significantly different from White segment

Other items that respondents identified (as write-in responses) as barriers or constraints to going fishing as often as they would like include dangerous wildlife, school priorities, outside temperature, COVID-19, needing training, quality of fishing locations, water levels, fishing fines, nuisance boaters, weather, lack of fishing clubs, and lack of pier fishing.

The two minority segments stood apart from White anglers with being significantly more constrained by the distance they have to travel to fish, having a convenient place to go, knowing where to go, and having access to a boat. In addition, African American anglers were significantly less constrained by crowding at fishing sites than Whites.

Negotiation Strategies

Having access to fishing piers or bank fishing was the strongest negotiation strategy for minorities. Not having to work as much was significantly more important as a negotiation strategy to White anglers than African American, while not having safety concerns was significantly more important to African Americans.

Seeing more people like themselves fishing, seeing advertisements and receiving information about fishing was significantly more important to helping minority segments go fishing than Whites, as was having access to fishing piers or bank fishing, participating in a fishing class or group, and knowing where to go. Receiving an invitation to go fishing and

having someone to teach or help them improve their fishing was significantly more important of a strategy to Latinxs than the others.

Table 12. Negotiation strategies licensed anglers identified would help them to go fishing more often in Alabama public waters

	African American			Latinx			White		
	mean	SD	n	mean	SD	n	mean	SD	n
Intrapersonal									
Giving up other activities	2.40 _{bc}	1	315	2.71 _a	1.05	204	2.77 _a	1.04	259
Better personal health	2.4	1.11	317	2.32	1.1	205	2.53	1.1	259
Improved water conditions and/or fish health	3.05	1.26	317	3.14	1.25	205	2.98	1.21	259
Interpersonal									
Family fishing activities or events	3.41	1.22	316	3.5	1.11	205	3.25	1.12	259
Having friends who also fish									
An invitation to go fishing	3.14 _b	1.26	318	3.53 _{ac}	1.15	203	3.14 _b	1.15	259
Seeing more people like me fishing	2.99 _c	1.26	317	3.04 _c	1.1	206	2.68 _{ab}	1.04	257
Participating in a fishing class or group	2.75 _c	1.22	317	2.96 _c	1.16	205	2.42 _{ab}	1.03	259
Someone to teach or help me improve	2.52 _b	1.24	319	3.05 _{ac}	1.22	206	2.56 _b	1.11	259
If people I know were able to get a fishing license	2.07 _{bc}	0.97	315	2.33 _{ac}	1.14	206	1.82 _{ab}	0.87	259
If I did not have safety concerns	2.47 _c	1.12	317	2.35	1.08	204	2.20 _a	1.04	259
Structural									
Having access to fishing piers or bank fishing	3.68 _c	1.22	316	3.62 _c	1.14	206	2.96 _{ab}	1.2	258
Reduced family obligations	2.65 _{bc}	1.08	315	3.03 _a	1.11	205	3.02 _a	1.11	259
If I did not have to work as much	3.28 _c	1.27	317	3.33	1.26	205	3.55 _a	1.24	259
Having a convenient place to go	3.41 _c	1.26	312	3.36 _c	1.25	205	3.41 _{ab}	1.26	259
If fishing sites were less crowded	2.77	1.21	317	2.95	1.16	205	2.89	1.13	259
If fishing costs were lower	2.79	1.22	316	2.81	1.21	205	2.73	1.08	259
Knowing where to go	3.49 _c	1.27	317	3.64 _c	1.1	205	2.97 _{ab}	1.18	259

Seeing advertisements and receiving information about fishing	3.04 _c	1.23	316	2.91 _c	1.18	205	2.54 _{ab}	1.13	258
Knowing more about different types of fish	2.63 _{bc}	1.21	314	2.98 _{ac}	1.23	206	2.36 _{ab}	1.02	258
If I did not have to travel so far to fishing sites	2.98 _c	1.25	318	3.02 _c	1.2	205	2.58 _{ab}	1.09	259
Having access to a boat	2.80 _c	1.38	317	2.99 _c	1.43	205	2.43 _{ab}	1.25	259
Fewer catch limits	2.59 _{bc}	1.05	316	2.37 _a	1	204	2.36 _a	0.92	258
Other	3.32	1.46	25	3.08	1.37	25	3.58	1.51	12

Comparisons should be made by row across the three segments. Letters denote statistically significant differences ($P < 0.05$) between the segments.

^a Statistically significantly different from African American segment

^b Statistically significantly different from Latinx segment

^c Statistically significantly different from White segment

Discussion

We found similarities and differences in the factors that characterize the fishing behavior of African American, Latinx, and White anglers. The three segments differed significantly in some aspects of their participation, preferences, importance they placed on fishing, their motives, how catch oriented they were, constraints experienced, and strategies they indicated would help them to fish more often. We found minority segments were recruited to fishing at older ages than Whites, had a shorter fishing history in Alabama, and lived further from fishing sites. Fishing was culturally important to all segments, but it was not central to the lifestyle of the average angler. The strongest motives for fishing were non-catch related, and anglers were not strongly catch oriented. We did not find any factors to be strongly constraining to respondents' participation in fishing, and they were satisfied on average with the overall quality of fishing in Alabama public waters. Our findings do provide insights that can be helpful to managers to satisfy current anglers to retain them in fishing while recruiting new anglers.

Similar to other studies (Hunt and Ditton, 2002; Hunt, 2000) we found that Latinx and African Americans were older when they first started fishing and had significantly less experience fishing in Alabama waters. One study (Sutton, 2007) found that anglers who experienced constraints fished fewer days than anglers who did not and also expressed a lower satisfaction with the quality of their fishing experiences. Latinx anglers in our study had the lowest levels of fishing participation and also were significantly less satisfied with the overall quality of their Alabama public waters fishing experiences in 2019. Further inquiry into influences of the presence of constraints could provide more insight. Though we did find significant differences in the rating of constraint factors across population segments, respondents on average were not strongly constrained by any of them. This may suggest that they are finding ways to negotiate through their constraints.

Some factors that have previously been shown to limit minority participation in fishing such as racial discrimination/bias (Stodolska et al., 2019), health related issues (Shores et al., 2007), costs (Jackson, 2000; RBFF, 2016; Schroeder, 2008), and safety concerns (Johnson et al., 2001) were significantly more constraining to one or both of the minority segments, but overall were not rated as important constraints to their participation. We identified some constraints linked to negotiation strategies that would help anglers of specific segments to go fishing more often. For instance, having a convenient place to go fishing was significantly more constraining to minorities than Whites and it was also reported as a significantly more important negotiation strategy to help them fish more often. Similarly, a lack of time due to family obligations was significantly more constraining to White and Latinx anglers than African American, and they also reported that reduced family obligations would help them significantly more than African

Americans to fish more. Not having to work as much was significantly more important as a negotiation strategy to White anglers than African American.

Centrality of fishing to lifestyle has been shown to have a positive relationship with being catch oriented (Sutton and Oh, 2015), and both have been linked to an increased likelihood of experiencing fishing constraints (Sutton, 2007). As avidity and expectations increase, so do the prevalence of barriers. The fact that Alabama anglers were not strongly catch oriented or having a strong centrality of fishing to lifestyle, may explain their lack of strongly reported constraints.

Though fishing was indicated to be culturally important to the majority of respondents, we found that fishing was on average not central to their lifestyles. Overall, it was most central to the lifestyle of African Americans. Latinx anglers have the least amount of experience fishing in Alabama public waters, and as they gain more experience, the potential of fishing to become more central to their lifestyle will increase (Sutton and Ditton, 2001). Social support played the least significant role in fishing recruitment motives for Latinxs (i.e., mentoring, teaching, tradition, and groups and camps). Perhaps it could play an important role in the recruitment and retention of new Latinx anglers, however.

Non-catch related motives (relaxation/escaping stressors, being in nature) were the strongest factors getting anglers into fishing, and on average were not strongly catch oriented and also were satisfied on average with their catches in Alabama public waters. Other studies have also found a majority of anglers having a low catch orientation and strongly valuing the non-catch aspects of going fishing (Arlinghaus, 2006). Managers should continue to strive to provide opportunities for catching their preferred species though, in addition to making considerations for appealing to their non-catch motives and values. Latinx anglers were significantly less satisfied with all aspects of their catch compared with the other segments. This presents an

opportunity to address recreational fishery management to better meet their needs. Contrary to Hunt and Ditton's (2001) finding that Latinx anglers perceived less benefits from escaping stressors and being in nature, we found that these were top motives for their fishing participation and along with Whites, they valued escaping stressors significantly more than African American anglers. Providing opportunities for recreation in the natural environment is also within the scope of resource managers.

There were some instances of congruence between fish species preferences and catch. African Americans reported catching significantly more striped bass than Whites and preferred to eat it significantly more than them. White anglers caught the most spotted and largemouth bass and preferred to eat it more than the other segments. Latinxs preferred to eat bream, catfish, and crappie significantly less than the other segments and significantly fewer of them caught these species. Because Latinx anglers were less satisfied with catching their preferred species in Alabama public waters as well as the number of fish and size they caught- managers can focus on their preferred species and bodies of water (e.g., lakes/reservoirs with dock/pier and bank fishing) to strengthen and enhance their retention in fishing. White anglers were also significantly less satisfied with the size of their catch than African Americans, while African Americans indicated that fewer catch limits were significantly more important than to Whites to helping them fish more.

Alabama anglers provided useful feedback about their catch and non-catch motives and values relative to their fishing histories and participation in Alabama waters. Though the non-catch aspects appear to be more dominant in their fishing characteristics, managers should also work to address the preferred fishing sites, species, and other catch related factors that have been identified. Satisfying current anglers to retain them in fishing while recruiting new anglers is

important to sustaining fishing license sales and associated support for fishery resource management and conservation. The negotiation strategies we identified can help managers to know which ones are likely to be used by anglers. Managers should take into consideration the characteristics of anglers and the needs of specific population segments we have outlined to tailor their management and outreach efforts accordingly.

Acknowledgements

This article is based on a study supported by the Alabama Cooperative Extension System, the Alabama Department of Conservation and Natural Resources Wildlife and Freshwater Fisheries Division (WFF) and the Sport Fish Restoration Program.

References

- Aas, Ø. 1995. Constraints on sportfishing and effect of management actions to increase participation rates in fishing. *North American Journal of Fisheries Management* 15(3):631–638.
- Aas, Ø., and Vittersø, J. 2000. Re-examining the consumptiveness concept: some suggestions from a confirmatory factor analysis.
- Ajzen, I., and B. L. Driver. 1991. Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure sciences* 13(3):185-204.
- Anderson, D. K., Ditton, R. B., and Hunt, K. M. 2007. Measuring angler attitudes toward catch-related aspects of fishing. *Human Dimensions of Wildlife* 12(3):181–191.
- Arlinghaus, R. 2006. On the Apparently Striking Disconnect between Motivation and Satisfaction in Recreational Fishing: The Case of Catch Orientation of German Anglers. *North American Journal of Fisheries Management* 26(3):592–605.

- Beardmore, B., Hunt, L. M., Haider, W., Dorow, M., and Arlinghaus, R. 2015. Effectively managing angler satisfaction in recreational fisheries requires understanding the fish species and the anglers. *Canadian Journal of Fisheries and Aquatic Sciences* 72(4):500–513.
- Behler, G. P., McGuinness, B. M., and Vena, J. E. 2001. Polluted Fish, Sources of Knowledge, and the Perception of Risk: Contextualizing African American Anglers' Sport Fishing Practices. *Human Organization* 60(3):288–297.
- Birdsong, M., Hunt, L. M., & Arlinghaus, R. 2021. Recreational angler satisfaction: What drives it?. *Fish and Fisheries* 22(4):682-706.
- Blahna, D. J. 1992. Comparing the preferences of black, Asian, Hispanic, and white fishermen at Moraine Hills State Park, Illinois. In In: Chavez, Deborah J., technical coordinator. 1992. *Proceedings of the Symposium on Social Aspects and Recreation Research*, February 19-22, 1992, Ontario, California. Gen. Tech. Rep. PSW-GTR-132. Albany, CA: Pacific Southwest Research Station, Forest Service, US Department of Agriculture; p. 42-44 (Vol. 132).
- Fedler, A. J., and Ditton, R. B. 1986. A framework for understanding the consumptive orientation of recreational fishermen. *Environmental Management* 10(2):221–227.
- Fedler, A. J., and Ditton, R. B. 2000. Developing a national outreach strategy for recreational fishing and boating. *Fisheries* 25(1):22–28.
- Fedler, A. J., and Ditton, R. B. 1994. Understanding angler Motivations in Fisheries Management. *Fisheries* 19(4):6–13.
- Finn, K. L., and Loomis, D. K. 1998. Minority group participation in recreational fishing: The role of demographics and constraints. In: Vogelsong, Hans G., comp, ed. *Proceedings of*

- the 1997 Northeastern Recreation Research Symposium; 1997 April 6-9; Bolton Landing, NY. Gen. Tech. Rep. NE-241. Radnor, PA: US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 64-69. (Vol. 241).
- Ghimire, R., Green, G. T., Poudyal, N. C., and H. K. Cordell. 2014. An analysis of perceived constraints to outdoor recreation. *Journal of Park and Recreation Administration* 32(4).
- Graefe, A. R. 1980. The relationship between level of participation and selected aspects of specialization in recreational fishing (Doctoral dissertation, Texas A&M University).
- Hubbard, J., and Mannell, R. C. 2001. Testing Competing Models of the Leisure Constraint Negotiation Process in a Corporate Employee Recreation Setting. *Leisure Sciences* 23(3):145–163.
- Hunt, K. M. 2000. Understanding racial and ethnic differences in angler behavior [Ph.D., Texas A&M University].
- Hunt, K. M., and Ditton, R. B. 2001. Perceived benefits of recreational fishing to Hispanic-American and Anglo anglers. *Human Dimensions of Wildlife* 6(3):153–172.
- Hunt, K. M., and Ditton, R. B. 2002. Freshwater Fishing Participation Patterns of Racial and Ethnic Groups in Texas. *North American Journal of Fisheries Management* 22(1):52–65.
- Hunt, K. M., Floyd, M. F., and Ditton, R. B. 2007. African-American and Anglo Anglers' Attitudes toward the Catch-Related Aspects of Fishing. *Human Dimensions of Wildlife* 12(4):227–239.
- Jackson, E. L. 2000. Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research* 32(1):62–68.
- Johnson, C.Y., Bowker, J. M., and Cordell, H. K. 2007. Outdoor recreation constraints: An examination of race, gender, and rural dwelling. *Southern Rural Sociology* 17:111–133.

- Kim, S.-S., Scott, D., and Crompton, J. L. 1997. An exploration of the relationships among social psychological involvement, behavioral involvement, commitment, and future intentions in the context of birdwatching. *Journal of Leisure Research* 29(3):320–341.
- Koemle, D., Beardmore, B., Dorow, M., and Arlinghaus, R. 2021. The human dimensions of recreational anglers targeting freshwater species in coastal ecosystems, with implications for management. *North American Journal of Fisheries Management* 41(5):1572–1590.
- Kyle, G., Norman, W., Jodice, L., Graefe, A., and Marsinko, A. 2007. Segmenting anglers using their consumptive orientation profiles. *Human Dimensions of Wildlife* 12(2):115–132.
- Manfredo, M. J., Driver, B. L., and Tarrant, M. A. 1996. Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research*, 28(3):188–213.
- Melstrom, R. T. 2018. How Do License Prices Affect Participation in Recreational Fishing? Evidence from Pennsylvania. *Human Dimensions of Wildlife* 23(3):273–283.
- Moore, R. L. and B. L. Driver. 2005. *Introduction to outdoor recreation: providing and managing resource based opportunities*. Venture Publishing, Inc., State College, Pennsylvania.
- Nichols, E. K., and Morse, W. C. 2020. *Capturing Minority Voices: A Focus Group Approach to Understanding Fishing Behavior in Alabama*. 10.
- RBFF (Recreational Boating and Fishing Foundation). 2016. *Recommendations and strategic tools for effective angler recruitment, retention, and reactivation (R3) efforts*. RBFF, Alexandria, Virginia.
- Roop, H. J., Poudyal, N. C., and Jennings, C. A. 2021. Fishing preferences, angling behavior, and attitudes toward management: A comparison between White and Nonwhite anglers. *Human Dimensions of Wildlife*, 26(1):84–89.

- Serenari, C., and Peterson, M. N. 2018. Evaluating the Cultural Fit of Hunting and Angling Among Minority Sportspersons in North Carolina. *Leisure Sciences* 1–14.
- Schroeder, S. A., Nemeth, M. L., Sigurdson, R. E., and Walsh, R. J. 2008. Untangling the line: Constraints to fishing participation in communities of color.
- Schuett, M. A., Lu, J., Ditton, R. B., and Tseng, Y. P. 2010. Sociodemographics, Motivations, and Behavior: The Case of Texas Anglers 1989–2004. *Human Dimensions of Wildlife*, 15(4):247–261.
- Sharaievska, I., Stodolska, M., Shinew, K. J., and Kim, J. 2010. Perceived discrimination in leisure settings in Latino urban communities. *Leisure* 34(3):295–326.
- Shores, K. A., Scott, D., and Floyd, M. F. 2007. Constraints to outdoor recreation: A multiple hierarchy stratification perspective. *Leisure Sciences* 29(3):227–246.
- Southwick Associates. 2020. A dashboard view of hunting and fishing metrics in the United States: 2010–2020. Report to the American Sportfishing Association, Alexandria, Virginia. asafishing.org/data-dashboard/. Accessed 15 November 2020.
- Stodolska, M. 1998. Assimilation and Leisure Constraints: Dynamics of Constraints on Leisure in Immigrant Populations. *Journal of Leisure Research*, 30(4):521–551.
- Stodolska, M., Shinew, K. J., and Camarillo, L. N. 2020. Constraints on Recreation Among People of Color: Toward a New Constraints Model. *Leisure Sciences* 0(0):1–19.
- Sutton, S. 2003. Personal and Situational Determinants of Catch-and-Release Choice of Freshwater Anglers. *Human Dimensions of Wildlife* 8(2):109–126.
- Sutton, S. G. 2007. Constraints on Recreational Fishing Participation in Queensland, Australia. *Fisheries*, 32(2):73–83.

- Sutton, S. G., and Ditton, R. B. 2001. Understanding catch-and-release behavior among US Atlantic bluefin tuna anglers. *Human Dimensions of Wildlife* 6(1):49-66.
- Sutton, S. G., and Oh, C.-O. 2015. How Do Recreationists Make Activity Substitution Decisions? A Case of Recreational Fishing. *Leisure Sciences* 37(4):332–353.
- U.S. Fish and Wildlife Service (USFWS). 2018. 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. FHW/16-NAT (RV).
- U.S. Department of Agriculture (USDA). 2018. *Rural America at a glance: 2018 Edition* (Economic Information Bulletin No. 200). Economic Research Center.
<https://www.ers.usda.gov/webdocs/publications/90556/eib-200.pdf?v=342.6>
- White, D. D. 2008. A Structural Model of Leisure Constraints Negotiation in Outdoor Recreation. *Leisure Sciences* 30(4):342–359.
- Wightman, R., Sutton, S., Matthews, B. E., Gillis, K., Colman, J., and Samuelsen, J.-R. 2008. Recruiting New Anglers: Driving Forces, Constraints and Examples of Success. In Ø. Aas (Ed.), *Global Challenges in Recreational Fisheries* (pp. 303–323). Blackwell Publishing Ltd.

References

- Aas, Ø. 1995. Constraints on sportfishing and effect of management actions to increase participation rates in fishing. *North American Journal of Fisheries Management* 15(3):631–638.
- Ajzen, I., and B. L. Driver. 1991. Prediction of leisure participation from behavioral, normative, and control beliefs: An application of the theory of planned behavior. *Leisure sciences* 13(3):185-204.
- Anderson, L. E. and D. K. Loomis. 2005. Underrepresented groups in recreational fishing: a literature review. Human Dimensions Research Unit, Department of Natural Resources Conservation, University of Massachusetts, Amherst, USA.
- Arlinghaus, R. 2006. On the apparently striking disconnect between motivation and satisfaction in recreational fishing: The case of catch orientation of German anglers. *North American Journal of Fisheries Management* 26(3):592–605.
- Arlinghaus, R., Tillner, R., and M. Bork. 2015. Explaining participation rates in recreational fishing across industrialised countries. *Fisheries Management and Ecology* 22(1): 45–55.
- Arlinghaus, R., Aas, Ø., Alós, J., Arismendi, I., Bower, S., Carle, S., Czarkowski, T., Freire, K. M. F., Hu, J., Hunt, L. M., Lyach, R., Kapusta, A., Salmi, P., Schwab, A., Tsuboi, J., Trella, M., McPhee, D., Potts, W., Wołos, A., and Z. J. Yang. 2020. Global participation in and public attitudes toward recreational fishing: International perspectives and developments. *Reviews in Fisheries Science & Aquaculture* 1–38.
- Blahna, D. J. 1992. Comparing the preferences of Black, Asian, Latino, and White fishermen at Moraine Hills State Park, Illinois. In D. J. Chavez (Ed.), *Proceedings of the Symposium*

- on Social Aspects and Recreation Research (General Tech. Rep. PSW-132, pp. 42–43).
Albany, CA: USDA, Forest Service, Pacific Southwest Research Station.
- Borisova, T., X. Bi, S. Larkin, and J. Longanecker. 2016. Assessing nature-based recreation to support economic development and environmental sustainability extension programs. *Journal of Extension* 54:Article 5RIB1.
- Burns, R. C., E. Covelli, and A. Graefe. 2008. Outdoor recreation and nontraditional users: results of focus group interviews with racial and ethnic minorities. Pages 123-137 in D. J. Chavez, P. L. Winter, and J. D. Absher, editors. *Recreation visitor research: studies of diversity*. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station PSW-GTR-210, Albany, California.
- Carroll, B., and K. Alexandris. 1997. Perception of constraints and strength of motivation: Their relationship to recreational sport participation in Greece. *Journal of Leisure Research* 29(3):279–299.
- Crawford, D. W. and G. Godbey. 1987. Reconceptualizing barriers to family leisure. *Leisure Sciences* 9:119-127.
- Creswell, J. W. 2007. *Qualitative inquiry and research design*, 3rd edition. Thousand Oaks, California.
- Ditton, R. B., and K. M. Hunt. 1996. Demographics, participation, attitudes, management preferences and trip expenditures of Texas Anglers. *Human Dimensions Fisheries Research Laboratory Report # HD-605*. Texas A&M University, College Station. 62.
- Fedler, A. J. and R. B. Ditton. 1994. Understanding angler motivations in fisheries management. *Fisheries* 19:6-13.

- Fedler, A. J. and R. B. Ditton. 2000. Developing a national outreach strategy for recreational fishing and boating. *Fisheries* 25:22-28.
- Fedler, A. J., and R. B. Ditton. 2001. Dropping out and dropping in: A study of factors for changing recreational fishing participation. *North American Journal of Fisheries Management* 21(2).
- Fedler, A. J., R. B. Ditton, and M. D. Duda. 1998. Factors influencing recreational sportfishing and boating participation. Report to the Sport Fishing and Boating Partnership Council, Alexandria, Virginia.
- Finn, K. L., and D. K. Loomis. 2001. The importance of catch motives to recreational anglers: The effects of catch satiation and deprivation. *Human Dimensions of Wildlife* 6(3):173–187.
- Floyd, M. F. 2007. Research on race and ethnicity in leisure: Anticipating the fourth wave. *Leisure*, 31(1):245–254.
- Ghimire, R., Green, G. T., Poudyal, N. C., and H. K. Cordell. 2014. An analysis of perceived constraints to outdoor recreation. *Journal of Park and Recreation Administration* 32(4).
- Glaser, B. G. and A. L. Strauss. 1967. *The discovery of grounded theory*. Chicago, Illinois.
- Godbey, G., D. W. Crawford, and X. S. Shen. 2010. Assessing hierarchical leisure constraints theory after two decades. *Journal of Leisure Research* 42:111-134.
- Hubbard, J. and R. Mannell. 2001. Testing competing models of the leisure constraint and negotiation process in a corporate employee recreation setting. *Leisure Sciences* 23:145–163.

- Hunt, L. M., Bannister, A. E., Drake, D. A. R., Fera, S. A., and T. B. Johnson. 2017. Do fish drive recreational fishing license sales? *North American Journal of Fisheries Management* 37(1):122–132.
- Hunt, L. M., E. Camp, B. van Pooten, and R. Arlinghaus. 2019. Catch and non-catch determinants of where anglers fish: a review of three decades of site choice related research in recreational fisheries. *Reviews in Fisheries Science & Aquaculture* 27:261-286.
- Hunt, K. M., and R. B. Ditton. 2001. Perceived benefits of recreational fishing to Hispanic-American and Anglo anglers. *Human Dimensions of Wildlife* 6(3):153–172.
- Hunt, K. M. and R. B. Ditton. 2002. Freshwater fishing participation patterns of racial and ethnic groups in Texas. *North American Journal of Fisheries Management* 22:52-65.
- Jackson, E. L. 1993. Recognizing patterns of leisure constraints: results from alternative analyses. *Journal of Leisure Research* 25:129–149.
- Jackson, E. L., and V. C. Rucks. 1995. Negotiation of leisure constraints by junior-high and high-school students: An exploratory study. *Journal of leisure research* 27(1):85-105.
- Jackson, E. L. 2000. Will research on leisure constraints still be relevant in the twenty-first century? *Journal of Leisure Research* 32:62–68.
- Krogman, R. M., and T. J. Stubbs. 2021. Factors affecting interest in fishing, program preferences, and constraints by potential, lapsed, and active anglers in urban areas of Iowa. *Human Dimensions of Wildlife* 1–17.
- Krueger, R. and M. Casey. 2009. *Focus groups: a practical guide for applied research*. Sage Publications, Thousand Oaks, California.

- Lee, K. J., D. Scott, M. F. Floyd, and M. B. Edwards. 2016. Social stratification in fishing participation in the United States: a multiple hierarchy stratification perspective. *Journal of Leisure Research* 48:245–263.
- Manfredo, M. J., Driver, B. L., and M. A. Tarrant. 1996. Measuring leisure motivation: A meta-analysis of the recreation experience preference scales. *Journal of Leisure Research* 28(3):188–213.
- Lupoli, C., W. C. Morse, C. Bailey, and J. Schelhas. 2015. Indicator development methodology for volunteer tourism in host communities: creating a low-cost, locally applicable, rapid assessment tool. *Journal of Sustainable Tourism* 23:726-747.
- McManus A., W. Hunt, J. Storey, and J. White. 2011. Identifying the health and well-being benefits of recreational fishing. Fisheries Research and Development Corporation FRDC 2011/217, Perth, Western Australia.
- Miles, M. B. and A. M. Huberman. 1994. *Qualitative data analysis*, 2nd edition. Sage Publications, Thousand Oaks, California.
- Moore, R. L. and B. L. Driver. 2005. *Introduction to outdoor recreation: providing and managing resource based opportunities*. Venture Publishing, Inc., State College, Pennsylvania.
- Morgan, D. L., R. A. Krueger, and J. A. King. 1998. *The focus group kit*, volumes 1–6. Sage Publications, Inc., Thousand Oaks, California.
- Morse, J. M., M. Barrett, M. Mayan, K. Olson, and J. Spiers. 2002. Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods* 1(2):13–22.

- Morse, W. C., D. R. Lowery, and T. Steury. 2014. Exploring saturation of themes and spatial locations in qualitative public participation geographic information systems research. *Society and Natural Resources* 27:557-571.
- Nichols, E. K., and W. C. Morse. 2020. Capturing minority voices: A focus group approach to understanding fishing behavior in Alabama. *Journal of Southeastern Fish and Wildlife Agencies* 8:65–74.
- Onwuegbuzie, A. J. and K. M. Collins, 2007. A typology of mixed methods sampling designs in social science research. *Qualitative Report* 12:281-316.
- QSR International. 2018. NVivo Qualitative Data Analysis Software, version 12. QSR International, Burlington, Massachusetts.
- RBFF (Recreational Boating and Fishing Foundation). 2016. Recommendations and strategic tools for effective angler recruitment, retention, and reactivation (R3) efforts. RBFF, Alexandria, Virginia.
- Recreational Boating and Fishing Foundation. 2019. U.S. multicultural quantitative research regarding fishing participation opportunities.
<<https://www.takemefishing.org/getmedia/aadce2b3-af6d-48f7-b207-43b027f9a961/Multicultural-Fishing-Research-Final.pdf>>. Accessed 5 January 2020.
- Recreational Boating and Fishing Foundation and Aquatic Resources Education Association. 2016. Highlights of angler recruitment, retention, and reactivation (R3) literature. Prepared by Bob Byrne Consulting.
<[https://www.takemefishing.org/getmedia/b18711d8-874c-4714-8a50-7188a6d08bc9/Highlights-of-Angler-Recruitment,-Retention-and-Reactivation-\(R3\)-Literature_March-2016](https://www.takemefishing.org/getmedia/b18711d8-874c-4714-8a50-7188a6d08bc9/Highlights-of-Angler-Recruitment,-Retention-and-Reactivation-(R3)-Literature_March-2016)>. Accessed 17 December 2019.

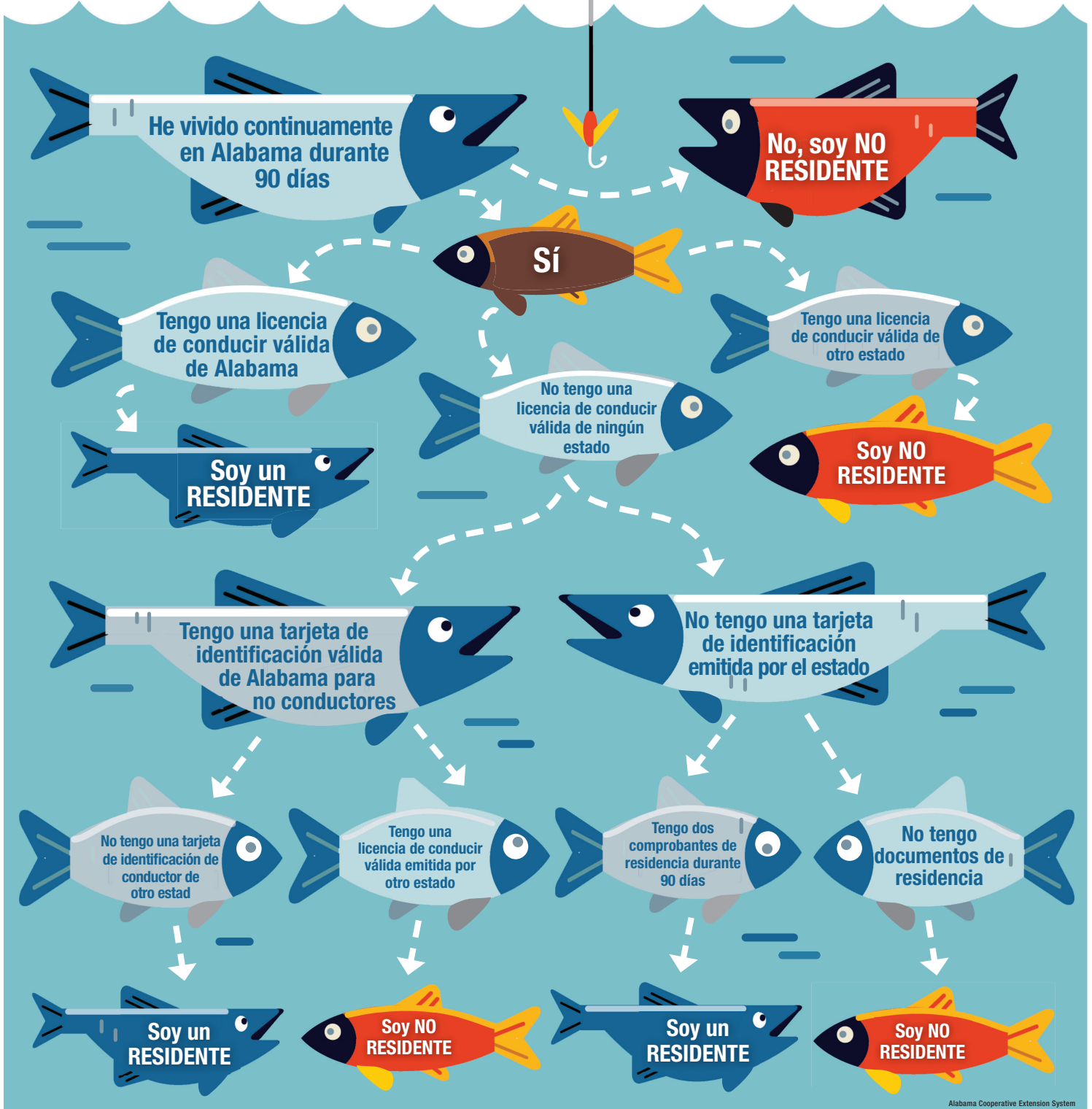
- Recreational Boating and Fishing Foundation and The Outdoor Foundation. 2020. Special report on fishing. Alexandria, Virginia. <https://www.takemefishing.org/getmedia/eb860c03-2b53-4364-8ee4-c331bb11ddc4/2020-Special-Report-on-Fishing_FINAL_WEB.pdf>. Accessed 15 October 2020.
- Responsive Management and National Shooting Sports Foundation. 2017. Hunting, fishing, sport shooting, and archery recruitment, retention, and reactivation: a practitioner's guide. Responsive Management and National Shooting Sports Foundation, Harrisburg, Virginia, USA.
- Roop, H. J., Poudyal, N. C., and C. A. Jennings. 2021. Fishing preferences, angling behavior, and attitudes toward management: A comparison between White and Nonwhite anglers. *Human Dimensions of Wildlife* 26(1):84–89.
- Schneider, I. E. and C. Wynveen. 2015. Exploring outdoor recreation conflict's role in evolving constraints models. *Journal of Outdoor Recreation and Tourism* 9:37-43.
- Schroeder, S. A., M. L. Nemeth, R. E. Sigurdson, and R. J. Walsh. 2008. Untangling the line: constraints to fishing participation in communities of color. In *American Fisheries Society Symposium* 67:97-112.
- Schuett, M. A., Lu, J., Ditton, R. B., and Y. P. Tseng. 2010. Sociodemographics, motivations, and behavior: the case of Texas anglers 1989–2004. *Human Dimensions of Wildlife* 15(4):247–261.
- Serenari, C. and M. N. Peterson. 2018. Evaluating the cultural fit of hunting and angling among minority sportspersons in North Carolina. *Leisure Sciences* 1–14.
- Sharaievska, I., M. Stodolska, K. J. Shinew, and J. Kim. 2010. Perceived discrimination in leisure settings in Latino urban communities. *Leisure* 34:295-326.

- Shores, K. A., D. Scott, and M. F. Floyd. 2007. Constraints to outdoor recreation: a multiple hierarchy stratification perspective. *Leisure Sciences* 29:227–246.
- Stodolska, M. 1998. Assimilation and leisure constraints: dynamics of constraints on leisure in immigrant populations. *Journal of Leisure Research*, 30:521-551.
- Stodolska, M., K. J. Shinew, and L. N. Camarillo. 2019. Constraints on recreation among people of color: toward a new constraints model. *Leisure Sciences* 1–19.
- Southwick Associates. 2019. Economic contributions of recreational fishing within U.S. states and congressional districts. Report to the American Sportfishing Association, Alexandria, Virginia.
- Southwick Associates. 2020. A dashboard view of hunting and fishing metrics in the United States: 2010-2020. Report to the American Sportfishing Association, Alexandria, Virginia. < <https://asafishing.org/data-dashboard/>>. Accessed 15 November 2020.
- Sutton, S. G. 2007. Constraints on recreational fishing participation in Queensland, Australia. *Fisheries* 32(2):73–83.
- Thunberg, E. M., and C. M. Fulcher. 2006. Testing the stability of recreational fishing participation probabilities. *North American Journal of Fisheries Management* 26(3):636–644.
- Toth, J. F. and R. B. Brown. 1997. Racial and gender meanings of why people participate in recreational fishing. *Leisure Sciences* 19:129-146.
- Tufts, B. L., J. Holden, and M. DeMille. 2015. Benefits arising from sustainable use of North America’s fishery resources: economic and conservation impacts of recreational angling. *International Journal of Environmental Studies* 72:850-868.

- U.S. Census Bureau. 2017. 2013-2017 American Community Survey 5-Year Estimates.
<<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>>.
Accessed 9 January 2018.
- U.S. Department of Agriculture (USDA). 2018. *Rural America at a glance: 2018 Edition*
(Economic Information Bulletin No. 200). Economic Research Center.
<https://www.ers.usda.gov/webdocs/publications/90556/eib-200.pdf?v=342.6>
- U.S. Fish and Wildlife Service (USFWS). 2012. 2011 national survey of fishing, hunting, and
wildlife-associated recreation.
- U.S. Fish and Wildlife Service (USFWS). 2018. 2016 National Survey of Fishing, Hunting, and
Wildlife-Associated Recreation. FHW/16-NAT (RV).
- Valdez, R. X., Drake, M. D., Burke, C. R., Peterson, M. N., Serenari, C., and A. Howell. 2019.
Predicting development preferences for fishing sites among diverse anglers. *Urban
Ecosystems* 22(1):127–135.
- White, D. D. 2008. A structural model of leisure constraints negotiation in outdoor recreation.
Leisure Sciences 30:342–359.
- Wightman, R., Sutton, S., Matthews, B. E., Gillis, K., Colman, J., and J. R. Samuelsen. 2008.
Recruiting new anglers: driving forces, constraints and examples of success. In Ø. Aas
(Ed.), *Global Challenges in Recreational Fisheries* (pp. 303–323). Blackwell Publishing
Ltd.
- Zhang, X., Landon, A. C., and C. A. Miller. 2021. The influence of aggregate sociodemographic
characteristics on fishing license sales in Cook County, Illinois. *North American Journal
of Fisheries Management* 41(2):344–354.

Appendix 1 R3 interventions to address multicultural angling information needs

¿Califico como residente?



Alabama Cooperative Extension System

¿Eres estudiante universitario (entre 17 y 23 años de edad)? Los estudiantes universitarios de tiempo completo entre 17 y 23 años de edad (residentes de otro estado) pero que están inscritos en una institución de educación superior de Alabama y residen en el estado pueden calificar para licencias de residente. https://www.outdooralabama.com/sites/default/files/Licenses/LY20%20Packets/NR_College_Student.pdf

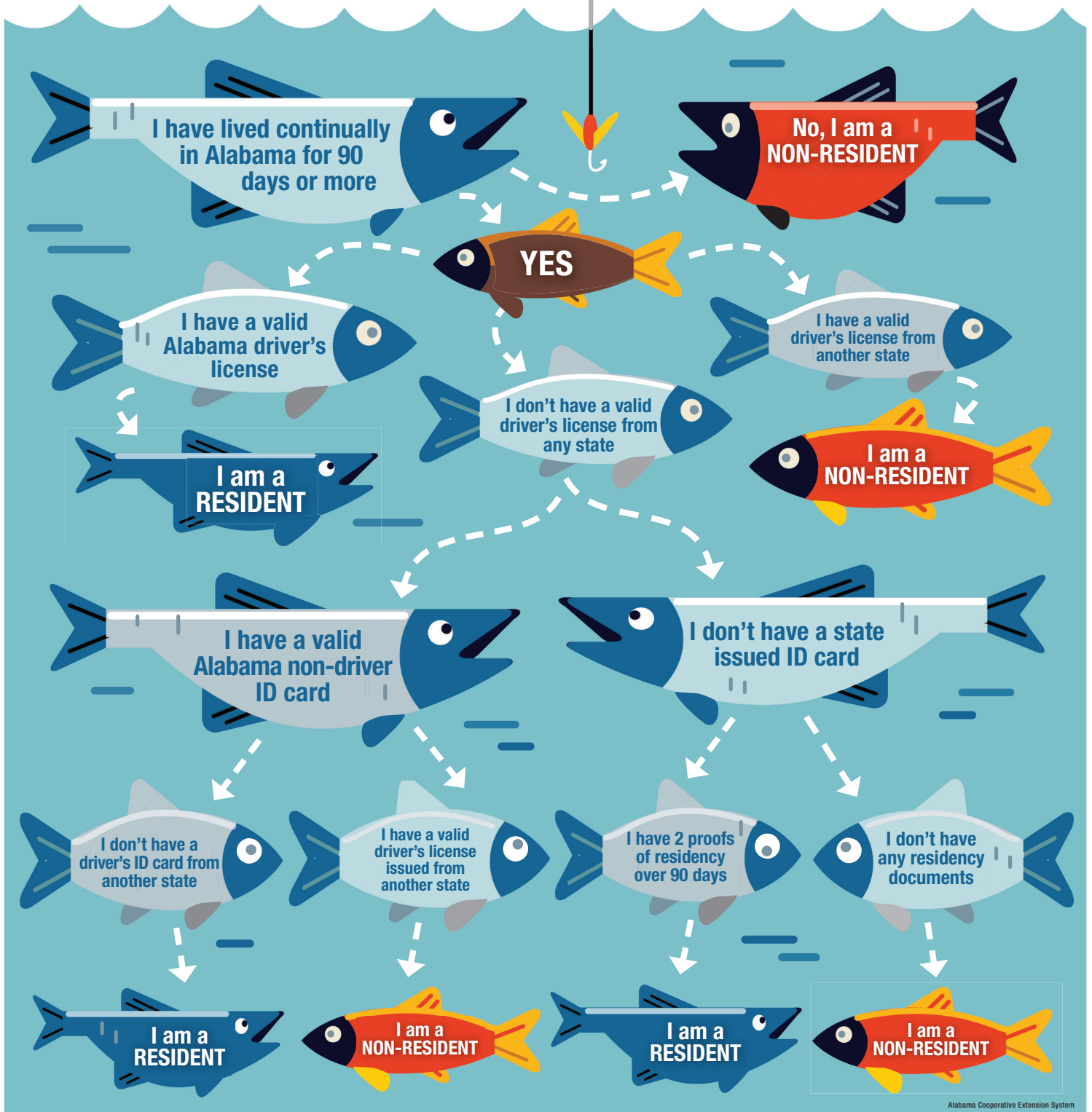
¿Eres miembro activo del personal militar? El personal militar activo estacionado en Alabama, o proveniente en un estado vecino pero que vive en Alabama, puede calificar para obtener licencias de pesca para residentes.

<https://www.outdooralabama.com/license-information/military-license-information>

El Sistema de Extensión Cooperativa de Alabama (Universidad A&M de Alabama y Universidad de Auburn) es un educador y empleador que promueve la igualdad de oportunidades. ¡Son todos bienvenidos! Por favor, informenos de cualquier requerimiento de accesibilidad.

© 2020 Sistema de Extensión Cooperativa de Alabama. Todos los derechos reservados. www.aces.edu 4HYD-2393

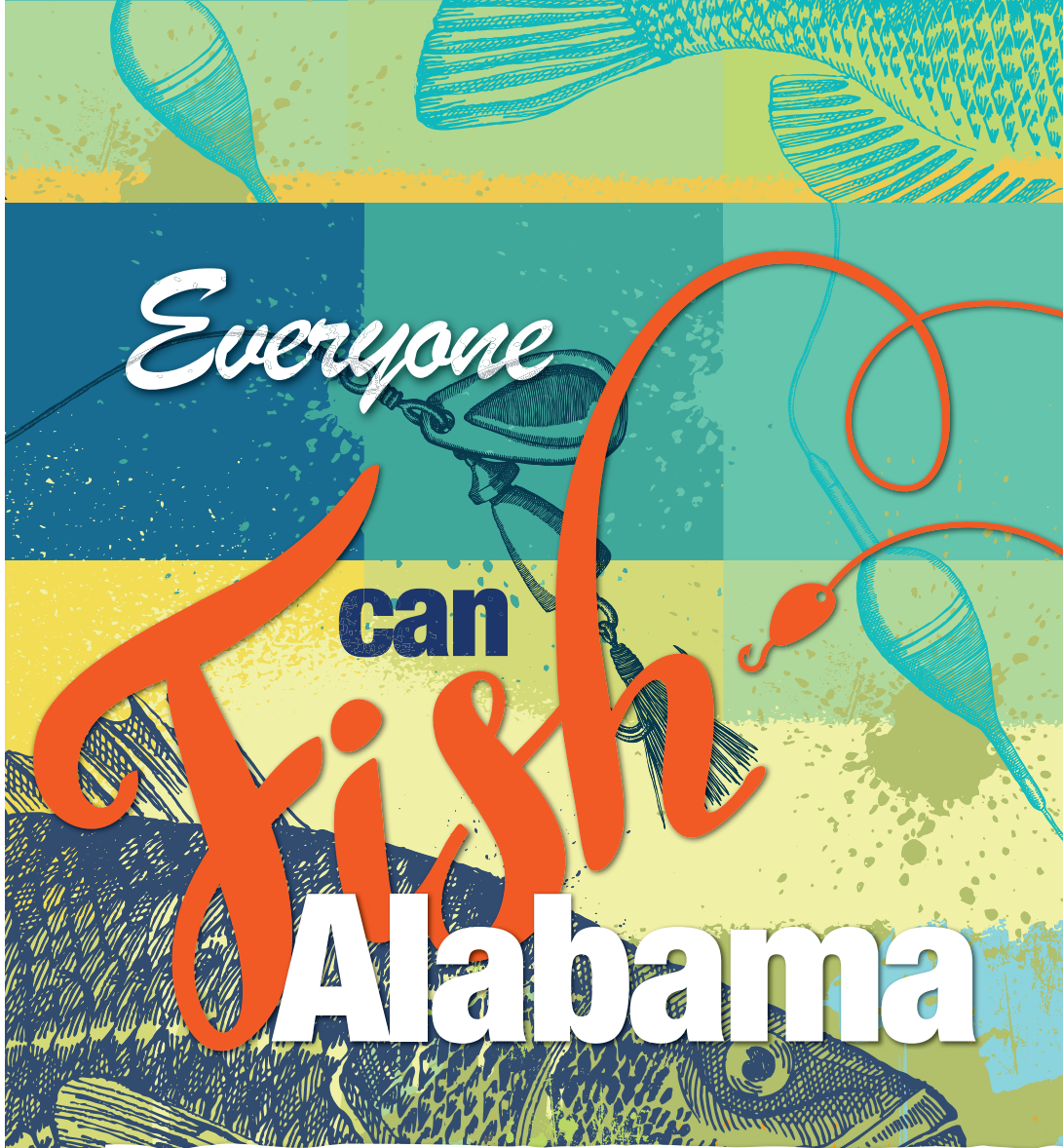
Do I Qualify as a Resident?



Alabama Cooperative Extension System

Are you a college student? Non-resident Full-Time College Students 17 to 23 years of age residing in Alabama enrolled in an approved Alabama Higher Education Institute may qualify for resident fishing licenses.
https://www.outdooralabama.com/sites/default/files/Licenses/LY20%20Packets/NR_College_Student.pdf

Are you active military personnel? Non-resident Active Military Personnel stationed in Alabama or assigned to a bordering state but living in Alabama may qualify for resident fishing licenses.
<https://www.outdooralabama.com/license-information/military-license-information>



How to purchase an
Alabama Recreational Freshwater
FISHING LICENSE

extension
ALABAMA A&M & AUBURN UNIVERSITIES

www.aces.edu



4 STEPS to

Purchasing an Appropriate Alabama Recreational Freshwater Fishing License

Alabama **RESIDENTS** and **NON-RESIDENTS** age 16 and older are required to have appropriate recreational licenses to fish in public waters (some exceptions apply). The fishing license year is from September 1 to August 31 every year.

1 Determine if you qualify for **RESIDENT** or **NON-RESIDENT** fishing license privileges.

You may purchase **RESIDENT fishing licenses**

if you have a valid Alabama driver's license or valid Alabama non-driver's ID card (or proof of residency as explained on the back) and have resided continuously in Alabama for 90 days and have a Social Security number.

You may purchase **NON-RESIDENT fishing licenses**

if you have a driver's license or ID card from a state other than Alabama or if you are not a US citizen.

2 Decide which **RESIDENT** or **NON-RESIDENT** fishing license(s) you want to purchase.

Example: If you want to fish all year in any Alabama public waters, you would choose the Annual Fishing License (either **RESIDENT** or **NON-RESIDENT**).

Example: If you want to fish all year in any Alabama state-owned county public fishing lake, you would purchase an Annual Public Fishing Lakes License (**NON-RESIDENT**).

Example: If you already have a **NON-RESIDENT** fishing license and want to take your family fishing for the weekend, you could purchase a 3-Day Family License (**NON-RESIDENT**).

3 Have your information and documentation ready.

Name
Date of birth (DOB)
Address
Driver's license, ID, or passport number
Social Security number (U.S. Residents)
Form of payment

4 Complete the application.

Complete in person at a retailer, print an application, and mail to ADCNR, or complete online at www.alabamainteractive.org/dcnr_license/welcome.action.

Resident

- Valid Alabama driver's license or valid non-driver's ID card
- Must reside continuously in Alabama for 90 days

NOTE: If you are a non-driver without a valid non-driver's ID card, you may purchase a license through the probate or license commissioner using at least two of the following documents: school registration, tax return, voter registration card, home property tax forms, health insurance forms with address, last 3 months utility bills with address listed, certificate of employment (including proof of residency).



Freshwater Fishing Recreational Licenses (Privilege Selection)

Daily Public Fishing Lakes License **\$6.40**

*valid only in state-owned county public fishing lakes; purchase on-site or at local probate.

Annual Fishing License **\$13.85**

*allows fishing in public freshwaters.

Annual Wildlife Heritage License **\$11.45**

*allows hook and line fishing from bank, fishing in state-owned county public fishing lakes (daily lake permits required), hunting small game (except waterfowl) on state-owned Wildlife Management Area (WMA permit required), and shooting on WFF-managed shooting ranges.

Annual Spearfishing License **\$6.00**

*allows completely submerged person to spear commercial or non-game fish in freshwater or saltwater.

Annual Wirebasket License **price varies**

*allows one basket (maximum of four per license year) to catch non-game fish in public freshwaters.

Lifetime **price varies**

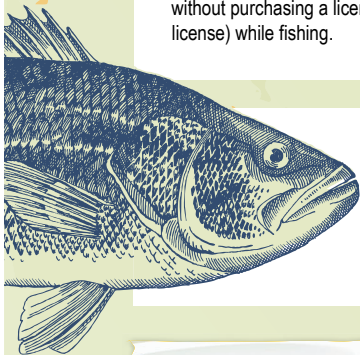
Optional 65+ **\$13.85**

100% Physically Disabled **\$3.05**

Disabled Military Veteran's Appreciation **\$3.15**

*Residents 65 and older are not required to purchase a freshwater fishing license.

*Residents can fish from the bank in their county of residence with hook and line (live bait only) without purchasing a license. You must be able to provide proof of residency (Alabama driver's license) while fishing.



Information you will need:

Driver's license, ID, or passport number

Social Security number

Form of payment





Non-Resident

- Driver's license from another state
- Passport (non-US citizens must use a valid passport)
- Non-driver's ID (ex: school ID, employment ID)
- Military personnel can apply using their orders and driver's license or ID card



Freshwater Fishing Recreational Licenses (Privilege Selection)

Daily Public Fishing Lakes License	\$7.50
*valid only in state-owned county public fishing lakes; purchase on-site or at local probate.	
3-Day Family License	\$29.95
*allows a non-resident license holder to fish with 4 family members in public freshwaters for 3 consecutive days.	
7-Day License	\$29.95
*allows fishing in public freshwaters for 7 consecutive days. Fee is \$32.20 if you are from Florida and \$33.20 if you are from Georgia.	
Annual Fishing License	\$53.30
*allows fishing in public freshwaters. Fee is \$62.20 if you are from Louisiana and \$64.29 if you are from Mississippi.	
Annual Public Fishing Lakes License	\$12.95
*valid only in state-owned county public fishing lakes; purchase on-site or at local probate.	
College Student Annual License	\$13.85
*allows full-time students (ages 17 to 23) residing in Alabama to fish in public freshwaters.	
Annual Spearfishing License	\$8.50
*allows completely submerged person to spear commercial or non-game fish in freshwater or saltwater.	
Annual Wirebasket License	price varies
*allows one basket (maximum of four per license year) to catch non-game fish in public freshwaters.	

Information you will need:

- Name
- Date of birth (DOB)
- Out-of-state address
- Passport or out-of-state license or ID number
- Form of payment



Complete the application.

Complete in person at a retailer, print an application and mail to ADCNR, or complete online at www.alabamainteractive.org/dcnr_license/welcome.action.

1. Select your country and state of residence.

Tip: If you are buying a **NON-RESIDENT** license using a passport, select the country that is listed on your passport and select *not in the US* from the state drop-down menu.

Tip: If you are buying a **NON-RESIDENT** license using a driver's license from another state, select USA as your country of residence and select the state that issued your driver's license from the state drop-down menu.

Tip: If you are buying a **RESIDENT** license, select US as your country of residence and select Alabama as your state.

2. Select the license(s) or privilege(s) you wish to purchase.

Tip: If you are buying a **NON-RESIDENT** license, *NR* will appear before the license or privilege title.

3. Your selection(s) of license or privilege will be displayed on the confirmation page.

Tip: Verify your selection(s), and make any changes to your information.

4. Enter your identification information.

Example: passport country, passport number, and names and surnames.

5. Enter your personal information.

Example: postal address: street, city, county, zip code; email address; and phone number in US format.

Tip: If you are using a passport to complete the application, use your foreign address in this section.

6. Enter your demographic information.

Example: gender, race, height, weight, eye color, and hair color.

7. The information you entered will be displayed on the summary page for final review.

8. Enter your credit card payment information and select **Send** to complete your purchase.



You can print your license(s) once completed (the latest version of Adobe PDF Reader is required). Download it to your smartphone or view it using the Outdoor Alabama application.



Alabama's Free Fishing Day



Alabama's Free Fishing Day each calendar year provides an opportunity for anyone to enjoy fishing in Alabama public waters without a fishing license (some lakes may still require fees and permits).

Visit www.OutdoorAlabama.com
for more information about fishing in Alabama.

Outdoor
ALABAMA

Thank you for supporting fish management and the protection of Alabama's aquatic resources by purchasing an Alabama Recreational Fishing License!

Did you know?

100% of your license fee goes to management of, protection of, and education about Alabama's natural resources. Your purchase also helps our state to gain matching federal funds available from excise taxes on anglers' and boaters' equipment and gasoline purchases.


ALABAMA A&M & AUBURN UNIVERSITIES
www.aces.edu

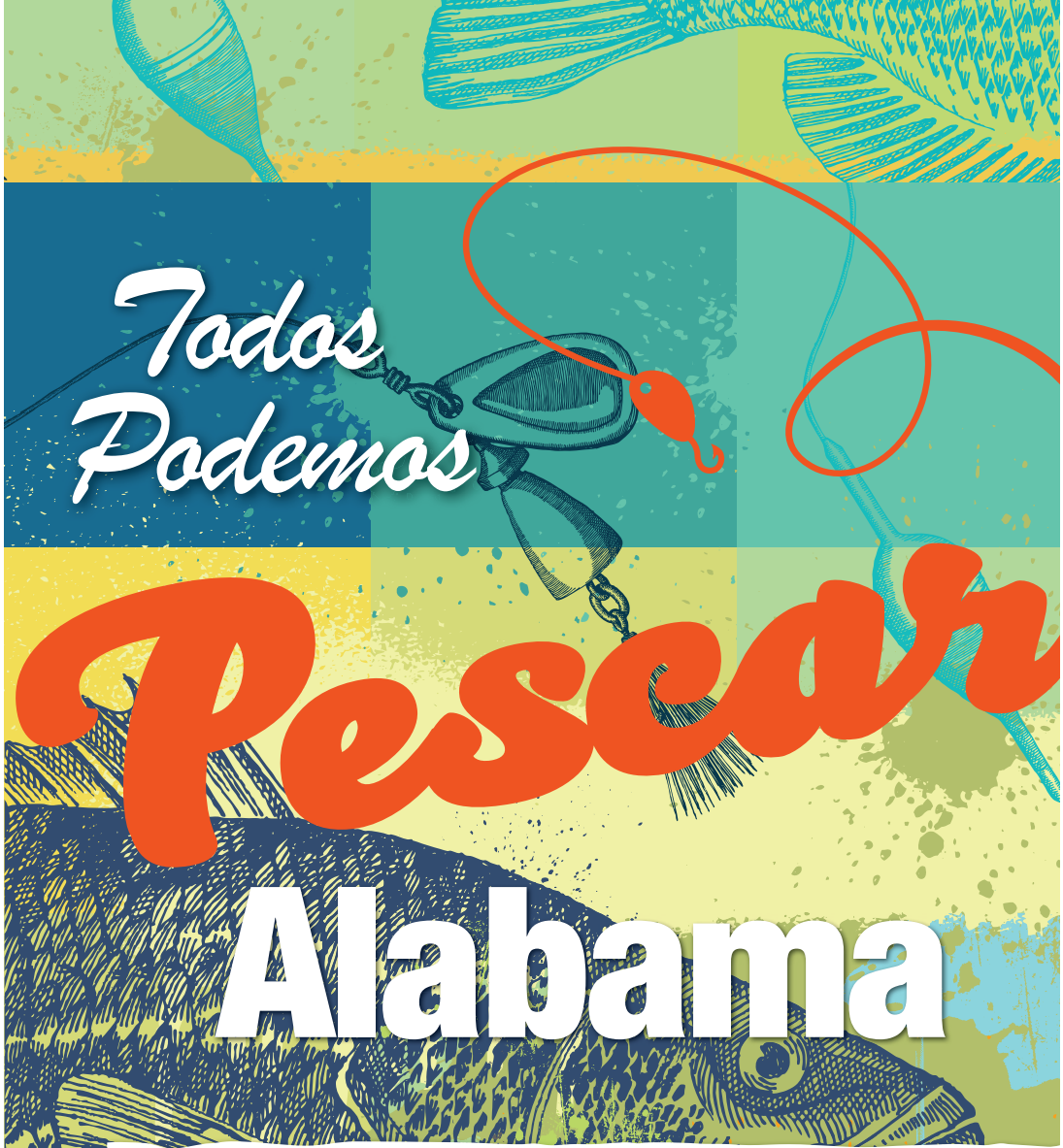


Emily Nichols, *Extension Specialist*, Alabama 4-H, Auburn University

For more information, contact your county Extension office. Visit www.aces.edu/directory.

The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer. Everyone is welcome! Please let us know if you have accessibility needs.

New October 2019, 4HYD-2366 © 2019 by the Alabama Cooperative Extension System. All rights reserved.



Todos
Podemos

Pescar

Alabama

Como Comprar
Licencias de Pesca
Recreativa en agua dulce

extension
ALABAMA A&M & AUBURN UNIVERSITIES

www.aces.edu



4 PASOS para

Comprar una Licencia Adecuada de Pesca Recreativa de Agua Dulce en Alabama

Los **Residentes** y **No Residentes** de Alabama mayores de 16 años deben tener licencias recreativas apropiadas para pescar en aguas públicas (se aplican algunas excepciones). El año de la licencia de pesca es del 1 de septiembre al 31 de agosto de cada año.

1

Determine si califica para los privilegios de licencia de pesca para Residente o No Residente.

Puede comprar licencias de pesca para Residente

si tiene una licencia de conducir válida de Alabama o una identificación de no conductor de Alabama (o prueba de residencia como se explica en la parte posterior), haber residido continuamente en Alabama durante 90 días y poseer un Número de Seguro Social.

Puede comprar licencias de pesca para No Residente

si tiene una licencia de conducir o tarjeta de identificación que no sea de Alabama o si NO se es ciudadano estadounidense.

2

Decida qué licencia (s) de pesca para residente o no residente desea comprar.

Ejemplo: Si desea pescar durante todo el año en cualquier cuerpo de agua público (ríos y lagos) de Alabama, seleccione la Licencia Anual de Pesca (ya sea para **Residente** o **No Residente**).

Ejemplo: Si desea pescar todo el año sólo en lagos de pesca pública de Alabama, compre una Licencia Anual de Pesca Pública de Lagos (**No Residente**).

Ejemplo: Si ya tiene una licencia de pesca para **No Residente** y desea llevar a su familia pescando el fin de semana, puede comprar una licencia familiar de 3 días.

3

Tenga lista su información y documentación.

Nombre
Fecha de nacimiento
Dirección fuera del estado
Pasaporte o número de identificación
Número de Seguro social (Residentes)
Forma de pago

4

Completa la solicitud.

Completa en persona en locales autorizados, imprima una solicitud y envíela por correo a ADCNR, o completa vía internet en www.alabamainteractive.org/dcnr_license/welcome.action.

Residente

- Debe residir en Alabama durante 90 días consecutivos
- Debe poseer Licencia de conductor de Alabama vigente o tarjeta de identificación de no conductor también vigente

Si no es conductor y tampoco tiene una tarjeta de identificación vigente de no conductor, puede comprar una licencia en el Juzgado de Paz o con un comisionado de licencias, utilizando al menos dos de los siguientes documentos: registro escolar, declaración de impuestos, tarjeta de registro de votante, formularios de pago de impuesto sobre la propiedad del hogar, formularios de seguro de salud con dirección, facturas de servicios públicos de los últimos 3 meses con la dirección indicada, certificado de empleo (incluyendo prueba de residencia).



Licencias de Pesca Recreativa en Agua Dulce para Residentes

Licencia Diaria de Pesca en Lagos Públicos **\$6.40**

*válida sólo en lagos de pesca pública de propiedad estatal. Se compra en el lugar de pesca o en el Juzgado de Paz local.

Licencia Anual de Pesca **\$13.85**

*permite pescar en cuerpos de agua dulce públicos.

Licencia Anual de Patrimonio de Vida Silvestre **\$11.45**

*permite la pesca con anzuelo y línea sin carrete, desde la orilla, pescando en los lagos de pesca pública de propiedad estatal (donde se requiere comprar permiso diario), la caza de animales pequeños (excepto aves acuáticas) en Áreas de Manejo de Vida Silvestre de propiedad estatal (de quienes se requiere permiso), y la práctica de tiro en campos de tiro administrados por la División de Vida Silvestre del estado de Alabama.

Licencia Anual de Pesca con Arpón **\$6.00**

*permite que una persona completamente sumergida en cuerpos de agua dulce o salada atrape pescado comercial o no comercial.

Licencia Anual de Pesca con Trampas **el precio varía**

*permite el uso de una canasta-trampa (máximo cuatro por año de licencia) para atrapar peces que no sean protegidos en cuerpos de agua dulce públicos.

Licencia Vitalicia **el precio varía**

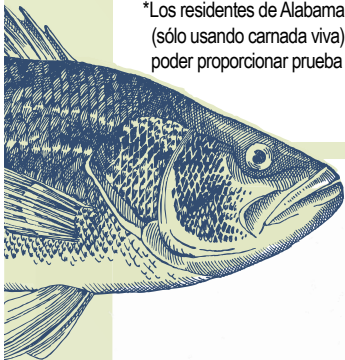
Opcional 65+ **\$13.85**

Pesca en Agua Dulce para Residentes 100% Discapacitados **\$3.05**

Pesca en Agua Dulce para Militares Veteranos Discapacitados **\$3.15**

*Los residentes de Alabama mayores de 65 años de edad no están obligados a comprar una licencia de pesca de agua dulce.

*Los residentes de Alabama pueden pescar sin comprar una licencia, si es solo con anzuelo y línea sin carrete (sólo usando camada viva) desde la orilla de un cuerpo de agua dentro de su condado de residencia. Debe poder proporcionar prueba de residencia (licencia de conducir de Alabama) mientras pesca.



Información que necesitará:

Licencia de conducir, identificación o número de pasaporte
Número de Seguro Social
Forma de pago



No Residente

- Debe poseer Licencia vigente de conductor emitida en otro estado
- Pasaporte (los ciudadanos no estadounidenses deben usar un pasaporte válido)
- Identificación de no conductor (ej.: identificación de estudiante, identificación de empleado)
- El personal militar puede presentar una solicitud utilizando su constancia de servicio militar y licencia de conducir o tarjeta de identificación



Licencias de Pesca Recreativa en Agua Dulce para No Residentes

Licencia Diaria de Pesca en Lagos Públicos	\$7.50
*válida sólo en lagos de pesca pública de propiedad estatal. Se compra en el lugar de pesca o en el Juzgado de Paz local.	
Licencia Familiar de Tres Días	\$29.95
*permite al No Residente poseedor de licencia vigente de conducir y cuatro familiares, el pescar en aguas públicas durante tres días consecutivos.	
Licencia de Siete Días	\$29.95
*permite pescar en cuerpos de agua dulce públicos durante siete días consecutivos. El costo es de \$32.20 para residentes de Florida y de \$33.20 para residentes de Georgia.	
Licencia Anual de Pesca	\$53.30
*permite pescar en cuerpos de agua dulce públicos. El costo es de \$62.20 para residentes de Luisiana y de \$64.29 para residentes de Mississippi.	
Licencia Anual de Pesca en Lagos Públicos	\$12.95
*válida sólo en lagos de pesca pública de propiedad estatal. Se compra en el lugar de pesca o en el Juzgado de Paz local.	
Licencia Anual de Pesca para Estudiante Universitario	\$13.85
*permite que estudiantes de tiempo completo (de 17 a 23 años de edad) que residen en Alabama pesquen en cuerpos de agua dulce públicos.	
Licencia Anual de Pesca con Arpón	\$8.50
*permite que una persona completamente sumergida en cuerpos de agua dulce o salada atrape pescado comercial o no comercial.	
Licencia Anual de Pesca con Trampas	el precio varía
*permite una canasta (máximo de cuatro por año de licencia) para capturar peces que no son de caza en aguas públicas.	

Información que necesitará:

Nombre
 Fecha de nacimiento
 Dirección fuera de Alabama
 Pasaporte o número de identificación
 Forma de pago



Completa la solicitud.

Completa en persona en locales autorizados, imprima una solicitud y envíela por correo a ADCNR, o completa vía internet en www.alabamainteractive.org/dcnr_license/welcome.action.

1. Seleccione su país y estado de residencia.

Consejo: Si está comprando una licencia de **No Residente** usando un pasaporte, seleccione el país que emitió su pasaporte y seleccione “no en los EE. UU.” en el menú desplegable de estado.

Consejo: Si está comprando una licencia de **No Residente** utilizando una licencia de conducir de otro estado, seleccione “EE. UU.” como su país de residencia y seleccione el estado que emitió su licencia de conducir en el menú desplegable del estado.

Consejo: Si está comprando una licencia de **Residente**, seleccione “EE. UU.” como su país de residencia y seleccione “Alabama” como su estado.

2. Seleccione la (s) licencia (s) o privilegio (s) que desea comprar.

Consejo: Si está comprando una licencia de **No Residente**, aparecerá “NR” antes del título de licencia o privilegio.

3. Su (s) selección (es) de licencia o privilegio se mostrarán en la página de confirmación.

Consejo: Verifique su (s) selección (es) y haga cualquier cambio necesario en su información.

4. Ingrese su información de identificación.

Ejemplo: país que emitió el pasaporte, número de pasaporte y nombres y apellidos.

5. Ingrese su información personal.

Ejemplo: dirección postal: calle, ciudad, condado, código postal; dirección de correo electrónico; y número de teléfono en formato estadounidense.

Consejo: Si está usando su pasaporte para completar la solicitud, use su dirección en el extranjero en esta sección.

6. Ingrese su información demográfica.

Ejemplo: género, raza, altura, peso, color de ojos y color de cabello.

7. La información que ingresó se mostrará en la página de resumen para su revisión final.

8. Ingrese la información de su tarjeta de crédito y seleccione “Enviar” para completar el pago de su compra.



Una vez completada la transacción, podrá imprimir su licencia (se requiere la última versión de Adobe PDF Reader), descargarla en su teléfono, o verla usando la aplicación Outdoor Alabama.



El Día de Pesca Gratis de Alabama



El Día de Pesca Gratis en Alabama es una oportunidad que se ofrece cada año para que cualquiera disfrute de la pesca en aguas públicas de Alabama sin requerir una licencia de pesca (algunos lagos pueden sin embargo requerir permiso y cobro de ingreso).

Visite www.OutdoorAlabama.com para obtener más información sobre la pesca en Alabama.

Outdoor ALABAMA

¡Gracias por apoyar el manejo de la pesquería y la protección de los recursos acuáticos de Alabama al comprar una licencia de pesca recreativa de Alabama!

¿Sabía usted que?

El 100% del costo de su licencia se destina a la gestión, protección y educación sobre los recursos naturales de Alabama. Su compra también ayuda a nuestro estado a obtener fondos federales provenientes de impuestos obtenidos sobre las compras de equipos y gasolina por parte de pescadores y propietarios de embarcaciones.

extension
ALABAMA A&M & AUBURN UNIVERSITIES
www.aces.edu



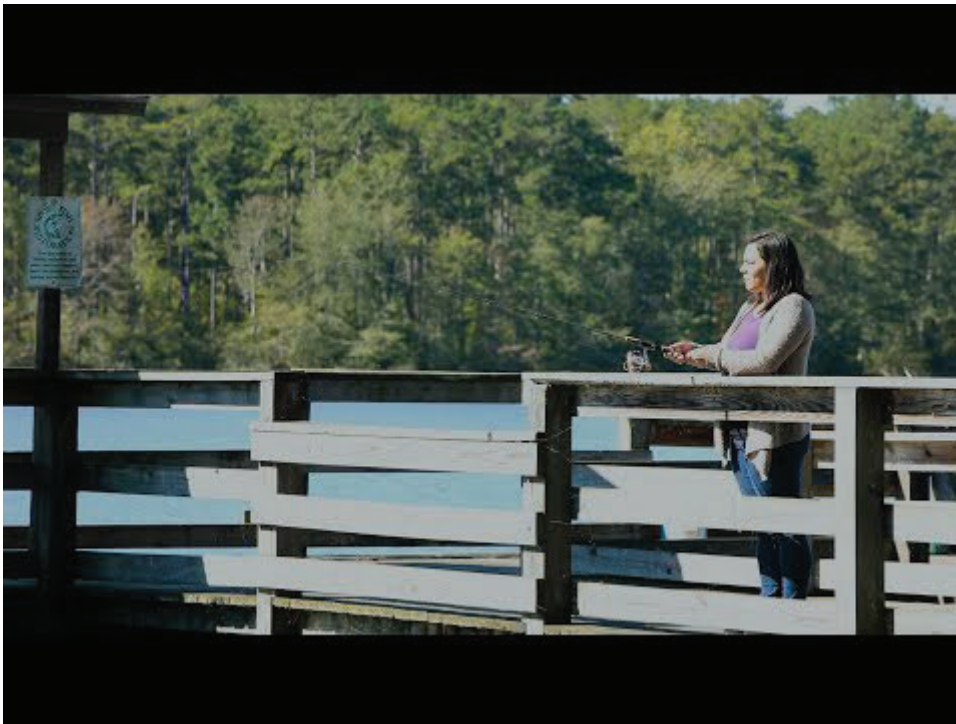
Emily Nichols, Especialista en Extensión, Alabama 4-H, Universidad de Auburn

Para obtener más información comuníquese con la oficina de Extensión de su condado, o visite www.aces.edu/directory.

El Sistema de Extensión Cooperativa de Alabama (Universidad A&M de Alabama y Universidad de Auburn) es un educador y empleador que promueve la igualdad de oportunidades. ¡Son todos bienvenidos! Por favor, infórmenos de cualquier requerimiento de accesibilidad.

Nuevo enero 2020, 4HYD-2378 © 2020 Sistema de Extensión Cooperativa de Alabama. Todos los derechos reservados.

Everyone Can Fish Alabama



<https://www.youtube.com/watch?v=v-3Qv0H8&list=PPSV>

Todos Podemos Pescar Alabama



<https://www.youtube.com/watch?v=3Eslt31wjo>

Our Fish Our Water



<https://www.youtube.com/watch?v=EVxMOLvkNTQ>

Nuestros Peces y Nuestras Aguas



https://www.youtube.com/watch?v=EJtlvrJp-go&list=PLkNoAmOtt_8DtxtZjxJfZMTVqfVNxP3a&index=5

Translated Web Content

[Freshwater Fishing Licenses](#)

Licenses Freshwater Fishing Licenses

Whether you want to spend quality time with family and friends by fishing in one of the Alabama reservoirs or enjoy the beauty while fishing an Alabama mountain stream, quiet wetland or Mobile Delta. Alabama is the place for fishing. The Alabama State Public Fishing Lakes are great places to experience the thrill of catching big largemouth bass or bream in a secure setting. The sport of Alabama bass fishing will challenge the most ardent competitor. And pond sportfish management information will allow you to develop your own fishing paradise. To support fish management and aquatic resources, purchase a fishing license.

Your purchase of an Alabama fishing license financially supports the protection and enhancement of Alabama's aquatic resources. Except for the issuance fees and Internet or telephone convenience fees, 100% of your license fee goes to management of, protection of, and education about Alabama's natural resources. Your purchase also help us gain matching federal funds available from excise taxes on anglers' and boaters' equipment and gasoline purchases.

Freshwater Fishing Recreational Licenses-Resident

Freshwater Fishing Recreational Licenses - Non-Resident

Freshwater Fishing Commercial Licenses

Licencias de pesca en agua dulce

Licencias - Licencias de pesca en agua dulce

Ya sea que quiera recrearse algún tiempo con su familia y amigos pescando en uno de los embalses de Alabama o disfrutando de la belleza mientras pesca en un arroyo en las montañas de Alabama, en un humedal tranquilo o en el delta del río Mobile. Alabama es el lugar para ir de pesca. Los Lagos para Pesca Pública del Estado de Alabama son excelentes lugares para experimentar la emoción de atrapar lobinas grandes o mojarra en un entorno seguro. La pesca deportiva de lobina en Alabama es un gran desafío para el competidor más ardiente. Y la información disponible sobre el manejo de estanques para pesca deportiva te permitirá crear tu propio paraíso de pesca. Para apoyar el manejo de las pesquerías y los recursos acuáticos, compre una licencia de pesca.

Su compra de una licencia de pesca en Alabama da apoyo financiero para la protección y el mejoramiento de los recursos acuáticos de Alabama. Con excepción de las tarifas de emisión y de uso de Internet o teléfono, el 100% del pago de su licencia se destina a la administración, protección de, y educación acerca de los recursos naturales de Alabama. Su compra también nos ayuda a obtener fondos federales disponibles de impuestos sobre la compra de equipos de pesca y navegación y compras de gasolina.

Licencias de Pesca Recreativa en agua dulce -Residentes

Licencias de Pesca Recreativa en agua dulce - No Residentes

Licencias comerciales para pesca en agua dulce.

Freshwater Fishing Recreational Licenses-Resident

You can click the 'PURCHASE LICENSES' to use the online sales system to purchase license, pay with a debit/credit card and immediately print your license. Recreational licenses expire August 31 annually.

By law, **residency** is defined by your driver's license or non-driver's ID card. View the Residency Information page for details. Alabama Residents can fish from the bank in their county of residence with hook and line (live bait only) without purchasing a license. Resident must be able to provide reasonable proof of residency (driver's license) while fishing.

Alabama Residents 65 years of age and over are exempt from purchasing the following licenses:

- Hunting
- Freshwater Fishing
- Saltwater Fishing
- State Duck Stamp
- Wildlife Management Area

Must have Alabama driver's license or proof of permanent residence and age. (Does not include non-resident landowners). Voluntary annual and lifetime licenses are available for those who wish to continue support ...

A **License Information Packet** can be viewed for each license for information, laws and regulations. A mail-in application is included for those who prefer not to use the online sales system or visit a license agent. To immediately issue and print your license, click 'Purchase Licenses'.

2020-2021 ANNUAL LICENSES

Freshwater Fishing - \$14.05

*Residents 64 years old receive a 'Resident 64 Lifetime License'

Optional 65+ Freshwater Fishing - \$14.05

Freshwater Public Fishing Lakes Daily License* - \$6.45

**Valid only in the State-owned county Public Fishing Lakes. (Not valid in the major rivers and lakes.)

Wildlife Heritage License - \$11.60

Spearfishing - \$6.00 Wirebasket - Prices Vary

LIFETIME LICENSES

Lifetime Freshwater Fishing - Prices Vary

Optional Senior Lifetime Freshwater Fishing - \$35.00

DISABLED FRESHWATER FISHING

100% Physically Disabled Resident Freshwater Fishing License - \$3.05

Disabled Freshwater Fishing Military Veteran's Appreciation - \$3.15

Disabled Freshwater Fishing 3-Day Event License - \$100.00

Licencia de pesca recreativa en agua dulce - Residentes

Presione **COMPRAR LICENCIAS** para ingresar al sistema de ventas de licencias de pesca, paga con una tarjeta de débito o crédito e imprima inmediatamente su licencia. Las licencias de pesca recreativa expiran el 31 de agosto de cada año.

Por ley, la residencia en Alabama se define en su licencia de conducir o su tarjeta de identificación de no conductor. Ver la página de información de residencia para más detalles. Los residentes de Alabama pueden pescar sin licencia, si es en su condado de residencia, desde la orilla del río o lago, con línea y anzuelo y sólo usando carnada viva. El pescador debe poder comprobar su residencia (licencia de conducir) mientras pesca.

Los **residentes de Alabama de 65 años de edad o más** están exentos de comprar las siguientes licencias:

- caza
- Pesca de agua dulce
- Pesca de agua salada
- Sello estatal para caza de pato
- Área de Manejo de Vida Silvestre

Se debe tener licencia de conducir de Alabama o prueba de residencia permanente y edad. (No incluye terratenientes no residentes). Las licencias voluntarias anuales y vitalicias están disponibles para aquellos que desean continuar apoyando ...

Existe un **paquete de información sobre licencias** para cada tipo de licencia, que incluye las leyes y reglamentos. Aquellos que prefieren no usar el sistema de ventas en internet pueden enviar su solicitud por correo o visitar a un agente de licencias. Para emitir e imprimir su licencia inmediatamente, haga clic en **COMPRAR LICENCIAS**.

LICENCIAS ANUALES 2020-2021

Pesca en agua dulce - \$ 14.05

* Los residentes de 64 años de edad reciben una 'Licencia Vitalicia de residente 64'

Opcional 65+ Pesca en agua dulce - \$ 14.05

Licencia Diaria de Pesca en Lagos Públicos * - \$ 6.45

** *Válida sólo en el condado donde está localizado el Lago Público. (No válido en los principales ríos y lagos).*

Licencia Patrimonio de Vida Silvestre - \$ 11.60

Pesca submarina - \$ 6.00 Nasa - Los precios varían

LICENCIAS VITALICIAS

Vitalicia de Pesca en agua dulce - Los precios varían

Opcional Pesca de agua dulce para mayores: \$35.00

LICENCIA DE PESCA EN AGUA DULCE PARA DISCAPACITADOS

Pesca en agua dulce para residentes 100% discapacitados: \$ 3.05

Pesca en agua dulce para veterano militar discapacitado - \$ 3.15

Licencia para eventos de 3 días de pesca de agua dulce para discapacitados - \$ 100.00

Freshwater Fishing Recreational Licenses - Non-Resident

You can click the 'PURCHASE LICENSES' to use the online sales system to purchase license, pay with a debit/credit card and immediately print your license. Recreational licenses expire August 31 annually.

By law, **residency** is defined by your driver's license or non-driver's ID card. View the Residency Information page for details. It is illegal in Alabama for a non-resident with a valid driver's license to possess an Alabama non-driver's ID card. Non-residents age 16 years of age and over are required to have appropriate recreational licenses.

A **License Information Packet** can be viewed for each license for information, laws and regulations. A mail-in application is included for those who prefer not to use the online sales system or visit a license agent. To immediately issue and print your license, click 'Purchase Licenses'.

2020-2021 ANNUAL LICENSES

Freshwater Fishing

- Annual
 - All States, except Louisiana and Mississippi - \$54.20
 - Louisiana - \$62.20
 - Mississippi - \$66.29
- 7-Day Trip
 - All States, except Florida and Georgia - \$30.40
 - Florida - \$32.20
 - Georgia- \$33.20

Note: Due to reciprocal agreements, special fishing license fees may apply to residents of Florida, Georgia, Louisiana, Mississippi & Tennessee.

Freshwater Fishing Family 3-day Trip

All states, except Florida & Georgia- \$30.40

Florida- \$32.20

Georgia- \$33.20

Non-Resident College Students - \$14.05

Freshwater Public Fishing Lakes License*

- Annual License - \$13.10
- Daily License - \$7.55

**Valid only in the State-owned county Public Fishing Lakes. (Not valid in the major rivers and lakes.)*

Spearfishing

- Annual - \$8.50
- 7-Day Trip - \$3.50

Wirebasket - Prices Vary

DISABLED FRESHWATER FISHING

Disabled Freshwater Fishing 3-Day Event License - \$100.00

Licencia de pesca recreativa en agua dulce – No Residentes

Presione **COMPRAR LICENCIAS** para ingresar al sistema de ventas de licencias de pesca, paga con una tarjeta de débito o crédito e imprima inmediatamente su licencia. Las licencias de pesca recreativa expiran el 31 de agosto de cada año.

Por ley, **la residencia en Alabama** se define en su licencia de conducir o su tarjeta de identificación de no conductor. Ver la página de información de residencia para más detalles. En Alabama es ilegal que una persona no residente que posee una licencia de conducir válida obtenga una tarjeta de identificación de no conductor de Alabama. Toda persona no residente mayor de 16 años de edad debe tener licencia de pesca recreativa apropiada.

Existe un **paquete de información sobre licencias** para cada tipo de licencia, que incluye las leyes y reglamentos. Aquellos que prefieren no usar el sistema de ventas en internet pueden enviar su solicitud por correo o visitar a un agente de licencias. Para emitir e imprimir su licencia inmediatamente, haga clic en **COMPRAR LICENCIAS**.

LICENCIAS ANUALES 2020-2021

Pesca en agua dulce

- Anual
 - Para todos los estados, excepto Luisiana y Mississippi - \$ 54.20
 - Luisiana - \$ 62.20
 - Mississippi - \$ 66.29
- Viaje de 7 días
 - Todos los estados, excepto Florida y Georgia - \$ 30.40
 - Florida - \$ 32.20
 - Georgia- \$ 33.20

Nota: Debido a acuerdos recíprocos, puede que se cobren otros impuestos especiales a los residentes de Florida, Georgia, Luisiana, Mississippi y Tennessee.

Pesca familiar en agua dulce - Viaje de 3 días

Todos los estados, excepto Florida y Georgia - \$ 30.40

Florida- \$32.20

Georgia-\$33.20

Estudiantes universitarios no residentes - \$ 14.05

Pesca en Lagos Públicos de Agua Dulce *

- Licencia anual - \$ 13.10
- Licencia diaria - \$ 7.55

**Válido sólo en el condado donde está localizado el Lago Público. (No válido en los principales ríos y lagos).*

Pesca submarina

- Anual - \$ 8.50
- Viaje de 7 días - \$ 3.50

Nasa - Los precios varían

PESCA EN AGUA DULCE PARA DISCAPACITADOS

Licencia para eventos de 3 días de pesca de agua dulce para discapacitados - \$ 100.00

Residency

Residency by Law is defined by Driver's License

State Law REQUIRES that you first ask to see the applicant's driver's license

Bona Fide Alabama Residents must present an Alabama driver's license or non-driver's ID to any local license agent. Or, in the case of Bona Fide residents with no driver's license or non-driver's ID, those residents must go to their local probate office or license commissioner with proofs of residency.

It is illegal for a resident of another state to be issued a resident license.

Applicants with multiple driver's license are not considered Alabama residents and must use their out-of-state driver's license to purchase non-resident licenses.

An Alabama Driver's License alone does not prove residency. Exceptions indicating that an Alabama driver's license holder will be considered non-residents:

- Possessing a valid driver's license from another state
- Possessing a valid AL Foreign National driver's license

Residencia

En Alabama, la residencia por ley está definida por la licencia de conducir.

La ley estatal REQUIERE que el solicitante muestre primero su licencia vigente de conducir

Todo residente legítimo de Alabama debe presentar una licencia de conducir de Alabama o una identificación de no conductor a cualquier agente local proveedor de licencias de pesca. Los residentes legítimos de Alabama que no poseen licencia de conducir o una identificación de no conductor, deben ir a la Corte de Justicia de la localidad o al comisionado de licencias con pruebas de residencia.

En Alabama es ilegal que un residente de otro estado reciba una licencia de residente.

Los solicitantes con varias licencias de conducir no se consideran residentes de Alabama y deben usar su licencia de conducir de otro estado para comprar licencias de no residentes.

Una licencia de conducir de Alabama por sí sola no es prueba de residencia. A continuación, se muestran las dos excepciones cuando una persona que posee licencia de conducir de Alabama se considerará no residente:

- Alguien que posee una licencia de conducir válida de otro estado
- Alguien que posee una licencia de conducir tipo "Extranjero-Nacional" de Alabama.

Alabama Residency Requirements

Residency, by law, is determined by your driver's license. It is a violation of state law to willfully or knowingly make a false statement when purchasing an Alabama resident license.

Resident licensed drivers or non-drivers with identification card applying for hunting and fishing license must:

- Present a valid Alabama driver's license or non-driver's identification card (with the exception of qualified active duty military, spouse and dependents stationed in Alabama or college students)
- Reside continuously in Alabama for 90 days
- Cannot possess a valid driver's license in any other state

Resident non-drivers without a valid identification

card (Bona fide residents, not holding a valid driver's license from Alabama or any other state) applying for hunting and fishing license must go to the Probate or License Commissioner and present at least two of the following documents:

- School registration (required for 5-16 years old)
- Previous year tax return (mailing address only)
- Voter registration card
- Home property tax
- Health insurance forms with address
- The last three months of a utility bill with address
- Certificate of employment, if containing proof of permanent residency
- Other legal documents that may establish residency after approval by the Conservation Department

In no instance will a resident of another state (except qualified military personnel and college students) be issued an Alabama resident license even if the person is able to produce these items.

Note: Applicants with multiple driver's license are not considered Alabama residents and must use their out-of-state driver's license to purchase non-resident licenses. An Alabama Driver's License alone does not prove residency. Exceptions indicating that an Alabama driver's license holder will be considered non-residents:

- Possessing a valid driver's license from another state
- Possessing a valid AL Foreign National driver's license

Requerimientos para tener Residencia en Alabama

La residencia en Alabama, por ley, está determinada por su licencia de conducir. Es una violación de la ley estatal hacer una declaración falsa intencionalmente para comprar una **Licencia de pesca recreativa en agua dulce para Residentes** de Alabama. Las personas residentes de Alabama con licencia de conducir u otra identificación, que soliciten una licencia de caza y pesca deben:

- Presentar una licencia vigente de conducir o una tarjeta de identificación de no conductor de Alabama (con la excepción de militares calificados en servicio activo, cónyuges y dependientes destacados en Alabama o estudiantes universitarios)
- Probar residencia continua en Alabama durante 90 días.
- No poseer una licencia vigente de conducir de otro estado

Los residentes de Alabama sin licencia de conducir o sin una tarjeta de identificación válida (los residentes legítimos que no tienen una licencia de conducir válida de Alabama o de cualquier otro estado) que soliciten una licencia de caza y pesca deben dirigirse a la Corte de Justicia en la localidad y presentar al menos dos de los siguientes documentos:

- Matrícula escolar (requerida para jóvenes de 5 a 16 años de edad)
- Declaración de impuestos del año anterior
- Tarjeta de registro para votar
- Impuesto a la propiedad de la vivienda
- Recibos de seguro de salud con dirección del domicilio.
- Recibos de los últimos tres meses de pago a servicios públicos con dirección.
- Certificado de empleo, si contiene comprobante de residencia permanente.
- Otros documentos legales que puedan comprobar residencia después de la aprobación del Departamento de Conservación.

En ningún caso se emitirá una licencia de residente de Alabama a un residente de otro estado (excepto personal militar calificado y estudiantes universitarios) incluso si la persona puede proporcionar estos documentos.

Nota: los solicitantes con múltiples licencias de conducir no se consideran residentes de Alabama y deben usar su licencia de conducir de otro estado para comprar licencias de no residente. La posesión de una licencia de conducir de Alabama por sí sola no es prueba de residencia. A continuación, se muestran las dos excepciones cuando una persona que posee licencia de conducir de Alabama se considerará no residente:

- Alguien que posee una licencia vigente de conducir de otro estado
- Alguien que posee una licencia vigente de conducir de Alabama tipo "Extranjero-Nacional"

- **Minor Children** under 18 years of age without a valid Alabama Driver's License:
 - Social Security Number Card (required)
 - Birth Certificate (required for all lifetime licenses age 11 and below)
 - Attach copy of parent's driver's license. If guardian other than parent, paperwork showing custody and copy of their driver's license. (required)
 - If enrolled in day care or school, attach a copy of current report card or enrollment, or
 - If not enrolled in day care or school, 2 additional proofs of residency are required:
 - Copy of parent's previous year Alabama tax return - showing child as a dependent and mailing address.
 - Current certification of employment, if containing proof of permanent residency (parent or child)
 - Current health insurance forms with child's name and address
 - Current doctor bill or other statements with child's name and address

Residents 64 years of age purchase special lifetime licenses for the price of an annual license.

Residents 65 years of age and over are exempt from purchasing the following licenses (MUST have Alabama driver's license or proof of permanent residence and age. Does not include non-resident landowners.):

- Hunting
- Freshwater Fishing
- Saltwater Fishing
- State Duck Stamp
- Wildlife Management Area

Residents age 65 and older can continue their support of DCNR programs and habitat with the purchase of a special group of optional annual recreational licenses. A Voluntary Senior Lifetime License can be obtained by making a one-time donation.

Resident Active Duty Military Home on Leave are exempt from purchasing a hunting and/or fishing license during their visit. They must:

- Have proof of residency (either an Alabama driver's license or document stating Alabama is their home of residence)
- Have proof of leave in their possession

Niños menores de 18 años sin una licencia vigente de conducir de Alabama:

- Tarjeta de Número de Seguro Social (requerido)
- Certificado de nacimiento (requerido para obtener licencia vitalicia siendo menor de 11 años de edad)
- Adjuntar copia de la licencia de conducir de los padres. Si se trata de un tutor que no sea el padre o madre, adjuntar documento que muestre la custodia y copia de su licencia de conducir. (requerido)
- Si está inscrito en una guardería o escuela, adjuntar una copia del informe de calificaciones o inscripción, o
- Si no está inscrito en una guardería o escuela, se requieren dos comprobantes adicionales de residencia:
 - Copia de la declaración de impuestos de Alabama del año anterior de los padres, que muestra al menor como dependiente y dirección.
- Certificado de empleo actual, si contiene comprobante de residencia permanente (padre o hijo)
- Recibos de seguro de salud vigente con la dirección del domicilio y nombre del menor.
- Factura médica actual u otras declaraciones con el nombre y la dirección del niño

Los **residentes de Alabama de 64 años de edad y más**, pueden comprar una licencia vitalicia por el costo de una licencia anual.

Los **residentes de 65 años o más** están exentos de comprar las siguientes licencias (DEBEN tener una licencia de conducir de Alabama o prueba de residencia permanente y edad. No incluye a los propietarios no residentes):

- caza
- Pesca de agua dulce
- Pesca de agua salada
- Sello estatal para caza de pato
- Área de Manejo de Vida Silvestre

Los residentes mayores de 65 años pueden continuar su apoyo al Departamento de Conservación y Recursos Naturales en sus programas y el manejo de hábitat con la compra de licencias anuales de pesca recreativa de un grupo especial. Se puede obtener una licencia vitalicia para personas mayores mediante una donación única.

Los **residentes que son militares calificados en servicio activo de regreso a casa con autorización**, están exentos de comprar una licencia de caza y / o pesca durante su visita. Ellos deben:

- Tener comprobante de residencia (ya sea una licencia de conducir de Alabama o un documento que indique que Alabama es su hogar de residencia)
- Tener en su poder un comprobante de autorización para estar en casa.

Resident FUR CATCHER, SEAFOOD, FRESHWATER COMMERCIAL FISHING AND MUSSEL CATCHERS.

- Reside continuously in Alabama for the following period:
 - Fur Catchers – 90 days
 - Seafood – 12 months
 - Freshwater Commercial Fishing – 12 months
 - Mussel Catchers - 12 months

License officials may require more than two of these items in order to prove **bona fide** residency.

For more information, call (334)242-3465 or email dcnr.wfflicense@dcnr.alabama.gov.

RESIDENTE COLECTOR DE PIELES, MARISCOS, PESCA COMERCIAL EN AGUA DULCE Y COLECTOR DE MEJILLONES.

- Residir continuamente en Alabama durante el siguiente período:
 - Cazadores de pieles - 90 días
 - Mariscos - 12 meses
 - Pesca comercial en agua dulce - 12 meses.
 - Colectores de mejillones - 12 meses

Los oficiales en la oficina de licencias pueden requerir más de dos de estos elementos para demostrar la legitimidad de la residencia.

Para obtener más información, llame al (334)242-3465 o envíe un correo electrónico a dcnr.wfflicense@dcnr.alabama.gov.

Non-Resident Requirements

Residency, by law, is determined by your driver's license.

It is a violation of state law to willfully or knowingly make a false statement when purchasing an Alabama resident license.

Applicants holding a non-resident driver's license will be considered a non-resident for the purposes of purchasing a hunting or fishing license even if they are able to produce a valid Alabama driver's license, Alabama non-driver's ID card or other evidence of residency, including non-resident landowners (with the exception of qualified active duty military stationed in Alabama or college students).

Applicants with multiple driver's license are not considered Alabama residents and must use their out-of-state driver's license to purchase non-resident licenses. An Alabama Driver's License alone does not prove residency. Exceptions indicating that an Alabama driver's license holder will be considered non-residents:

- Possessing a valid driver's license from another state
- Possessing a valid AL Foreign National driver's license

Special fishing license fees apply to residents of Florida, Louisiana and Mississippi due to reciprocal license costs.

Non-Resident licensed drivers applying for hunting and fishing license must:

- Present a valid Driver's License (see exemption below regarding qualified military personnel and college students).

Non-Resident non-drivers applying for hunting and fishing license must:

- Present some form of ID, preferably with a picture (school ID, employment ID, etc.).

Non-Resident College Students applying for hunting and fishing license must:

- Be between 17-23 years of age, reside in Alabama, and be enrolled in an approved AL Higher Education Institute to qualify for resident licenses. See application packet for more information.

Requisitos para No Residentes

La residencia en Alabama, por ley, está determinada por su licencia de conducir.

Es una violación de la ley estatal hacer intencionalmente una declaración falsa para comprar una **Licencia de pesca recreativa en agua dulce para Residentes** de Alabama.

Los solicitantes que posean una licencia de conducir de otro estado se considerarán no residentes para los efectos de comprar una licencia de caza o de pesca, incluso si pueden presentar una licencia válida de conducir de Alabama, una tarjeta de identificación de no conductor de Alabama u otra evidencia de residencia. incluidos los propietarios de inmuebles no residentes (con la excepción de los militares en servicio activo destacados en Alabama o estudiantes universitarios).

Los solicitantes con múltiples licencias de conducir no se consideran residentes de Alabama y deben usar su licencia de conducir de otro estado para comprar licencias de no residente. La posesión de una licencia de conducir de Alabama por sí sola no es prueba de residencia. A continuación, se muestran las dos excepciones cuando una persona que posee licencia de conducir de Alabama se considerará no residente:

- Alguien que posee una licencia vigente de conducir de otro estado
- Alguien que posee una licencia vigente de conducir de Alabama tipo "Extranjero-Nacional"

Debido a acuerdos recíprocos, puede que se cobren otros impuestos especiales a los residentes de Florida, Luisiana y Mississippi.

Las personas **no residentes con licencia de conducir** que soliciten licencias de caza y pesca deben:

- Presentar una licencia de conducir válida (ver las excepciones a continuación sobre personal militar calificado y estudiantes universitarios).

Las personas **no residentes sin licencia de conducir** que soliciten licencias de caza y pesca deben:

- Presentar algún tipo de identificación, preferiblemente con una foto (identificación escolar, identificación laboral, etc.).

Los **estudiantes universitarios no residentes** que soliciten una licencia de caza y pesca deben:

- Tener entre 17 y 23 años de edad, residir en Alabama y estar inscrito en una institución de educación superior aprobada en Alabama para calificar para las licencia de residente. Para más información ver el paquete de solicitud.

Non-Resident Military personnel applying for hunting and fishing license stationed in Alabama must go to the Probate Office or License Commissioner and must present each of the following:

- Copy of orders assigning them to Alabama for 30 days or more.
- A valid U.S. driver's license
- A military ID card.

Including their spouse and dependents living with them. AL National Guard members with an out-of-state driver's license are not exempt and must purchase a non-resident license.

If assigned in a state bordering Alabama and currently living in Alabama for at least 90 days, you may apply for resident privileges using the same evidence of residency as a resident nondriver.

- Military personnel assigned to Fort Benning, living in Alabama, **hunting off base** may apply for resident privileges after 90 days using the same evidence of residency as a non-driver. (includes spouse and dependents with out of state driver's license)
- Military personnel assigned to Fort Benning, not living in Alabama, **hunting off base** must purchase a non-resident license if hunting in Alabama.
- Military personnel assigned to Fort Benning, who have a Fort Benning hunting license, **hunting on base only** are not required to purchase an Alabama license.
 - They are still required to carry a **Harvest Record and report any deer or turkey killed on base in Alabama to Game Check.**
 - They may be issued a **Game Check H.E.L.P Number** to report these kills by presenting orders and military ID.

For more information, call (334)242-3465 or email dcnr.wfflicense@dcnr.alabama.gov.

El **personal militar no residente** destacado en Alabama que solicita una licencia de caza y pesca debe ir a la Corte de Justicia en la localidad o al Comisionado de Licencias y debe presentar cada uno de los siguientes documentos:

- Prueba de estar destacado en Alabama por 30 días o más.
- Una licencia de conducir válida de los EE.UU.
- Una tarjeta de identificación militar.

Incluyendo a su cónyuge y dependientes que viven con ellos. Los miembros de la Guardia Nacional de Alabama con una licencia de conducir de otro estado no están exentos y deben comprar una licencia de no residente.

Personal destacado en un estado que limita con Alabama y viviendo actualmente en Alabama durante al menos 90 días, puede solicitar los privilegios de residente utilizando la misma evidencia de residencia que un residente sin licencia de conducir.

- El personal militar destacado en Fort Benning, que vive en Alabama, puede solicitar privilegios de residencia para cazar fuera de la base, después de 90 días utilizando la misma evidencia de residencia que un no conductor. (incluye cónyuge y dependientes con licencia de conducir de otro estado)
- El personal militar asignado a Fort Benning, que no vive en Alabama, debe comprar una licencia de no residente si caza en Alabama.
- El personal militar asignado a Fort Benning, que tiene una licencia para cazar solo dentro de Fort Benning, no requiere comprar una licencia de Alabama.
 - Todo personal militar debe mantener un Registro de Cosecha e informar al Departamento de Conservación de cualquier venado o pavo cazado en la base en Alabama.
 - Se les puede emitir un Número de Registro de Caza (H.E.L.P.) para reportar esta caza mediante la presentación de órdenes y una identificación militar.

Para obtener más información, llame al (334)242-3465 o envíe un correo electrónico a dcnr.wfflicense@dcnr.alabama.gov.

Who is Exempt from Purchasing Recreational Licenses?

For Resident Licenses, those exempt from licenses would be:

- Residents under 16 years of age
- Residents over 65 years of age
- Resident Landowners and immediate family:
 - Landowner's spouse
 - Landowner's children, if Alabama residents
 - Landowner's parents, if Alabama residents
 - Landowner's brothers and/or sisters, if Alabama residents
 - If Landowner has a tenant residing on the property, he and his immediate family residing on the property are exempt from the requirement of a hunting license.
NOTE: If the member of the immediate family has moved out of state, regardless of whether or not they possess an Alabama Driver's License, they are considered Non-Residents.
Grandchildren of landowner are NOT exempt.
- Residents who are home on military leave (must have ID and paperwork)

For Nonresidents, those exempt from licenses would be:

- Nonresident under 16 years of age

¿Quién está exento de comprar licencias recreativas?

Para las licencias de residente, los exentos de licencias serían:

- Residentes menores de 16 años de edad.
- Residentes mayores de 65 años de edad.
- Residentes propietarios de tierra y familia inmediata:
- Cónyuge del propietario
- Los hijos de los propietarios, si residen en Alabama
- Los padres de los propietarios, si residen en Alabama
- Hermanos y / o hermanas de los propietarios, si son residentes de Alabama
- Si el propietario tiene un inquilino que reside en la propiedad, él y su familia inmediata que residen en la propiedad están exentos del requisito de una licencia de caza.
NOTA: Si el miembro de la familia inmediata se ha mudado fuera del estado, independientemente de si posee o no una licencia de conducir de Alabama, es considerado como no residente.
 - Los nietos del terrateniente NO están exentos.
 - Residentes que están en casa con permiso militar (deben tener identificación y documentos)

Para los no residentes, aquellos exentos de licencias son:

- No residentes menores de 16 años de edad.

[Where to fish in Alabama](#)

Alabama State Public Fishing Lakes - Small, state-owned lakes in Alabama managed for quality bream, bass and catfish fishing.

Reservoirs - A list of the large reservoirs in Alabama and a description of management strategies to improve fishing.

Rivers and the Mobile Delta - Information about fishing rivers, streams, and estuaries in Alabama.

Ponds - How to manage Alabama fish ponds for bream (bluegill and redear sunfish) and largemouth bass fishing.

Fishing in Alabama's National Forests - Waters in Alabama's National Forests are full of surprises. Crappie, bream, catfish, and bass are waiting for your lure. Look at some of the places to visit and explore a favorite fishing spot. We think you will be hooked on fishing in a national forest.

Freshwater Boating Access Points - Links to ADCNR managed freshwater boat ramps in Alabama.

Freshwater Fish Attractors – Updated list of freshwater fish attractors in an Excel file.

KML file for opening with Google Earth

Anglers can also save the files below to their SD cards and upload directly into their fish finder/GPS unit. To download, right-click the file and choose "Save as," then save it to your computer, SD or microSD card. Once the file is saved to your card, insert your card into your fish finder/GPS unit and follow directions according to your specific manufacturer. ****See extra step below for Humminbird users****. You then should be able to view these fish attractor locations on your GPS/fish finder/chartplotter map.

Dónde pescar en Alabama

Lagos de pesca pública del estado de Alabama- listado de lagos pequeños operados por el estado de Alabama para la pesca de calidad de mojarra, lobina y bagre.

Reservorios- una lista de los reservorios grandes en Alabama y una descripción de las estrategias de manejo para mejorar la pesca.

Ríos y el delta del río Mobile- información sobre la pesca en ríos, arroyos y estuarios en Alabama.

Estanques- cómo operar estanques de peces en Alabama para la pesca de mojarra y de lobina bocona.

Pesca en los bosques nacionales de Alabama - Las aguas en los bosques nacionales de Alabama están llenas de sorpresas. Las mojarras, bagres y lobinas están esperando su anzuelo. Mire algunos de los lugares que puede visitar y explore un lugar favorito para pescar. Creemos que se encantará de pescar en los bosques nacionales.

Puntos de acceso para navegación en agua dulce- enlaces a un listado de rampas para embarcaciones de agua dulce administradas por el Departamento de Conservación y Recursos Naturales de Alabama.

Atrayentes de peces de agua dulce - Lista actualizada de lugares con atrayentes de peces de agua dulce en un archivo Excel.

Archivo KML para navegar con Google Earth

Los pescadores pueden también guardar en sus tarjetas de memoria digital SD, los archivos vinculados a continuación y cargarlos directamente en su buscador de peces o unidad de GPS. Para descargarlos, haga clic derecho en el archivo y seleccione "Guardar como", luego guárdelo en su computadora, tarjeta SD o microSD. Una vez que el archivo esté guardado en su tarjeta, inserte su tarjeta en su sonda para buscar peces / unidad GPS y siga las instrucciones de acuerdo con su fabricante específico. **** Vea el paso adicional a continuación para usuarios de sondas Humminbird ****. Luego usted debería poder ver en su mapa de GPS o sonda para buscar peces estas estructuras para atraer peces.

GPX file for Garmin units

USR file for Lowrance & Simrad units

HWR file for Humminbird units **Please note that Humminbird users will need to create a folder in their SD card, name the folder "matrix," then put the .HWR file into the matrix folder. This is necessary in order for Humminbird fish finders to read (recognize) the file.**

To view locations on the Interactive Map, open the map, expand the "Fishing" tab and toggle "Freshwater Fish Attractors." More fish attractor locations can be found on the Alabama Power Shorelines website at <https://apcshorelines.com/recreation/fishing/>.



Support freshwater habitat enhancement, aquatic wildlife species protection and restoration, conservation education, bass genetic research,

sport fish disease research, invasive species management, and public water fish stockings.

Archivo GPX para unidades Garmin

Archivo USR para unidades Lowrance y Simrad

Archivo HWR para unidades Humminbird ** Los usuarios de unidades Humminbird deben crear una carpeta en su tarjeta SD, nombrarla "matriz" y luego colocar el archivo. HWR en esa carpeta "matriz". Esto es necesario para que las sondas de peces Humminbird lean (reconozcan) el archivo. **

Para ver ubicaciones en el mapa interactivo, abra el mapa, expanda la pestaña "Pesca" y active "Atrayentes de peces de agua dulce". Se pueden encontrar más ubicaciones de atrayentes de peces en el sitio web de Alabama Power Shorelines en <https://apcshorelines.com/recreation/fishing/>.



Apoye la mejora del hábitat de agua dulce, la protección y restauración de especies acuáticas de vida silvestre, la educación

para la conservación, la investigación genética de lobina, la investigación de enfermedades de peces de pesca deportiva, el manejo de especies invasoras, y la repoblación de peces en aguas públicas.

Alabama Public Fishing Lakes (PFLs)

The Alabama Wildlife and Freshwater Fisheries Division manages 23 Public Fishing Lakes (PFLs) in 20 counties throughout the State. These lakes range in size from 13 to 184 acres for a total of 1,912 surface acres. Each lake is intensively managed to provide quality fishing on a sustained basis. All lakes were originally stocked with largemouth bass, bluegill (bream), and redear sunfish (shellcracker). Channel catfish are stocked in every lake during the winter. White crappie and black crappie have become established in many lakes.

PFL Information/Updates:

Washington County PFL is closed due to draining and restocking. A reopening date will be announced at a later time.

Permit Requirements:

To Fish:

Valid Fishing License
Fishing Permit (Anglers 12 Years Old and Older)

To Launch a Personal Boat, Kayak, or Canoe:

Valid Fishing License
Fishing Permit
Launch Permit
Must be Purposely Fishing

To Rent a Jon Boat:

Boat Rental Permit
Valid Fishing License
Fishing Permit
If Motorized, Boater Certification or Agree to Alabama PFL Boat Rental Agreement
16 Years Old or Older

PFLs are typically open six days a week from February 1 through June 30 each year. From July 1 until November 30, some lakes are only open five days a week. During the months of December and January, a majority of the lakes are closed or operate on a limited basis. Information and schedules may change without notice, so please call the Lake Manager or the appropriate Wildlife and Freshwater Fisheries District Office for the current operating schedule.

Lagos de pesca pública de Alabama (PFL)

La División de Pesca de Agua Dulce y Vida Silvestre de Alabama administra 23 lagos de pesca pública (PFL) en 20 condados en todo el estado. Estos lagos varían en tamaño de 13 a 184 acres para un total de 1,912 acres de superficie. Cada lago se opera de forma intensiva para proporcionar una pesca de calidad de forma sostenible. Todos los lagos estaban originalmente poblados de lobina negra, mojarra negra y mojarra de oreja roja. Durante el invierno todos los lagos son sembrados con bagre de canal. En muchos lagos ya hay poblaciones estables de mojarra blanca y mojarra negra.

Información y Actualizaciones sobre los PFL:

El Lago de pesca pública del condado de Washington está cerrado por mantenimiento y repoblación. La fecha de reapertura se anunciará más adelante.

Permisos Requeridos:

Para pescar:

- Licencia de Pesca vigente
- Permiso de Pesca (personas de 12 años de edad y mayores)

Para usar una embarcación personal, kayak o canoa:

- Licencia de Pesca vigente
- Permiso de Pesca
- Permiso para embarcar
- Debe ser con el propósito de pescar

Para Rentar una embarcación:

- Permiso para rentar embarcación
- Licencia de Pesca vigente
- Permiso de Pesca
- Si es embarcación con motor, certificación de conductor de lancha o firmar Convenio de Renta de Embarcación en Lago de pesca pública de Alabama.
- Tener 16 años de edad o mayor

Los Lagos de pesca pública de Alabama suelen estar abiertos seis días a la semana desde el 1 de febrero hasta el 30 de junio de cada año. Desde el 1 de julio hasta el 30 de noviembre, algunos lagos solo abren cinco días a la semana. Durante los meses de diciembre y enero, la mayoría de los lagos están cerrados o funcionan de forma limitada. La información y los horarios pueden cambiar sin previo aviso, así que llame al Administrador del Lago o a la Oficina del Distrito de Pesca de Agua Dulce y Vida Silvestre correspondiente para conocer el horario operativo actual.

Reservoirs

Alabama Reservoir Fishing and Management

Fish sampling is conducted with various gears, depending on the species of interest. Largemouth bass, spotted bass, bluegill and the major forage species, gizzard shad and threadfin shad, are collected in the spring by specially designed electrofishing boats. Gill nets are used in the fall to evaluate walleye, sauger, striped bass, hybrid striped bass and white bass. Specially designed trap nets are used in fall to sample crappie. These nets collect crappie of all sizes, including those that are only three or four inches long. This allows for accurate predictions of fishing success several years in advance. Another useful management tool is interview surveys with anglers to assess fishing effort, catch and angler opinions.

Alabama's Reservoir Management Program monitors 42 reservoirs totaling more than a half million acres. The information collected is vital for biologists to make wise management decisions. Whether a fish population needs a minimum length limit, a slot limit, change in creel limit, or is found to be in good condition, the Reservoir Management Program is the primary source of reliable data.

In addition to baseline reservoir monitoring, research projects are often needed to address specific fisheries problems. Some research projects are undertaken by Fisheries Section biologists but other research projects are contracted to experts from various state and educational institutions.

Generally, research projects evaluate various aspects of standardized sampling techniques, food habits analysis, population age structure and growth rate, fish movement, fish production and stocking, genetic diversity and engineering, fish population dynamics, angler exploitation,

Embalses

Manejo y pesca en embalses en Alabama

El muestreo de peces se lleva a cabo con varios artes, dependiendo de la especie de interés. La lobina negra, la lobina manchada, la mojarra y las principales especies de forraje, los sábalos, se recolectan en la primavera usando embarcaciones diseñadas especialmente para pesca con electricidad. Las redes de enmalle se usan en el otoño para evaluar otras especies, incluyendo lobina rayada, lobina rayada híbrida y lobina blanca. En otoño se usan trampas diseñadas especialmente para muestrear mojarra. Estas trampas colectan mojarra de todos los tamaños, incluidos aquellos que miden solo tres o cuatro pulgadas de largo. Esto permite realizar predicciones precisas del éxito de la pesca con varios años de antelación. Otra herramienta útil en el manejo de pesquerías son las encuestas con entrevistas a pescadores para evaluar el esfuerzo de pesca, la captura y las opiniones de los pescadores.

El Programa de Manejo de los Embalses de Alabama monitorea 42 embalses que suman más de medio millón de acres. La información recopilada es vital para que los biólogos tomen decisiones de manejo acertadas. Ya sea que una población de peces necesite un límite de longitud mínima de captura, un límite de rango en tamaño de captura, un cambio en el límite de cantidad de peces capturados, o que la población de peces se encuentre en buenas condiciones, el Programa de Manejo de Embalses es la fuente principal de datos confiables.

Además del monitoreo de referencia que se da a los embalses, a menudo se necesitan proyectos de investigación para abordar problemas específicos de la pesca. Algunos proyectos de investigación los llevan a cabo biólogos de la Sección de Pesca, pero para otros proyectos de investigación se contratan a expertos de diversas instituciones estatales y educativas.

En general, los proyectos de investigación evalúan varios aspectos de las técnicas de muestreo estandarizadas, análisis de hábitos alimenticios, estructura de edad de la población y tasa de crecimiento, movimiento de las poblaciones de peces, producción y repoblación de peces, diversidad e ingeniería genética, dinámica de poblaciones de peces, explotación por parte de pescadores,

tournament related fish mortality, gear evaluation, instream flow dynamics and many other fish related topics. Relationships between environmental conditions, fish species interaction, water quality, macroinvertebrates and man reveal the complexity of understanding the nature of our aquatic resources.

Some recent research has produced interesting findings. For example, the best crappie spawns are often associated with higher than average rainfall in winter followed by lower than average rainfall in summer. Another recent study analyzed the food habits of striped bass. More than 2,400 prey items were retrieved from striped bass stomachs. Almost 2,300 of the prey items were shad, the primary forage of striped bass. Only twelve prey items, six bluegill and six crappie, were game fish. This is important information because many anglers assume that striped bass often prey on game fish.

Many other species, including smallmouth bass, paddlefish, walleye and alligator gar have been the focus of recent research efforts. This work is a necessary part of Division of Wildlife and Freshwater Fisheries efforts to preserve, protect and enhance Alabama's aquatic resources.

Fish kills sometimes occur on public waters and can be the result of pollution incidents or various natural causes. Any time you observe more than a few dead fish in public waters notify the appropriate District Fisheries Office immediately.

Following is a list of public reservoirs (large lakes) in Alabama:

mortalidad de peces relacionada con torneos de pesca, evaluación de artes de pesca, dinámica de flujo en la corriente y muchos otros temas relacionados con los peces. Las relaciones entre las condiciones ambientales, la interacción de las especies de peces, la calidad del agua, los macroinvertebrados y el hombre revelan la complejidad de comprender la naturaleza de nuestros recursos acuáticos.

Algunas investigaciones recientes han producido hallazgos interesantes. Por ejemplo, los mejores desoves de la mojarra a menudo se asocian con cantidad de lluvia en invierno superior al promedio, seguido de lluvias inferiores a la media en verano. Otro estudio reciente analizó los hábitos alimenticios de la lobina rayada, donde se recuperaron más de 2.400 presas en sus estómagos. Casi 2.300 de las presas eran sábalo, el principal forraje de la lobina rayada. Sólo doce presas, seis mojarras y seis mojarras negras, eran peces de pesca deportiva. Esta es una información importante porque muchos pescadores asumen que la lobina rayada a menudo se alimenta de peces de pesca deportiva.

Muchas otras especies, como la lobina de boca chica, el pez espátula, la lucioperca y el pez lagarto han sido el foco de los esfuerzos de investigación recientes. Este trabajo es una parte necesaria de los esfuerzos de la División de Vida Silvestre y Pesca de Agua Dulce para preservar, proteger y mejorar los recursos acuáticos de Alabama.

La muerte de peces a veces ocurre en aguas públicas y puede ser el resultado de incidentes de contaminación o diversas causas naturales. Cada vez que observe más de unos pocos peces muertos en aguas públicas, notifique inmediatamente a la Oficina de Pesca del Distrito correspondiente.

A continuación, se muestra una lista de embalses públicos (grandes lagos) en Alabama:

[Freshwater Boating Access](#)

Freshwater Boat Ramp Access Points

Below is an interactive map of all current public boat ramp access points managed by the Alabama Wildlife and Freshwater Fisheries (AWFF) Division on Alabama's public bodies of water. Public access point not managed by AWFF Division will not be noted on this map. Click on any of the blue icons below to view the specifics of each access point.

If you'd like to export this list to your GPS device, download the KML/KMZ file [here](#).

[Rivers and the Mobile Delta](#)

Alabama River - True to its name, the Alabama River flows through the heart of the state of Alabama.

Autauga Creek - Autauga Creek is a floatable tributary to the Alabama River with access in the City of Prattville, Autauga County, Alabama

Black Warrior - Located in west central Alabama, the Black Warrior River is a 178 mi (286 km) long tributary of the Tombigbee River, the main stem of which is entirely impounded.

Cahaba River - Flowing through Birmingham in the heart of Alabama, the Cahaba River is the longest free flowing river in Alabama and has a wide diversity of plants and aquatic animals including fishes due to the variety of its physical habitats and ecology.

Chattahoochee River - The Alabama portion of the Chattahoochee River is a border with Georgia.

Choctawhatchee River - The Choctawhatchee River in southeast Alabama is one of Alabama's longest free flowing streams.

Conecuh River - Conecuh River, a 230-mile long coastal river in south Alabama, is called the Escambia River when it enters Florida.

Coosa River - The Coosa River has its headwaters in Georgia, but the Coosa River flows through northeast Alabama and joins the Tallapoosa River near Montgomery to form the Alabama River.

Cypress Creek, Lauderdale County - Typical of northern tributaries to the Tennessee River, Cypress Creek has excellent water quality and a substrate of sand and gravel supporting a wide array of fish species, some of which are unique within Alabama.

Puntos de acceso a rampas para botes de agua dulce

A continuación, se muestra un mapa interactivo actualizado de todos los puntos de acceso a rampas para embarcaciones públicas, administrados por la División de Pesca de Agua Dulce y Vida Silvestre de Alabama (AWFF) en los cuerpos de agua públicos de Alabama. Los puntos de acceso público que no son administrados por la División AWFF no se muestran en este mapa. Haga clic en cualquiera de los iconos azules a continuación para ver los detalles de cada punto de acceso.

Si desea exportar esta lista a su dispositivo GPS, descargue el archivo KML / KMZ [aquí](#).

Ríos y delta del Río Mobile

Río Alabama- fiel a su nombre, el río Alabama fluye a través del corazón del estado de Alabama.

Autauga Creek - Autauga Creek es un afluente navegable del río Alabama con acceso en la ciudad de Prattville, condado de Autauga, Alabama

Río Black Warrior- ubicado en el centro oeste de Alabama, este río es un afluente de 178 millas (286 km) de largo del río Tombigbee, cuyo cauce principal está represado en su totalidad.

Río Cahaba- fluye a través de Birmingham en el corazón de Alabama, el río Cahaba es el río de caudal libre más largo en Alabama y tiene una amplia diversidad de plantas y animales acuáticos, incluidos peces, debido a la variedad de sus hábitats físicos y ecología.

Río Chattahoochee- la parte de este río en Alabama es una frontera con Georgia.

Río Choctawhatchee- el río Choctawhatchee en el sureste de Alabama es otro de los ríos de caudal libre más largos de Alabama.

Río Conecuh – Es un río costero de 230 millas de largo en el sur de Alabama, que se llama río Escambia cuando ingresa a Florida.

Río Coosa- el río Coosa tiene su nacimiento en Georgia, pero el río Coosa fluye a través del noreste de Alabama y se une al río Tallapoosa cerca de Montgomery para formar el río Alabama.

Cypress Creek, condado de Lauderdale- típico de los afluentes del norte del río Tennessee, Cypress Creek tiene una excelente calidad de agua y un sustrato de arena y grava que sustenta una amplia gama de especies de peces, algunas de las cuales son únicas en Alabama.

Escatawpa River in Mobile County - Escatawpa River is a blackwater stream originating in Mississippi; it has sandy beaches and tea-colored water.

Fish River in Baldwin County - The Fish River is a small Baldwin County waterway with nine miles of navigable water and two boat access ramps.

Fivemile Creek, Jefferson County - A tributary to the Locust Fork, Fivemile Creek often provides spring and early summer canoeing possibilities.

Flint Creek, North Alabama - A slow meandering creek that flows north into Wheeler Lake, Flint Creek provides excellent spring fishing for crappie.

Flint River in Madison County - The Flint River is an excellent float fishing stream in its lower reaches.

Hatchet Creek - Hatchet Creek is a floatable stream which enters the Coosa River at Lake Mitchell. Hatchet Creek used to be an important spawning grounds for the southern walleye.

Little Cahaba River - The Little Cahaba River is an important part of the Cahaba River watershed with its diverse plants and aquatic animals.

Little River - With cliffs towering some 600 feet above the river and with scenic waterfall vistas, the Little River Canyon of northeast Alabama reminds one of the Yellowstone River Canyon.

Locust Fork - Tributary to the Warrior River in Jefferson and Blount counties.

Mobile Delta - The Mobile Delta consists of approximately 20,323 acres of water. It is formed by the confluence of the Alabama and Tombigbee Rivers.

Mulberry Fork - River system in Alabama offers interesting float fishing because of the bedrock area through which it flows and the Alabama spotted bass inhabiting its depths.

North River, Tuscaloosa County - The North River is a clear river that creates Lake Tuscaloosa just above the Black Warrior River.

Paint Rock River - For a stream in the Temperate Zone, the Paint Rock River has one of the world's most diverse fish populations for its size.

Patsaliga - A tributary to the Conecuh River at Point A Reservoir located in Crenshaw and Covington counties.

Río Escatawpa en el condado de Mobile - El río Escatawpa es un arroyo de aguas húmicas que se origina en Mississippi; tiene playas de arena y agua color té.

Fish River en el condado de Baldwin- el río Fish es una pequeña vía fluvial del condado de Baldwin con nueve millas de agua navegable y dos rampas de acceso para embarcaciones.

Fivemile Creek, condado de Jefferson- es un afluente del río Locust Fork, Fivemile Creek a menudo ofrece posibilidades de canotaje en la primavera y principios del verano.

Flint Creek, North Alabama- es un arroyo serpenteante lento que fluye hacia el norte hacia el lago Wheeler, Flint Creek ofrece oportunidades excelentes de pesca de mojarra en la primavera.

Río Flint en el condado de Madison- el río Flint en sus tramos inferiores es un excelente arroyo para pesca desde embarcación.

Hatchet Creek - es un arroyo navegable que ingresa al río Coosa en el lago Mitchell. Hatchet Creek solía ser un lugar importante de desove para la lucioperca del sur.

Río Little Cahaba- el Little Cahaba es una parte importante de la cuenca del río Cahaba con sus plantas y animales acuáticos diversos.

Little River- con acantilados que se elevan a unos 600 pies sobre el río y con vistas panorámicas de las cascadas, el Cañón del Little River en el noreste de Alabama recuerda al Cañón del Río Yellowstone.

Locust Fork- afluente del río Warrior en los condados de Jefferson y Blount.

Delta del Río Mobile- este delta consta de aproximadamente 20,323 acres de agua. Está formado por la confluencia de los ríos Alabama y Tombigbee.

Mulberry Fork – Este río ofrece una interesante pesca desde lancha o canoa gracias a sus áreas de lecho rocoso a través del cual fluye y la lobina manchada de Alabama que habita en sus profundidades.

Río North, condado de Tuscaloosa- es un río claro que forma el lago Tuscaloosa justo antes de unirse al río Black Warrior.

Paint Rock River- para ser un arroyo en la zona templada, el río Paint Rock tiene una de las poblaciones de peces más diversas del mundo por su tamaño.

Río Patsaliga- es un afluente del río Conecuh en Point-a-Reservoir ubicado en los condados de Crenshaw y Covington.

Pea River - The Pea River in southeast Alabama is a tributary to the Choctawhatchee River.

Perdido River - Perdido River forms the eastern boundary of Alabama with Florida and flows into Perdido Bay

Sepulga River - The coastal Sepulga River flows through Lowndes, Crenshaw, Monroe, Conecuh, Butler, Covington and Escambia counties of south Alabama.

Shades Creek, Birmingham Area - In the greater Birmingham area, Shades Creek is a long tributary to the Cahaba that provides some fishing opportunities.

Sipsey Fork above Smith Lake - The Sipsey Fork above Smith Lake is Alabama's only National Wild and Scenic River.

Sipsey Fork below Smith Lake - Trout Fishing - The deep waters leaving Smith Lake provide a rainbow trout fishing experience, unique within Alabama.

Sipsey River - The Sipsey River, west Alabama, is one of the last wild, free flowing swamp streams in Alabama.

Styx River, Baldwin County - The Styx River is known locally as a great place for float trips.

Tallapoosa River- With its watershed mostly in the rocky Piedmont, the Tallapoosa River runs clear during low flow periods.

Tennessee River- Known for its largemouth bass, smallmouth bass, and catfish, the Tennessee River is impounded throughout its journey through north Alabama: Lake Guntersville, Wheeler Lake, Wilson Lake and Pickwick Lake.

Terrapin Creek- Terrapin Creek is a small fishable stream in northeast Alabama near Piedmont; Terrapin Creek begins in Talladega National Forest.

Tombigbee River- The Tombigbee River is now a navigable series of lakes in west and southwest Alabama.

Río Pea- es un afluente del río Choctawhatchee en el sureste de Alabama.

Río Perdido - El río Perdido forma el límite este de Alabama con Florida y desemboca en la Bahía Perdido.

Río Sepulga- es un río costero que fluye atravesando los condados de Lowndes, Crenshaw, Monroe, Conecuh, Butler, Covington y Escambia en el sur de Alabama.

Shades Creek, área de Birmingham- en el área metropolitana de Birmingham, Shades Creek es un largo afluente del Río Cahaba que ofrece algunas oportunidades de pesca.

Sipsey Fork río arriba del lago Smith- es el único río silvestre y escénico nacional de Alabama.

Sipsey Fork río abajo del lago Smith - Pesca de trucha - Las aguas profundas que salen del lago Smith brindan una experiencia de pesca de trucha arco iris, única en Alabama.

Río Sipsey- el río Sipsey, al oeste de Alabama, es uno de los últimos arroyos pantanosos silvestres y de libre caudal en Alabama.

Río Styx, condado de Baldwin- este río es conocido localmente como un gran lugar para viajes en canoa o kayak.

Río Tallapoosa- con su cuenca principalmente en la provincia geográfica rocosa, el río Tallapoosa fluye limpio durante los períodos de bajo caudal.

Río Tennessee- reconocido por su lobina bocona, lobina negra y bagre, el río Tennessee está represado a lo largo de su curso por el norte de Alabama formando el lago Guntersville, el lago Wheeler, el lago Wilson y el lago Pickwick.

Terrapin Creek- Terrapin Creek es un arroyo pequeño que nace en el Bosque Nacional Talladega en el noreste de Alabama cerca del poblado de Piedmont.

Río Tombigbee- el río Tombigbee es ahora una serie de lagos navegables en el oeste y suroeste de Alabama.

Appendix 2 Survey instruments

**Questions about why you
stopped fishing**
*Alabama Recreational
Freshwater Fishing Survey*



A Study By:

**Alabama Division of Wildlife and Freshwater Fisheries
and
The School of Forestry and Wildlife Sciences
Auburn University**



Greetings from Auburn University and the Alabama Division of Wildlife and Freshwater Fisheries

The Alabama Division of Wildlife and Freshwater Fisheries (WFF) appreciates your past support of our state's fisheries through your purchase of a freshwater fishing license. The WFF has contracted with Auburn University (AU) to gather information related to the barriers to participation in fishing and to study the behavior of people who used to fish in lakes, streams, ponds, rivers, and reservoirs throughout the state.

Please join us in our efforts to better understand why some people have stopped fishing and how to provide quality fishing experiences in Alabama and meet the needs of our residents, like you!

The best way we have of learning about fishing related issues is by asking a diversity of people to share their thoughts and opinions. You are one of a number of randomly selected former fishing license buyers who we are asking to complete this survey. The questions should take about 5-7 minutes to complete. We appreciate and value your input and look forward to receiving the completed survey.

The information you share with us will be used to enhance fishing and management related decisions in Alabama.

Sincerely,

Emily Nichols
PhD Student
School of Forestry and Wildlife
Sciences Auburn University

Nick Nichols
Chief of Fisheries
Division of Wildlife and Freshwater Fisheries
Alabama Department of Conservation and Natural Resources

Dr. Wayde Morse
Assistant Professor and Researcher
School of Forestry and Wildlife
Sciences Auburn University

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO.

The Auburn University Institutional Review Board has approved this Document for use from February 27, 2019 to February 26, 2020
Protocol # 18-049 EP 1802

Your Fishing History

1. How old were you when you went fishing for the first time?

2. Do other members of your family fish?

- Yes
- No

3. About how many years have you fished in Alabama?

4. Which type of fishing license did you last purchase?

- Annual Resident Freshwater Fishing License
- Annual Non-Resident Freshwater Fishing License
- Spearfishing
- Wirebasket
- Freshwater Public Fishing Lakes Daily License
- 100% Physically Disabled Resident Freshwater Fishing License
- Disabled Military Veterans Appreciation Freshwater Fishing License
- Disabled Freshwater Fishing 3-day Event License

5. When was the last time you went fishing?

- 0-6 months
- 6-12 months
- 1-2 years
- More than 2 years

6. What is your favorite type of water body to fish?

- Rivers, creeks, and streams
- Lakes/Reservoirs
- Ponds
- Below Reservoir dams

7. From where do you prefer to do your fishing? *select all that apply*

- In the water
- Dock/Pier
- Non-motorized boat
- Motorized boat
- Bank

8. How close do you live to the nearest fishing spot?

- 1 mile or less
- 2 to 5 miles
- 6 to 10 miles
- 11 to 15 miles
- More than 15 miles

How You Got Started

9. Although you may not fish anymore, how did you originally get involved with fishing?

	Not at all important	Slightly important	Important	Very important	Extremely important
A family member/relative who taught/mentored me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a neighbor, or close family friend who taught/mentored me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spending time outdoors in my youth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in youth groups like Scouts & 4-H	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Summer outdoor youth camps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing is a part of my family tradition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having friends who also fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having confidence in my abilities outdoors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The desire to provide fish for myself/family to eat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The relaxation/stress relief fishing provides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The opportunity to be in nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experience excitement/adventure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To show others I can do it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To do something with my family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To learn more about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other_____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How You Relate to Fishing

10. Please indicate your level of agreement with the following statements about the importance of fishing to you.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Fishing is important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Where I come from, fishing is an important part of the culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Where I live now, fishing is an important part of the culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing should be passed down from generation to generation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Where did you get information about Alabama fishing opportunities and fishing related information in the past? (Select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Email | <input type="checkbox"/> Television |
| <input type="checkbox"/> Letter/brochure mailed to my home | <input type="checkbox"/> From other people |
| <input type="checkbox"/> Social Media (Facebook, Twitter, Instagram) | <input type="checkbox"/> Signs |
| <input type="checkbox"/> Radio | |

Barriers to Your Participation

12. What has kept you from going fishing?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is too expensive to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have enough time due to work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other family commitments limit my time to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My preferred fishing sites are too crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The distance I have to travel to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limits on amount and size of what I can catch and keep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Racial discrimination/bias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that the water and/or fish are not healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have a convenient place to go fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not interested in fishing anymore	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health related issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have other activities I choose to do instead of fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is too complicated to purchase a fishing license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not understand the rules about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have enough information about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have access to a boat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People I know cannot get a license to fish with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have anyone to go with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not feel welcome at the fishing areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I cannot speak and/or understand the language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Making it Easier to Go Fishing

13. What would help you to continue to fish, fish more often, or to start fishing again?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Someone to teach or help me improve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having friends who also fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An invitation to go fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeing more people like me fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing where to go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having access to better fishing sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in a fishing class or group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family fishing activities or events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding the fishing license process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I did not have to travel so far to fishing sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If people I know were able to get a fishing license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing where to find information about fishing and where to go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing more about different types of fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding the rules about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeing advertisements and receiving information about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting information in my language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Do you plan to purchase a freshwater fishing license within the next 5-years?

- Definitely not
- Probably yes
- Probably not
- Definitely yes
- Might or might not

Demographic Information

For statistical purposes, we need to ask you a few demographic questions. Please remember that the information you provide is CONFIDENTIAL!

15. What year were you born?

16. What is your gender?
 Female Male

17. Including yourself, how many people live in your house?

18. Are you retired?
 Yes No

19. What is your race/ethnicity? *Check all that apply*

<input type="checkbox"/> American Indian	<input type="checkbox"/> Caucasian or White
<input type="checkbox"/> African-American or Black	<input type="checkbox"/> Hispanic or Latino
<input type="checkbox"/> Asian	<input type="checkbox"/> Native Hawaiian/Other Pacific Islander
	<input type="checkbox"/> Other _____

20. What is your marital status?
 Single (never married) Divorced
 Married Widowed

21. What is your highest degree or level of school completed?

<input type="radio"/> Did not complete high school	<input type="radio"/> Associate Degree (2-year degree)
<input type="radio"/> High School Diploma or GED	<input type="radio"/> Bachelor Degree (4-year degree)
<input type="radio"/> Some college, but no degree	<input type="radio"/> Graduate or professional degree
	<input type="radio"/> Other _____

22. Please select the option that best describes your household income in 2018. *This information is only used to understand fishing participation and preferences across income groups.*

- | | | |
|--|--|--|
| <input type="radio"/> Less than \$14,999 | <input type="radio"/> \$25,000 to \$34,999 | <input type="radio"/> \$75,000 to \$99,999 |
| <input type="radio"/> \$15,000 to \$19,999 | <input type="radio"/> \$35,000 to \$49,999 | <input type="radio"/> \$100,000 to \$149,999 |
| <input type="radio"/> \$20,000 to \$24,999 | <input type="radio"/> \$50,000 to \$74,999 | <input type="radio"/> \$150,000 or more |

23. Which of the following best describes where you live?

<input type="radio"/> City (100,000 to 300,000 people)	<input type="radio"/> Town (1,000 to 20,000 people)
<input type="radio"/> Large Town (20,000 to 100,000 people)	<input type="radio"/> Rural (Less than 1,000 people)

THANK YOU FOR PARTICIPATING IN THIS STUDY!!

Your answers to this survey will provide our agency with useful information regarding the management and conservation of our natural resources. We appreciate your participation in the survey and value your support and past purchase of Alabama fishing licenses.

Please provide any additional comments here.



**Please return this survey to the
School of Forestry and Wildlife
Sciences at Auburn University
in the self-addressed, stamped
envelope provided.**



Fishing in Alabama Public Waters

Alabama Recreational Freshwater Fishing Survey



A Study By:

**Alabama Division of Wildlife and Freshwater Fisheries
and
The School of Forestry and Wildlife Sciences
Auburn University**



Greetings from Auburn University and the Alabama Division of Wildlife and Freshwater Fisheries

The Alabama Division of Wildlife and Freshwater Fisheries (WFF) appreciates your support of our state's fisheries through your purchase of a freshwater fishing license. The WFF has contracted with Auburn University (AU) to gather information related to the barriers to participation in fishing and to study the behavior of people who fish in lakes, streams, ponds, rivers, and reservoirs throughout the state.

Please join us in our efforts to better understand how to provide quality fishing experiences in Alabama and meet the needs of our residents, like you!

The best way we have of learning about fishing related issues is by asking a diversity of people to share their thoughts and opinions. You are one of a number of randomly selected fishing license buyers who we are asking to complete this survey. The questions should take about 8-10 minutes to complete. We appreciate and value your input and look forward to receiving the completed survey.

The information you share with us will be used to enhance fishing and management related decisions in Alabama.

Sincerely,

Emily Nichols
PhD Student
School of Forestry and Wildlife
Sciences Auburn University

Chris Greene
Chief of Fisheries
Division of Wildlife and Freshwater Fisheries
Alabama Department of Conservation and Natural Resources

Dr. Wayde Morse
Assistant Professor and Researcher
School of Forestry and Wildlife
Sciences Auburn University

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO.

The Auburn University Institutional Review Board has approved this document for use from July 28, 2020 to February 17, 2021.
Protocol # 18-049 EP 1802

The Auburn University Institutional
Review Board has approved this
Document for use from
07/28/2020 to 02/17/2021
Protocol # 18-049 EP 1802

Your Fishing History

1. How old were you when you went fishing for the first time? Years

2. Do other members of your family fish? No Yes

3. About how many years have you fished in Alabama? Years

4. Which type of fishing license did you last purchase?

- Annual Resident Freshwater Fishing License
- Annual Non-Resident Freshwater Fishing License
- Spearfishing
- Wirebasket
- Freshwater Public Fishing Lakes Daily License
- 100% Physically Disabled Resident Freshwater Fishing License
- Disabled Military Veterans Appreciation Freshwater Fishing License
- Disabled Freshwater Fishing 3-day Event License

5. When was the last time you went fishing?

- 0-6 months
- 6-12 months
- 1-2 years
- More than 2 years

6. What is your favorite type of water body to fish?

- Rivers, creeks, and streams
- Lakes/Reservoirs
- Ponds
- Below Reservoir dams

7. How close do you live to the nearest fishing spot?

- 1 or less miles
- 2 to 5 miles
- 6 to 10 miles
- 11 to 15 miles
- More than 15 miles

8. From where do you prefer to do your fishing? *select all that apply*

- In the water
- Dock/Pier
- Bank
- Non-motorized boat
- Motorized boat

9. Which fish are your favorite to fish for in freshwater?

#1: _____ #2: _____ #3: _____

10. About how many days did you fish the following water bodies in Alabama during 2019?

Rivers, creeks, and streams Days

Lakes/Reservoirs Days

Below Reservoir dams Days

Ponds Days

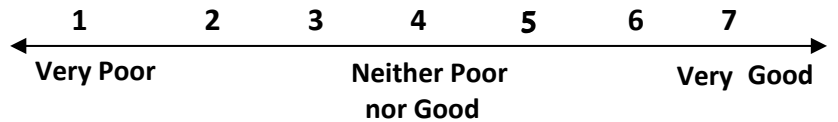
11. Which of the following did you catch during 2019? Select all that apply

- | | | |
|---|--|--|
| <input type="checkbox"/> largemouth bass | <input type="checkbox"/> striped bass | <input type="checkbox"/> smallmouth bass |
| <input type="checkbox"/> crappie | <input type="checkbox"/> hybrid striped bass | <input type="checkbox"/> spotted bass |
| <input type="checkbox"/> bream (bluegill and other sunfish) | <input type="checkbox"/> bowfin | <input type="checkbox"/> carp |
| <input type="checkbox"/> catfish | <input type="checkbox"/> gar | <input type="checkbox"/> other _____ |

12. What is your favorite freshwater fish to eat? Select all that apply

- | | | |
|---|--|--|
| <input type="checkbox"/> largemouth bass | <input type="checkbox"/> striped bass | <input type="checkbox"/> smallmouth bass |
| <input type="checkbox"/> crappie | <input type="checkbox"/> hybrid striped bass | <input type="checkbox"/> spotted bass |
| <input type="checkbox"/> bream (bluegill and other sunfish) | <input type="checkbox"/> bowfin | <input type="checkbox"/> carp |
| <input type="checkbox"/> catfish | <input type="checkbox"/> gar | <input type="checkbox"/> other _____ |

13. How would you rate the overall quality of your fishing experience in Alabama in 2019?



	1	2	3	4	5	6	7
Number of fish caught	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Size of fish caught	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Species of fish preferred	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilities (boat ramp, pier, restroom, concessions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. How much have you fished in 2020 compared to 2019?

- I fished less than last year About the same I fished more than last year

15. How has the COVID-19 pandemic affected your fishing participation this year?

- It has kept me from fishing or as much as I would like
- It has not positively or negatively influenced my fishing participation
- It has allowed me to go fishing or fish more often
- I have taken more day trips that are closer to home

16. Do you plan to purchase a freshwater fishing license within the next 2-years?

- Definitely not Probably yes
- Probably not Definitely yes
- Might or might not

How You Got Started

17. What played an important role to your start in fishing?

	Not at all important	Slightly important	Important	Very important	Extremely important
A family member/relative who taught/mentored me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a neighbor, or close family friend who taught/mentored me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spending time outdoors in my youth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in youth groups like Scouts & 4-H	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Summer outdoor youth camps	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing is a part of my family tradition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having friends who also fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having confidence in my abilities outdoors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The desire to provide fish for myself/family to eat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The relaxation/stress relief fishing provides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The opportunity to be in nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Experience excitement/adventure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To show others I can do it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To do something with my family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To learn more about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How You Relate to Fishing

18. Please indicate your level of agreement with the following statements about the importance of fishing to you and your lifestyle.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Fishing is important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Where I come from, fishing is an important part of the culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Where I live now, fishing is an important part of the culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing should be passed down from generation to generation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I stopped fishing, I would probably lose touch with a lot of my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I couldn't go fishing, I am not sure what I would do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because of fishing, I don't have time to spend participating in other leisure activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of my friends are in some way connected with fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider myself to be somewhat expert at fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find that a lot of my life is organized around fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather go fishing than do most anything else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other leisure activities don't interest me as much as fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Where did you get information about Alabama fishing opportunities and fishing related information in the past? (Select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Email | <input type="checkbox"/> Television |
| <input type="checkbox"/> Letter/brochure mailed to my home | <input type="checkbox"/> From other people |
| <input type="checkbox"/> Social Media (Facebook, Twitter, Instagram) | <input type="checkbox"/> Signs |
| <input type="checkbox"/> Radio | <input type="checkbox"/> Apps |

20. What is your preferred language?

- English Spanish Other _____

21. How do you prefer to receive information about Alabama fishing opportunities and fishing related information? (Select all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Email | <input type="checkbox"/> Television |
| <input type="checkbox"/> Letter/brochure mailed to my home | <input type="checkbox"/> From other people |
| <input type="checkbox"/> Social Media (Facebook, Twitter, Instagram) | <input type="checkbox"/> Signs |
| <input type="checkbox"/> Radio | <input type="checkbox"/> Apps |

22. Would you like to see more advertisements about fishing information and opportunities? (Select all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Public waters in Alabama | <input type="checkbox"/> Boat rentals |
| <input type="checkbox"/> Locations of public fishing piers | <input type="checkbox"/> Public boat ramps |
| <input type="checkbox"/> How to select and purchase a fishing license | <input type="checkbox"/> Annual Free Fishing Day |
| <input type="checkbox"/> Catch limits | <input type="checkbox"/> Fishing Classes or Family Events |
| <input type="checkbox"/> Fish stocking | <input type="checkbox"/> County Public Fishing Lakes |
| <input type="checkbox"/> Fish attractors | <input type="checkbox"/> Types of Fish |
| <input type="checkbox"/> Water quality and/or consumption advisories | <input type="checkbox"/> Tournaments |
| <input type="checkbox"/> Fishing Rules and Regulations | <input type="checkbox"/> Fisheries Conservation |
| <input type="checkbox"/> Other _____ | <input type="checkbox"/> I do not want to see any additional advertisements |

23. How frequently to you use the Outdoor Alabama website?

- I do not use it Rarely Sometimes Often

24. What type of information do you look for or view on the website? (Select all that apply)

- Where to Fish
- Fishing Creel and Size Limits
- Fishing Licenses and Permits
- Fish Stockings
- Types of Fish
- How to Fish
- Boating Access
- Tournaments
- Other _____

25. What type of information would you like to see on the website? (Select all that apply)

- Where to Fish
- Fishing Creel and Size Limits
- Fishing Licenses and Permits
- Fish Stockings
- Types of Fish
- How to Fish
- Boating Access
- Tournaments
- Other _____

26. Have you ever used the Outdoor AL mobile App? No Yes

27. What type of information would you like to see on-site at public fishing locations? (Select all that apply)

- Places to fish in Alabama
- Fishing Creel and Size Limits
- Fishing Licenses and Permits
- Fish Identification
- Fish Attractor Locations
- How to Fish
- Events and Activities
- Other _____

28. Please rate your level of agreement with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
When I'm fishing, I am just as happy if I do not catch a fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A fishing trip can be successful to me even if no fish are caught	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I go fishing, I am not satisfied unless I catch at least something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I release most of the fish I catch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The more fish I catch, the better the day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Barriers to Your Participation

29. What has kept you from going fishing as often as you would like?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is too expensive to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have enough time due to work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other family commitments limit my time to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My preferred fishing sites are too crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The distance I have to travel to fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limits on amount and size of what I can catch and keep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Racial discrimination/bias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry that the water and/or fish are not healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have a convenient place to go fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not know where to go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health related issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have other activities I choose to do instead of fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have enough information about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have access to a boat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People I know cannot get a license to fish with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have anyone to go with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have the skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Making it Easier to Go Fishing

30. What would help you to continue to fish, or fish more often?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Someone to teach or help me improve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An invitation to go fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeing more people like me fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing where to go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in a fishing class or group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family fishing activities or events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having access to fishing piers or bank fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I did not have to travel so far to fishing sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If people I know were able to get a fishing license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing more about different types of fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeing advertisements and receiving information about fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If fishing costs were lower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If fishing sites were less crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I did not have safety concerns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I did not have to work as much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduced family obligations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a convenient place to go	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improved water conditions and/or fish health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fewer catch limits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better personal health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Giving up other activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having access to a boat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Demographic Information

For statistical purposes, we need to ask you a few demographic questions. Please remember that the information you provide is **CONFIDENTIAL!**

31. What year were you born?

19

32. What is your gender?

- Female Male

33. Including yourself, how many people live in your house?

people

34. Are you retired?

- Yes No

35. What is your race/ethnicity? Please check all that apply

- American Indian Caucasian or White
 African-American or Black Hispanic or Latino
 Asian Native Hawaiian/Other Pacific Islander
 Other _____

36. What is your marital status?

- Single (never married) Divorced
 Married Widowed

37. What is your highest degree or level of school completed?

- Did not complete high school Associate Degree (2-year degree)
 High school Diploma or GED Bachelor Degree (4-year degree)
 Some college, but no degree Graduate or professional degree
 Other _____

38. Please select the option that best describes your household income in 2019.

This information is only used to understand fishing participation and preferences across income groups.

- Less than \$14,999 \$25,000 to \$34,999 \$75,000 to \$99,999
 \$15,000 to \$19,999 \$35,000 to \$49,999 \$100,000 to \$149,999
 \$20,000 to \$24,999 \$50,000 to \$74,999 \$150,000 or more

39. Which of the following best describes where you live?

- Rural (Less than 1,000 people) Large Town (20,000 to 100,000 people)
 Town (1,000 to 20,000 people) City (100,000 to 300,000 people)

THANK YOU FOR PARTICIPATING IN THIS STUDY!!

Your answers to this survey will provide our agency with useful information regarding the management and conservation of our natural resources. We appreciate your participation in the survey and value your support and past purchase of Alabama fishing licenses.

Please provide any additional comments here.



**Please return this survey to the
School of Forestry and Wildlife
Sciences at Auburn University
in the self-addressed, stamped
envelope provided.**

