

2002 Alabama Freshwater Anglers Survey

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Abstract: We conducted a mail survey to evaluate the demographics, attitudes, and practices of Alabama licensed freshwater anglers. The survey consisted of 36 questions that largely paralleled the most recent (1987) previous angler survey conducted by Alabama Department of Conservation and Natural Resources. Of the 2000 surveys mailed to randomly-selected licensed anglers, 31% (628) were returned before the stated deadline. Responses were similar to those in the last statewide survey. Tournament anglers represented only about 5% of respondents. The most sought freshwater fish species by respondents was largemouth bass (*Micropterus salmoides*). Anglers demonstrated a greater desire to release rather than harvest fish, with reasons for releasing fish including the expectation of improving fishing and fear of contaminants. Anglers were generally aware of management and outreach activities by the Alabama Division of Wildlife and Freshwater Fisheries (ADWFF), ranking the “hands-on” management programs as most important. Anglers were not certain of the sources of funding for ADWFF. While opinions and practices of respondents has not shifted dramatically since the 1987 survey, targeted surveys would be valuable to determine biases in the results and better represent important under represented groups.

Key words: opinion survey, questionnaire, Alabama anglers, fishing

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 57:68–79

Managing aquatic resources requires the balancing of a number of components, some of which may be in conflict with one another, including ecological, economic, sociocultural, and political considerations (Krueger and Decker 1993). While state natural resource agencies are responsible for managing, protecting, and conserving our natural resources, they are simultaneously responsible for meeting the resource needs of their human clientele. Understanding the attitudes and changing demands of the angling public is essential for effective management, and indeed for the viability

of the management agency (see papers in Miranda and DeVries 1996, Knuth and McMullin 1996).

Typically, surveys of the angling public are taken every few years to determine their attitudes and needs. The last such survey of Alabama's freshwater anglers was conducted in 1987. In the intervening 15 years, attitudes by anglers may have changed and should be re-characterized. For example, catch-and-release angling is now the dominant practice among anglers targeting black basses (Quinn 1996, Weathers et. al 2002). In addition, recent years have seen a shift to a more militant and better-organized approach of anti-angler groups which may have also influenced angler attitudes and behavior. Given such changes in attitudes and practices of anglers and the general public, it may be necessary to modify management practices to address new concerns, or develop additional educational efforts to better inform the public.

Methods

The survey instrument was a mail questionnaire with 36 questions addressing fishing practices, knowledge and opinion of management practices, knowledge and opinion of the Alabama Division of Wildlife and Freshwater Fisheries (ADWFF), and demographics. Questions were generated through discussion with ADWFF personnel to be consistent with the most relevant questions from the 1987 survey and to capture information that may be more relevant today. Included with each mailing was a cover letter from Auburn University, a letter from the Director of ADWFF, and a return-addressed postage-paid envelope. In the cover letter we stated that 15 \$50 gift certificates, 25 \$25 gift certificates, and 50 \$5 gift certificates (no indication was given at which store the gift certificates would be redeemable) would be given to randomly-selected respondents as an incentive to complete and return the survey. This type of incentive has been demonstrated to reduce the non-response rate to surveys (Pollock et al. 1994). Anglers were told to limit their response to activities between 1 July 2001 and 1 July 2002.

We randomly chose 2000 licensed Alabama anglers by generating a list of 2000 random numbers, sorting the license records for all freshwater resident license sales (licenses types included all freshwater licenses, senior citizen fishing licenses, combination fishing and hunting, combination freshwater and saltwater fishing, and handicapped fishing licenses) that occurred between 1 May 2001 and 1 May 2002, as well as all lifetime license holders, and then counting to the randomly-selected angler's license. Consistent with the policies of the Auburn University Committee for Use of Human Subjects, only anglers 19 years of age and older were included in the survey.

The survey was mailed on 14 August 2002. Approximately 1 week after mailing the survey, a reminder card was sent to each of the selected anglers to encourage them to complete and return the survey. After 30 September 2002, randomly-selected respondents were drawn to receive gift certificates, and the remaining respondents were sent thank-you cards.

All statistical analyses were done using SPSS for Windows, release 11.0.1. Categorical responses to selected questions were modeled using binary logistic regression to test the influence of possible influential variables on the response. Chi-squared analyses were used to compare observed versus expected frequencies of returns. Continuous data were analyzed using analysis of variance (ANOVA) and multiple-regression techniques.

Results and Discussion

Response and Demographics

Of the 2000 surveys mailed on 14 August 2002, 628 (31%) were returned by 30 September 2002 (our stated deadline) and were therefore included in our analysis. Eight surveys were returned after the deadline the latest arriving on 30 April 2003. This is a particularly low return rate given that the average return rate reported by state fisheries agencies was 57% for mail surveys of this type (Wilde et al. 1996). The low return rate for this survey could be due to several causes including general apathy by the angling public. However, return rate may have been lower because we were able to send only a single followup reminder and did not send additional followup mailings of the survey and extra self-addressed stamped envelopes; sending multiple followup reminders and followup mailings of the survey with extra self-addressed stamped envelopes have been shown to significantly increase return rate (Pollock et al. 1994, Hunt and Ditton 1996).

Of those identifying their gender ($N = 613$), 81.4% were male and 18.6% female. The percentage of female respondents was slightly lower than the 23.1% from the 1987 survey. Approximately 84% of the respondents identified their ethnic/racial status as Caucasian ($N = 501$ of 596) with lower percentages of African American (7%), Native American (6%), and mixed heritage (2%). Other categories (Asian, Hispanic/Latino) included <1% of respondents. Census estimates of the ethnic/racial makeup of Alabama's citizens indicates that non-Hispanic/Latino Caucasians and African Americans account for 70% and 26% of the population, respectively (U.S. Census Bureau 2003). Chi-squared tests of the expected versus observed return rate suggests that Caucasians were over-represented ($\chi^2 = 16.8$, $P < 0.005$) while African Americans were under-represented in the responses to this survey relative to the population at large ($\chi^2 = 82.3$, $P < 0.005$). The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior 2001) estimated that African Americans composed about 12% of Alabama's anglers without separating those who fish in freshwater versus saltwater. Unfortunately, we cannot determine the rate of participation in angling or relative return rate of the survey by individual ethnic/racial group because such information is not available on the fishing license. The low numbers of non-Caucasian respondents compromises our ability to characterize the attitudes and practices of these groups with this survey. Targeted surveys using in-person or telephone interviews would be needed to determine any bias in return rate (Brown 1991, Pollock et al. 1994, Bray et al. 1996).

The average age of the respondents was 43.6 ± 0.5 years (mean \pm 1 SE). For

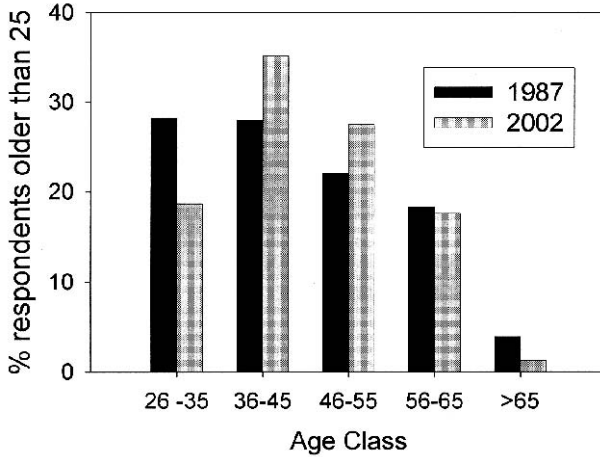


Figure 1. Percentage of respondents to the 2002 Alabama freshwater angler survey (gray bars) whose ages were within each of the indicated 10-year age groups, along with the results from respondents to the 1987 survey (dark bars).

those older than 25 (the only age groups for which we have comparable data), comparison between the 1987 and the present survey suggests a slight shift toward older anglers in the population (Fig. 1). The average age of males and females responding was 43.8 and 42.5 years, respectively. The modal household income bracket reported in 2002 was \$50,000–\$75,000, up from \$12,500–\$25,000 in 1987. This shift in income appears to be due primarily to inflation rather than increased education or a shift in professions since 1987. As in 1987, the most common level of education was 12 years. The top 4 occupations of respondents in the 1987 survey in order of frequency of response were skilled laborer, retired, self-employed, and laborer. The same 4 occupations appear as the top 4 occupations listed in 2002 with a slightly different order, skilled tradesman (laborer), self-employed, laborer, and retired.

Respondents generally were not members of local outdoor sporting organizations, such as sportsman's clubs, community lake organizations, or local bass fishing clubs. Only 23.9% (149 out of 625 responses) indicated affirmatively to any category. Likewise most respondents were not members of national organizations such as Bass Anglers Sportsman's Society (B.A.S.S.), Sierra Club, or Trout Unlimited. Of the 625 respondents to this question, 11% belonged to B.A.S.S., with all other groups having <1% of respondents (19% responded affirmatively to belonging to any such national organization). Those indicating "other" included the National Rifle Association, Ducks Unlimited, North American Hunting Club, National Wild Turkey Federation, North American Fishing Club, Coastal Conservation Association, Alabama Wildlife Federation, and Buckmasters, with 17 other groups having 1 response each. The percentage of licensed anglers that owned a pond or small lake was 11%, and 2% paid membership fees to fish a small lake or pond. Of those that responded that they owned a pond, only 4 (0.7%) of all respondents replied that they also paid membership fees to fish a private pond. There is no license requirement in Alabama to fish a private pond; therefore, this survey may under-represent anglers that fish exclusively in private ponds.

Personal Fishing History

To determine how these anglers became involved with fishing, we asked how long they have been anglers and who first introduced them to the activity. Of those responding, 59% said they had been anglers for more than 30 years followed in sequence by 21–30 years (22%), 11–20 years (13%), 6–10 years (4%), 1–5 years (2%), and less than 1 year (0.2%). This trend of most anglers having fished for longer periods of their lives may be due to the survey instrument having been restricted to respondents 19 years of age and older. However, it also does suggest that recruitment into the angling population is relatively limited once individuals have reached their teens. Fathers were overwhelmingly (63%) listed as the individual who first introduced the respondent to fishing, with their first fishing experience most often in a small stream (30%), pond (27%), or river (23%).

Expenditures and Trip Frequency

When asked how much money they spent in the previous year on boats, trailers, etc., the median response was \$0, while the average was \$2,157. The average value is somewhat inflated by one angler who reported spending more than \$100,000. Nearly 60% of anglers said that they owned a boat and 96% of boat owners used that boat for angling. The average amount that respondents reported spending on tackle in the previous year was \$339 with a median of \$200. Discount department stores were listed most often as a source of angling equipment (80% of 625 responses) followed by bait shops (29%), specialty sporting goods stores (25%), and catalogues (12%). Anglers often reported multiple sources for equipment. Spending on individual fishing trips averaged \$77 with a median of \$44. When compared in a multiple regression of expenditures as a function of the demographic descriptors of age, education level, income, and whether the respondent was a tournament angler, spending per trip and the amount spent for tackle were positively related to tournament participation and income ($P < 0.001$). Boat and trailer expenditures were correlated with tournament participation as well as with the respondent's age ($P < 0.01$). Tournament anglers reported spending an average of \$6,985 on boats and trailers, \$966 on tackle and bait, and \$150 per fishing trip as compared to \$1,840, \$295, and \$73 respectively for non-tournament anglers. While tournament anglers represent a small fraction of the license holders in the state, they may represent a disproportionately large influence on both fishing effort and economic impact.

It is likely that estimates of expenditures on tackle and trips were highly imprecise given that they are probably based on recollections over the past year rather than actual records kept. It is also clear that spending was highly skewed with a few individuals spending large amounts, leading to the median values being much less than the average values.

Fishing Practices

The survey addressed several aspects of the choices anglers make with regard to target species, type of water fished, frequency of trips, and catch-and-release angling.

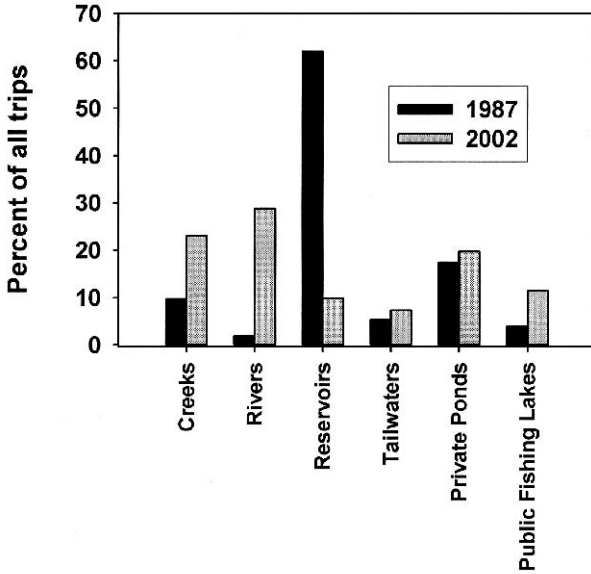


Figure 2. Percentage of all trips reported by respondents to the 2002 Alabama freshwater angler survey (gray bars) that were made to each of six different types of water bodies, along with the results from respondents to the 1987 survey (dark bars).

Ninety-nine percent of anglers reported that they fished with rods and reels as opposed to cane poles, trot lines, set lines, and jug lines, and that both live baits and artificial lures were used. The majority of anglers (72%) reported that they normally fished from a boat with fewer reporting that they fish from the bank, pier, or while wading. The majority of anglers (72%) indicated that they fished entirely within Alabama. Those that did fish outside the state listed Florida as the most common place they fished other than Alabama. For those anglers reporting that they fished outside the state, the average number of fishing trips they report taking outside the state was about 5 during the year.

To determine what types of fishing waters were preferred by Alabama anglers, we asked if they had fished at least once in the past year in small creeks or streams, rivers, reservoirs, tailwaters below dams, private ponds, or public fishing lakes (i.e., county lakes). The maximum response was for river fishing, followed in decreasing order by private ponds, small streams, public lakes, reservoirs, and tailwaters. When asked for the number of trips the angler took to each habitat, the average number of fishing trips was highest for small streams. The number of anglers using a habitat multiplied by the average number of trips provides an estimate of the total trips to a particular habitat by all respondents. When we compared the distribution of all trips in various habitats in 2002 with that in 1987, we see an apparent shift away from the use of reservoirs to rivers and creeks/small streams (Fig. 2). However, this comparison may be biased by the fact that we did not ask anglers what specific water body they fished. In the 1987 survey, anglers were asked which specific systems that they routinely fished. Using that information, the biologists that compiled the results could determine whether anglers interpreted the definitions of “river,” “small stream,” and

“reservoir” correctly. Given that most anglers responded that they fish from a boat, it is highly unlikely that they were fishing in small streams.

Most anglers (69% of 621 responding) replied that they had not fished in saltwater in the previous year. Of those that had fished in saltwater, 28% did not begin any saltwater fishing trip in Alabama, 54% took 1–5 saltwater trips originating in Alabama with relatively few anglers (18%) taking more than 5 saltwater trips originating in Mobile or Baldwin counties (Alabama’s only counties bordering on salt water). When asked to characterize the percentage of fishing they did in the previous year that occurred in saltwater, 88% indicated that saltwater fishing represented 5% or less of their angling effort in the previous year.

The fish that were preferred by anglers did not change since the 1987 survey. The overall order of preference was largemouth bass, crappie (*Pomoxis* spp.), catfish (Ictaluridae), bream (*Lepomis* spp.), and striped bass (*Morone saxatilis* and hybrids) (Fig. 3). Nationally anglers report a similar rank in species preference (U.S. Department of the Interior 2001). This order of preference was also evident in our survey when the anglers listed the fish they targeted according to the type of water fished. Largemouth bass was the primary quarry in each of the habitat types except tailwaters where catfish were the most sought fish. Given that tournament angling for black basses has generally increased over recent years (Kerr and Kamke 2003), one might think that the preference for largemouth bass is driven by large numbers of tournament anglers in the survey. However, when asked if they were active tournament anglers, only 6% responded affirmatively. Those that identified themselves as tournament anglers reported that they entered an average of 11.9 tournaments in the previous year. The majority of tournaments were directed at black bass. Tournament anglers were among the most active and avid anglers surveyed as demonstrated not only by the number of tournaments they entered, but also by their expenditures. Unfortunately, our sample of tournament anglers was too small to adequately assess their attitudes and needs. A targeted survey of this group would be valuable.

Anglers demonstrated a reluctance to harvest the fish they caught. Nearly half (48%) of the 375 responding anglers targeting largemouth bass reported seldom keeping the fish they caught up from 26% that responded similarly in 1987 (Fig. 4). Anglers were less reluctant to keep crappie, bream, or catfish than largemouth bass. In fact, catfish and crappie were indicated to be the favorite freshwater fish to eat. For those that did not choose to eat their catch, belief that releasing fish improves fishing was the most common reason given ($N = 214$), followed by fear of contamination ($N = 139$), cleaning fish being too much trouble ($N = 69$), and dislike of fish ($N = 20$). Some of the more frequent other reasons that anglers gave for not keeping the fish included, too few or too small fish caught ($N = 17$), keep some but release others depending on the waters ($N = 11$), gave them away ($N = 6$), fished only for fun ($N = 5$), and being allergic to fish ($N = 3$). The minimum size of fish that an angler would consider keeping also increased from 1987 to 2002 for largemouth bass, crappie, and bream (Fig. 5). For largemouth bass the average smallest fish they would keep according to the 1987 survey was 9.4 inches, and this increased to 13.3 inches in the 2002 survey. The increase for crappie was from 6.5 inches in 1987 to 9.4 inches in 2002, while for bream the average smallest fish kept in 1987 was 4.8 inches and was

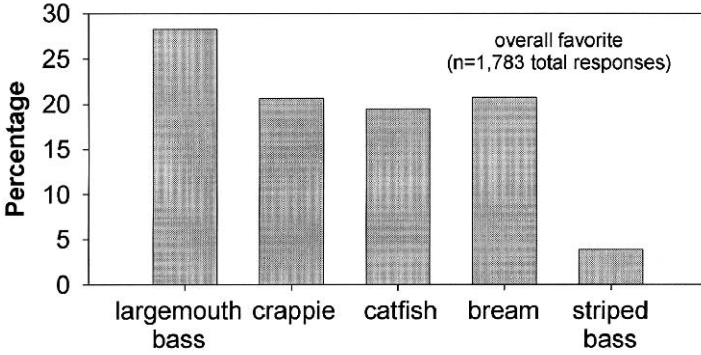


Figure 3. Percentage of the total number of responses that were provided when asked to name the favorite fish for which the respondents fished.

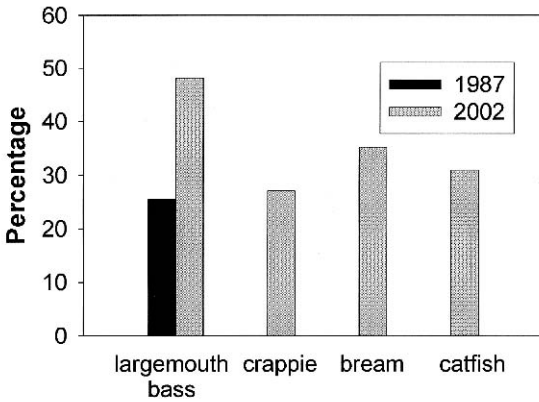


Figure 4. Percentage of respondents to the 2002 Alabama freshwater angler survey (gray bars) who indicated that they would seldom keep the indicated species, along with a comparison for largemouth bass from the 1987 survey results (dark bar).

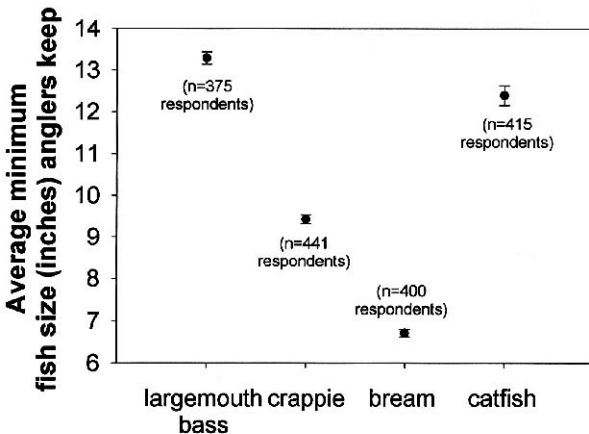


Figure 5. The average (± 1 SE) minimum size of fish that respondents reported being willing to keep for largemouth bass, crappie, bream, and catfish. The values in parentheses represent the number of respondents for that particular species.

Table 1. Response by anglers to the question “Which of the following programs conducted by Alabama Division of Wildlife and Freshwater Fisheries are you familiar with?” Responses are listed in rank order for the 2002 survey. Empty cells in the 1987 column represent programs that were not included in the 1987 survey.

Program	2002 % Familiar	1987 % Familiar (Rank)
Lifetime fishing license	55	39 (3)
Public fishing lakes	53	43 (1)
Public boat ramps	48	41 (2)
Outdoor Alabama magazine	45	14 (8)
Outdoor Alabama TV	44	—
Habitat protection/ improve	34	17 (7)
Pond management	31	19 (6)
Youth fishing rodeos	26	—
Reservoir management	25	20 (4)
Fish attractors	24	11 (11)
Striped bass stocking	23	19 (5)
Aquatic plant management	17	6 (13)
Aquatic education	12	—
B.A.I.T.	12	11 (12)
Florida bass stocking	11	12 (9)
Not familiar with any of these programs	13	26

6.7 inches in 2002. These results suggest that anglers are becoming far more selective in the size of fish they are willing to harvest.

Of the 616 respondents, 43% fished for striped bass or hybrid striped bass during the past year. Of those that did not, they cited targeting others species, lack of knowledge, lack of availability, contamination, no interest, no opportunity, do not like to eat them, or a lack of time. Anglers fished for striped bass, hybrid striped bass, or either fish in a wide array of systems throughout Alabama.

Knowledge And Attitudes about ADWFF

Anglers were asked if they were familiar with programs and activities conducted by ADWFF. The top 3 programs in terms of familiarity were lifetime fishing licenses, public fishing lakes, and public boat ramps. These were also the top three in a similarly worded question in the 1987 survey (Table 1). The programs with which the public is least familiar include aquatic education, the Bass Anglers Information Team program (B.A.I.T., which is a voluntary reporting of tournament angling), and Florida strain largemouth bass stocking. The programs with which anglers were less familiar were similar to those from the 1987 survey. For all but one program, Florida largemouth bass stocking, the anglers reported greater familiarity with ADWFF programs in 2002 than in 1987. Only 10% of anglers responded that they subscribed to Outdoor Alabama Magazine. This percentage is an overestimate of the subscriptions since the total circulation is only about 7100 and 10% of licensed anglers would be more than 40,000. It is likely that respondents are confusing Outdoor Alabama Magazine with other publications such as Alabama Game and Fish magazine, a privately published magazine often with information and articles from ADWFF.

Table 2. The average rank of importance given by anglers to selected activities conducted by the Alabama Division of Wildlife and Freshwater Fisheries. Ranks in parentheses under the 1987 survey indicate hatchery production with no distinction between that for public and private waters.

Activity	2002 average rank of importance	1987 average rank of importance
Habitat protection	2.9	1
River & stream management	4.3	2
Hatchery -public waters	4.7	(5)
County lakes	5.4	3
Reservoir management	5.4	4
Aquatic education	7.1	—
Fishing access	7.3	6
Fish attractors	7.4	7
Pond management	7.8	8
Hatchery - private ponds	7.9	(5)
Boat ramp development	8.1	9
Outdoor Alabama	9.7	—

When asked to rank ADWFF programs by importance, those activities that are typically associated with active management on public waters were ranked highest (Table 2). Habitat protection, river and stream management, and hatchery production for the stocking of public waters were ranked as the most important activities. While it is impossible to compare rankings between the 1987 and 2002 surveys directly (due to the inclusion of some different categories), for the categories in common, the 2002 rankings agreed completely with that from the 1987 survey. Lowest ranked programs were hatchery production for private ponds, boat ramp development, and the Outdoor Alabama television program. Similarly, anglers from both the 2002 and 1987 surveys agreed that a combination of research and public opinion should be used to make fisheries management decisions—80% of the 629 respondents thought management should be based on a combination of scientific research and public opinion, while 12% thought decisions should be based only on scientific research, 4% thought it should be based only on public opinion, and 4% either were not sure or had no opinion. On 2 specific management issues, anglers were generally in favor of stocking striped bass (55% in favor, 13% against, and 30% no opinion) and Florida largemouth bass (58% in favor, 8% against, and 35% no opinion) into Alabama's public waters.

As in 1987, anglers still do not understand how ADWFF is funded. The percent of anglers that erroneously thought that ADWFF is funded at least in part by general tax dollars increased from 9% in 1987 to 27% in 2002. Logistic regression using demographic predictors revealed that no demographic variable significantly contributed to a model that correctly predicted incorrect or uncertain response. When only correct versus incorrect responses were analyzed, education level and gender of the respondent contributed to a predictive logistic model.

Conclusions

Responses to the 2002 survey, while largely consistent with those in 1987, had some notable differences. The age distribution of anglers has slightly shifted to older age-classes and the percentage of female anglers responding declined slightly. In addition, there is a suggestion of relatively limited recruitment into the angling population once individuals have reached their teens. Anglers are more reluctant to keep fish now as compared to 1987, typically keeping only larger fish. Largemouth bass continues to rank as the most important fish sought by Alabama's licensed anglers. Largemouth bass are of particular interest to tournament anglers who make up a small but economically important constituency.

The knowledge of Alabama's anglers about the activities and management by ADWFF is somewhat mixed. Anglers seem to be aware of many of the initiatives by the agency but many do not understand how ADWFF is funded. While they are aware of many of the public outreach and education programs, anglers continue to rank 'hands on' management above these efforts in importance.

Acknowledgments

We thank T. DeVries, D. Smith, S. Herrington, A. Norris, A. Peer, and the clerical staff of the Division of Wildlife and Freshwater Fisheries for their help in finding, sorting through, and identifying randomly-selected licenses, as well as T. DeVries for entering the license information (for 2000 license holders) and all of the respondent data. Funding for this research was provided by the Alabama Department of Conservation and Natural Resources through the Federal Aid in Sportfish Restoration Project F-40-R.

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