

Angler Opinions Regarding Handfishing for Catfish in Missouri

Ronald A. Reitz, *Missouri Department of Conservation, 1110 South College Avenue, Columbia, MO 65201*

Vincent H. Travnicek, *Missouri Department of Conservation, 701 NE James McCarthy Drive, St. Joseph, MO 64507*

Abstract: A mail survey was conducted in 2004 to solicit the opinions and attitudes of active resident anglers on the subject of handfishing for catfish in Missouri. Almost 90% of survey respondents had heard of handfishing prior to receiving our survey. However, only about 10% had ever participated in the activity. Anglers were essentially split in their opinions with roughly 33% of anglers in support of, 33% in opposition to, and 34% not having an opinion about allowing handfishing in Missouri. Less than 15% of those surveyed indicated that they would participate in handfishing if legalized in Missouri. However, over 70% of those surveyed that had previously participated in handfishing supported legalizing it in Missouri. Results of this survey indicated that there was not a clear majority for support or opposition to legalizing handfishing in Missouri, and handfishing is an activity that would likely have limited participation if legalized. Results of this survey identified differences among Missouri anglers that will assist policymakers within the Missouri Department of Conservation regarding the future of handfishing in Missouri.

Key words: angler survey, catfish, noodling, handfishing, human dimensions, fisheries management

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Catfish represent one of the most important recreational and commercial fish groups in Missouri. In one survey, catfish were the third most popular group of fish among Missouri anglers comprising 16% of total angler effort (Weithman 1991). In another survey of Missouri anglers, catfish ranked second only to black bass in both the number of anglers and days spent fishing (U.S. Department of Interior 1997). It has also been recognized that catfish anglers are a diverse group with varying desires and backgrounds (Gill 1980, Wilde and Riechers 1994, Burlingame and Guy 1999, Schramm et al. 1999, Wilde and Ditton 1999, Reitz and Travnicek 2004).

Catfish anglers use a variety of methods for catching catfish other than traditional rod and reel methods. Handfishing, also known as noodling, hogging, grabbing, grabbling, grappling, and under-banking, is a method of catching catfish (most often flathead catfish) with one's hands. No rods, reels, hooks, lines, bait, nor tackle are generally used. Handfishing is usually conducted from May through August during the spawning season. People that handfish feel their way along shallow riffles, slower deep water, sunken logs, root wads, or along stream banks looking for holes

or ledges where catfish are laying their eggs, guarding their nest, or resting. Once a location is found with a catfish, the person blocks the hole with their body. Then they reach in the hole and get a grip on the fish by pinning it to the bottom or side of the hole. The fish is generally secured by grabbing the lower lip of the fish or by running a hand through its mouth and out the gills. Once the person secures the fish and removes it from the hole or crevice an assistant runs a stringer through the fish and it is caught.

Summers (1990) reported that in addition to rod and reel angling 34% of Oklahoma catfish anglers used trotlines, 20% used juglines, 18% used limblines, and 5% handfished. Some of these unorthodox fishing methods, especially handfishing, are controversial (Quinn 1993). Some anglers oppose handfishing because it targets spawning fish, disturbs spawning areas, and targets the largest and most fecund fish. Increasingly, the views of individuals and groups who are interested in angling for catfish conflict with the views of those involved in traditional or commercial harvest (Quinn 1993).

Few studies have examined effects of handfishing on catfish populations. Francis (1993) compared hoop net catches to handfishing and concluded that recreational handfishing was unlikely to pose a threat to flathead catfish stocks in two Mississippi rivers. Data in Jackson et al. (1997) from the Tallahatchie River in Mississippi showed that catfish were infrequently encountered in wooden slat boxes checked weekly with handfishing methods from 1 May through 15 July (52 fish contacts in 638 grab attempts; 8% encounter rate). However, out of the 52 fish contacts made, 36 of the catfish were caught (69% capture rate when encountered). Winkelman (2003) examined effects of handfishing on flathead catfish populations in Lake Carl Blackwell, Oklahoma. He concluded that although the handfishers he encountered were very successful, because of their rarity they were probably not having a significant negative impact on flathead catfish populations in the reservoir.

Handfishing for catfish is only legal in the southern United States. A search of the Missouri State Archives revealed that handfishing was officially declared illegal in the state in 1919. However, since 2000 handfishing has been at the forefront of Missouri conservation issues with a contingent of people that would like to see handfishing legalized at some level in Missouri waters. A number of proponents of handfishing have met with Missouri Department of Conservation (MDC) biologists, administrators, and commissioners on numerous occasions. State legislators also expressed an interest in the handfishing issue as a result of constituent requests to legalize handfishing in Missouri. However, handfishing methods seem counter to more stringent harvest regulations proposed in an approved catfish management plan (Dames et al. 2004) developed by the MDC and supported by the public.

Prior to considering legalization of handfishing in Missouri, information was needed on attitudes of Missouri's anglers on the issue. A survey was designed and mailed in 2004 to solicit opinions and attitudes of active resident anglers on the subject of handfishing in Missouri. The survey identified catfish anglers and asked specific questions related to angler demographics and opinions on the handfishing issue. Identifying differences in angler opinions and demographics will allow poli-

cymakers to make better informed decisions on how best to allocate catfish resources so that most anglers are satisfied with angling opportunities and anglers are supportive of agency goals.

Methods

A randomly selected sample of 6,000 anglers that purchased a 2003 Missouri resident fishing license, or a combination hunting-fishing license, was surveyed. This sample size was adequate to allow a statewide inference to anglers and, specifically, catfish anglers. All duplicate information, individuals with missing addresses, and non-Missouri residents were deleted from the data set before the final sample was drawn. The survey was administered following recommendations by Dillman (2000) with regard to sampling, survey design, and mailing schedule. The questionnaire was developed with input from MDC biologists. Anglers were asked to respond based on their fishing activity and opinions, not that of family members or angling party. The initial mailing of 6,000 surveys took place in August 2004. A follow-up survey was mailed to 4,510 non-respondents in September 2004, and a final mailing to 3,481 non-respondents was completed in October 2004. Respondents who stated they fished for catfish in Missouri during 2003 were included in the analysis.

Data were analyzed (SAS 2003) using simple frequencies, cross tabulations, and Chi-square tests to identify any difference in response based on demographics and background. The null hypotheses that there would be no difference in opinions among demographic groups were tested using techniques for categorical data analysis. Chi-square (χ^2) tests were done using loglinear models to provide standardized Pearson residuals (r_{pi}) by cell to determine whether or not significant differences in responses existed among demographic groups (Agresti 2002) using the PROC GENMOD procedure. An alpha level of 0.01 was established *a priori* for all tests in an attempt to reduce the probability of a Type I error due to the large sample size. When significant differences were observed, a cell-by-cell analysis using cell chi-square and Pearson's standardized residuals (r_{pi}) was conducted to identify the nature of dependence. Cells containing residuals with absolute values of two or greater indicated a lack of fit with the null hypothesis in that cell (Agresti 2002).

Results

A total of 2,537 usable surveys were returned for a response rate of 42%. Sixty-eight percent of respondents indicated that they fished for catfish at least one day in the previous 12 months, and thus, were considered a "catfish angler" for our analysis. Thirty-eight percent further considered themselves to be "avid catfish anglers." We asked anglers whether or not they had ever heard of handfishing. Eighty-six percent of all anglers, 88% of catfish anglers, and 92% of avid catfish anglers had heard of handfishing prior to receiving our survey. Respondents were asked if they had handfished in Missouri or another state before. Nine percent of all anglers reported having handfished before, while about 11% of catfish anglers and 13% of

Table 1. Angler opinions regarding legalization of handfishing in Missouri.

	All anglers		Catfish anglers		Avid catfish anglers	
	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)
Support legalizing	702	(33.4)	541	(34.9)	309	(39.9)
Oppose legalizing	697	(33.1)	554	(35.7)	309	(39.9)
Undecided	388	(18.4)	281	(18.1)	100	(12.9)
No opinion	317	(15.1)	175	(11.3)	56	(7.3)

Table 2. Likelihood of respondents to participate in handfishing if it was allowed in Missouri.

	All anglers		Catfish anglers		Avid catfish anglers	
	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)
Very likely	97	(4.6)	92	(5.9)	73	(9.4)
Somewhat likely	133	(6.3)	123	(7.9)	79	(10.2)
Neither likely nor unlikely	132	(6.3)	115	(7.4)	47	(6.1)
Somewhat unlikely	175	(8.3)	145	(9.4)	70	(9.1)
Very unlikely	1,568	(74.5)	1,076	(69.4)	504	(65.2)

avid catfish anglers said they had participated in handfishing at some point in time.

Respondents were asked their opinion on whether they supported or opposed allowing handfishing for catfish in Missouri. Anglers in general were essentially split in their opinions with roughly 33% of anglers in support of, 33% in opposition to, and 34% not having an opinion or being undecided about whether or not handfishing should be allowed in Missouri (Table 1). Opinions among catfish anglers were slightly different, with fewer respondents having no opinion (Table 1). Opinions of those anglers that considered themselves avid catfish anglers were evenly split between supporting and opposing handfishing, with still fewer undecided and no opinion responses (Table 1). Responses among these angler groups were significantly different ($\chi^2 = 55.6$, $DF = 6$, $P < 0.0001$), and standardized residuals indicated that the all inclusive angler group had more responses of “no opinion” than what was expected, whereas avid catfish anglers had fewer responses of “no opinion” than expected.

When asked how likely it would be that they would participate in handfishing if it was allowed in Missouri, a large majority of all respondents, regardless of angler type, said it was unlikely they would participate in this activity (Table 2). Only 11% of all anglers, 14% of catfish anglers, and 20% of avid catfish anglers said it was likely that they would participate in handfishing (Table 2). Significant differences existed in response rates among the three different angler groups ($\chi^2 = 45.3$, $DF =$

8, $P < 0.0001$), and Pearson’s standardized residuals indicated that more anglers than expected from the all inclusive angler group were very unlikely to participate in handfishing in Missouri if legalized. Conversely, more avid catfish anglers than expected indicated that they were likely to participate in handfishing if legalized in Missouri.

Anglers were asked if they had ever heard of handfishing prior to receiving the survey, and responses from this question were cross-tabulated with responses to the question regarding opinions on legalizing handfishing in Missouri. Chi-square analysis showed a significant difference in responses regarding legalizing handfishing in Missouri between those who had heard of handfishing and those who had not (all anglers: $\chi^2 = 59.3$, $DF = 3$, $P < 0.0001$; catfish anglers: $\chi^2 = 23.9$, $DF = 3$, $P < 0.0001$). Pearson’s standardized residuals indicated that differences in response in the support categories contributed most to the chi-square values, with respondents who had heard of handfishing expressing more support for legalization while those who had not previously heard of handfishing being less likely to support legalization than what was expected (Table 3).

Anglers were asked whether or not they had participated in handfishing before in Missouri, and responses from this question were cross-tabulated with responses to the question regarding opinions on legalizing handfishing in Missouri. Over 70% of anglers who had previously participated in handfishing supported legalizing it in Missouri (Table 4). However, anglers who had never handfished before were equally

Table 3. Angler opinions regarding legalization of handfishing in Missouri based on whether or not they had heard of handfishing before receiving survey.

	All anglers				Catfish anglers			
	Heard of		Not heard of		Heard of		Not heard of	
	N	(%)	N	(%)	N	(%)	N	(%)
Support legalizing	656	(36.4)	44	(15.0)	505	(37.0)	33	(18.7)
Oppose legalizing	581	(32.3)	113	(38.6)	475	(34.8)	76	(42.9)
Undecided	321	(17.8)	65	(22.2)	239	(17.5)	40	(22.6)
No opinion	244	(13.5)	71	(24.2)	146	(10.7)	28	(15.8)

Table 4. Angler opinions regarding legalization of handfishing in Missouri based on whether or not they had ever participated in handfishing before receiving the survey.

	All anglers				Catfish anglers			
	Handfished		Not handfished		Handfished		Not handfished	
	N	(%)	N	(%)	N	(%)	N	(%)
Support legalizing	118	(72.8)	552	(31.4)	103	(71.0)	413	(31.7)
Oppose legalizing	22	(13.6)	602	(34.2)	21	(14.5)	490	(37.7)
Undecided	18	(11.1)	330	(18.8)	16	(11.0)	239	(18.4)
No opinion	4	(2.5)	274	(15.6)	5	(3.5)	158	(12.2)

Table 5. Angler opinions regarding legalization of handfishing in Missouri based on where they currently live. Values given are total number of responses and (column percent).

	All anglers				Catfish anglers			
	Rural	Small town	Suburban	Urban	Rural	Small town	Suburban	Urban
Support legalizing	322 (38.3)	179 (32.5)	154 (27.8)	47 (29.7)	255 (39.3)	142 (32.8)	110 (30.7)	34 (30.6)
Oppose legalizing	268 (31.9)	171 (31.1)	195 (35.2)	63 (39.9)	228 (35.1)	143 (33.0)	135 (37.7)	48 (43.3)
Undecided	132 (15.7)	111 (20.2)	118 (21.3)	26 (16.5)	96 (14.8)	88 (20.3)	79 (22.1)	18 (16.2)
No opinion	119 (14.1)	89 (16.2)	87 (15.7)	22 (13.9)	70 (10.8)	60 (13.9)	34 (9.5)	11 (9.9)

split in their support for and opposition to legalizing handfishing in Missouri (Table 4). Chi-square analysis showed a significant difference in responses regarding legalization between those who had tried handfishing and those who had not (all anglers: $\chi^2 = 114.9$, $DF = 3$, $P < 0.0001$; catfish anglers: $\chi^2 = 88.9$, $DF = 3$, $P < 0.0001$). Standardized residuals indicated that differences in response in the support, oppose, and no opinion categories contributed most to the chi-square values for all anglers as well as catfish anglers, with those who had participated in handfishing expressing more support, less opposition, and being less likely to have no opinion than those who had not previously participated in handfishing.

Finally, we examined whether current residency influenced opinions regarding legalization of handfishing in Missouri. Respondents were asked where they currently live (i.e., rural, small town, suburban, or urban area) and this information was cross-tabulated with opinions regarding handfishing legalization in Missouri (Table 5). Chi-square analysis showed a significant difference in responses regarding legalization based on where respondents currently live for all anglers ($\chi^2 = 24.3$, $DF = 9$, $P = 0.0038$) as well as catfish anglers ($\chi^2 = 21.9$, $DF = 9$, $P = 0.0092$). Support generally declined as residency moved from rural to urban areas (Table 5). Standardized residuals indicated that the differences in opinions supporting legalized handfishing between rural and suburban respondents contributed most to the chi-square value, with those living in rural areas showing more support and those from suburban areas showing the least support for legalization (Table 5). However, urban respondents were still more likely to oppose legalization than respondents from any other area for both angler groups (Table 5).

Discussion

Historically, legal angling methods for catfish in Missouri have included rod and reel, setlines (e.g., trotlines, banklines, limblines, etc.), and free-floating juglines. Reitz and Travnichek (2004) found that about 85% of Missouri anglers preferred rod and reel angling for catfish, followed by setlines (10%) and juglines (5%).

Opinions of individuals who are interested in angling for catfish sometimes conflict with opinions of those involved in traditional catfish harvest methods (e.g., handfishing and commercial fishing) passed down through generations of families (Quinn 1993). A group calling itself Noodlers Anonymous approached MDC during the summer of 2000 regarding the possibility of legalizing handfishing for catfish in Missouri. MDC staff opposed legalization, citing numerous concerns (e.g., overharvest, ethical considerations, safety, spawning success). However, members of Noodlers Anonymous continued to press the issue during the next four years garnering support across Missouri, including some from politicians. This grass-root support prompted MDC to conduct this survey to identify opinions of Missouri anglers regarding legalizing handfishing in Missouri to assist future decisions on how best to allocate catfish resources.

Most anglers surveyed had heard of handfishing prior to receiving our survey. Our results indicate that there was not a clear majority for support or opposition to legalizing handfishing in Missouri. Additionally, the survey indicated that only a few people will likely participate in handfishing if legalized in Missouri. Results of our survey showed that about 20% of avid catfish anglers were likely to participate in handfishing for catfish if legalized in Missouri, but this would only be a small proportion of the total number of catfish anglers in Missouri.

Accommodating angling diversity is a challenge facing fishery managers across North America. Gilliland (1998) indicated that agencies generally design most of their management programs to satisfy the average angler. This is often a compromise that may not fully satisfy the many segments within an agency's constituency. Management regulations that may be seen as favoring special interest groups are often avoided. This has been particularly true for catfish management in Missouri in the past. However, MDC recently approved a statewide catfish management plan (Dames et al. 2004) that defines a course to improve catfish populations, particularly those that can produce larger catfish. Peyton and Gigliotti (1989) suggested that rather than formulating generalizations about angler satisfaction and applying these to all anglers, managers should take a market segmentation approach that recognizes the fishing public is made up of many segments, and comparison of these segments often reveal differences in the relative importance they place on satisfaction elements. While there was no clear majority with regards to opinions regarding legalizing handfishing for catfish in Missouri, results of this survey indicate that a fairly large segment of Missouri anglers exist that support legalizing handfishing for catfish in Missouri.

Fisheries managers are becoming more aware of the need to implement programs that accommodate the diversity of experiences desired by the public (Chipman and Helfrich 1988). However, fishery managers continue treating catfish anglers as an aggregate in their management efforts, and by doing so they are likely managing for fishing outcomes that please only a minority of anglers. Not recognizing that catfish anglers are diverse in their motives and desires will continue the "one shoe fits all" approach that has driven past catfish management. While the MDC always acknowledged that there were individuals that participated in handfishing for

catfish in Missouri, it was never known what proportion of the angling public supported this activity. Results of this survey indicated that MDC is justified in implementing regulations to provide a limited amount of handfishing opportunities for catfish at a few locations across Missouri to meet the desires of individuals who wish to participate in this activity. Based partially on the results of this survey, the MDC initiated an experimental handfishing season for catfish in portions of the Mississippi, St. Francis, and Fabius rivers in 2005. Public opinion surveys should never totally drive the management of fishery resources, and the MDC is still responsible for ensuring that this added level of exploitation does not cause problems with existing catfish populations. The affected river segments will be monitored to determine what effects handfishing has on catfish populations. Information from these studies will guide the future direction of handfishing for catfish in Missouri.

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