Fishing Practices and Motivations of Hand Fishers in Texas

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Abstract: In 2011, the Texas state legislature legalized hand fishing as a harvest method for catfish in Texas. Although large catfish (>600 mm total length [TL]) are expected to be vulnerable to this fishing method, little is known about hand fishers or their harvest practices. To help make informed management decisions and better understand how hand fishers compare to other Texas' catfish anglers, we surveyed hand fishers to collect information on their demographics and fishing activities. Survey respondents ($n = 118$) were primarily preexisting catfish fishermen who already utilized other gear types to fish for catfish; only 5.6% of respondents exclusively hand fished. Despite expressing a willingness to use other gear types, 40% of respondents ($n = 47$) considered hand fishing their most important fishing activity. Respondents indicated they hand fished a median of 15 days annually, primarily during the spawning period. Hand fishers reported catching about 8 catfish per day, yet harvesting only two or three. The median size of flathead catfish (*Pylodictis olivaris*) and blue catfish (*Ictalurus furcatus*) caught was 762 and 508 mm TL, respectively. The maximum size flathead catfish and blue catfish hand fishers indicated they would keep was 1016 mm and 914 mm TL, respectively. Results suggested that even though hand-fishers target large fish, harvest may not be a primary objective. The legal addition in 2011 of hand fishing in Texas does not appear to have recruited many new people to catfishing, and hand fishers were likely represented in previous statewide angler surveys as well as a 2010 statewide catfish survey. Thus, the overall impact of this style of fishing to Texas' fisheries resources will likely be minimal.

Key words: flathead catfish, blue catfish, noodling, grabbling, harvest, demographics.

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About 56% of all Texas fishermen pursue catfishes, making them the second most sought after sportfish in the state (Hunt and Hutt 2010). Their popularity is likely attributed to abundant catfish populations and a variety of angling opportunities ranging from high catch rates to trophy potential. In addition, fishermen can use an assortment of available fishing methods including rod and reel, jug lines, trot lines, and bank lines. In 2011, hand fishing, also known as noodling or grabbling, was legalized for all catfish species in Texas, providing yet another opportunity for catfish fishermen. Hand fishing is a form of fishing where individuals use their hands to remove catfish from underwater cavities. Unlike some states, Texas does not allow use of "poles" or "sticks" while hand fishing, nor the placement of "nest boxes" to aid in the capture of catfish, which can increase catch and harvest rates (Salazar 2002).

Despite its legalization, little is known about hand fishing or those who participate in the activity (Salazar 2002, Morgan 2008). Blue catfish (*Ictalurus furcatus*) and flathead catfish (*Pylodictis olivaris*) are primarily targeted with this technique because of their large size, quality table fare (Jackson et al. 1997), and vulnerability while spawning in shallow (<3m) nesting cavities (Turner and Summerfelt 1970, Layher and Boles 1979, Weller and Winter 2001, Daugherty and Sutton 2005). Historically, hand fishing has not been widely accepted among fishermen or fisheries professionals primarily because of the perceived negative social and biological impacts of removing fish from nesting cavities (Morgan 2008). As a result, hand fishing is illegal in many U.S. states. The biological impacts of hand fishing have been investigated (Bobea 1989, Francis 1993, Jackson et al. 1997, Brandes 2008, Winkelman 2011, Bodine et al. 2016), but few studies have examined the social aspects of hand fishing (e.g., Bourne 1988; Bilger 1997; Salazar 2002; Reitz and Travnichek 2005; Morgan 2006, 2008). Information on catch and harvest characteristics, as well as hand-fisher motivations and opinions will allow fisheries managers to develop or adjust catfish management plans to include this new group.

Surveying hand fishers is difficult (Morgan 2008). Even in states where hand fishing is allowed, the proportion of catfish anglers

who hand fish is often small (<1%, Kyle et al. 2014), which makes studying the activity difficult. Hand fishing has historically been illegal in Texas, so hand fishers are likely reluctant to participate in surveys for fear of providing information that may cause revocation of hand-fishing privileges. Characteristics associated with this angling method also prevent or minimize exposure of hand fishers to creel or survey personnel. Hand fishers do not always use typical access locations to water bodies (e.g., boat ramps, fishing docks, etc.) and they often resemble recreational swimmers. Because hand fishing does not require the use of boats or equipment, participants can access a lake or river from any location, including private property. This, coupled with their small population, make traditional survey techniques impractical for surveying hand fishers. One approach that has proven useful in surveying small, somewhat secretive groups is "snowball sampling," a targeted survey design that allows those surveyed to confidentially identify other potential survey candidates (Goodman 1961, Morgan 2008, Griffiths et al. 2010). Through use of such targeted surveys, our goal was to better understand hand fishers. Our objectives were to characterize the demographics, fishing practices, and opinions of hand fishers in Texas. We also sought to understand how hand fishers compare to general catfish fishermen through comparison with statewide survey results. Survey information obtained will allow managers to broadly identify and characterize potential impacts this new method could have on catfish populations.

Methods

Surveys were administered from May 2013 through July 2014. The survey included questions pertaining to fishing preferences (e.g., preferred fishing locations and gears), harvest tendencies (e.g., current and desired number and size of fish caught and harvested), and demographics (e.g., age, gender, and annual household income). Respondents were also given the option to provide additional, open-ended comments about their hand fishing preferences. We initiated our "snowball" sampling procedure using a list of known hand fishers generated from online fishing forums, tag returns from a concurrent exploitation study (Bodine et al. 2016), three hand-fishing tournaments, and from other anglers. Each hand fisher was surveyed either by mail, phone, or in person, and was asked to provide contact information for other hand-fishing participants. The newly identified hand fishers were then contacted and the process was repeated (i.e., snowball) until an exhaustive list was constructed. Hand-fishing tournament participants were contacted at tournament weigh-in ceremonies, where we explained the purpose of the survey and gave them a printed copy of the survey to complete and immediately return or return by mail using a supplied postage-paid envelope. Hand fishers who caught a tagged fish during the concurrent exploitation study were surveyed by phone or mail depending on their preference. Recipients contacted by mail received a cover letter explaining the survey, the survey instrument, and a postage-paid return envelope. Follow-up surveys were mailed to all non-respondents approximately four weeks following initial survey mailings. To increase sample size and to expand frame coverage (de Leeuw 2005) to include other hand-fisher networks (e.g., non-tournament hand fishers), we also deployed the survey online via SelectSurvey (2014). The online survey was openly advertised through statewide media outlets (e.g., newspapers, radio stations, etc.) and online fishing forums.

Hand fisher demographics, behaviors, and opinions were assessed by summarizing each response and reporting the frequencies (percentages) or median and interquartile range (IQR) for each survey question. Opinion questions pertaining to hand fishing for catfish in Texas were measured with a 5-point Likert-type scale (Likert 1932). Agreement (i.e., agree and strongly agree) and disagreement (i.e., disagree and strongly disagree) responses were pooled and neutral responses were omitted for analysis (Allen and Seaman 2007). To look for differences in responses among our sampling frames (tournament and online), categorical responses were assessed with Chi-square or Fisher's exact tests to better understand sampling bias associated with survey methods. A Fisher's exact test was performed if at least 20% of expected frequencies were less than five. Responses from five mail surveys were pooled with 51 tournament surveys for comparison with responses from online survey respondents. A one-way ANOVA was used to test for differences in age between our sampling frames. Because no significant differences among the sampling frames for hand fishers were observed, all survey results were pooled for final analysis. To understand how hand fishers compare to general catfish anglers, our survey data were compared with results from the Texas' statewide catfish survey conducted in 2010 (Hunt and Hutt 2010) using Chi-square tests. All analyses were run using SAS 9.2 (SAS Institute 2010); differences were considered significant at $P < 0.05$.

Results

Surveys administered through our targeted sampling approach (e.g., hand-fishing tournaments, and tag returns) produced 56 completed surveys. Most surveyed fishermen demonstrated a reluctance to provide contact information for other hand fishers. Only 17.8% of the initial hand fishers (i.e., seed population) provided contact information and none of the newly identified individuals responded to the survey. An additional 62 hand fishers completed our online survey. Overall, we obtained completed surveys from 118 hand fishers (combined across all survey methods); 43% were surveyed at the three hand-fishing tournaments, 53%

Table 1. Select statistics of Texas hand fishers surveyed using different sampling frames (tournament vs. online).

Variable		Tournament	Online
	Median age (years)	28	32
Income (%)			
	<$20,000	9.8	4.0
	$20,000–$39,999	4.9	20.0
	$40,000–$59,999	24.4	14.0
	$60,000–$79,000	31.7	24.0
	$80,000–$99,000	22.0	12.0
	≥$100,000	19.5	26.0
Education (%)			
	Elementary	0.0	0.0
	Some high school	10.9	2.0
	High school	39.1	22.0
	Some college	37.0	34.0
	College	26.1	30.0
	Post graduate	2.2	12.0

Table 2. Median age, gender, education, income, Spanish/Hispanic origin, and race for Texas hand fishers (this study) and statewide Texas catfish anglers (Hunt and Hutt 2010).

Variable		Hand fishers	All Texas catfish anglers
	Median age (years)	30	47
Gender (%)			
	Male	98.1	85.3
	Female	1.9	14.7
Income (%)			
	<$20,000	6.3	8.1
	$20,000–$39,999	12.5	15.9
	$40,000–$59,999	17.7	18.6
	$60,000–$79,000	26.0	17.1
	$80,000–$99,000	15.6	16.5
	≥$100,000	21.9	23.9
Education (%)			
	Elementary	1.0	0.2
	Some High School	5.7	3.7
	High School	29.2	27.8
	Some College	32.1	31.2
	College	25.5	26.9
	Post Graduate	6.5	10.3
Spanish/Hispanic origin (%)			
	No	97.1	91.2
	Yes	2.9	8.8
Race (%)			
	White or Anglo	94.3	90.4
	Black or African	1.0	2.0
	Native American	3.7	1.3
	Asian or Pacific Islander	0.0	1.1
	Other	1.0	5.2

online, and 4% were surveyed by mail from contact information provided via tag returns during the concurrent exploitation study.

No significant differences were observed in age between our sample frames ($F = 2.48$, df = 2, $P = 0.09$; Table 1). Hand fishers were predominantly male regardless of sample frame; only two female hand fishers were surveyed, both at hand-fishing tournaments. Median income was US$60,000 to $79,000 for all sample frames and the proportions of respondents in each income category was not significantly different ($_{\chi}2 = 8.2$, df = 5, $P = 0.15$). Hand fisher's highest level of education completed was also similar between sampling frames (Fisher's exact test, $P = 0.09$).

Overall, hand fishers were predominately male (98.1%) and White/Anglo (94.3%). Median age was 30 years (range = 12 to 76 years), and 57% were younger than 35 (Table 2). Hand-fishers were younger ($_{\chi}2 = 137$, df = 10, $P < 0.01$), and more predominately male (98%) than statewide catfish anglers (85%). Over half (64.1%) of the surveyed hand fishers had at least some college education; 32% had a college degree or higher (Table 2). Individuals of the Spanish/Hispanic demographic accounted for just 2.9% of hand-fishers; however, this demographic represented 8.8% of all Texas catfish anglers.

Angling Practices and Behaviors

The median number of days spent hand fishing per year was 15 (IQR = 5 to 30), and primarily occurred in May through July (Table 3). Eighty-two percent of hand fishers reported hand fishing at least one day in reservoirs, and 38% reported fishing at least one day in rivers. Overall, hand fishers indicated they had hand fished in 50 different reservoirs and 15 river systems, spanning most of central and eastern Texas.

During a typical hand-fishing trip, hand fishers indicated they caught about two or three flathead catfish and blue catfish of each species (i.e., 30 to 45 year^{-1}), but harvested only one to two fish of either species (i.e., 15 to 30 year^{-1}). Only about 6% reported harvesting a daily limit (five) of flathead catfish during a typical hand-fishing trip, but none reported harvesting a daily limit of blue catfish (25). The combined median daily catch rate of blue catfish and flathead catfish (6.0 day^{-1}; IQR range = 3.0 to 9.3) was similar to the combined average catch rate of all catfish species (9.0 dar^{-1}; SD = 6.0) reported by Texas catfish anglers. The median length of harvested fish was 559 mm TL (IQR = 406 to 737 mm) for blue catfish and 762 mm TL (IQR = 610 to 914 mm) for flathead catfish. A greater portion of hand fishers (45.6%; $_{\chi}2 = 3.7$, df = 1, $P = 0.055$) indicated the size of fish they caught was more important than the number (24.6%) of fish they caught; however, only 31.6% indicated that the size of fish they are allowed to keep was important (Table 4). Only 20.2% ($_{\chi}2 = 4.0$, df = 1, $P = 0.05$) indicated that the number of fish

Table 3. Fishing practices of hand fishers (this study) compared to results obtained from the Texas statewide survey of catfish anglers (Hunt and Hutt 2010). Median response is presented along with the interquartile range (in parentheses), except where noted.

Item	Attribute	Hand fishers	All Texas catfish anglers
Number of days fished in each location (person^{-1} year^{-1})	All	15 (5–30)	15 (5–30)
	Rivers	0 (0–3)	0 (0–5)
	Reservoirs	10 (4–26)	6 (1–18)
	Other	0 (0–0)	0 (0–3)
Number of days fished in each month (person^{-1})	January	0 (0–0)	
	February	0 (0–0)	
	March	0 (0–0)	
	April	0 (0–3)	
	May	4 (1–10)	
	June	5 (2–10)	
	July	2 (0–10)	
	August	0 (0–2)	
	September	0 (0–0)	
	October	0 (0–0)	
	November	0 (0–0)	
	December	0 (0–0)	
Number of catfish caught and harvested trip^{-1}		*Flathead catfish*	
	Caught	3 (2–5)	6 (4–12)[a]
	Harvested	1 (0–2)	4 (2–8)[a]
		Blue catfish	
	Caught	2 (1–5)	6 (4–12)[a]
	Harvested	0 (0–2)	4 (2–8)[a]
Length catfish caught and harvested (mm)		*Flathead catfish*	
	Caught	762 (635–914)	470 (318–470)[b]
	Harvested	762 (610–914)	
		Blue catfish	
	Caught	508 (432–724)	470 (318–470)[b]
	Harvested	559 (406–737)	

a. Catch and harvest rates were not separated by catfish species.
b. Values represent all catfish species. Length of harvested fish was not asked in the statewide survey.

Table 4. Fishing preferences of hand fishers (this study) and Texas catfish anglers statewide (Hunt and Hutt 2010). Median response is presented along with the interquartile range (in parentheses), except where noted.

Item	Attribute	Hand fishers	All Texas catfish anglers
Proportion (%) using each gear type	Rod and reel	94.0	94.2
	Trot lines	86.5	27.1
	Limb lines	60.4	13.5
	Jug lines	67.6	26.3
	Hand fishing	100.0	n/a
	Other	18.5	0.7
Median trophy size in (mm) for each species	Flathead catfish	1016 (914–1219)	762 (711–914)
	Blue catfish	914 (762–1067)	711 (610–889)
Minimum and maximum. size fishermen would keep (mm)		*Flathead catfish*	
	Min	457 (457–610)	457 (356–508)
	Max	1016 (762–1321)	
		Blue catfish	
	Min	356 (305–508)	381 (305–406)
	Max	914 (762–1321)	

Table 5. Attitudes of Texas hand fishers concerning characteristics of hand fishing trips.

Survey question	Disagree (%)	Agree (%)	$\chi 2$[a]
The size I catch is more important than the number I catch	24.6	45.6	3.7
The number I catch is more important than the size I catch	39.5	17.5	5.0
The number I am allowed to keep is most important to me	40.4	20.2	4.0
The size I am allowed to keep is most important to me	29.8	31.6	0.03
I'm just as happy if I release all I catch	15.8	55.3	13.5
The most important place for me to hand fish is in rivers	52.8	13.2	14.3
The most important place for me to hand fish is in reservoirs	12.5	61.6	20.6

a. Chi-square ($\chi 2$) values were considered significant at 3.84 ($P < 0.05$; df = 1).

they are allowed to keep is important and 55.3% ($\chi 2 = 13.5$, df = 1, $P < 0.01$) were just as happy if they released all the fish they caught. Hand fishers considered 914 mm TL and 1016 mm TL to be median trophy size for blue catfish and flathead catfish, respectively. Trophy size was the same as the maximum size fish hand fishers suggested they would keep for both species. Trophy size of blue catfish and flathead catfish appeared slightly larger than the median trophy size reported by all Texas catfish anglers for blue catfish (711 mm TL, Table 4) and flathead catfish (762 mm TL, Table 4).

Almost all surveyed hand fishers (94.4%) indicated they also use other methods to catch catfish; whereas a small proportion of statewide catfish survey respondents used gear types other than rod and reel (Table 4). Hand fishers reported consistently purchasing an annual fishing license: 79.4% of this group reported purchasing a fishing license each of the last five years. Twenty-seven percent of hand fishers reported that legalization of hand fishing in 2011 influenced their decision to purchase a fishing license during the 2012 license year.

The most common additional comment hand fishers provided in the open-ended comments portion of our survey was related to restrictions placed on hand fishers (Table 5). Twenty-four percent of survey respondents requested that Texas Parks and Wildlife Department (TPWD) legalize use of "poles" or "sticks" while hand fishing whereas 11% requested use of more restrictive harvest regulations to protect or enhance "trophy" catfish populations. Only two respondents requested TPWD allow use of nesting boxes or pipes.

Discussion

The recent legalization of hand fishing in Texas motivated TPWD to better understand hand fishing and those who participate in the activity. However, Texas hand fishers were difficult to survey. Although we compiled the largest known sample of hand fishers to date ($n = 118$), our targeted snowball sampling technique was ineffective as most hand fishers did not provide contact information for other hand fishers. We suspect this is most likely because hand fishers were unwilling to participate in any survey that may cause TPWD to revoke hand-fishing privileges. Lack of participation has been observed in other studies that survey secretive groups or highly controversial topics (Salganik and Heckathorn 2004, Dickinson et al. 2015). Morgan (2008) found a similar reluctance to respond in Missouri hand fishers, as did Bennett et al. (2014) for Texas bowfishers. To increase participation when surveying such groups, future surveys might consider use of qualitative techniques (Biernacki and Waldorf 1981, Baker 2009, Dickinson et al. 2015), grounded theory methodology (Denzin 2001, Dickinson et al. 2015), or monetary incentives (Church 1993, Edwards et al. 2002). Building trust with hand fishers and other non-traditional angling groups by involving them in management and decision making processes may help ease suspected tensions and foster better relationships with angling groups (Armstrong et al. 2008, Scholten et al. 2008).

Some bias associated with our survey methods are likely. Online surveys have been found to over-represent those who are younger, male, and more highly educated (Duffy et al. 2005, Vaske et. al. 2011) and less representative of individuals from lower education and income levels (de Leeuw 2005). In addition, tournament fishermen are found to be more avid and to have different fishing practices and preferences than non-tournament anglers (Fisher 1997, Wilde et al. 1998a). Our responses were similar across sampling frames and other surveys of hand fishers, and suggest our results provide a valuable resource for understanding hand fishers in Texas and elsewhere. Further, the demographics, opinions, and preferences of hand fishers closely resemble those of the other one million Texas catfish fishermen (Hunt and Hutt 2010). Thus, current catfish management plans likely already include hand fisher's preferences.

The demographics of hand fishers of our study were similar to other catfish anglers although hand fishers represented a younger cohort and were composed of more males compared to typical catfish anglers in Texas. Other than age and gender, hand fishers added little diversity to the Texas catfish angler constituency. This is likely because most survey respondents (94%) were pre-existing catfish anglers before the legalization of hand fishing. Furthermore, hand fishing did not appear to recruit new Spanish/Hispanic anglers, the fastest growing ethnic group in Texas (Passel et al. 2011). Despite the lack of recruitment, hand fishing may encourage existing fishermen to purchase a fishing license, as over 27% of hand fishers suggested legalization of hand fishing influenced their decision to purchase a license in 2014.

Similar to hand fishers in Missouri (Morgan 2008), Texas hand fishers reported using a wide range of other gear types to fish for catfish. However, the majority of Texas' catfish anglers strictly used rod and reel (Hunt and Hutt 2010); thus, hand fishers apparently belong to the subset of catfish fishermen who utilize a diversity of gear types. Although hand fishing is thought to comprise only 0.6% of the Texas catfish constituency (Kyle et al. 2014), survey respondents were broadly distributed across the state, and hand fishers listed more than 60 water bodies throughout the state as preferred fishing locations. Similar to other inland Texas angling groups, respondents predominately hand fished in reservoirs. Identifying and closely monitoring popular hand-fishing destinations may be important in order to assess long term impacts of hand fishing.

Hand fishing activity was highly seasonal, corresponding to the expected period of increased nesting activity of blue catfish and flathead catfish (Weller and Winter 2001, Daugherty and Sutton 2005). Fisheries managers should consider the seasonality of hand-fishing effort when designing future studies in which intercepting hand fishers or estimating harvest is desired. The number of days spent hand fishing each year in Texas was similar to that in Missouri and Oklahoma (Morgan 2008, Winkelman 2011). The similar frequency of hand fishing in our study in Texas to that occurring in Missouri was surprising considering surveyed hand fishers in Missouri were participating in the activity illegally (Morgan 2008). Illegal hand fishing also occurred in Texas prior to legalization although the practice was done in secret and often occurred at night (S. Stapleton, Captain Game Warden, TPWD, personal communication).

Harvest reported in our study was low, similar to that reported in Missouri and Oklahoma (Morgan 2008, Winkelman 2011), and results from an exploitation study supported this observation (Bodine et al. 2016). The seasonality of hand fishing activity results in low annual effort overall and likely contributes to low harvest. Catfish fishermen have been found to be generally harvest oriented (Schramm et al. 1999, Wilde and Ditton 1999, Hunt and Hutt 2010, Dickinson et al. 2015); however, hand fishers reported that they only kept a small portion of the fish caught during a typical hand-fishing trip. We found more than half (55%) of hand fishers reported that they were just as happy if they released all the fish they caught. Comments provided by survey respondents indicated that some hand fishers practice catch and release, and a few desired more restrictive harvest regulations to enhance the trophy as-

pect of this fishery. Further, hand fishers primarily target flathead catfish and blue catfish, and those who pursue these species often place greater importance on catching a trophy (Wilde and Ditton 1999, Arterburn et al. 2002, Morgan 2008) and consider size of fish caught to be more important than catch or harvest rates. These findings suggest the majority of hand fishers participate in the sport for recreation rather than for consumption.

Though hand fishers reported releasing many catfish, our results suggest some hand fishers may selectively harvest larger catfish. Length of fish harvested was not obtained through the 2010 statewide catfish survey; however, the length of fish reported caught by hand fishers was larger than that reported by respondents in the statewide survey as was the reported trophy size (Hunt and Hutt 2010). Similarly, Jackson et al. (1997) found hand fishing selectively harvested large catfish (>762 mm). In contrast, Brown (2011) and Winkelman (2011) both reported hand fishers harvested catfish in proportion to their abundance. Regardless of such discrepancies, it can be inferred that this fishing technique itself is size selective because only larger, reproductively mature fish are likely to be caught and harvested. Because blue and flathead catfish may require a decade or more to reach the preferred harvest size (~762 mm) of hand fishers (Munger et al. 1994, Bodine et al. 2016), it is feasible that slight increases in hand fishing activity or harvest could quickly impact fisheries where trophy fisheries are a management goal.

Although hand fishers may be slightly size selective, the overall low number of fish currently harvested annually (Bodine et al. 2016) is not likely to significantly alter catfish population dynamics in Texas. The hand-fishing season is primarily limited to the short spawning season (about 2 to 3 months), and hand fishers are rare (<1% of fishermen). This combined information suggests fisheries managers will likely not observe population level impacts resulting from the fishing method. However, more research may be needed to access the impact of hand fishing on small catfish populations. Preferred fishing locations suggested by Texas' hand fishers were primarily large reservoirs (>2000 ha) and river systems (>800 km) where overharvest may be less likely. However, in situations when hand-fishing activity is higher (e.g., higher harvest or more hand fishers), or catfish populations are dominated by fewer, large individuals, alternative management strategies could be warranted.

It is unknown if hand fishing activity is increasing; however, recent television series featuring the fishing method have generated additional interest, and legalization of the activity in Texas has allowed the occurrence of organized, competitive hand fishing tournaments (S. Stapleton, Captain Game Warden, TPWD, personal communication). The impact of hand fishing tournaments is unknown, but it will be important for resource managers to understand how competitive hand fishing, as well as catch-and-release hand fishing, may impact the long-term mortality and recruitment of catfish, particularly where trophy catfish fisheries exist. Additionally, "road-runner" style tournaments (Wilde et al. 1998b) are a common format for hand fishing tournaments, and may increase the incidence of catfish mortality as well as the risk of exotic species transfer (Kerr and Kamke 2003). These and other potential impacts of hand fishing should be studied as constituents explore this unique fishing opportunity.

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