

**A Catch-Card Survey
of Anglers at
Lake Mineral Wells**

**by
John Moczygemba**

**Management Data Series
No. 285
2015**



INLAND FISHERIES DIVISION
4200 Smith School Road
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ACKNOWLEDGMENTS

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ABSTRACT

Lake Mineral Wells, located in Lake Mineral Wells State Park (LMWSP), was stocked annually with advanced-size Channel Catfish (9 inches) from 2008-2011 as part of a fisheries management plan developed by Texas Parks and Wildlife Department (TPWD) Inland Fisheries Division District 2A. The “Free Fishing in State Parks” Program (FFSPP) allows park visitors to fish the lake without purchasing a fishing license. To evaluate the utilization of the stocked Channel Catfish and the FFSPP program, a catch-card survey was conducted by District 2A and LMWSP personnel. This was also a low cost way of gathering information to make an informed decision about continuing the Channel Catfish stocking program. There were 1,405 interviews handed out with 300 returned for a 21% response rate. White Crappie was the most sought-after sport fish as well as the most caught and harvested sport fish. Channel Catfish was the fourth most-sought after sport fish, the third most-harvested sport fish, and provided 8% of the total harvest. Of the completed questionnaires, 40% said they came to LMWSP because of the FFSPP, while 29% said it was not the reason for visiting the state park. The supplemental Channel Catfish stocking was no longer recommended. Problems with the survey included ambiguous answers, incomplete information on cards, and low angler participation in returning interview forms. Recommendations are made to address these problems.

INTRODUCTION

Lake Mineral Wells (LMW) is located entirely within Lake Mineral Wells State Park (LMWSP; Parker County) and provides various forms of recreation. The Texas Parks and Wildlife Department (TPWD) program “Free Fishing in State Parks” (FFSPP) allows state park visitors to fish the lake without a fishing license. The sport fish population is managed by the TPWD Inland Fisheries District 2A (D2A) office to provide a quality fishing opportunity. Largemouth Bass, White Crappie, and Channel Catfish are the major sport fish species found in LMW (Moczygemba and Hysmith 2011). Since 1971, LMW has received over 300,000 advanced Channel Catfish fingerlings averaging 9 inches TL (Table 1). As part of the 2007 Fisheries Management Plan for LMW (Hysmith and Moczygemba 2007) 11,000 advanced Channel Catfish fingerlings were stocked annually from 2008-2011. However, the 2011 Fisheries Management Plan (Moczygemba and Hysmith 2011) identified a lack of angler information including utilization of Channel Catfish and other sport fishes as well as angler preferences. To justify the expense of stocking advanced fingerling Channel Catfish, it’s important to know the utilization of these fish. The 2011 Fisheries Management Plan recommended a creel survey to document this information. In addition, the importance of the FFSPP program in attracting park visitors would be valuable information in marketing LMWSP.

MATERIALS AND METHODS

Lake Mineral Wells is a 440-acre impoundment with one two-lane boat ramp. It has a lighted fishing pier near the concession shop and five additional fishing piers scattered around the lake near camping areas. Visitors gain access to LMWSP through a single entrance/exit, making a catch-card survey an efficient way to determine various angler parameters. Furthermore, utilization of on-site park personnel, which would be manning the entrance booth as part of their job description, was more cost effective than sending D2A staff (130 miles and 2.5 hours, one way) to conduct a roving creel survey. The survey began January 1, 2012 and ended December 31, 2012. Park personnel asked all visitors if they planned to fish during their visit. If so they were given a questionnaire (Figure 1) to be filled out each day of fishing and asked to return it to one of three angler survey boxes located in the park near the boat ramp, the concession’s fishing pier or the park exit. Questionnaires were sequentially numbered to keep count of the number of questionnaires handed out. Completed questionnaires were shipped to the D2A office for data entry.

A data entry program was developed on the TPWD GoFish server to tabulate questionnaire data. The following information was gleaned from the data base: number of anglers, number of boat and bank/pier anglers, angler’s fish species preference, hours fished, number of fish harvested by species and inch group, and number of fish released by species. Anglers were asked whether the Free Fishing in State Parks Program had influenced them in coming to LMWSP. The percentage in each response category was estimated by dividing the number of respondents in that category by the total. Because this was a survey, Proc SurveyFreq in SAS was used to estimate sample variances. A large-sample Z-test was assumed appropriate for testing whether percentages within each category were significantly different. Pairwise comparisons were conducted between responses and adjusted for multiple comparisons by using a Bonferroni correction.

RESULTS

The state park had 157,746 visitors in 2012. A total of 1,405 questionnaires were handed out to park visitors who indicated they were going to fish. Anglers returned 300 questionnaires for a 21% response rate. However, a number of the questionnaires (16) were returned incomplete. The incomplete questionnaires were excluded from further analysis. Of those that completed the survey (284), there were almost equal numbers of boat (143) and bank/pier anglers (141). The average group size was 2.2 anglers and they fished an average of 3.8 hours. Table 2 shows the angler's fish species preferences. Anglers sought White Crappie most often, with Channel Catfish being the fourth most preferred species. White Crappie were by far the most harvested fish (Table 3) and also contributed the highest catch and release numbers (Table 4). White Crappie made up 78% of the harvest and 55% of the fish released. White crappie anglers released 70% of the White Crappie they caught. Channel Catfish contributed 8% to the total fish harvest and almost 13% of the fish released. Channel Catfish anglers released 83% of the Channel Catfish they caught. Anglers reported harvesting Channel Catfish from 8 to 24 inches TL (Figure 2) with 14 inches being the most predominant inch group harvested. Since Lake Mineral Wells is considered a community fishing lake (located totally within a state park), there is no length limit on Channel Catfish. However, some anglers were non-compliant with the minimum length limits for Largemouth Bass (Figure 3) and White Crappie (Figure 4). Anglers reported harvesting Largemouth Bass from 6 to 21 inches, with 14 inches being the most abundant. White Crappie harvested-lengths were reported to be from 5 to 16 inches, with 10 inches the most numerous.

Table 5 shows 40% of the 284 respondents indicated they did come to LMWSP because of the FFSPP, while only 29% said this was not the reason. Those not answering the question amounted to 31%. We detected no significant differences in any of the pairwise comparisons ($P > 0.05$ for all comparisons).

DISCUSSION

The response rate during this study (21%) was similar to the 23.8% overall response rate during a Texas State Park Visitor Survey conducted at 67 state parks from 2002-2007 (Dziekan and Lau 2008). LMWSP was part of the Texas State Park Visitor Study. Of the 3,031 questionnaires handed out at LMWSP from November 2002 to October 2003, there were 683 returned for a response rate of 23% (Williams and Dziekan 2004). Therefore the current angler questionnaire response rate was similar to the results of a previous hand-out interview survey at LMWSP.

Although the data did not lend itself to statistical analysis, the results answered the question concerning utilization of Channel Catfish by anglers at Lake Mineral Wells. Channel Catfish were taken by anglers, but the most preferred fish as well as the most harvested and released fish were White Crappie. Moczygemba and Hysmith (2011) observed a high catch rate of young (1-2 year old fish using age and average length-at-capture analysis by Hysmith et. al. (1999)) Channel Catfish in 2003 without supplemental stocking (Table 1), which indicated the population could be sustained by natural reproduction with current-angler harvest levels. Since the Channel Catfish population is self-sustaining there is no need to continue supplemental

stocking, which would reduce hatchery production costs and free pond space for other species production.

Williams and Dziekan (2004) reported fishing was second among the top activities of several classes of visitors at LMW. During the 2004 survey, fishing was the primary reason for coming to the park for 8% of the visitors. During summer months fishing as a primary reason for visiting jumped to 18%. The FFSP could be attracting visitors to LMWSP as 40% of our study respondents (114) indicated they came to the park because they did not have to buy a fishing license. Although this was the highest response rate, 31% of respondents (88) did not answer the question, so it is not known what their response would have been or if they were aware of the FFSP. Still another 29% of respondents (82) indicated they came to the park because of other reasons. Dziekan and Lau (2008) found that 28% of visitors to Texas state parks were aware of the FFSP and 22% of those aware visited state parks for that reason. The current study only passed out questionnaires to visitors who were going to fish, so that may have skewed the response rate. Compared to the total LMWSP 2012 visitation (157,746), the number of questionnaires passed out was far less than expected. Based on Williams and Dziekan (2004), 12,620 (8% of 157,746) visitors should have had fishing as the primary reason for coming to LMW. The total number of questionnaires expected should be around 12,620 not 1,405. A data set of 12,620 would have been far more representative of the angler population at LMW. Nonetheless, the small data base indicated some anglers are drawn to LMWSP to utilize the free fishing opportunity.

A standard annual creel of 36 days (4 week days and 5 weekend days per quarter) at LMW would have required 99 man-days, approximately \$3,300 in gas, and 9,360 miles on a truck and trailer. This study required approximately 9 man-days to ship interview forms, enter data, and verify data. State park personnel passed out forms, as part of their routine duties, to announced anglers, gathered, and shipped forms to the D2A office. Their expenses included the postage and the time it took to get the forms together for shipping.

Problems with the survey included ambiguous answers and incomplete information on interview forms (Figure 5) and low angler participation in returning interview forms. Some answers on the interview forms indicated the anglers did not understand the questions. Species misidentification by anglers is an inherent problem in this type of survey. Issues with these surveys may be remedied by the following recommendations:

1. Use historical data to estimate a number of potential interviewees for the partnering entity to reach, so an adequate data base will be collected.
2. Make questions as simple as possible to avoid confusion.
3. Do not expect data that can be statistically analyzed without follow-up data collection.
4. Base the need for the information on how much effort will be required. If the question needing to be answered is critical then catch-card surveys may not be ideal, but if minimal data is needed to answer a question then this could be a viable alternative.
5. Impress the importance of the survey to the partnering entity to include the benefits of the study to park visitation.
6. Employ an incentive for the interviewee to return the form, such as free day pass, some Mineral Wells State Park memorabilia, etc.

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TABLE 1.—Channel Catfish stocking history of Mineral Wells Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), and advanced fingerlings (AFGL). Life stages are defined as having a mean length that falls within the given length range. For each year and life stage the mean total length (Mean TL; in) is given.

Year	Number	Life Stage	Mean TL (in)
1971	15,000	AFGL	7.9
1972	100,000	AFGL	7.9
1987	32,800	FGL	3.0
1989	18,786	AFGL	4.7
1991	9,985	AFGL	5.2
1992	9,948	AFGL	5.1
1993	16,580	AFGL	8.8
1993	11,040	FRY	0.4
1994	35,638	AFGL	6.7
1995	17,064	AFGL	7.2
1996	16,575	AFGL	6.8
2005	11,210	AFGL	10.0
2008	11,095	AFGL	9.3
2009	11,760	AFGL	9.0
2010	11,163	AFGL	9.4
2011	11,034	AFGL	9.0
Total	339,678		

TABLE 2.—Percent angler preferences by species for Lake Mineral Wells, Texas, January 2012 – December 2012. Anglers selected all species they were seeking.

Species	Percent
Common Carp	1
Channel Catfish	23
Flathead Catfish	9
Largemouth Bass	40
Crappie (White and Black)	43
Sunfish	8
Anything	28

TABLE 3.—Number of fish harvested (462) as reported by anglers at Lake Mineral Wells, Texas, January 2012 – December 2012.

Species	Number
Channel Cat	39
Flathead Catfish	1
Spotted Bass	7
Largemouth Bass	50
Sunfish	3
White Crappie	361
Freshwater Drum	1

TABLE 4.—Numbers of fish released (1,501) by species as reported by anglers at Lake Mineral Wells, Texas, January 2012 – December 2012.

Species	Number
Common Carp	10
Golden Shiner	10
Channel Catfish	190
Flathead Catfish	21
Largemouth Bass	168
Crappie (White and Black)	829
Sunfish	257

TABLE 5.—Angler responses to the question, “DID ‘FREE FISHING IN STATE PARKS’ (NO FISHING LICENSE REQUIRED) INFLUENCE YOUR GROUP’S DECISION TO COME TO THIS PARK TODAY?”. The inquiry was on the 284 questionnaires returned during a catch-card survey at Lake Mineral Wells, Texas, January 2012 - December 2012.

Response	Number (%)
Yes	114 (40)
No	82 (29)
No Answer	88 (31)

**TEXAS PARKS AND WILDLIFE DEPARTMENT
LAKE MINERAL WELLS ANGLER SURVEY QUESTIONNAIRE**

!!WE ARE ASKING FOR YOUR HELP TO KEEP THE FISHING GREAT AT YOUR LAKE!!

Whether your group caught fish or not, please fill out this form (one form/group) and return to an angler survey box located at either the : 1) Headquarters Building, 2) concessions fishing pier, or 3) boat ramp.

1. **DID "FREE FISHING IN STATE PARKS" (NO FISHING LICENSE REQUIRED) INFLUENCE YOUR GROUP'S DECISION TO COME THIS PARK TODAY?**
Yes No

2. Date Your Group Fished: _____ (mm/dd/yyyy)

3. Number of people in your group that fished today: _____

4. What species were your group fishing for (Circle all that apply):

- | | | |
|--------------------|---------------------|-------------|
| 1. Largemouth Bass | 4. Flathead Catfish | 7. Anything |
| 2. Crappie | 5. Sunfish | |
| 3. Channel Catfish | 6. Carp | |

5. How many hours did your group fish today (0-24 h): _____

6. Which of the following did your group fish from today (Circle all that apply):

- | | |
|--------------|---------|
| 1. Bank/Pier | 2. Boat |
|--------------|---------|

7. **If your group caught any fish today, please record your group's catch in the form below.**

FISH HARVESTED			FISH RELEASED	
Fish Species	Length (inches)	Number	Fish Species	Number
			largemouth	
			Spotted bass	
			Crappie	
			Channel Cat	
			Flathead Cat	
			Sunfish	
			Carp	

FIGURE 1.—Catch-card questionnaire for Lake Mineral Wells anglers.

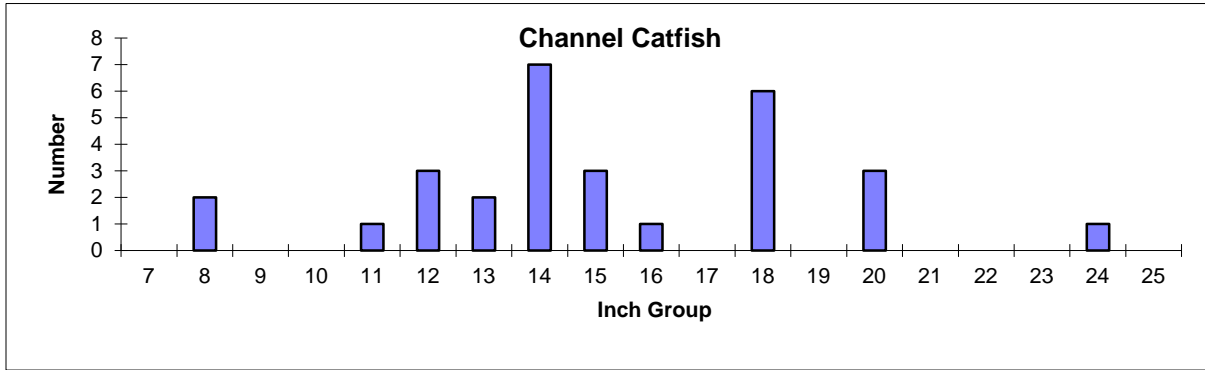


FIGURE 2.—Length frequency of harvested Channel Catfish as reported by anglers during catch-card survey at Lake Mineral Wells, Texas, January 2012 - December 2012. No minimum length limit.

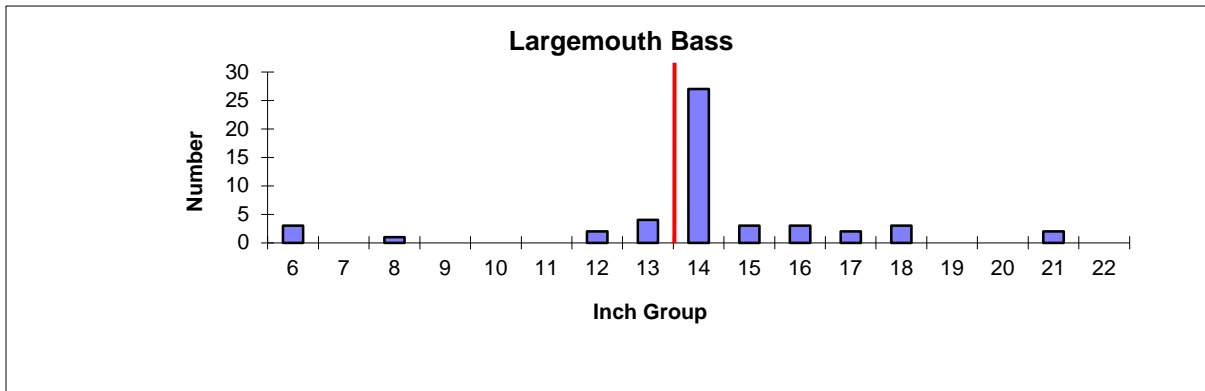


FIGURE 3.—Length frequency of harvested Largemouth Bass as reported by anglers during catch-card survey at Lake Mineral Wells, Texas, January 2012 - December 2012. Vertical line represents minimum length limit at time of creel survey.

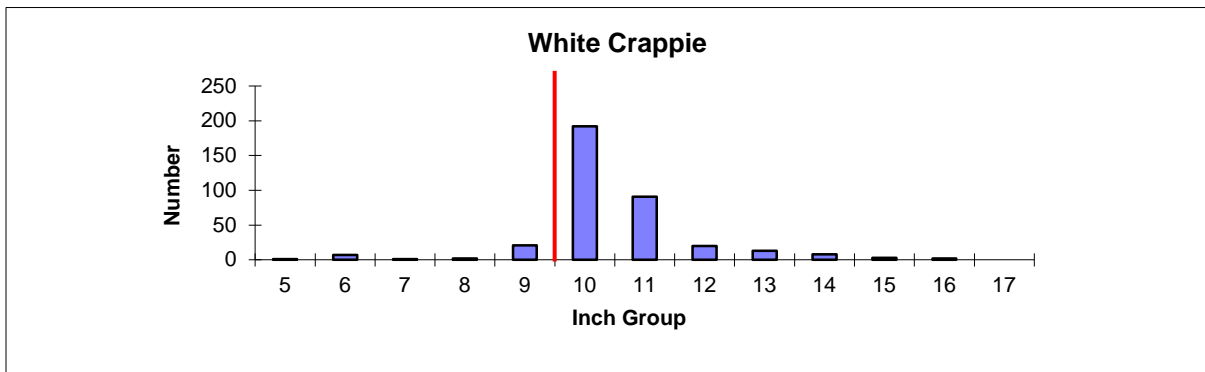


FIGURE 4.—Length frequency of harvested White Crappie as reported by anglers during catch-card survey at Lake Mineral Wells, Texas, January 2012 - December 2012. Vertical line represents minimum length limit at time of creel survey.

John

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 TEXAS PARKS AND WILDLIFE DEPARTMENT
 LAKE MINERAL WELLS ANGLER SURVEY QUESTIONNAIRE

!! WE ARE ASKING FOR YOUR HELP TO KEEP THE FISHING GREAT AT YOUR LAKE !!

Whether your group caught fish or not, please fill out this form (one form/group) and return to an angler survey box located at either the : 1) Headquarters Building, 2) concessions fishing pier, or 3) boat ramp.

1. DID "FREE FISHING IN STATE PARKS" (NO FISHING LICENSE REQUIRED) INFLUENCE YOUR GROUP'S DECISION TO COME TO THIS PARK TODAY?
 Yes No

2. Date Your Group Fished: 10-13-12 (mm/dd/yyyy)

3. Number of people in your group that fished today: 3.

4. What species was your group fishing for (Circle all that apply):

- 1. Bass
- 2. Crappie
- 3. Channel Catfish
- 4. Flathead Catfish
- 5. Perch (Sunfish)
- 6. Carp
- 7. Anything

5. How many hours did your group fish today (0-24 h) : 6 hrs.

6. Which of the following did your group fish from today (Circle all that apply):
 1. Bank/Pier 2. Boat

7. If your group caught any fish today, please record your group's catch in the form below.

Fish Kept			Fish Released	
Fish Species	Length (inches)	Number	Fish Species	Number
Perch	9 in	1	Bass	
Crappie	7 in	1	Crappie	1
			Channel Cat	
			Flathead Cat	
Perch	9 in	1	Perch	1
			Carp	

FIGURE 5.—Example of returned questionnaire with ambiguous answers: question 1 was not answered and “fish released” could also be the same “fish kept”.

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