

Job Completion Report

STATE OF TEXAS

Project No. F5R3 Name Fisheries Investigations and Surveys of the Waters of Region 3-B.

Job No. B-9 Title Creel Census of San Angelo Reservoir, Tom Green County, Texas.

Period Covered: September 1, 1954 through April 30, 1956

ABSTRACT

1. Fishing was first opened on May 1, 1954 with a calculated 81,355 fishermen for the first three days. At this time the lake contained about 59,000 acre feet of water but has shown a general decline in the volume since that time.
2. The average length of the fish vary somewhat by the month with only the black bass showing a general increase in length.
3. The percent of catch by weight shows channel catfish 32.31%, crappie 31.68%, sunfish 17.11%, and black bass 12.65%. The other five species account for only 6.25%.
4. The calculated fish per man hour shows the cooler months high with a tendency to drop in the hot months and rise again in the fall but with an overall decrease.
5. The proximity of the lake to the city and ease of access gives a tendency of short fishing trips and a difficulty in contacting the boat fishermen. This is also a factor in the small percentage of overnight fishing.
6. The numerically predominant species in order were: crappie 39.37%, sunfish 37.05%, channel catfish 13.75%, and black bass 8.53%. All of the other five species of fish caught accounted for only 1.30% of the total. The average fish per man hour was .7114.
7. The calculated total number of fish was 116,188.19 with a calculated total weight of 53,323.59 pounds and average weight of .4747.
8. Still fishing was by far the most popular and profitable. Trotline fishing was second in popularity and effectiveness with trolling the third most popular but only the fourth most effective. Casting was the least popular but was the third most profitable.

OBJECTIVES

To estimate the total catch by species and to obtain data indicating the relative abundance and size of each species in the catch as well as the success of different methods of fishing.

METHODS

San Angelo Reservoir lies adjacent to the northwest residential section of San Angelo and 7.2 miles from the Federal Courthouse. The lake was constructed by the S. Army Corps of Engineers as a flood control structure, being completed in 1953.

The gates were closed early in 1953 and in May and June of that year the lake filled to 59,000 acre feet. Since that time it has generally decreased in volume and has not reached its capacity of 90,000 acre feet.

Creel census on this lake covers a period from September 1954 through April 1956. Although the first five months of the period was established on the basis of seven creel census days for each month and the latter fifteen months established on a basis of eight creel census days for the month there were enough extra days worked to make a total of 158 creel census days with an average of 7.9 days for each month. At the beginning of this period there was only one established fishing camp on the lake and at the end of this time there were two public dock areas as well as numerous privately owned boat houses and docks. The land surrounding the lake is public land and access roads allow bank fishing around its entire perimeter (except at the dam where fishing is prohibited) and boat launching for most of its shoreline. The easy access to the lake by the fishermen made it most difficult in checking the fishermen but made the total count relatively simple. Indicative of the ease of access is the average time of the fishermen on the lake, which was 3.32 hours per trip with an average of 2.36 fish.

For taking the creel census, the lake was divided into four sections or stations. Two of these were on each side of the lake. One man was stationed on each side of the lake for the day and the lake proper was divided in such a manner that each man would count the fishermen on his shoreline and a portion of the lake without duplication. During the first five months of this project the total count was made in the mid-morning and mid-afternoon with the time between counts spent in contacting the fishermen as they fished. The total count was started at one end of the lake and taken as rapidly as possible to the other end, covering all of the shoreline and the lake proper. The use of binoculars made this portion of the work more accurate. As soon as the total count was completed the return trip was started to the original station, stopping to check the creel of the fishermen on the way. For this period the creel census was taken on seven consecutive days during a different week of each month to include each day of the week and to vary the time of the month for a more random sample. For the last fifteen months of the project the time of day for the total counts was varied to give a more random sample by dividing the day into quarters according to the daylight hours for each day of that month. It was found that an average of one hour was needed to make a total count and the mid-hour of each quarter was established and used for this purpose. The creel census for this period was planned on the basis of eight days for each month, four of these days being week-days and four of them being weekends and holidays. Only one day per week was used and the week-days were alternated so that no day of the week was used twice in one month. The week-end days were used alternately, interspersed with holidays whenever possible. On alternate days, alternate quarters were used: i.e., quarters 1 and three; quarters 2 and 4. To maintain random sampling the week-days and week-end days and holidays were considered separately in this matter.

EXPLANATION OF TABLES

Table 1 shows the rate of catch for the successful fishermen and for all fishermen covered by this creel census for each month. The table contains the number of successful fishermen and unsuccessful fishermen for each month as well as a total for each. It gives the breakdown of successful hours fished and a total of these hours for each month. Also, it shows the fish per man hour for successful fishermen, fish per man hour for all fishermen, and the percent of all fishermen successful for each month.

Table 2 gives the average length of the fish caught by the month and species and the overall average by species. This information was obtained by averaging the length of all fish caught in each month by species.

Table 3 reports the approximate total weight for each species, the average weight in pounds for each species, and the percent of the total weight for each species. The weights in this table were derived from the gill net records of the lake for this period. The average weight of all fish caught was obtained by dividing the total number of pounds of fish caught by the total number of fish caught.

Table 4 shows the calculated number of fish caught, number of fishermen, total man hours, hours per fisherman day, fish per man hour for each month, and the calculated totals for each of the above mentioned items. For the first five months of this period the number total fishermen was calculated by taking the total count for each day and averaging them and multiplying by the days of the month. The number of fish caught and the hours fished were obtained by finding the fish per fishermen and the hours per fisherman and multiplying these by the total fishermen for the day. This gives the total fish caught and the total hours fished for the day. These were averaged and multiplied by the number of days in the month for the final totals. The final fifteen months were treated the same way with the exception that the week-day and the week-end day and holiday data were calculated separately and added for the final totals. The fish per fishermen was obtained by dividing the calculated number of fish by the calculated number of fishermen. The hours per fisherman was obtained by dividing the calculated hours fished by the calculated number of fishermen. The fish per man hour was obtained by dividing the calculated number of fish by the calculated hours fished. The totals for each month was used to calculate the final totals.

Table 5 presents the calculated rate of catch, total catch, percent of catch, and fish per man hour by species. This information was obtained by finding the percentages of catch and the percentage of man hours for each species for the month and multiplying the totals from Table 4 by this number. This gives the total fish for each species and the total man hours fished for each species. The fish per man hour was calculated from this information.

Table 6 shows the calculated number and weight of the various species caught during this period of the project. These calculations are based on Tables 2, 3, and 4. The calculated weight was arrived at by multiplying the calculated number of each species caught (Table 4) by the average weight (Table 3).

Table 7 shows the results of fishing by different methods. The number of each species caught by the various methods was tabulated and the percentage calculated from this.

DISCUSSION

Fishing was first opened on May 1, 1954 with a calculated 81,355 fishermen for the first three days. The creel census was started September 1, 1954 and the months immediately following this show the greatest percent of all fishermen successful through the cooler months and show a general decline through the warmer months until cooler weather, when the tendency is generally up but never as high as the first cool months of the creel census. During this time the lake continued to make a general decline in volume.

The average length of the fish over this period shows that the white crappie, sunfish, white bass, channel catfish, carp, and drum vary from month to month but generally remain close to the average for the entire period. The only species showing a

trend to increase in length near the end of this period was the black bass. The last four months average length being all above the average for the entire time and the greatest average length being in three of the last four months. (Table 2).

The average weight for these fish was taken from the gill net samples of this lake for the same period. These gill net samples were taken over a longer period of time than the creel census so data for the gill net samples used was only that portion that coincided with the creel census.

The percent of catch by weight was predominately channel catfish with 32.31% and crappie a close second with 31.68%, sunfish third with 17.11% and black bass fourth with 12.65%. Five other species accounted for only 6.25% of the total catch. (Table 3).

The calculated fish per man hour shows a general tendency to be higher through the early months of the project and to be generally lower through the warm months and rise again in the cooler weather. The average length of time spent fishing by the individual fishermen shows a tendency to lengthen with the days and/or the warmer more comfortable days allow longer trips to the lake. The final average of 3.32 hours per fisherman trip indicates that the lake is used predominately by the local fishermen with short periods of time for fishing. The habit of trotline fishermen to drive out to the lake and run their lines before work in the mornings and after work in the afternoons using private docks or easily launched trailer boats, made it difficult to contact as many as was desirable. All other boat fishermen were difficult to contact for they seldom returned to the public fishing camps. Night fishing appeared to be at a minimum as spot checks through the warm months when night fishing would be expected, showed a comparison of 40.06% of the total count to be for the morning count, 49.67% for the afternoon, and 10.27% for the night. The creel data for the night counts that it was possible to obtain was negligible.

The predominant species caught, calculated on a numerical basis was crappie with 39.37% a close second with 37.05% was the sunfish group, mostly bluegill and green sunfish, with some warmouthed bass, yellowbellies, and western longear, third was the channel catfish with 13.75%, leaving fourth place to the black bass with a 8.53%. The other five species caught white bass, drum, carp, flathead catfish, and yellow bullhead catfish, accounted for only 1.30% (Table 5). The overall fish per man hour catch was .7114.

The calculated total number of fish caught during the period covered was 116, 188.19 with a calculated total weight of 53,323.59 pounds (Table 6).

The most popular and profitable method of fishing was still fishing. A total of 5,328.25 man hours being spent in this manner with a result of .7588 fish per man hour. The second most popular and profitable method was trotline fishing with 2,525.50 man hours resulting in a fish per man hour catch of .2692. The third most popular was trolling with 186 man hours, but it was less profitable than casting, having only .1989 fish per man hour compared to the .2305 fish per man hour for the 124.50 man hours spent casting.

Prepared by W. G. McClellan

Approved by

Marion Toole
Chief Aquatic Biologist

Date

May 24, 1957

Fishermen, San Angelo Reservoir Creel Census September 1954

Successful Fishes	Unsuccessful Hours fished	Total Hours Fished	Total Fish Caught	Fish/man hr.		% of all Fishermen Successful
				Successful Fishing	for all Fishing	
4.50	10.75	215.25	211	1.0318	.9803	84.85
4.00	9.90	243.90	384	1.6410	1.5744	95.18
2.00	14.00	146.00	154	1.1667	1.0548	55.36
8.50	4.00	82.50	80	1.0191	.9697	70.59
9.00	2.00	91.00	83	.9326	.9129	89.47
2.50	42.75	265.25	239	1.0742	.9010	68.75
1.50	67.25	468.75	321	.7995	.6848	72.55
3.00	106.50	329.50	262	1.1749	.7951	72.95
9.50	126.00	615.50	338	.6905	.5491	66.43
2.75	123.50	986.25	366	.4242	.3711	67.29
3.00	284.00	1487.00	805	.6629	.5414	67.46
7.00	57.50	804.50	499	.6680	.6203	70.44
1.00	75.00	556.50	225	.4678	.4043	69.05
7.75	40.50	188.25	100	.6768	.5312	62.86
2.50	25.00	137.50	97	.8622	.7055	67.24
4.50	11.75	66.25	83	1.5229	1.2528	71.43
3.50	14.50	118.00	103	.9952	.8729	73.17
1.00	65.50	146.50	55	.6790	.3754	47.14
5.00	77.00	482.00	124	.3062	.2573	67.52
2.00	285.50	657.50	191	.5134	.2905	44.31

Table 2. Average Length of Fish by Month and Species, Creel Census San Angelo Reservoir
September 1954 through April 1956.

Month	B. Bass	Crappie	Sunfish	C. Cat.	W. Bass	Carp	Drum	Fh. Cat.	YB Cat.
Sept.	8.58	5.58	4.40	11.55	7.00	18.00	12.00		
Oct.	7.90	6.83	4.95	12.25	6.00		8.00		
Nov.	10.25	7.15	5.27	13.80					
Dec.	10.40	6.24	5.29	12.33		16.00			
Jan.	9.23	7.23	4.68	12.11		10.00			
Feb.	11.35	6.22	4.42	11.44	6.00	17.00			
March	10.03	6.20	4.65	15.10	6.20	12.00	10.67		7.00
April	11.77	6.77	5.29	11.81	8.20	14.67			
May	8.69	8.11	5.67	12.78	7.00		8.00		
June	10.00	6.30	5.35	13.53			7.00		
July	9.44	7.80	4.28	12.46	7.00			34.00	
Aug.	11.85	7.45	4.33	13.88					
Sept.	9.80	7.48	4.80	12.34					
Oct.	10.20	7.83	4.95	15.45		19.50		22.00	
Nov.	8.00	6.20	4.64	14.00		17.00			
Dec.	9.00	6.73	4.50	9.00	7.00				
Jan.	12.80	6.51	5.50	10.40					
Feb.	12.00	6.87	4.00						
March	10.73	8.00	4.30	11.62					
April	11.28	6.92	4.52	13.53		17.00	12.00		
Avg.	10.17	7.09	4.79	12.60	6.90	15.69	9.61	28.00	7.00

Table 3. Weight of Fish Species Caught, San Angelo Reservoir Creel Census, September 1954 through April 1956.

Fish Species	No. Fish Caught	Total Wt. Pounds	Average Wt. Pounds	Percent by Weight
Black Bass	336	283.38	0.8434	12.65
White crappie	1622	709.63	0.4375	31.68
Sunfish	1800	383.22	0.2129	17.11
Channel catfish	905	723.73	0.7997	32.31
White bass	22	11.10	0.5043	0.50
Carp	19	86.42	4.5485	3.86
Drum	10	7.36	0.7363	0.33
Flathead catfish	2	34.44	17.22	1.54
Yellow Bullhead Catfish	1	0.41	0.4063	0.02
Totals	4,718	2,239.69		100.00
Average			0.4747	

Table 4. Calculated Rate of Catch and Total Catch by Months San Angelo Reservoir Creel Census, September 1954 through April 1956.

	September	October	November	December	January	February	March	April
No. Caught	9,677	8,875.69	5,470	3,438.79	1,596.50	6,068.00	16,868.10	12,240.48
No. Fishermen	2,807	2,104	1,500	1,044.70	792.67	2,590.00	6,140.00	4,739.25
Total Man Hours	8,373	5,502.50	4,806.40	2,085.37	1,925.10	6,443.35	16,559.68	14,453.20
Fish Per Fisherman	3.45	4.22	3.20	3.29	2.01	2.34	2.75	2.58
Hours Per Fisherman	2.98	2.62	3.20	2.00	2.43	2.49	2.70	3.05
Fish Per Man Hour	1.1557	1.6130	1.1380	3.2900	0.8293	0.8189	1.0184	0.8469

	May	June	July	August	September	October	November	December
No. Caught	13,926.74	5,851.56	7,636.38	8,684.74	4,544.92	1,543.55	979.22	992.99
No. Fishermen	6,770.50	3,339.50	3,295.42	3,558.25	2,506.50	1,084.00	612.00	507.90
Total Man Hours	29,213.96	15,030.04	13,451.00	14,891.08	12,716.04	3,115.88	968.23	1,131.31
Fish Per Fisherman	2.06	1.75	2.32	2.44	1.81	1.42	1.60	1.96
Hours Per Fisherman	4.31	4.50	4.08	4.18	5.07	2.87	1.58	2.23
Fish Per Man Hour	0.4767	0.3893	0.5677	0.5832	0.3574	0.4954	1.0114	0.8777

	January	February	March	April	Calculated Totals and Averages
No. Caught	1,514.74	3,283.88	741.40	2,253.50	116,188.18
No. Fishermen	698.50	588.00	1,726.00	2,745.00	49,149.19
Total Man Hours	700.92	1,355.57	2,931.00	7,637.20	163,326.85
Fish Per Fisherman	2.17	5.58	0.43	0.82	(Average) 2.36
Hours Per Fisherman	1.00	2.31	1.70	2.80	(Average) 3.32
Fish Per Man Hour	2.1610	2.4225	0.2530	0.2937	(Average) 0.7114

Table 5. Calculated Rate of Catch, Total Catch and Percent of Catch by Species, San Angelo Reservoir Creel Census September 1954 through April 1956.

	Largemouth Black Bass	White Crappie
No. Caught	9,908.01	45,740.24
Total Man Hours	14,514.38	54,276.96
Fish Per Man Hour	0.6826	0.8428
Percent of Catch	8.53	39.37
	Sunfish (All Species)	Channel Catfish
No. Caught	43,045.88	15,976.89
Total Man Hours	37,848.94	54,613.70
Fish Per Man Hour	1.1373	0.2925
Percent of Catch	37.05	13.75
	White Bass	Carp
No. Caught	593.20	353.89
Total Man Hours	859.46	498.51
Fish Per Man Hour	0.6902	0.7099
Percent of Catch	0.51	0.30
	Drum	Flathead Catfish
No. Caught	451.03	43.14
Total Man Hours	586.47	113.52
Fish Per Man Hour	0.7691	0.3800
Percent of Catch	0.39	0.04
	Yellow bullhead Catfish	Totals
No. Caught	75.91	116,188.19
Total Man Hours	14.90	163,326.84
Fish Per Man Hour	5.0946	0.7114
Percent of Catch	0.06	

Table 6. Calculated Number and Weight of Fish Species Caught San Angelo Reservoir Creel Census, September 1954 through April 1956.

Fish Species	Calculated Number Caught	Calculated Weight in Pounds
Black Bass	9,908.01	8,356.42
White Crappie	45,740.24	20,011.36
Sunfish	43,045.88	9,164.47
Channel Catfish	15,976.89	12,776.72
White Bass	593.20	299.15
Carp	353.89	1,609.67
Drum	451.03	332.09
Flathead Catfish	43.14	742.87
Yellow Bullhead Catfish	75.91	30.84
Totals	116,188.19	53,323.59

Table 7. Results of Fishing by Different Methods, San Angelo Reservoir Creel Census, September 1954 through April 1956.

	Stillfishing	Trotline	Casting	Trotting	Totals
Black Bass	Number 240 Percent 5.94	25 3.83	28 90.32	27 72.973	320
White Creppie	Number 1,599 Percent 39.55	29 4.44	0 0.00	5 13.513	1,633
Sunfish	Number 1,801 Percent 44.55	10 1.53	3 9.68	0 0.00	1,814
Channel Catfish	Number 349 Percent 8.63	585 89.58	0 0.00	5 13.513	939
White Bass	Number 20 Percent 0.49	0 0.00	0 0.00	0 0.00	20
Carp	Number 23 Percent 0.57	2 0.31	0 0.00	0 0.00	25
Drum	Number 10 Percent 0.25	0 0.00	0 0.00	0 0.00	10
Flathead Catfish	Number 0 Percent 0.00	2 0.31	0 0.00	0 0.00	2
Yellow Bullhead Catfish	Number 1 Percent 0.02	0 0.00	0 0.00	0 0.00	1
Total Number Caught	4,034	653	31	37	4,764
Total Man Hours	5,328.25	2,525.50	124.50	186.00	8,704.25
Fish Per Man Hour	0.7588	.2692	0.2305	0.1989	

