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Segment Completion Report

by

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TITLE

Creel Census of Lake Whitney, Texas.

OBJECTIVES

To estimate the total catch by species and to obtain data regarding the growth rate and relative abundance of each species in the catch

INTRODUCTION

More people are enjoying the sport of fishing today than has ever been known before. Many of the anglers are concentrating their efforts on the large artificial impoundments of the Southwest. Good management of the lakes is somewhat dependent upon valid records of their production. At present there is insufficient data regarding the crops of harvestable fish that are being produced. A creel census project was begun on Lake Whitney in order to obtain such information.

Lake Whitney is located on the Brazos River in Hill and Bosque Counties, Texas. The Whitney Dam and Reservoir was constructed and is operated by the Corps of Army Engineers as a multiple purpose project for the control of floods, the development of hydroelectric power and for recreational purposes and other uses.

Construction of the dam was started May 12, 1947. Construction of the closure section was begun in May 1950 and completed in December of that year. During that period about 590 surface acres of water were impounded. The gates of the dam were closed December 10, 1951 which permitted the power pool to commence filling. By June 1952 the lake was approximately half-filled with water about 70 ft. deep near the dam. Several thousand acre feet of water were discharged from the lake in the fall of 1952 which concentrated the fish in the flooded river channel and the basin near the dam.

The fishing public was somewhat alarmed about the large harvest of small bass during the period of comparatively low water. There was considerable agitation at that time to have the lake closed to fishing for one year. But the advice of fisheries biologists was followed and fishing remained legal. By allowing the surplus bass to be caught, probable stunting and outbreaks of paracitism were prevented. The latter productivity of the impoundment indicates that no harm was done by leaving it open to heavy fishing pressure.

The reservoir refilled to approximately one-half of its capacity by June 1953. Progressive rises expanded the lake area until the normal capacity of 15,800 surface acres was attained in May 1954.

Lake Whitney is a clear water lake about 37 miles long with a shoreline of approximately 190 miles at normal lake level (520 feet above sea level.) The maximum depth is 95 feet. About one-third of the lake area is 20-45 feet deep and one-third is only 10 feet deep or less. The shoreline is irregular and extends far up many of the drainage tributaries in which most of the original timber still stands. There are a number of protected areas that anglers can fish when strong winds form rough water on the main body of the lake.

CREEL CENSUS METHODS

This paper reports the results of a 10 months creel census beginning in August of 1953 and ending in May 1954. Approximately six days per month were used in working four of the largest fishing camps on the lake. One census clerk was left at each of the four camps to record data from all fishermen using that camp. Information taken included the number of each species caught, their standard lengths, total hours fished, type of fishing and the kind of baits used. The weights of each species were determined by weight - length data obtained from a netting operation worked on the lake during the same period of study. The total fish harvest was calculated by using known creel census data times the number of fishermen using the lake as recorded by automatic traffic counters operated by the Corps of Engineers. Spot checks determined the percentage of visitors that were actually fishing the lake.

FISH HARVEST

Almost one million anglers fished the lake during the ten-month period covered by this study. Table 1 records the number of fishermen using the lake each month and the results of their angling efforts. The harvest fishing pressure occurred in April when 167,462 fishermen used the lake. The largest harvest was creeled in March when 306,035 pounds of fish were caught. Table 2 shows a breakdown of the data into species caught per month, the number of each species checked, their average weight and the percentage of the month's catch they represent. January is not represented in the table due to the small amount of creel census data gathered that month. The products of Table 2 represent a larger number of creel census cards than were used to obtain data in Table 1. Some of the cards contained incomplete data and therefore could not be used in compiling information for Table 1.

White crappie were the most abundant species caught, representing slightly more than one-third of the entire harvest. Largemouth black bass were next, accounting for a little less than one-third of the total catch. Black crappie totaled about 11% of the catch. For information on the remaining species, see Table 2.

Calculating the total production for a lake is sometimes difficult. Automatic traffic counters on the lake roads and spot checks to determine the percentage of visitors that were actually fishing the lake were a great help in the present study. As the lake was expanding in area during most of the ten months covered by the study, it was deemed necessary to break the fish harvest into month intervals. The mean surface acres of water in the lake as well as the number of calculated fishermen for each month were obtained from the Fort Worth office of the Corps of Army Engineers. Production of the lake was calculated by use of the information mentioned above based on the average catch per angler as obtained from the creel census crews by personal contact with the fishermen.

Table 3 shows the mean surface acres of water in the lake each month and the pounds of fish harvested per surface acre during that month. It also shows the total harvest per acre for the ten month period. The lake was quite productive, furnishing 118.89 pounds of fish per surface acre, of which practically all were game fish. The data gathered during this period indicates that additional information may be obtained by continuing the study.

SUMMARY

A ten-month creel census was run on Lake Whitney, Texas. The lake is a new impoundment which had just reached its normal capacity of water storage during the last month of the census.

Almost one million anglers fished the lake and more than two thousand of them were contacted personally for fishing data.

The average fishing day was 5.08 hours long and yielded 2.83 fish. White crappie and largemouth bass bore the brunt of the fishing pressure.

The lake yielded 2,741,139 fish for an average production of 118.89 pounds per surface acre during the ten-month study.

Table 1. Tabulation of Data from Creel Census Cards Lake Whitney, Texas 1953 -1954

	1954												Total and/or Average
	1953 Aug.	Sept.	Oct.	Nov.	Dec.	Jan.*	Feb.	March	April	May			
No. Anglers Contacted	41	137	247	130	19	79	140	526	323	438			2,001
No. Man-Hr. Fished	209	857	843	783	113	459	804	3183	1856	2403			11,051
No. Fish Caught	313	663	555	269	29	258	487	1652	899	951			5,818
Fish Per Man-Hour	0.636	0.774	0.659	0.344	0.257	0.440	0.622	0.516	0.484	0.396			0.521
Avg. Fishing Day (Hr.)	5.10	6.26	3.41	6.02	5.94	5.84	5.74	6.05	5.74	5.49			5.08
Avg. No. Fish Per Day	4.85	3.24	2.15	2.07	1.49	2.53	3.57	3.12	2.78	2.17			2.83
Est. Anglers on Lake	80,596	104,270	70,263	53,075	44,791	40,159	102,254	142,937	167,462	141,270			906,928
Est. No. Fish Caught	390,891	337,835	151,065	109,865	66,739	101,602	365,047	445,995	465,544	306,556			2,741,139
Est. Lb. Fish Caught	193,100	174,120	80,049	74,071	54,292	77,268	258,230	306,035	191,990	120,139			1,529,294

* January data based on an average of the data collected in Dec. and Feb.

Table 2. Tabulations of Data from Creel Census Cards Showing: Number, Average Weight, and % Of Month's Catch Represented by the Various Species, Lake Whitney, Texas, 1953-1954

Species	Largemouth Black Bass			Kentucky or Spotted Bass			White Crappie			Black Crappie			Channel Catfish			White Bass		
	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.
Aug. 1953	24	4.28	.906	445	79.32	.330	15	2.67	.381	5	.89	.544						
Sep. 1953	222	17.32	.662	644	50.23	.453	117	9.13	.431	9	.70	.621	21	1.64	.652			
Oct. 1953	453	42.62	.677	319	30.08	.531	79	7.45	.544	21	1.99	1.160						
Nov. 1953	162	60.22	.694	35	13.01	.830	15	5.58	.644	12	4.46	.766						
Dec. 1953	20	64.51	1.03	9	29.03	.347				1	3.23	1.15						
Feb. 1954	298	59.60	.848	48	9.60	.594	40	8.00	.765	5	1.00	1.185				4	.80	.663
Mar. 1954	692	36.47	.994	34	1.78	.859	369	19.44	.660	27	1.46	1.050				40	2.15	.700
Apr. 1954	216	24.19	.611	11	1.23	.720	250	28.00	.456	29	3.25	.849				4	.44	.598
May 1954	199	20.77	.599	9	.94	1.100	200	20.88	.522	47	4.91	1.160				5	.52	.450
Total (Avg.)	2286	30.68	.677	163	2.19	.665	2604	34.94	.551	156	2.09	.828	74	.90	.612			

Note: Snow and freezing weather prevented collection of data in January.
Average weights are recorded in pounds.

Species	Sunfish			Bullhead Catfish			Drum			Yellow Catfish			Rock Bass			Totals		
	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.	No.	%	Avg. Wt.
Aug. 1953	70	12.48	.182	1	.18	.315				1	.18	.385				561	100	277.10
Sep. 1953	213	18.95	.214	4	.31	.425										1282	100	559.70
Oct. 1953	151	14.24	.214	5	.49	.363				3	.30	2.00				1061	100	562.29
Nov. 1953	37	13.76	.264													269	100	181.36
Dec. 1953																31	100	25.22
Feb. 1954	38	7.00	.175	2	.40	.802				1	.20	2.22				500	100	352.71
Mar. 1954	90	4.73	.270	1	.04	.777										1897	100	134.92
Apr. 1954	256	28.67	.223	6	.67	.531										893	100	368.30
May 1954	406	42.38	.249	2	.20	.716				3	.32	2.75				958	100	375.48
Tot. or Avg.	1388	17.28	.224	11	.15	.706	46	.16	.361	7	.09	2.32	2	.03	.410	7452	100	4152.00

Table 3. Surface Acres of Water (Mean for Month) and the Pounds of Fish Harvested from Lake Whitney, August 1953 - May 1954*.

Month	Surface Acres in Lake (Mean)	Total Pounds Of Fish Harvested	Pounds Of Fish Harvested Per Acre
August 1953	9,000	193,100	21.46
September 1953	9,700	174,120	17.95
October 1953	11,100	80,049	7.21
November 1953	13,900	74,071	5.33
December 1953	14,008	54,292	3.87
January 1954	15,002	77,268	5.15
February 1954	15,003	258,230	17.21
March 1954	15,004	306,035	20.40
April 1954	15,005	191,990	12.80
May	16,001	120,139	7.51
Total		1,529,294	118.89

* - The lake level throughout the ten-month period was subjected to an almost continuous but not necessarily steady rise.