

Report of Fisheries Investigations
Resurvey and Appraisal of Several Public Waters in Region 4-B

by

Leonard D. Lamb
Project Leader

Dingell-Johnson Project F-4-R-7, Job B-26
November 1, 1959 - October 31, 1960

H. D. Dodgen - Executive Secretary

Texas Game and Fish Commission
Austin, Texas

Marion Toole
Coordinator

Kenneth C. Jurgens and William H. Brown
Assistant Coordinators

A B S T R A C T

Seven lakes in Region 4-B were resurveyed. These include Lakes Benbrook, Eagle Mountain, Fincastle, Fort Parker, Waco, Whitney, and Worth. The results of the resurvey work on Fort Parker was included in the completion report for Project F-15-D-4, Job 16a24. The results of resurvey work on Fincastle Lake and Lake Whitney have been included in completion reports for Project F-4-R-7, Jobs E-4 and E-7.

An abstract and discussion of each lake, including population changes, is made separately.

Segment Completion Report

State of TEXAS

Project No. F-4-R-7

Name: Fisheries Investigations and Surveys
of the Waters of Region 4-B.

Job No. B-26

Title: Resurvey and Appraisal of Several
Public Waters in Region 4-B.

Period covered: November 1, 1959 - October 31, 1960

OBJECTIVES

To determine the present status of waters and fish populations which have been previously surveyed in Project F-4-R.

PROCEDURE

Certain previously surveyed waters in Region 4-B were revisited and seine or net checks made. The data collected was examined and compared to that collected during the previous survey to determine any changes that might have occurred.

Netting or seining was done at the site of previously established stations if water conditions permitted. Net collections were made with nylon gill nets 100 feet by 8 feet with $1\frac{1}{2}$ -inch mesh. Water analysis was not attempted because of the difficulty encountered in keeping fresh reagents. Changes in ecological conditions were noted as were changes in populations.

The waters that were revisited during this segment were Lakes Benbrook, Eagle Mountain, Fincastle, Fort Parker, Waco, Whitney, and Worth.

The results of the resurvey of Fort Parker Lake has been included in completion report for Project F-15-D-4, Job 16a24. The results of resurveys on Fincastle Lake and Lake Whitney have been included in completion reports for Project F-4-R-7, Jobs E-4 and E-7.

Seining was made difficult by rises in water level that made the previously cleared seining beaches unfit for use.

Prepared by Leonard D. Lamb
Project Leader

Approved by Marion Toole
Director Inland Fisheries Division

Date February 10, 1961

Lake Benbrook

ABSTRACT

The population of Benbrook Lake showed a definite game fish dominance in the 1953-1954 netting with 89 percent game fish. Largemouth bass, Micropterus salmoides, composed 84.77 percent of this total. Rough fish became dominant in 1954-1955 when bass dropped to 15.9 percent. The rough fish dominance continued in 1955-1956 when spotted suckers, Minytrema melanops, provided 51.48 percent of the catch and white crappie, Pomoxis annularis, composed 21.39 percent. Game fish were 29.50 percent of the total catch. The 1958-59 net catch showed a marked change when game fish provided 63 percent of the catch. Channel catfish, Ictalurus punctatus, accounted for 30.44 percent.

The 1959-1960 netting showed a return to rough fish dominance with rough fish comprising 69.13 percent. Gizzard shad, Dorosoma cepedianum, made up 62.67 percent of the catch and white crappie, the most numerous game species, provided 11.73 percent.

DISCUSSION AND FINDINGS

Lake Benbrook is a flood control and water conservation impoundment on the Clear Fork of the Trinity River near Fort Worth, Texas. The dam was constructed by the U.S. Corps of Engineers and was closed September 29, 1952, but lack of rainfall delayed filling until 1957.

Changes in population trends have been marked (Table 1). The 1953-1954 net catches were 89.07 percent game fish, with largemouth bass making up 84.77 percent of that total. The 1954-1955 net catch contained only 15.9 percent bass, while gizzard shad proved to be the most numerous species with 22.22 percent. Spotted suckers comprised 14.78 percent to be the third species in abundance. The 1955-1956 netting was dominated by the spotted suckers, with 51.48 percent, while game fish made up 29.5 percent of which 21.39 percent was white crappie. Gizzard shad provided 11.75 percent. There was no netting on this lake in 1957, but the 1958-1959 netting showed a marked change. Game fish then made up 63 percent of the total with channel catfish providing 30.44 percent. Spotted suckers, gizzard shad, and largemouth bass followed with 18.47, 17.39, and 16.30 percent respectively.

The 1959-1960 netting showed still further rough fish dominance but spotted suckers did not appear in the catch (Table 2). Gizzard shad made up 62.67 percent of the 69.13 percent contributed by rough fish. White crappie, largemouth bass, and bluegill sunfish, Lepomis macrochirus, provided 11.73, 8.38, and 7.65 percent respectively. Carp, Cyprinus carpio, and river carpsuckers, Carpilodes carpio, appeared in the catch with carp providing 5.27 percent of the catch. This increase in the relative abundance of rough fish is not unexpected since this lake is now eight years old and appears to be following the usual pattern of reservoirs in this area.

Table 1. Benbrook Lake netting results, 1958-1959.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average Length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	Range ^{"K"}	Average ^{"K"}
Gizzard shad*	16	17.39	5.65	9.68	209	2.67	0.96	1.50-2.40	1.73
Spotted sucker*	17	18.47	14.12	24.22	279	2.83	2.35	1.55-1.87	1.76
Channel catfish	28	30.44	21.38	36.67	273	4.67	3.56	1.20-2.30	1.65
Black bullhead*	1	1.09	0.68	1.16	230	0.17	0.11	2.60-2.60	2.60
Largemouth bass	15	16.30	11.71	20.08	251	2.50	1.95	2.00-2.70	2.27
Bluegill sunfish	7	7.61	1.67	2.87	136	1.17	0.28	2.30-4.90	3.86
White crappie	8	8.70	3.10	5.32	199	1.33	0.52	2.50-3.00	2.70
Totals	92	100.00	58.31	100.00		15.34	9.73		

*Indicates rough fish species

Table 2. Benbrook Lake netting results, 1959-1960.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average Length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" Range	"K" Average
Gizzard shad*	262	62.67	95.87	44.40	207	17.47	6.39	1.45-2.40	1.86
River carpsucker*	2	0.48	2.44	1.13	284	0.13	0.16	2.05-2.40	2.22
Carp*	22	5.27	18.91	8.75	241	1.47	1.26	2.00-2.80	2.39
Channel catfish	13	3.11	26.37	12.22	350	0.87	1.76	1.20-1.90	1.59
Black bullhead*	3	0.71	1.43	0.66	196	0.20	0.09	2.60-3.30	2.86
Largemouth bass	35	8.38	44.67	20.69	264	2.33	2.98	1.35-3.80	2.30
Bluegill sunfish	32	7.65	7.01	3.24	135	2.13	0.47	3.00-5.00	4.00
White crappie	49	11.73	19.22	8.91	187	3.27	1.28	2.20-3.20	2.65
Totals	418	100.00	215.92	100.00		27.87	14.39		

*Indicates rough fish species

Eagle Mountain Lake

ABSTRACT

The dominance of game fish in the 1955-1956 net collections was not continued in subsequent nettings. Rough fish provided 78.57 and 57.25 percent of the 1958-1959 and 1959-1960 net collections, respectively.

Gars, Lepisosteus sps., and gizzard shad are the most numerous rough fish while white bass, Roccus chrysops, and white crappie provided the highest percentages of the game species.

Gar make up the majority of the weight of the catch and it is believed that much benefit could be obtained from a satisfactory means of gar control.

DISCUSSION AND FINDINGS

Eagle Mountain Lake is located on the West Fork of the Trinity River between Lake Worth and Lake Bridgeport. The dam was completed in 1932 as a water supply for the City of Fort Worth, Texas.

A fishery survey made in 1955-1956 showed a game fish dominance in the net catches. Game species made up 67.67 percent of the catch with white bass providing 48.99 percent.

In 1958-1959, a recheck was made and the results of netting indicated that the rough fish were predominant as they made up 78.57 percent of the total with gars and gizzard shad accounting for 41.43 and 25.72 percent respectively. White bass had been the dominant species during the previous netting but provided only 4.29 percent of the 1958-1959 catch (Table 3).

Rough fish continued to dominate the net catch in 1959-1960 but to a smaller degree. Gizzard shad comprised over half of the total rough fish percentage with 33.59 percent. Rough fish comprised a total of 57.25 percent of the net catch. White bass again were the most numerous game fish in the catch with 25.19 percent. White crappie were in fourth position with 11.46 percent just behind longnose gar, Lepisosteus osseus, with 17.56 percent (Table 4).

The gars continue to be prominent in the fish population of this lake. They provided an even greater percentage of the total poundage than they do of the numbers. A satisfactory means of control for these species should be of great benefit to this and many other lakes.

Table 3. Eagle Mountain Lake netting results, 1958-1959.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" ¹ Range	"K" ¹ Average
Spotted gar*	7	10.00	12.00	10.52	447	2.33	4.00	---	---
Longnose gar*	22	31.43	69.00	60.47	672	7.33	23.00	---	---
Gizzard shad*	18	25.72	11.20	9.82	231	6.00	3.73	1.90-2.65	2.23
Smallmouth buffalo*	4	5.71	6.30	5.52	272	1.33	2.10	3.00-3.40	3.25
River carpsucker*	4	5.71	2.90	2.54	240	1.33	0.91	1.67-1.67	1.67
Channel catfish	6	8.57	8.30	7.27	335	2.00	2.76	1.07-2.20	1.62
White bass	3	4.29	1.90	1.67	233	1.00	0.63	2.10-2.25	2.16
Largemouth bass	1	1.43	0.70	0.61	240	0.33	0.23	2.48-2.48	2.48
White crappie	5	7.14	1.80	1.58	184	1.66	0.60	2.20-3.30	2.71
Totals	70	100.00	114.10	100.00		23.31	37.96		

*Indicates rough fish species

Table 4. Eagle Mountain Lake netting results, 1959-1960.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" ³ Range	"K" ¹ Average
Spotted gar*	2	1.52	2.37	1.76	440	.40	.47	----	----
Longnose gar*	23	17.56	78.67	58.74	765	4.60	15.73	----	----
Gizzard shad*	44	33.59	16.03	11.97	207	8.80	3.21	1.40-2.40	1.93
Smallmouth buffalo*	3	2.29	2.41	1.80	221	.60	.48	2.70-4.50	3.50
River carpsucker*	3	2.29	3.54	2.64	220	.60	.71	1.67-2.90	2.41
Channel catfish	7	5.34	8.48	6.33	325	1.40	1.70	1.30-1.85	1.54
White bass	33	25.19	15.90	11.87	223	6.60	3.18	1.25-2.80	1.99
Largemouth bass	1	.76	1.18	.88	270	.20	.23	270	270
White crappie	15	11.46	5.36	4.01	189	3.00	1.07	1.90-3.10	2.42
Totals	131	100.00	133.94	100.00		26.20	26.78		

*Indicates rough fish species

Lake Worth

ABSTRACT

Lake Worth was impounded in 1912 and was the first of a chain of three water supply lakes for Fort Worth, Texas. It is located on the West Fork of the Trinity River above the confluence with the Clear Fork.

Early gill net collections showed a game fish dominance when 57.02 percent of the catch were game species. White crappie provided 43.80 percent. This predominance of game fish continued in 1958-1959 when game species made up 75.61 percent of which bluegill sunfish and largemouth bass provided 36.59 and 12.20 percent respectively. The 1959-1960 netting showed still further overbalance in favor of game species when net catches showed 86.07 percent with white crappie and white bass making up 48.36 and 22.13 percent respectively.

DISCUSSION AND FINDINGS

Lake Worth was constructed in 1912 to provide a water supply for the City of Fort Worth, Texas. It is the first of a chain of three lakes on the West Fork of the Trinity and is located about six miles above the confluence with the Clear Fork.

Gill net collections made during 1955-1956 showed game species to dominate the catch with white crappie providing 43.80 percent of the 57.02 percent total. Gizzard shad were the most numerous rough fish present with 23.47 percent. The 1958-59 net collections were also dominated by game fish as bluegill sunfish and largemouth bass provided 36.59 and 12.20 percent respectively of the 75.61 percent that were game fish species (Table 5). The 1959-1960 netting was overbalanced still further in favor of the game fish species. They provided 86.07 percent of the total catch. White crappie made up 48.36 percent followed by white bass with 22.13 percent. Gizzard shad were the most numerous rough species with 5.74 percent of the total (Table 6).

Lake Worth is located within the Fort Worth City limits and is almost completely surrounded by homes. The residents of these homes fish almost constantly with trotlines and set lines, along with artificial lures or minnows when weather conditions are favorable. Many large flathead catfish, Pylodictus olivaris, are taken from this lake by trotline fishermen.

Table 5. Lake Worth netting results, 1958-1959.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average Length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" ¹ Range	"K" ¹ Average
Spotted garr*	1	2.44	1.10	4.78	410	0.33	0.36	0.72-0.72	0.72
Gizzard shad*	2	4.88	0.60	2.61	192	0.66	0.20	1.80-2.05	1.92
Smallmouth buffalo*	2	4.88	2.50	10.87	250	0.66	0.83	3.60-3.60	3.60
River carpsucker*	3	7.31	3.10	13.47	250	1.00	1.03	2.40-3.00	2.73
Carp*	2	4.88	2.70	11.74	280	0.66	0.90	2.80-2.90	2.85
Channel catfish	3	7.31	1.60	6.96	244	1.00	0.53	1.45-1.75	1.63
White bass	1	2.44	0.40	1.74	210	0.33	0.13	2.40-2.40	2.40
Largemouth bass	5	12.20	4.00	17.39	250	1.66	1.33	2.10-2.60	2.35
Redear sunfish	1	2.44	0.20	0.87	150	0.33	0.06	3.60-3.60	3.60
Bluegill sunfish	15	36.59	3.90	16.96	134	5.00	1.30	4.80-5.00	4.91
White crappie	4	9.75	1.90	8.26	198	1.33	0.63	2.50-3.64	2.86
Drum*	2	4.88	1.00	4.35	215	0.66	0.33	2.15-2.40	2.27
Totals	41	100.00	23.00	100.00		13.62	7.63		

*Indicates rough fish species

Table 6. Lake Worth netting results, 1959-1960.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average Length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" Range	"K" Average
Spotted gar*	5	4.09	8.11	12.66	490	1.00	1.62	---	---
Longnose gar*	1	0.82	2.49	3.89	620	0.20	0.50	---	---
Gizzard shad*	7	5.74	1.92	3.00	188	1.40	0.38	1.50-2.20	1.86
Smallmouth buffalo*	1	0.82	1.00	1.56	260	0.20	0.20	2.50	2.50
Carp*	1	0.82	0.44	0.68	200	0.20	0.09	2.50	2.50
Channel catfish	9	7.38	8.53	13.32	289	1.80	1.70	1.30-1.70	1.52
White bass	27	22.13	14.35	22.41	220	5.40	2.87	2.00-2.60	2.27
Spotted bass	1	0.82	0.53	0.83	210	0.20	0.11	2.60	2.60
Bluegill sunfish	9	7.38	2.18	3.40	138	1.80	0.44	3.60-4.80	4.14
White crappie	59	48.36	23.68	36.98	191	11.80	4.73	2.20-3.40	2.59
Drum*	2	1.64	0.81	1.27	195	0.40	0.16	2.30-2.80	2.55
Totals	122	100.00	64.04	100.00		24.40	12.80		

*Indicates rough fish species

Lake Waco

ABSTRACT

Lake Waco is located on the Bosque River six miles west of Waco, Texas. It was built in 1925 as a water supply for the City of Waco.

Netting collections in 1956-1957 were dominated by gizzard shad with a percentage of 53.63, or over half of the rough fish total of 76.34 percent. The 1959-1960 netting showed a drop in the percentage of rough fish with 55.69 percent. Gizzard shad were again the most numerous species with 47.74 percent followed by white crappie with 23.87 percent.

The need for shad control is quite apparent but the difficulty of treating the Bosque River watershed together with the fact that Lake Waco is a water supply increases the difficulty of treatment.

DISCUSSION AND FINDINGS

Lake Waco is located on the Bosque River six miles west of Waco, Texas. It was impounded in 1925 as a water supply for the City of Waco. A survey was made in 1956-1957 at which time rough fish made up 76.34 percent of the net catch. Gizzard shad provided 53.63 percent of the catch followed by drum, Aplodinotus grunniens, and white crappie with 16.42 and 14.68 percent respectively.

The results of netting in 1959-1960 show a better balance with rough fish making up 55.69 percent of the catch of which 47.74 percent were gizzard shad. White crappie are the dominant game species with 23.87 percent (Table 7).

The difference in netting results could be due to a change in water level. The 1957-1958 netting was done when the lake was almost dry while the 1959-1960 collections found the level at normal or above.

Gizzard shad are quite abundant in this lake and there is little hope of their being controlled by any of the species present at this time. There is also little hope for chemical controls since shad infest the entire length of the Bosque River. In addition, Waco uses this lake as a primary water supply.

Table 7. Lake Waco netting results, 1959-1960.

Species	Number	Percent	Weight (lbs.)	Percent of Weight	Average Length (mm.)	Number per 100 feet of net	Pounds per 100 feet of net	"K" Range	"K" Average
Spotted gar*	22	3.97	42.74	14.41	504	1.37	2.67	---	---
Gizzard shad*	264	47.74	97.37	32.84	215	16.50	6.09	1.25-3.50	1.83
Smallmouth buffalo*	3	0.55	7.74	2.61	326	0.19	0.48	2.05-3.60	3.06
River carpsucker*	11	1.98	13.03	4.39	267	0.69	0.81	2.40-3.70	2.80
Carp*	1	0.18	0.55	0.19	220	0.06	0.03	2.30	2.30
Channel catfish	54	9.76	50.05	16.88	294	3.38	3.13	1.15-2.20	1.53
Largemouth bass	21	3.80	13.57	4.57	240	1.31	0.85	1.50-2.50	2.11
Warmouth	1	0.18	0.29	0.10	150	0.06	0.02	3.90	3.90
Redear sunfish	7	1.27	1.90	0.64	154	0.44	0.12	2.75-4.00	3.38
Bluegill sunfish	30	5.43	6.53	2.20	132	1.87	0.41	3.10-5.00	4.24
White crappie	132	23.87	58.98	19.89	194	8.25	3.69	1.75-4.10	2.68
Drum*	7	1.27	3.77	1.28	238	0.44	0.23	2.00-2.40	2.11
Totals	553	100.00	296.52	100.00		34.56	18.53		

*Indicates rough fish species