

## JOB COMPLETION REPORT

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STATE OF TEXAS

Project No. F4R3 Name Fisheries Investigations and Surveys of the Waters of Region 4-B.

Job No. B-15 Title Inventory of Species Present in Lake Worth

Period Covered: November 1, 1955 to October 31, 1956

### OBJECTIVES

To determine the species present and their relative abundance and to determine the ecological factors influencing their distribution.

### HISTORY OF LAKE

Lake Worth is located on the West Fork of the Trinity River about 8 miles north of Fort Worth, in the northwest part of Tarrant County. It is the smallest and oldest of a chain of three lakes from which Fort Worth receives its water supply. The dam was completed in 1912 and originally impounded 27,000 acre feet of water with a surface area of 5,400 acres. The lake has not been full of water for a number of years. The level of the impoundment does not fluctuate severely as water is frequently released into it from Eagle Mountain Lake, located only a few miles above it on the Trinity River. The lake is never clear. A large amount of aquatic vegetation, primarily cattails and large areas of sedges, Scirpus sp., abound along the shoreline. Many stumps can be seen protruding from the surface of certain areas. There is a large collection of silt on the lake bottom. The shoreline is heavily populated with homes and has a few fishing camps. Boating is heavy on the lake in areas that are clear of stumps. Most of the fishing pressure comes from local anglers whose catch is primarily composed of white crappie, catfish and drum. The population of fish in Lake Worth can not be considered entirely endemic due to the large inflow of water from Eagle Mountain Lake.

### COLLECTING METHODS

Random samples of the fish population were collected with gill nets. Seven stations were sampled with 2900 feet of net. An effort was made to select stations that would be representative of the various ecological conditions found on the lake. However, our efforts may not have been entirely successful as stump patches, sand bar, and other unnavigable areas prevented the exploration of the entire lake. Minnow seine collections were not made on the lake. Most of the shore is covered with dense vegetation of some sort. The remaining areas have so much mud that it is impossible to wade and seine them. Table 1 is a checklist of fish found in Lake Worth.

### RESULTS OF NETTING COLLECTIONS

A total of 28 gill net sets captured 605 fish representing 14 species. Table 2 shows a tabulation of the data taken from the gill net collections. White crappie were the most abundant species caught and represented 43.80 percent by number and 21.75 percent by weight of all fish netted. The crappie population of Lake Worth is good but may not be quite as high as our net catches indicated. Station 1 consistently produced good catches of crappie. This station was located adjacent and perpendicular to a shore covered with a dense growth of sedges. The water was 3 to 6 feet deep over a bottom covered with soft mud. Other stations produced good catches of crappie at times but not as consistently as Station 1.

While the number of crappie in Lake Worth is high the general condition of the crappie population is not too good. The average "K" factor of that species from the impoundment is considerable lower than the average "K" factor of the same species from three other lakes. The average "K" factor of crappie from Whitney, Eagle Mountain and Benbrook Lakes is 2.71, 2.73, and 2.76 respectively. Lake Worth shows an average "K" factor of 2.55. One clue to the low "K" factor at Lake Worth may be that 80 percent of the crappie population is accounted for in the 7 and 8-inch size range. Measurements are recorded as standard length. The 7 and 8-inch groups compose the major part of the crappie population in many lakes but are usually of less importance than that found in Lake Worth. The reasons for the general poor condition of the crappie and the abnormally high percentage of the 7 and 8-inch fish are not known. No doubt, a more thorough examination of the food chain as well as the environmental conditions would reveal additional data on the subject.

Channel catfish accounted for 6.77 percent of the total net catch. Most of the channel cat were small with an average weight of less than one pound. The fish were in fair to poor condition. A number of trotlines are set for catfish in the lake and channel cat play a fairly important role in the local fish harvest. A number of large yellow cats (flatheads) are also taken by trotlines, although our gill nets failed to produce any fish of this species.

Largemouth bass are not abundant and accounted for only 1.49 percent of the total net catch. Bass fishing is no longer considered a productive pastime on Lake Worth. The white bass population is also limited and represented only 2.81 percent of the net catch.

Shad accounted for 23.47 percent of the fish population. Carpsuckers represented 8.76 and gar 6.45 percent of the net catch. With a relatively high gar representation and a good channel cat and yellow cat population, the predatory species represent an important segment of the fish population. This factor could account for the fair balance that exists between the game and rough fish species of the lake. Table 3 shows a comparison of the data regarding the collection of game and rough fish made by the nets.

The stomachs of all fish were examined in the field. Only prominent objects were listed as a microscope was not used in the examination. Table 4 records the frequency that various food items were found in the stomachs of the game species.

#### RECOMMENDATIONS

Heavy siltation and turbidity are the main factors prohibiting better fish production in Lake Worth. The sport fishing is as good as could be expected with the present conditions prevailing. Any perceptible improvement in the lake would have to begin with some major morphological change such as removing the deep layer of silt that blankets the bottom or raising the lake level to inundate new ground.

#### SUMMARY

1. Lake Worth is an old, dingy, heavily silted impoundment that serves as a holding reservoir for Fort Worth's water supply.
2. The lake was sampled with gill nets from December 1955 through October 1956.
3. White Crappie was the most abundant species collected.

4. The population of channel catfish is good and a fair amount of yellow cats are reported in the fishermen's catch.

5. Largemouth bass are scarce in the lake.

6. The balance between the rough and game species is surprisingly good.

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Table 1. Checklist of Fish Species from Lake Worth, Texas, 1955 - 1956.

Common Name	Scientific Name
Spotted gar	<u>Lepisosteus productus</u>
Longnose gar	<u>Lepisosteus osseus</u>
Gizzard shad	<u>Dorosoma cepedianum</u>
Smallmouth buffalo	<u>Ictiobus bubalus</u>
River carpsucker	<u>Carpionodes carpio</u>
Carp	<u>Cyprinus carpio</u>
Channel catfish	<u>Ictalurus punctatus</u>
White bass	<u>Roccus chrysops</u>
Largemouth black bass	<u>Micropterus salmoides</u>
Redear sunfish	<u>Lepomis microlophus</u>
Bluegill sunfish	<u>Lepomis macrochirus</u>
Longear sunfish	<u>Lepomis megalotis</u>
White crappie	<u>Pomoxis annularis</u>
Freshwater drum	<u>Aplodinotus grunniens</u>

Table 2. Tabulation of Data from Gill Net Collections from Lake Worth, Texas, November 1955 through October 1956.

Species	Number Caught	Percent of Total Number	Pounds Caught	Percent of Total Weight	Avg. Weight in Pounds	No. of Fish Per 100' Net	Lbs. Fish Per 100' Net
Spotted Gar	32	5.29	60.77	14.57	1.90	1.10	2.10
Longnose Gar	7	1.16	31.05	7.44	4.44	.24	1.07
Gizzard Shad	142	23.47	53.27	12.77	.38	4.90	1.84
Buffalo	15	2.48	30.80	7.39	2.05	.52	1.06
Carp sucker	53	8.76	58.78	14.09	1.11	1.83	2.03
Carp	11	1.82	18.98	4.55	1.73	.38	.65
Channel Catfish	41	6.77	35.48	8.51	.87	1.41	1.22
White Bass	17	2.81	7.91	1.90	.47	.59	.27
Largemouth Bass	9	1.49	9.39	2.25	1.04	.31	.32
Bluegill Sunfish	7	1.16	1.53	.37	.22	.24	.05
White Crappie	265	43.80	90.70	21.75	.34	9.14	3.13
Drum	6	.99	18.40	4.41	3.07	.21	.63
Total	605	100.00	417.06	100.00		20.87	13.37

Table 3. A Comparison of the Rough and Game Fish Caught by Gill Nets in Lake Worth, Texas, 1955 - 1956.

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Total Number of Specimens Caught	605
*Total Weight of Specimens Caught	417
Average Weight Per Specimen	.69
Total Weight of Rough Fish	254
**Total Weight of Game Fish	163
Total Number of Rough Fish	260
Total Number of Game Fish	345
Average Weight Per Rough Fish	.98
Average Weight Per Game Fish	.47
Percent Rough Fish (by Weight)	60.91
Percent Game Fish (by Weight)	39.09
Percent Rough Fish (by Number)	42.98
Percent Game Fish (by Number)	57.02

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\* Weight in Pounds.

\*\* Catfishes, drum and white bass included in game fish.

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Table 4. Frequency of Occurrence of Food Items from Fish Collected by Gill Nets, Lake Worth, Texas, November 1955 through October 1956.

Species	Shad	Unidentifiable Fish Remains	Insects	Algae and Vegetation	No. of Fish Examined
Spotted Gar	0	1	1	0	32
Longnose Gar	0	1	0	0	7
Channel Catfish	0	5	2	13	41
White Bass	0	2	0	0	17
Largemouth Black Bass	0	2	0	0	9
Bluegill Sunfish	0	1	0	0	7
White Crappie	1	130	1	0	265

