

JOB COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-5-R-13

REGION I-B FISHERIES STUDIES

Job No. 5 Stocking Recommendations

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ABSTRACT

Seining and netting collections, visual observations and hydrological data were used to determine which Region I-B lakes required stocking from the state fish hatcheries. Eight public lakes received largemouth bass and/or channel catfish. Seven other lakes were not stocked because the carrying capacity of their water areas was already utilized by game and/or rough fish species, and the prognosis for additional water catchment was not promising.

JOB COMPLETION REPORT

State of Texas

Project No. F-5-R-13

Name: Region I-B Fisheries Studies

Job No. 5

Title: Stocking Recommendations

Period Covered: March 1, 1965 to February 28, 1966

Objectives:

To determine those waters which will benefit from stocking.

Procedures:

Water areas were assessed at public reservoirs during the stocking season to determine whether expansion or diminution had occurred. Most evaluations were estimates based on surveillance of known landmarks or water outlet gauges. Some hydrological readings were obtained from pertinent agencies.

Seines were employed, where topography did not prohibit, to help estimate the abundance of age classes zero and one for largemouth bass and channel catfish. Dimensions of the various seines used are described as their catches are reported.

Only 1-, 1½- and 2-inch mesh gill nets were needed to sample young game fish. However, standard nets were used since they were already available and contained the meshes needed, along with 2½-, 3- and 3½-inch mesh.

Data obtained under Job 4 were perused, along with the information compiled under this job, to determine which lakes would benefit from stocking.

A checklist of scientific names is presented so that common names may be used in this report. These names are specified in "A List of Common and Scientific Names of Fishes from the United States and Canada", Second Edition, American Fisheries Society, Special Publication Number 2, 1960.

Longnose gar	<u>Lepisosteus osseus</u>
Gizzard shad	<u>Dorosoma cepedianum</u>
Goldfish	<u>Carassius auratus</u>
Carp	<u>Cyprinus carpio</u>
Golden shiner	<u>Notemigonus crysoleucas</u>
Red shiner	<u>Notropis lutrensis</u>
Blacktail shiner	<u>Notropis venustus</u>
Fathead minnow	<u>Pimephales promelas</u>
River carpsucker	<u>Carpionodes carpio</u>
Black bullhead	<u>Ictalurus melas</u>
Channel catfish	<u>Ictalurus punctatus</u>
Flathead catfish	<u>Pylodictis olivaris</u>
Mosquitofish	<u>Gambusia affinis</u>

White bass
Warmouth
Green sunfish
Orangespotted sunfish
Bluegill
Longear sunfish
Redear sunfish
Largemouth bass
White crappie
Logperch

Roccus chrysops
Chaenobryttus gulosus
Lepomis cyanellus
Lepomis humilis
Lepomis macrochirus
Lepomis megalotis
Lepomis microlophus
Micropterus salmoides
Pomoxis annularis
Percina caprodes

Findings:

Table 1. A Compilation of Hydrological and Fish Population Data and the Resultant Stocking Requests for the 1965 Stocking Season.

Lake	Population Findings		Hydrological Conditions	Abundance of Young		Stocking Requests
	Job	Tables		Bass	Catfish	
Colorado City	5	2	Lake nearly full and level, relatively constant.	Common (c.) 1/	Common (e.&f.)	None
Champion Creek	5	3 & 4	Level 24' below spillway. As full as has ever been.	Abundant (b., c.&d.)	Common (b.&e.)	None
Mountain Creek	5	5(a.)	Maximum capacity. Level rose 2' day before nets set.	Common (b.&e.)	Common (b.&e.)	8,500 bass fry (g.)
Oak Creek	5	6 & 7	8' below conservation level on 7-9-65; but had recently caught 15'.	Abundant (c.)	Common (d., e.&f.)	120,000 bass fry (g.)
New Winters	5	8 & 9	1' below spillway on 5-6-65, after heavy rains. 3' below on 8-18-65.	Common (c.)	Abundant (b.)	20,000 bass fry (g.)
Nasworthy	5	10(a.)	1' below capacity during spring.	Abundant (b.&d.)	Common (b.&e.)	135,000 bass fry 35,300 catfish fingerlings (g.)
Twin Buttes	5	11	Varied between 5,000 and 12,000 acre feet. Conservation pool capacity - 170,060 acre feet.	Common (b.&d.)	Common (b.&e.)	60,000 bass fry 50,000 catfish fingerlings (i.).
Big Lake	--	--	Dry	----	----	-----
J. B. Thomas	4	1 & 2	Caught 18" on 5-16-65 but still 15.55' below spillway.	Common (b.)	Abundant (b.)	48,000 bass fry (g.)
Valley Creek	4	3,4&5	Ran over spillway several times during spring and summer.	Rare (b.)	Rare (b.)	10,000 bass fry (g.&h.)

Table 1.
(continued)

Lake	Population Findings		Hydrological Conditions	Abundance of Young		Stocking Requests
	Job	Tables		Bass	Catfish	
Old Winters	4	6 & 7	1½' below spillway on 8-19-65.	Abundant (c.)	Abundant (b.)	None
Elm Creek	4	8 & 9	Ran over dam several times during summer.	Rare (b.)	Rare (b.)	None (j.&k.)
San Angelo	4	10, 11 & 12	22, 220 acre-feet on 4-16-65 (when partial renovation effectuated). Caught additional 8,000 acre-feet during May.	Rare (b.&c.)	Common (b.)	270,000 bass fry 135,000 catfish fingerlings (g.&h.)
Old Robert Lee	4	13 & 14	Less than half full.	Common (b.&c.)	Rare (b.&c.)	None (k.&l.)
Towle Park	4	15 & 16	Full (55 acre-feet)	Rare (b.&c.)	Common (b.)	None (l.)

1/ Key

- a. Seining impossible because of obstructions.
- b. Netting results.
- c. Seining results.
- d. Visual observation.
- e. Creel reports
- f. Prior biological samples
- g. Increased water area.
- h. Scarcity of game fish.
- i. Probability of runoff great because of large watershed.
- j. Being considered for renovation.
- k. Carrying capacity utilized by rough fish.
- l. Carrying capacity utilized by sunfish and crappie.

Table 2. Results of 24 Seining Collections From Lake Colorado City on June 21, 1965 and July 1, 1965.
 (20 collections with a 20-foot straight seine, 6 feet deep with $\frac{1}{4}$ -inch mesh.) (2 collections with a 30-foot straight seine, 6 feet deep with $\frac{1}{4}$ -inch mesh.) (2 collections with a 100-foot straight seine, 8 feet deep with $\frac{1}{2}$ -inch mesh.)

Species	Number	Size Range in Inches
Gizzard shad	261	1-6
Goldfish	1	6
Red shiner	1	2
Blacktail shiner	844	1 $\frac{1}{2}$ -4
Bluegill	20	1 $\frac{1}{2}$ -4
Redear sunfish	5	4-5
Largemouth bass	13	2-15
Logperch	11	2-4
Total	1156	

Table 3. Results of Six Seining Collections From Champion Creek Reservoir on August 31, 1965.
 (6 collections with a 20-foot straight seine, 6 feet deep with $\frac{1}{4}$ -inch mesh.)

Species	Number	Size Range in Inches
Golden shiner	1	3
Blacktail shiner	31	1-3
Green sunfish	1	4
Bluegill	150	1-4
Largemouth	8	2 $\frac{1}{2}$ -6 $\frac{1}{2}$
Total	191	

Table 4. Results of Four Gill Nets Set in Champion Creek Reservoir on July 15, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Golden shiner	2	2.10	.33	.17	.63	2.06
River carpsucker	1	1.05	2.50	2.50	4.77	3.23
Channel catfish	5	5.27	19.56	3.91	37.38	2.13
Green sunfish	2	2.10	.18	.09	.35	3.61
Bluegill	65	68.42	20.66	.32	39.48	5.04
Largemouth bass	18	18.95	8.09	.45	15.45	2.30
White crappie	2	2.11	1.01	.50	1.94	3.15
Totals	95	100.00	52.33		100.00	

Table 5. Results of Four Gill Nets Set in Mountain Creek Reservoir on April 29, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Golden shiner	19	8.29	2.73	.14	7.92	2.19
River carpsucker	1	.44	2.62	2.62	7.60	3.81
Black bullhead	1	.44	2.25	2.25	6.54	3.08
Channel catfish	2	.87	2.75	1.38	7.98	1.90
Warmouth	2	.87	.83	.42	2.41	4.15
Bluegill	132	57.64	11.83	.09	34.34	3.75
Largemouth bass	6	2.62	4.02	.67	11.67	2.89
White crappie	66	28.83	7.42	.11	21.54	2.59
Totals	229	100.00	34.45		100.00	

Table 6. Results of Four Seining Collections From Oak Creek Reservoir on July 8, 1965.
(4 collections with a 20-foot seine, 6 feet deep with $\frac{1}{4}$ -inch mesh.)

Species	Number	Size Range in Inches
Gizzard shad	14	3-6
Bluegill	2	$\frac{1}{2}$ -3
Longear sunfish	3	3
Largemouth bass	7	$2\frac{1}{2}$ - $3\frac{1}{2}$
Logperch	6	2-4
Total	32	

Table 7. Results of Four Gill Nets Set in Oak Creek Reservoir on July 9, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	37	33.94	7.98	.22	15.96	1.98
Carp	32	29.36	22.07	.69	44.15	2.65
River carpsucker	11	10.09	13.67	1.24	27.34	2.75
Channel catfish	1	.92	1.56	1.56	3.12	2.20
Warmouth	1	.91	.20	.20	.40	4.20
Bluegill	21	19.27	1.75	.08	3.50	4.11
Largemouth bass	2	1.84	1.78	.89	3.56	2.58
White crappie	4	3.67	.98	.25	1.97	2.68
Totals	109	100.00	49.99		100.00	

Table 8. Results of 14 Seining Collections From New Winters Lake On May 6, 1965, August 17, 1965 and September 28, 1965.

(8 collections with a 20-foot straight seine, 6 feet deep with $\frac{1}{4}$ -inch mesh.)

(4 collections with a 100-foot straight seine, 8 feet deep with $\frac{1}{2}$ -inch mesh.)

(2 collections with a 100-foot straight seine, 8 feet deep with 1-inch mesh.)

Species	Number	Size Range in Inches
Gizzard shad	361	3-8 $\frac{1}{2}$
Carp	1	6
Golden shiner	38	1-3
Red shiner	405	$\frac{1}{2}$ -3
Fathead minnow	14	2
Mosquitofish	169	1-3
Green sunfish	14	1-3
Orangespotted sunfish	18	1-3
Bluegill	411	$\frac{1}{2}$ -3
Longear sunfish	31	1 $\frac{1}{2}$ -5
Redear sunfish	4	5-7
Largemouth bass	41	2 $\frac{1}{2}$ -11
White crappie	39	$\frac{1}{2}$ -9
Total	1546	

Table 9. Results of Ten Gill Nets Set in New Winters Lake on May 6 and August 18, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	3	1.52	.72	.24	.44	1.84
Carp	51	25.89	86.22	1.69	53.34	2.94
River carpsucker	1	.50	1.25	1.25	.77	3.25
Black bullhead	75	38.07	52.11	.69	32.24	3.21
Channel catfish	17	8.63	6.64	.39	4.11	1.92
Flathead catfish	1	.51	7.12	7.12	4.41	1.94
Warmouth	9	4.57	.91	.10	.56	4.42
Green sunfish	21	10.66	2.07	.10	1.28	4.09
Orangespotted sunfish	2	1.02	.12	.06	.07	3.21
Bluegill	3	1.52	.54	.18	.34	5.20
Longear sunfish	2	1.01	.22	.11	.13	5.35
Largemouth bass	7	3.56	1.92	.27	1.19	2.24
White crappie	5	2.54	1.80	.36	1.12	3.37
Totals	197	100.00	161.64		100.00	

Table 10. Results of Six Gill Nets Set in Lake Nasworthy on April 27, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	3	3.03	1.24	.41	1.30	1.94
Carp	5	5.05	13.08	2.62	13.78	2.77
Golden shiner	3	3.03	.50	.17	.53	1.98
Black bullhead	14	14.14	18.92	1.35	19.93	3.06
Channel catfish	5	5.05	7.05	1.41	7.43	1.92
Flathead catfish	1	1.01	32.00	32.00	33.71	2.45
Warmouth	3	3.03	.31	.10	.33	3.81
Green sunfish	15	15.15	2.26	.15	2.38	3.54
Bluegill	29	29.29	5.29	.18	5.57	4.51
Longear sunfish	4	4.04	.90	.23	.95	5.26
Redear sunfish	4	4.04	.39	.10	.41	3.55
Largemouth bass	12	12.12	11.98	1.00	12.62	2.49
White crappie	1	1.02	1.00	1.00	1.06	1.63
Totals	99	100.00	94.92		100.00	

Table 11. Results of Four Gill Nets Set in Twin Buttes Reservoir on April 30, 1965.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	2	1.24	5.93	2.96	2.11	.42
Gizzard shad	17	10.56	8.35	.49	2.98	2.26
Carp	69	42.85	240.81	3.49	86.00	2.86
Golden shiner	3	1.87	.50	.17	.17	2.40
River carpsucker	4	2.48	6.88	1.72	2.46	3.00
Channel catfish	4	2.49	5.50	1.38	1.96	2.08
White bass	6	3.72	4.40	.73	1.58	3.03
Warmouth	1	.62	.11	.11	.04	3.84
Green sunfish	4	2.49	.36	.09	.12	3.94
Bluegill	49	20.43	4.55	.09	1.63	4.43
Largemouth bass	2	1.25	2.65	1.33	.95	2.87
Totals	161	100.00	280.04		100.00	

Discussion:

The stocking of hatchery reared fishes in Region I-B is sometimes a matter of conjecture. The person responsible for making stocking recommendations must often base his decisions on several factors other than the relative abundance of game fish and the current lake levels.

If a lake with a vast drainage is very low, and the hatchery has an abundance of fish with which something must be done, it is practical to recommend stocking. As an example, the water level at Twin Buttes Reservoir was very low during the segment and this lake has a large watershed. The nearby hatchery had an ample supply of small fish. It was considered a good gamble to stock this reservoir. In such a case, the lake level may continue to decline and the fish are wasted. But sometimes a significant water influx occurs and the new room created is well utilized.

One possible resolution for this problem would be to have additional rearing and holding ponds on the hatcheries so that fish would be available at all times of the year. When a lake had an appreciable increase in volume (and more important -- in area) game fish could be immediately stocked. Research could probably be designed to determine if the initial costs of pond construction and increased costs of hatchery operation would outweigh the benefits derived from such a program.

A closely allied experiment would be to stock larger, but fewer, largemouth bass and channel catfish in lakes with established fish populations. Research is currently being conducted under the F-7-R project to determine

the benefits derived from stocking bass fry and catfish fingerlings in waters saturated with other fish species.

Another hindrance encountered in recommending stocking, is our inability to accurately determine the age of fishes in this area. Fingerling large-mouth bass are not always age class zero. Not only must the season of the year, when samples were collected, be considered, but the overall lake population must be evaluated to determine if a small bass is young or if it is stunted. The development of a practical technique for appraising the age of individual warmwater fishes would be a worthwhile research project.

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Date February 3, 1966

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