FILE

JOB COMPLETION REPORT

Investigations Projects

STATE OF TEXAS

Project No. F2R4 Name Fisheries Investigations and Surveys of the Waters of Region 6-B.

Job No. B-16 Title Inventory of Species in Lake Granite Shoals, Texas

Period Covered: February 1, 1956 through January 31, 1957.

ABSTRACT

Thirty-seven seine and fifty-nine gill net collections produced a total of 3,351 fish specimens from Lake Granite Shoals during the segment period. The gizzard shad, Dorosoma cepedianum was the most abundant species taken in gill nets, accounting for over 40% of the total number. The spottail shiner, Notropis venustus was the most abundant species taken in the seining collections, making up slightly over 30% of the total. Net and seine collections were made at random since the lake was considered to large to effectively work set stations.

Rough fish in Lake Granite Shoals are becoming an ever-increasing problem, with longnose gar, gizzard shad, smallmouth buffalo, river carpsucker, and gray redhorse sucker making up 71.76% of total numbers taken in the net collection during this segment compared to 63.98% in the previous segment. Percent of total weight for these same rough fish species increased from 45.58% of the total number in the 1955-56 segment period to ..61% of the total in the 1956-57 segment.

The increasing abundance of aquatic vegetation which is closing some of the better fishing areas to the fishermen is one of the most pressing problems and one that will have to be conquered if this lake is to be retained as a good fishing lake.

OBJECTIVES

To determine the species present and their relative abundance.

TECHNIQUES

Fish collections and ecological observations were made monthly throughout the segment period with the exception of November 1956. Random gill net sets provided almost half of the collected material.

With the exception of one 2 inch mesh net set, all netting was done with experimental type gill nets. All specimens taken in gill nets were identified, weighed, measured and checked for gonadal development in the field. In addition, all game fish stomachs containing food were preserved in a formaldahyde solution and returned to the laboratory for content analysis.

Three types of seines were used in collecting the seined material. Six foot straight, thirty-six foot by six foot bag, and twenty foot $\frac{1}{4}$ inch mesh bobbinet seines were utilized during the segment period with only limited results. The specimens taken in the seine collections were preserved in a 10% formaldahyde solution and taken to the laboratory for identification and study.

PHYSICAL DESCRIPTION

A complete physical description of Lake Granite Shoals is included in the Segment Completion Report, Project F-2-R-3, Job B-16.

CHEMICAL CHARACTERISTICS

Analysis of water samples was discontinued during this segment period because it was felt that the analyses made during the preceding period were sufficient. Since the lake area is thinly populated and no industries are present in the vicinity, the chance for harmful, man-made pollution is remote at this time.

AQUATIC VEGETATION

Over-abundant aquatic vegetation, chiefly Myriophyllum sp., is one of the major deterrents to the full utilization of the lake by the angler. Large areas of the lake are completely blocked to both the boat and shore fishermen. This aquatic weed is found in all sections of the lake and in many areas grows as far as 50 yards out from the shoreline. The heavy matting on, and just beneath the surface make boat travel near the shoreline extremely difficult.

The number of specimens collected in seines dropped during this segment period, largely because of the vegetation. Only a few areas contained enough open water to be seined and even these were so close to large concentrations of Myriophyllum sp. that the fish population immediately escaped into it.

A mechanical barge-mounted weed cutter has been used by dock owners in clearing dock areas and cutting limited boat paths in some areas of the lake. This method is expensive and completely impractical in clearing as vast an area as is covered by th weed.

The problem of aquatic vegetation is particularly acute in Lake Granite Shoals because much of the lake is relatively shallow. Unless some inexpensive and effective weed control process is developed soon, the shoreline area will have only a small portion of its surface acreage available to the fishermen.

FISH COLLECTIONS

Table 1 contains a checklist of species found to occur in Lake Granite Shoals. Twenty-seven species were taken during this segment as compared with 29 during the previous segment period. Although Lepisosteus platostomus was included in the checklist for the first segment period it is now felt that this was an error and that this species is not found in Lake Granite Shoals. The only member of family Lepisoseidae found in the collections was the longnose gar, Lepisosteus osseus.

Table 2 presents the results of seine collections for the period February 1956 through October 1956. No seine collections were made after this date because of difficult seining conditions and the poor results obtained. The largemouth bass, Micropterus salmoides and the bluegill sunfish, Lepomis macrochirus were taken in much larger numbers during this segment than during the initial period. An excellent spawn of both species in the spring of 1956 was evident.

Fifty-nine random net collections were made during the segment period and the results of the netting in terms of number and pounds of each fish species, by month, are included as Tables 3 and 4.

Table 5 shows success of gill netting in number and pounds of fish per net and per foot of net and is broken down into monthly totals.

Rotenone sampling of selected areas was planned but the idea was abandoned because of the over abundance of aquatic vegetation. Application of the rotenone would have been difficult and recovery of the specimens all but impossible.

FINDINGS

Lake Granite Shoals is considered a good fishing lake, with largemouth black bass, white bass and channel catfish the most sought after fish species. Excellent strings of all three species were observed during the segment period and both net and seine collections indicate a large game fish population. The largemouth black bass spawn was apparently very successful since thousands of fingerlings were seen in the shallow bank areas in June and July.

A comparison of the 1956-57 segment period shows a noticeable increase in the rough fish population. Longnose gar, gizzard shad, smallmouth buffalo, river carpsucker, and gray redhorse sucker contributed 63.98% of the total number and 45.58% of the total weight during the 1955-56 segment as compared with 71.76% of total number and 64.61% of the total weight during the later period.

The primary shift in relative abundance concerned three fish species and this shift is shown in Chart A.

Chart A. Comparison of Netting Results for Three Species, 1955-56 Segment and 1956-57 Segment.

	Gizzard shad		White bass		Smallmouth buffalo	
	Percent total wt.	Percent total no.	Percent total wt.	Percent total no.	Percent total wt.	Percent total no.
1955-56	8.29	27.82	21.33	12.71	9.85	6.46
1956-57	8.03	41.19	8.58	6.33	23.53	10.69

As can be seen in Chart A, the white bass population shows a definite decline in both total numbers and total weight while gizzard shad have increased significantly in total numbers and the smallmouth buffalo in total weight. The increase in the gizzard shad and smallmouth buffalo was expected but the decline in the white bass population was not. Lack of running water for spawning during the past few years is probably responsible in part for this decline and possible it is part of a natural cycle of peaks and lows in white bass populations as found in other lakes in the United States.

The increase in percent of total pounds for the smallmouth buffalo is due to a slight increase in number collected and a greater increase in weight of individuals. The smallmouth buffalo averaged one pound during the 1955-56 segment and 1.7 pounds in the present segment.

RECOMMENDATIONS

Following the pattern of other Colorado River lakes and other major impoundments in Texas, Lake Granite Shoals is beginning to suffer from an overabundant rough fish population. Much of the lakes' productivity is being utilized for undesirable fish which have little value from either a sport or commercial standpoint. No chemical rough fish control measures are feasible at this time, because of the excessive cost of treatment and the difficulty in applying it to so large an area, particularly with the weed problem.

It is recommended that the lake be inventoried again in from two to five years and recommendations for management be made at that time.

The vegetation problem appears insolvable at this time but when techniques are developed for the control of Myriophyllum heterophyllum on a large scale, a weed control project should be initiated on Lake Granite Shoals.

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Table 1. Checklist of Species Found to Occur in Granite Shoals Lake.

SCIENTIFIC NAME	COMMON NAME	JUNE '55-JAN. '56	FEB. '56-JAN. '57
Lepisosteus platostomus **	shortnose gar		
Lepisosteus osseus	longnose gar	-	-
Dorosoma cepedianum	gizzard shad	-	-
Ictiobus bubalus	smallmouth buffalo	-	-
Carpiodes carpio	river carpsucker	-	-
Moxostoma congestum	gray redhorse sucker	-	-
Cyprinus carpio	carp	-	-
Notropis venustus	spottail	-	-
Notropis lutrensis	redhorse shiner	-	-
Pimephales vigilax	parrot minnow	-	-
Campostoma anomalum	stoneroller	-	
Ictalurus punctatus	channel catfish	-	-
Pilodictus olivaris	yellow catfish	-	-
Gambusia affinis	gambusia	-	-
Roccus chrysops	white bass	-	-
Micropterus punctulatus	Kentucky spotted bass	-	-
Micropterus treculi	Texas spotted bass	-	-
Micropterus salmoides	largemouth black bass	-	-
Chaenobryttus gulosus	warmouth	-	-
Lepomis cyanellus	green sunfish	-	-
Lepomis microlophus	redear sunfish	-	-
Lepomis macrochirus	bluegill sunfish	-	-
Lepomis humilis	orangespotted sunfish		-
Lepomis auritus	yellowbelly sunfish	-	-
Lepomis megalotis	longear sunfish	-	-
Pomoxis annularis	white crappie	-	-
Percina carpodes	logperch	-	-
Etheostoma spectabile	orangethroated darter	-	
Aplodinotus grunniens	freshwater drum	-	-
Cichlasoma cyanoguttatum	Rio Grande perch	-	-

** Note: Lepisosteus platostomus was incorrectly identified in the Segment Completion Report F-2-R-3, Job B-16. It should be Lepisosteus osseus.

Table 2. Number of Specimens Taken in Seines from Lake Granite Shoals, February through October, 1956.

Species	February	March	April	June	July	August	September	October	Total	Percent of Total
Dorosoma cepedianum	-	-	58	3	16	31	1	-	109	6.50
Carpiodes carpio	-		-	-	-	-	1	-	1	0.06
Notropis venustus	4	70	22	40	121	119	50	78	504	30.07
Notropis lutrensis	11	3	40	16	71	39	16	4	200	11.93
Pimephales vigilax	1	-	15	-	-	-	-	-	16	0.96
Gambusia affinis	-	-	-	-	59	11	19	19	108	6.44
Micropterus punctulatus	-	-	-	-	-	4	-	-	4	0.24
Micropterus treculi	-	-	-	12	-	-	8	4	24	1.43
Micropterus salmoides	-	8	2	69	5	16	23	2	125	7.46
Chaenobryttus gulosus	-	1	-	-	-	3	2	10	16	0.96
Lepomis cyanellus	-	3	-	-	-	2	3	12	20	1.19
Lepomis microlophus	1	-	2	3	-	-	6	1	13	0.77
Lepomis macrochirus	25	48	31	51	17	60	163	32	427	25.48
Lepomis humilis	-	-	-	1	-	5	2	-	8	0.48
Lepomis auritus	-	4	-	3	3	4	17	12	43	2.56
Lepomis megalotis	-	-	1	9	1	2	15	-	28	1.68
Pomoxis annularis	-	-	2	-	-	-	-	-	2	0.11
Percina caprodes	-	-	1	-	3	3	-	2	9	0.54
Cichlasoma cyanoguttatum	-	-	-	-	2	3	8	6	19	1.14
Totals	42	137	174	207	298	302	334	182	1,676	100.00

Table 3. Number of Specimens taken in Gill Nets from Lake Granite Shoals, February, 1956 through January, 1957.

Species	February	March	April	May	June	July	August	September	October	December	January	Total	Percent of Total
L. osseus	-	-	22	1	1	-	-	-	-	-	-	24	1.43
D. cepedianum	37	14	290	48	60	32	40	110	25	23	11	690	41.19
I. bubalus	14	20	12	3	33	6	30	18	8	31	4	179	10.69
Carpiodes carpio	43	14	31	23	25	10	26	9	17	27	6	231	13.79
M. congestum	8	11	2	1	9	-	2	1	3	3	1	41	2.45
Cyprinus carpio	-	4	5	4	15	-	1	3	1	1	2	36	2.15
I. punctatus	30	6	31	9	5	10	7	21	5	10	17	151	9.01
P. olivaris	-	-	-	-	-	-	2	-	-	-	-	2	0.12
R. chrysops	10	2	7	8	7	9	14	27	6	14	2	106	6.33
M. treculi	1	-	-	-	-	-	-	1	2	-	-	4	0.24
M. salmoides	2	3	2	-	-	1	3	5	2	4	3	25	1.49
C. gulosus	1	-	-	-	-	-	-	-	-	-	-	1	0.06
L. macrochirus	-	1	8	9	9	7	12	12	9	15	11	94	5.61
L. megalotis	-	-	1	2	3	1	2	-	1	-	-	10	0.60
P. annularis	6	2	43	3	3	3	3	7	7	-	3	80	4.78
A. grunniens	-	-	-	-	1	-	-	-	-	-	-	1	0.06
Totals	152	78	454	111	171	79	142	214	86	128	60	1,675	100.00

Table 4. Number of Pounds of Each Fish Species taken in Gill Nets from Lake Granite Shoals, February, 1956 through January, 1957. (Figured in Tenths of Pounds).

Species	February	March	April	May	June	July	August	September	October	December	January	Total	Percent of Total
L. osseus	0.00	0.00	97.81	1.81	7.94	0.00	0.00	0.00	0.00	0.00	0.00	107.56	8.41
D. cepedianum	8.19	2.88	41.38	6.00	8.44	4.25	5.69	14.00	3.75	4.19	4.00	102.77	8.03
I. bubalus	24.94	41.19	12.56	6.19	76.06	7.63	38.56	25.25	11.00	53.94	3.44	300.76	23.53
Carpiodes carpio	40.56	11.63	26.50	22.19	24.19	7.50	23.19	6.88	13.75	29.19	8.19	213.77	16.71
M. congestum	10.00	15.00	3.19	1.25	11.38	0.00	2.56	1.19	3.13	4.75	0.56	53.01	4.15
Cyprinus carpio	0.00	4.44	7.63	6.63	19.06	0.00	1.19	3.44	0.50	1.38	3.06	47.33	3.70
I. punctatus	23.94	10.25	34.06	12.50	12.69	18.44	17.38	28.63	13.13	16.88	57.63	245.53	19.20
P. olivaris	0.00	0.00	0.00	0.00	0.00	0.00	16.69	0.00	0.00	0.00	0.00	16.69	1.31
R. chrysops	10.00	2.31	5.81	5.25	11.19	10.50	16.63	28.81	4.13	12.94	2.13	109.70	8.58
M. treculi	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.19	2.19	0.00	0.00	4.88	0.38
M. salmoides	9.81	3.00	4.75	0.00	0.00	1.06	1.81	2.00	1.25	7.44	7.44	38.56	3.02
C. gulosus	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01
L. macrochirus	0.00	0.25	0.94	1.25	1.31	0.88	1.44	1.06	1.38	1.31	1.13	10.95	0.85
L. megalotis	0.00	0.00	0.13	0.25	0.38	0.13	0.31	0.00	0.13	0.00	0.00	1.33	0.11
P. annularis	3.38	1.06	7.75	0.63	2.00	1.06	0.56	1.94	4.56	0.00	1.81	24.75	1.93
A. grunniens	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.08
Totals	133.45	92.01	242.51	63.95	175.58	51.45	126.01	113.39	58.90	132.02	89.39	1,278.66	100.00

Table 5. Success of Gill Netting in Terms of Number and Pounds of Fish, Lake Granite Shoals, May through December, 1956.

Month	Number of Net Set	Number of Foot Net Set	Number of Fish Caught	Number Lbs. Fish Caught	Average No. Fish/Net	Average No. Fish Ft. of Net	Average No. Lbs. Fish/ Net	Average No. Lbs. Fish Per Ft. of Net.
May	4	500	184	391.07	46.0	0.36	97.77	0.78
June	4	500	66	144.71	16.5	0.13	36.18	0.29
July	4	500	102	158.51	25.2	0.20	39.63	0.32
September	4	500	206	160.62	51.5	0.41	26.66	0.32
December	4	500	98	67.44	24.5	0.19	16.86	0.13
Total	20	2,500	656	922.35	32.8	0.26	46.12	0.37