Report of Fisheries Investigations

Resurvey of the Waters of Region 6-B

by

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Dingell-Johnson Project F-2-R-7, Job B-20
February 1, 1959 - January 31, 1960

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ABSTRACT

A resurvey of Lake Inks, Granite Shoals, Buchanan, Belton, Marble Falls, and Austin, as well as the Brazos and San Gabriel Rivers, was carried out during 1959. Seventeen seine, 84 experimental gill net, and two rotenone collections were made on Inks Lake. The fish population was found to be similar to previous surveys, although some changes were noted in the rough fish complex. Gizzard shad showed a substantial drop in relative abundance in the netting results but rotenone samples revealed much higher population figures. Catfish and white bass dominated the game fish catch. The important largemouth bass is presumably still at a minimal population level as net and seine collections produced very few individuals.

The results of 23 net sets on Lake Granite Shoals reveal very high rough fish population, but low population figures for gizzard shad. Smallmouth buffalo were the most abundant species taken, accounting for 33 percent of total numbers and 56 percent of total weight. The game fish population is considered adequate and fishing remains good. The vegetation problem remains acute, but no control measures are considered economically feasible at this time.

Fifty-two net sets were made on Lake Buchanan. Rough fish accounted for over 72 percent of total numbers and 78 percent of total weight. Gizzard shad made up 54 percent of total fish taken. Game fish, including channel catfish, white bass, largemouth bass and white crappie, support heavy fishing pressure on the lake. No management practices are recommended at this time.

Seine collections on the Brazos River produced 5 species not taken in the original survey of the river including Notropis venustus, Notimogus crysoleucas, Ictalurus melas, Lepomis punctatus and Lepomis microlophus.

Thirty-eight net sets and nine seine collections showed substantially the same fish population as had been taken in previous surveys. A limited creel census was undertaken in an effort to check the catch of white crappie from Lake Belton. The census showed 1,581 anglers fished a total of 6,872.5 hours and caught 4,944 fish, for a fish/man hour total of 0.72. The crappie were small and few fishermen utilized the increased bag limit on this species. Gizzard shad showed a definite decrease in relative abundance, but no reason for the decrease could be ascertained.

Work on the San Gabriel River and Lakes Austin and Marble Falls was too limited for comparison with previous collections and the data gathered will be included in later reports.

Segment Completion Report

State of TEXAS

Project No. F-2-R-7 Name: Fisheries Investigations and Surveys of the Waters of Region 6-B.

Job No. B-20 Title: Resurvey of the Waters of Region 6-B.

Period Covered: February 1, 1959 - January 31, 1960

OBJECTIVES

To determine the present status of waters and fish populations which have been previously surveyed in Project F-2-R.

PROCEDURE

Fish collections were made principally through the use of standard experimental gill nets and small-mesh seines. All fish collections were taken from random locations with the exception of those from Inks Lake, which were made at stations selected in the basic survey.

Seined specimens were identified, counted, and checked for sexual development in the field except for those individuals whose identification was doubtful. These were brought to the laboratory for identification.

An eight-month creel census was undertaken on Lake Belton to check the crappie size and to determine if the more liberal crappie bag limit was being utilized by fishermen on the lake.

The creel census required one man on each of three major fishing docks. The census began at 12 noon and ran until the majority of fishermen left the dock at night. The census started the following morning when fishermen returned to the docks and was discontinued at noon. In this way the majority of dock fishermen were contacted in the 24-hour noon to noon census period. The census was conducted on a 13-day cycle to achieve rotation in days of the week.

In addition to fish collections and the creel census, physical changes which might influence fish population, were noted on the surveyed waters.

OBSERVATIONS AND FINDINGS

Inks Lake

Netting, rotenone, and seining data were tabulated and are contained in Tables 1, 2, and 3. Data for the report was compiled from 17 seine collections, 84 gill net sets, and 2 rotenone collections during the period February 1, 1959, through

January 31, 1960. Rough fish, including longnose gar, smallmouth buffalo, river carpsucker, European carp, gizzard shad and freshwater drum, comprised slightly under 65 percent of total fish taken with the game species making up over 35 percent. In total weight the same rough species made up approximately 74 percent with game fish contributing 26 percent. As shown, these data are reasonably consistent with those from the 1957 and the 1958 figures.

	1957		1958		1959	
	% No.	% Wt.	% No.	% Wt.	% No.	% Wt.
Rough fish	63	78	71	71	65	74
Game fish	37	22	29	29	35	35

Although the overall game fish - rough fish ratio remained fairly constant, indicated population changes in the rough fish complex were pronounced.

	1958		1959	
	% Number	% Weight	% Number	% Weight
Gizzard shad	56.18	7.87	37.85	4.72
Smallmouth buffalo	1.90	6.97	5.89	17.56
Gar	5.29	37.83	5.43	22.68
River carpsucker	6.19	16.83	14.09	26.20

Gizzard shad continued to be the most abundant species taken from Inks Lake. Although netting figures would indicate shad make up 37 percent of the nettable fish population, rotenone samples show a much higher population. In two one-quarter surface acre test plots which were treated with liquid rotenone for total kill, gizzard shad comprised well over 50 percent of the total fish taken including cyprinids. In a selective shad kill on a seven-surface acre slough on Lake Inks the kill of gizzard shad was of such magnitude that estimates of kill were not attempted. A majority of the gizzard shad killed in the selective test were too small to be regularly taken in even the 1-inch mesh of the experimental nets and thus, this segment of the population does not show up in the netting figures.

If the numbers of small shad present in the seven-acre test site are indicative of the lake's population it is doubtful that the predator population of Inks Lake can effectively reduce the numbers and prevent a build-up of the shad population.

Netting figures continue to indicate a substantial channel catfish population and sizeable numbers of white bass. The status of the important largemouth bass population is hard to determine because of the net avoidance tendencies of this species. An effort was made to capture bass fry or fingerlings during the months of March, April, and June. Seventeen seine collections made in selected bass habitats, turned up only six fingerling bass in a total of 1,296 fish.

Approximately 300,000 largemouth bass fry have been stocked in this lake since the spring of 1958. Net and seine collections as well as reports from fishermen and camp operators on Lake Inks seem to indicate a low population level for this species.

A selective kill of gizzard shad was scheduled for October of 1959. High water and the continuous threat of overflow from the lake above forced indefinite postponement of the job.

Lake Granite Shoals

Twenty-three experimental nets were set on Lake Granite Shoals during the segment period. Eleven net collections were made in the period January 26-27 and 12 collections on 27-28 of August. Although January 1959, technically is not included in this segment, the data was received too late for inclusion in the report for the previous segment. (These data are shown in Table 4).

On the basis of these net collections little change can be noted when compared with previous data. Gizzard shad remain at a low level accounting for less than 14 percent of total fish taken. The smallmouth buffalo was the most abundant fish taken, accounting for over 33 percent of total numbers and over 56 percent of total weight.

Channel catfish were the most numerous game fish found in this segment with white bass and white crappie also showing evidence of substantial populations.

Excellent spawning habitat for largemouth bass are present in this lake and reproduction of this species is considered adequate to maintain the population. Fishermen and camp operators reported continued fishing success for bass throughout the segment.

Rough fish, including smallmouth buffalo, river carpsucker, carp, gray redhorse sucker, drum, longnose gar and shad contributed 70.59 percent of total numbers and 79.02 percent of the total weight taken from gill net collections. Despite the preponderance of rough fish, Lake Granite Shoals maintains heavy sport fishing pressure and good fishing.

No drastic physical changes have occurred although continuous siltation occurs. The aquatic vegetation present, particularly Myriophyllum sp., remains a serious problem by keeping many areas of the lake virtually closed to boat traffic and hence, to fishing pressure.

No extensive management practices are considered economically feasible for this lake at the present time.

Lakes Austin and Marble Falls

One two-day trip was made to each of these lakes, primarily to note physical changes which might influence fish populations or fishing pressure. Fish collections were made on each lake but the samples involve too few fish for comparison purposes and the data will be incorporated with that from future collections.

No important physical changes were observed and, of course, no management measures can be recommended.

Lake Buchanan

Netting data is tabulated in Table 5. Four seine collections were made and 52 nets were set on Lake Buchanan during the segment period. The seine collections produced 240 Notropis venustus and Notropis lutrensis but no other species. Netting figures are comparable with those from the 1954-55 basic survey. Rough species, including longnose gar, smallmouth buffalo, river carpsucker, carp, and gizzard shad make up 72.57 percent of total fish taken in gill nets and 77.99 percent of the total weight. Gizzard shad alone make up almost 54 percent of the total fish taken and river carpsuckers account for over 35 percent of the total weight.

White bass and channel catfish are the most abundant of the game fish. Fishing pressure for white bass is heavy and angler success is considered good. Lake Buchanan is considered a good largemouth bass lake by fishermen and seasonally, white crappie are also taken in large numbers.

No extensive management practices are being considered for this lake.

San Gabriel and Brazos Rivers

Ten net collections were made on the San Gabriel River and 11 seine collections from the Brazos River. The collections were made primarily to keep familiar with the waters, check possible pollution sources, and to note physical changes in the stream systems.

Seine collections from the Brazos River include five species not included in thos taken during the basic survey, namely: Notropis venustus, Notemigonus crysoleucas, Ictalurus melas, Lepomis microlophus, and Lepomis punctatus. In addition, Lepisosteus osseus was taken and also added to the species list but it is possible that the Lepisosteus platostomus included in the basic survey was actually L. osseus.

Collection data from the San Gabriel River were too limited for conclusions. At the present time the river flow is so varied that a stable fish population does not exist. A dam is proposed for the San Gabriel River and when a definite site is selected, a more extensive pre-impoundment survey will be conducted.

Lake Belton

Thirty-eight net sets and nine seine collections were made on Lake Belton during the segment period. Results are shown in Table 6 and 7. For most species, population figures were similar to those in the 1958 collections. The most apparent changes involved gizzard shad which decreased in the netting collections from 47.51 percent of all fish taken in the 1958 period to 23.94 percent in the 1959 study. Smallmouth buffalo decreased from 7.85 percent of total numbers and 23.19 percent of total weight in the previous segment to 2.83 percent of total numbers and 3.76 percent of total weight in this segment.

The apparent reduction in the smallmouth buffalo population was offset by a substantial increase in numbers and weight of river carpsuckers netted. The carpsucker showed an increase from 1.94 percent of total numbers and 5.94 percent of total weight in 1958 to 6.57 percent of numbers and 13.52 percent of total weight in 1959 collections.

This lake supported a large-scale commercial fishery for several months and the primary effort of the fishermen was directed toward smallmouth buffalo. It is not known whether this fishery was responsible for a reduction in the buffalo population, but over 140,000 pounds of smallmouth buffalo were removed between July 1958 and mid-1959.

The lake maintains good largemouth bass, white crappie, and catfish fishing. Fishing for both carp and smallmouth buffalo is extensive and more popular than on any other lake in the region.

The creel census was utilized primarily to determine how many fishermen would take advantage of the increased bag limit on white crappie, which was initiated in an attempt to reduce a suspected overabundance and stunted population of this species.

During the course of the census it was discovered that the majority of crappie taken by fishermen were too small to be utilized as food and were returned to the water, unharvested. Of 1,581 fishermen contacted during the segment period only three actually retained a limit catch of crappie (50) and four took over 25 (the previous bag limit).

Although it was often possible for fishermen to catch many more than 50 crappie, the small size discouraged the possession of the catch.

For this reason it seems apparent that the attempt to control overpopulation by an increased bag limit was initiated too late to be of value. Comments by fishermen and personal observations would indicate the program of increasing the harvest of white crappie would have been more successful if the bag limit had been raised while the population was composed of larger individuals. Anglers on Lake Belton would be willing to take 50 desirable-sized fish, but are unwilling to clean and prepare 50 small individuals.

Table 8 shows numbers and size of fish caught by anglers on census days. No expansion of the data will be included as the census was limited and aimed at a specific group of fishermen.

The total catch figures for Lake Belton as included here are unrealistic since the majority of bass and catfish fishermen utilize boats and not fishing docks for their sport. No attempt was made to contact bass fishermen away from the fishing docks and no attempt was made to evaluate total fishing success on Lake Belton because the manpower necessary for such an extensive undertaking was not available.

The small size of white crappie in Lake Belton was shown in the catch of the anglers during the census period. Of the 2,664 crappie measured during the period, 75 percent were eight inches or less in total length and 56 percent were seven inches or less. Only 57 fish or two percent were larger than 11 inches. It must be remembered that these are the fish that were harvested and does not include the thousands that were caught and returned to the water as being too small to keep.

It is interesting to note that the 1,581 anglers contacted, fished a total of 6,872.5 hours and caught 4,944 fish. The rate of catch was computed at 0.72 fish/man hour.

Another interesting observation is the utilization of carp in the lake. A total of 1,565 carp were counted during the census, almost all taken for food, as well as for sport.

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Table 1. Lake Inks Netting Results, 1959.

Common Name	Number	Percent of Number	Weight (Lbs.)	Percent of Weight
Gar	106	5.43	471.22	22.68
Gizzard shad	739	37.85	98.07	4.72
Smallmouth buffalo	115	5.89	364.99	17.56
River carpsucker	275	14.09	544.66	26.20
Carp	24	1.23	55.63	2.68
Channel catfish	361	18.49	342.44	16.47
Yellow catfish	2	0.10	12.99	0.63
White bass	128	6.56	105.06	5.05
Largemouth black bass	22	1.13	34.11	1.64
Texas spotted bass	5	0.25	3.32	0.16
Warmouth	4	0.21	1.19	0.05
Sunfish (all)	96	4.92	7.98	0.39
White crappie	74	3.79	36.20	1.74
Freshwater drum	1	0.06	0.56	0.03
Totals	1,952	100.00	2,078.42	100.00

Table 2. Lake Inks Rotenone Results, July 22, 1959.

Common Name	Number	Percent of Number
Gizzard shad	1,980 (approx)	61.98
Carp	1	0.03
Cyprinids (minnows)	460 (approx)	14.39
Channel catfish	40	1.25
White crappie	6	0.19
Largemouth black bass	33	1.03
Warmouth	1	0.03
Sunfish (all)	671 (approx)	21.00
Logperch	2	0.06
Freshwater drum	1	0.04
Totals	3,195	100.00

Table 3. Lake Inks Seining Results, 1959.

Common Name	Scientific Name	Number	Percent of Number
Gizzard shad	Dorosoma cepedianum	79	6.10
Spottail shiner	Notropis venustus	924	71.29
Redhorse shiner	Notropis lutrensis	259	19.99
Parrot minnow	Pimephales vigilax	3	0.23
Gambusia	Gambusia affinis	1	0.08
Largemouth black bass	Micropterus salmoides	3	0.23
Texas spotted bass	Micropterus treculi	3	0.23
Green sunfish	Lepomis cyanellus	15	1.16
Bluegill sunfish	Lepomis macrochirus	9	0.69
Totals		1,296	100.00

Table 4. Lake Granite Shoals Netting Results, 1959.

Common Name	Number	Percent of Number	Weight (Lbs.)	Percent of Weight
Longnose gar	4	0.74	23.25	2.99
Gizzard shad	75	13.79	15.50	2.00
Smallmouth buffalo	176	32.35	437.24	56.23
River carpsucker	120	22.06	104.38	13.43
Carp	5	0.92	12.96	1.66
Gray redhorse sucker	2	0.37	19.63	2.53
Channel catfish	56	10.29	82.21	10.57
Yellow catfish	3	0.55	21.38	2.75
White bass	32	5.88	28.45	3.66
Largemouth black bass	12	2.21	13.82	1.78
Texas spotted bass	1	0.18	1.75	0.22
Sunfish (all)	34	6.25	3.69	0.47
White crappie	22	4.05	11.89	1.53
Freshwater drum	2	0.36	1.38	0.18
Totals	544	100.00	777.53	100.00

Table 5. Lake Buchanan Netting Results, 1959.

Common Name	Number	Percent of Number	Weight (Lbs.)	Percent of Weight
Gar	12	0.60	35.51	2.14
Gizzard shad	1,069	53.91	485.86	29.19
Smallmouth buffalo	55	2.78	182.49	10.96
River carpsucker	302	15.23	589.03	35.38
Carp	1	0.05	5.25	0.32
Channel catfish	184	9.27	108.27	6.50
Yellow catfish	5	0.26	16.87	1.01
White bass	266	13.42	186.38	11.20
Largemouth black bass	25	1.26	27.38	1.65
Texas spotted bass	13	0.65	8.06	0.48
Warmouth	1	0.05	0.38	0.02
Sunfish (all)	28	1.41	2.69	0.16
White crappie	22	1.11	16.53	0.99
Totals	1,983	100.00	1,664.70	100.00

Table 6. Lake Belton Netting Results, 1959.

Common Name	Number	Percent of Number	Weight (Lbs.)	Percent of Weight
Gar	114	14.68	162.85	22.75
Gizzard shad	186	23.94	43.32	6.05
Smallmouth buffalo	22	2.83	26.89	3.76
River carpsucker	51	6.57	96.81	13.52
Carp	28	3.61	31.77	4.43
Gray redhorse sucker	25	3.21	54.13	7.56
Channel catfish	83	10.68	172.18	24.04
White bass	14	1.80	15.54	2.17
Largemouth black bass	24	3.09	40.48	5.65
Sunfish (all)	102	13.12	11.51	1.61
White crappie	77	9.91	43.87	6.13
Freshwater drum	51	6.56	16.69	2.33
Totals	777	100.00	716.04	100.00

Table 7. Lake Belton Seining Results, 1959.

Common Name	Scientific Name	Number	Percent of Number
Spotted gar	Lepisosteus productus	1	0.23
Longnose gar	Lepisosteus osseus	1	0.23
Gizzard shad	Dorosoma cepedianum	23	5.28
Spottail shiner	Notropis venustus	271	62.15
Redhorse shiner	Notropis lutrensis	77	17.66
Largemouth black bass	Micropterus salmoides	24	5.50
Warmouth	Chaenobryttus gulosus	1	0.23
Green sunfish	Lepomis cyanellus	2	0.46
Spotted sunfish	Lepomis punctatus	3	0.68
Redear sunfish	Lepomis microlophus	2	0.46
Bluegill sunfish	Lepomis macrochirus	27	6.20
Longear sunfish	Lepomis megalotis	4	0.92
Totals		436	100.00

Table 8. Lake Belton Creel Census Results, February 5 through September 28, 1959.

Species Caught	Length in inches																								Total
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
Largemouth black bass	-	1	9	11	13	19	21	19	24	17	5	5	3	11	6	7	6	2	4	2	1	-	-	-	186
Spotted bass	-	-	-	5	1	4	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
White crappie	6	293	625	558	519	305	218	83	45	7	2	3	-	-	-	-	-	-	-	-	-	-	-	-	2664
Channel catfish	-	-	-	-	3	11	18	12	9	11	11	15	4	3	2	2	3	1	1	-	-	-	-	-	106
White bass	-	-	-	1	2	4	1	27	25	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	69
Drum	-	-	-	-	3	10	5	2	2	3	-	-	1	-	-	-	-	-	-	-	-	-	-	-	26
Warmouth	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
Green sunfish	3	7	13	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
Bluegills	28	82	40	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	159
Redear sunfish	-	2	9	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Longear sunfish	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Carp	-	-	3	1	44	56	131	201	456	392	42	46	18	16	9	9	17	59	19	22	20	1	2	1	1565
Buffalo	-	-	-	-	1	-	10	10	5	18	8	6	7	2	-	4	1	3	-	2	-	-	-	-	77
Gar	-	-	-	-	-	1	-	1	6	-	-	8	1	1	-	-	-	-	-	-	-	-	-	-	18
Totals	39	389	702	592	591	410	406	360	574	456	69	83	34	33	17	22	27	65	24	26	21	1	2	1	4944

total fishermen	1,581	
total fish	4,944	
total hours fished	6,872.5	
total fish/man-hour		.71938