

Colorado River

Report of Fisheries Investigations
Resurvey of the Waters of Region 6-B

by

NOTHING ON RIVER

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and

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Dingell-Johnson Project F-2-R-8, Job B-20
February 1, 1960 - January 31, 1961

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A B S T R A C T

A fisheries resurvey was conducted in Region 6-B to ascertain major changes in fish populations in the rivers and impoundments previously surveyed. In addition physical changes which might influence fisheries management work were noted. Only limited surveys were made on Lakes Buchanan, Marble Falls, Granite Shoals, and Travis and the Leon and Colorado Rivers. No significant changes in fish populations were noted but it was found that these waters continue to carry a sizable rough fish population, exceeding 70 percent of the total netted fish.

Lakes Inks and Belton were subjected to heavy netting pressure and results obtained are considered to be comparable to results of preceding segments. Rough fish were found to dominate the nettable population in both total numbers and total weight.

It is believed that certain factors, probably involving commercial netting, have influenced the rough fish complex on Lake Belton. The removal of large numbers of smallmouth buffalo in 1958 has presumably resulted in an increased percentage of carpsucker in the netting collections as well as an increase in pounds per foot of net for this species.

The large rough fish population found to be present in Inks Lake has resulted in a project designed to test the effectiveness of physical removal of these species.

Segment Completion Report

State of Texas

Project No. F-2-R-8

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, 1960 - January 31, 1961.

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 small-mesh experimental gill nets. Small-mesh seine collections were made to check spawning success and forage fish populations.

One rotenone sample was taken for comparison with the net collections. However, for reasons later explained, this data is not considered reliable. All specimens taken in the net collections were weighed, measured and checked in the field for gonadal development.

Random net sets were used to sample fish populations in all of the waters resurveyed except Inks Lake. In Inks Lake netting stations established in 1955 were utilized during this segment along with some random sets.

Any major physical change which might influence distribution, movement, or spawning success of the fish population was noted at each of the concerned waters.

Six lakes and one river were surveyed during the segment, but only Lakes Inks and Belton were worked extensively enough for comparison with previous surveys. Lakes Granite Shoals, Buchanan, Marble Falls, and Travis were visited, and netting collections were made in an effort to note major changes in the fish population and to keep familiar with the waters. No attempt will be made to evaluate the results in detail or compare them with previous, more extensive surveys.

The Leon River below Belton Dam was surveyed to determine the desirability of a complete fisheries renovation. Limited resurvey and reconnaissance under Job B-22 will be continued during the coming segment on the waters of Region 6-B, except on Lake Inks and Buchanan, as noted in the following discussions of those impoundments.

FINDINGS AND DISCUSSION

Lake Granite Shoals

Two trips were made to Lake Granite Shoals during the segment period, one on August 4 and 5, and one on November 22 and 23. A total of 24 experimental gill nets were set during the trips. Results of the collections are presented in Table 1. Rough fish, including longnose gar, gizzard shad, freshwater drum, carp, river carpsucker, gray redhorse sucker, and smallmouth buffalo made up 72.54 percent of total numbers taken and 85.57 percent of total weight.

In spite of the number of rough fish, sport fishing has remained good and commercial development of fishing docks and other accommodations is increasing yearly. Principal game species taken during the year were white crappie, white bass, black basses and channel catfish. Good catches of white bass and crappie were made throughout the year, but channel catfish were reportedly taken in far fewer numbers than in previous years.

Lake Buchanan

A total of 39 experimental gill nets were set in Lake Buchanan during the segment. Rough fish, including longnose gar, gizzard shad, smallmouth buffalo, river carpsucker, gray redhorse sucker, carp and freshwater drum accounted for 70.23 percent of total numbers and 81.64 percent of total weight taken in the net collections. The results of the netting collections are presented in Table 2.

From reports of fishermen and camp operators, sport fishing was fair throughout the year. A seasonal improvement takes place when white bass move to the head of the lake to spawn. This concentration occurs in late winter through early spring and fishing success improves greatly in the upper lake and up the Colorado River for approximately 40 miles. An extensive resurvey of Lake Buchanan will be accomplished under Job B-24 during the coming segment.

Lake Marble Falls

Twenty-one gill nets were set on Lake Marble Falls during the segment period. Rough fish made up 70.85 percent of total numbers and 82.18 percent of total weight netted. Although the lake maintains a good channel catfish population and seasonally white bass fishing is good, the lake does not support a heavy sport fishery. Fish taken per foot of net in Lake Marble Falls was computed at 0.15 as compared with 0.23 in Lake Granite Shoals, located immediately above on the Colorado River. In pounds of fish per foot of net, Marble Falls produced 0.15 compared with 0.30 in Lake Granite Shoals. Physiography of the lake basin is believed to be at least partially responsible for the poor fish population. Collection data for Lake Marble Falls is found in Table 3.

Lake Travis

Two trips were made to Lake Travis but only six gill nets were set. The data obtained is considered too meager for presentation in this report.

Leon River

The Leon River was resurveyed primarily to ascertain the desirability of a total fish eradication and restocking program. The segment of the river surveyed extends from Belton Dam to a small dam located approximately three miles downstream. Although the limited fish population present indicates needed renovation, no management work will be undertaken until such time as the City of Temple approves the project.

Lake Belton

Eighty-four gill nets were set during the segment period. Although all were random sets, an attempt was made to obtain lake coverage by netting the upper and lower lake on the same trip. The results of the net collections are shown in Table 4.

An examination of the data reveals a number of interesting facts, but interpretation is difficult. Changes in the smallmouth buffalo and river carpsucker populations have been pronounced over the past three years.

Species	1958		1959		1960	
	Percent of number	Percent of weight	Percent of number	Percent of weight	Percent of number	Percent of weight
Buffalo	7.85	23.19	2.83	3.73	8.25	19.34
Carpsucker	1.94	5.91	6.57	13.52	10.97	13.45
Totals	9.79	29.10	9.40	17.28	19.22	32.79

As can be seen, the buffalo population appears in the netting data in far greater numbers in both the 1958 and the 1960 segments than in the 1959 segment. The reduction in 1959 is believed to be correlated with the removal of large numbers of smallmouth buffalo by a commercial fisherman during late 1958 and early 1959.

In 1958, smallmouth buffalo were taken at the rate of two pounds per 100 feet of net set. River carpsucker were taken at 0.8 pounds per 100 feet. In 1959, six months after the commercial fisherman ceased operation, the buffalo population was found to be considerably reduced. Netting results in 1959 showed a rate of catch for buffalo at 0.5 pounds per 100 feet of net and river carpsucker were taken at one pound per 100 feet of net. In 1960, river carpsucker were taken at a rate exceeding 2 pounds per 100 feet of net and smallmouth buffalo at 3 pounds per 100 feet of net.

Although the reason for the 1959 decline in the nettable buffalo population is not understood, the only known factor which might account for the decline (outside of sampling error) is commercial fishing. The market price for smallmouth buffalo is considerably higher than for other rough fish available and therefore they are selectively searched out and taken. During this period the lake was commercially netted and approximately 40 pounds of buffalo per surface acre were removed. The mesh sizes of commercial nets used on Belton Lake were too large to take many river carpsuckers and this species shows a steady increase in the netting collections from 1958 through 1960.

Because the indicated buffalo decline is so pronounced, an assumption is made that there was a reduction in the total buffalo population in Lake Belton. The re-

duction is at least partially attributed to the effects of commercial fishing. In support of this assumption is the fact that three other lakes surveyed do not show great changes in the buffalo-carp sucker complex. Lakes Granite Shoals, Buchanan, and Inks have rough fish populations in which either buffalo or carp sucker predominate. None of the three have shown a major change in relative abundance of the two species.

Of the three lakes referred to in the preceding paragraph, two -- Inks and Buchanan -- show a predominance of carp sucker over buffalo in the netting collections. In Lake Granite Shoals the smallmouth buffalo is taken in much higher numbers than the carp sucker. Two theories have been advanced to explain the difference in this population complex. One is the factor of lake age. Lake Granite Shoals, which contains the highest buffalo population, is the youngest at eight years of age as compared to 23 years each for Lakes Buchanan and Inks. It is possible that lake age may largely account for the difference in relative abundance of the two species.

Another theory is the possible effect of commercial netting. Lake Granite Shoals, which maintains the largest buffalo population, has been virtually closed to commercial netters. Lake Buchanan, which has the highest nettable carp sucker population, has supported almost constant commercial netting. Lake Inks has been netted heavily at times.

Lake fertility does not appear to be a major factor as the three lakes are in a continuous chain along the Colorado River. Lake Granite Shoals and Buchanan are considered somewhat more fertile than Inks Lake because of the influence of major tributaries.

Lake Belton appears to have the lowest overall fish population among the impoundments in Region 6-B. In both fish/100 feet of net and pounds of fish/100 feet of net, Lake Belton has reflected considerably smaller populations than Lakes Granite Shoals, Inks, and Buchanan during the past three years. However, game fish populations were found to be substantially the same in all four lakes. The significance of this is not understood, although it would appear that Belton Lake is less fertile than those on the Colorado River drainage, but that for the period which the impoundment has existed (eight years), game fish have been able to compete successfully with rough species.

Lake Inks

A total of 107 gill net sets were made during nine months of the segment. Most were at netting stations established in 1955, although some random sets were made. Results of the net collections are shown in Table 5.

Results of a total kill attempt utilizing rotenone at 1 p.p.m. in a small cove of the lake are not included here since high winds apparently carried large quantities of the toxicant into open water where shad were observed dying several hundred yards from the area treated. Many fish in the cove itself apparently escaped the lethal effects of the rotenone.

Rough fish, including longnose gar, smallmouth buffalo, river carp sucker, European carp, gizzard shad, and freshwater drum comprised 72.21 percent of the numbers and 79.07 percent of weight of fish netted. These figures are in line with past surveys in regard to the rough fish-game fish ratios for the impoundment. The

following shows comparable figures for the past three segment periods:

	1957	1958	1959
Percent rough fish (number)	63	71	65
Percent rough fish (weight)	78	71	74

Gizzard shad accounted for over 41 percent of numbers and 6.5 percent of weight of fish netted as opposed to just under 38 percent and 5 percent respectively during 1959. The slight increase indicated may be real, but is not significant. It is felt that the fish population complex that now exists compares closely with that of recent years.

Due to continued lack of fishing success in Lake Inks as well as its relatively small area (900 surface acres), Job E-6 was submitted and subsequently approved for the purpose of removing large quantities of rough species, especially river carpsucker, longnose gar, and smallmouth buffalo from Lake Inks. In conjunction with this job, an extensive resurvey under Job B-24 will be continued during the coming segment.

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Gary Wood
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Date April 18, 1961

Table 1. Lake Granite Shoals netting results, 1960.

Species	Number	Percent of number	Weight (pounds)	Percent of weight
Longnose gar	16	2.33	35.92	3.93
Gizzard shad	112	16.35	31.17	3.41
Smallmouth buffalo	159	23.21	464.02	50.74
River carpsucker	192	28.03	208.80	22.83
Gray redhorse sucker	3	0.44	5.01	0.54
Carp	7	1.02	30.04	3.28
Channel catfish	49	7.16	67.49	7.38
Flathead catfish	1	0.15	4.50	0.49
White bass	40	5.84	28.40	3.09
Texas spotted bass	2	0.29	1.34	0.15
Largemouth bass	12	1.76	7.82	0.86
Warmouth	1	0.14	0.13	0.02
Green sunfish	1	0.15	0.13	0.02
Redear sunfish	1	0.15	0.13	0.02
Bluegill	35	5.10	4.96	0.54
Orangespotted sunfish	2	0.29	0.25	0.03
Longear sunfish	7	1.03	0.50	0.06
White crappie	37	5.40	16.20	1.77
Freshwater drum	8	1.16	7.69	0.84
Totals	685	100.00	914.50	100.00

Table 2. Lake Buchanan netting results, 1960.

Species	Number	Percent of number	Weight (pounds)	Percent of weight
Longnose gar	28	2.88	105.22	8.63
Gizzard shad	386	39.75	220.91	18.14
Smallmouth buffalo	34	3.50	174.87	14.35
River carpsucker	198	20.39	429.82	35.29
Gray redhorse sucker	4	0.42	6.32	0.52
Carp	22	2.26	51.68	4.24
Channel catfish	79	8.14	76.57	6.28
Flathead catfish	4	0.41	20.89	1.72
White bass	136	14.01	85.35	7.01
Largemouth bass	16	1.64	16.46	1.35
Green sunfish	3	0.31	0.38	0.03
Redear sunfish	1	0.11	0.31	0.02
Bluegill	11	1.13	2.32	0.19
Longear sunfish	1	0.10	0.13	0.01
White crappie	38	3.92	21.23	1.75
Freshwater drum	10	1.03	5.70	0.47
Totals	971	100.00	1,218.16	100.00

Table 3. Lake Marble Falls netting results, 1960.

Species	Number	Percent of number	Weight (pounds)	Percent of weight
Longnose gar	5	1.28	25.39	6.32
Gizzard shad	182	46.55	68.25	16.99
Smallmouth buffalo	34	8.70	103.93	25.87
River carpsucker	56	14.32	132.57	33.00
Channel catfish	62	15.85	41.07	10.22
White bass	30	7.67	15.02	3.74
Texas spotted bass	2	0.52	0.88	0.23
Largemouth bass	4	1.02	9.69	2.41
Warmouth	1	0.25	0.38	0.10
Bluegill	7	1.79	0.56	0.14
White crappie	8	2.05	3.95	0.98
Totals	391	100.00	401.69	100.00

Table 4. Lake Belton netting results, 1960.

Species	Number	Percent of number	Weight (pounds)	Percent of weight
Spotted gar	62	3.53	64.65	4.16
Longnose gar	85	4.83	137.22	8.83
Gizzard shad	611	34.73	161.11	10.38
Smallmouth buffalo	145	8.25	300.42	19.34
River carpsucker	193	10.97	208.82	13.45
Gray redhorse sucker	63	3.58	72.87	4.69
Carp	49	2.78	107.81	6.94
Channel catfish	119	6.76	266.15	17.13
Flathead catfish	5	0.28	19.57	1.26
White bass	79	4.50	91.11	5.87
Texas spotted bass	5	0.29	2.14	0.14
Largemouth bass	43	2.44	59.37	3.82
Warmouth	2	0.12	0.25	0.01
Green sunfish	23	1.31	3.27	0.21
Redear sunfish	2	0.12	0.50	0.04
Bluegill	124	7.05	14.22	0.91
Longear sunfish	43	2.44	4.65	0.30
White crappie	92	5.23	30.26	1.95
Freshwater drum	14	0.79	8.75	0.57
Totals	1,759	100.00	1,553.14	100.00

Table 5. Lake Inks netting results, 1960.

Species	Number	Percent of number	Weight (pounds)	Percent of weight
Longnose gar	114	4.58	596.05	19.72
Gizzard shad	1,035	41.57	197.32	6.53
Smallmouth buffalo	128	5.14	468.15	15.49
River carpsucker	451	18.11	1,010.38	33.44
Carp	52	2.09	93.19	3.09
Channel catfish	222	8.91	275.39	9.12
Flathead catfish	7	0.28	141.33	4.67
White bass	167	6.71	115.42	3.81
Largemouth bass	37	1.49	38.25	1.27
Warmouth	21	0.84	8.11	0.26
Green sunfish	22	0.88	2.71	0.08
Redear sunfish	30	1.20	3.72	0.13
Bluegill	86	3.46	8.68	0.28
Longear sunfish	27	1.09	3.03	0.11
White crappie	73	2.93	36.12	1.20
Freshwater drum	18	0.72	24.04	0.80
Totals	2,490	100.00	3,021.89	100.00

A checklist of species mentioned in report.

Common name	Scientific name
Spotted gar	<u>Lepisosteus oculatus</u>
Longnose gar	<u>L. osseus</u>
Gizzard shad	<u>Dorosoma cepedianum</u>
Smallmouth buffalo	<u>Ictiobus bubalus</u>
River carpsucker	<u>Carpionodes carpio</u>
Gray redhorse shiner	<u>Moxostoma congestum</u>
Carp	<u>Cyprinus carpio</u>
Channel catfish	<u>Ictalurus punctatus</u>
Flathead catfish	<u>Pylodictus olivaris</u>
White bass	<u>Roccus chrysops</u>
Texas spotted (Guadalupe) bass	<u>Micropterus treculi</u>
Largemouth bass	<u>M. salmoides</u>
Warmouth	<u>Chaenobryttus coronarius</u>
Green sunfish	<u>Lepomis cyanellus</u>
Redear sunfish	<u>L. microlophus</u>
Bluegill	<u>L. macrochirus</u>
Orangespotted sunfish	<u>L. humilis</u>
Longear sunfish	<u>L. megalotis</u>
White crappie	<u>Pomoxis annularis</u>
Freshwater drum	<u>Aplodinotus grunniens</u>

