JOB PROGRESS REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-4-R-15

REGION 2-A FISHERIES STUDY

Job No. B-37: Fishery Management Recommendations

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Summary

During this segment 15 major public lakes in North Central Texas were checked on a quarterly basis. From 5 to 15 netting collections were made on each lake.

Data were recorded for the specimens taken in the netting and seining collections, and notes were made on aquatic vegetation.

Game fish species comprised 50 per cent or more of the total number of fish taken in 5 lakes. But rough fish species, by weight, were dominant in 14 of the 15 lakes checked.

In 7 lakes the rough fish species comprised more than 80 per cent of the total weight of all fish taken. Some consideration should be given to controlling the rough fish species in those lakes.

Aquatic vegetation control work should be done at Lakes Graham and Wichita immediately. Lotus and cattails are likely to blanket many prime fishing areas if they are allowed to go unchecked.

This job should be continued so that we may be able to keep abreast of changes in the fish populations. This information will be valuable in managing the fisheries of this area.

Job Progress Report

State of Texas

Project No. F-4-R-15 Name: Region 2-A Fisheries Studies

Job No. B-37 Title: Fishery Management Recommendations

Period Covered: January 1, 1968 to December 31, 1968

Objectives:

To determine the need for, in Region 2-A waters:

1. Changes in fish harvest regulations.
2. Population control.
3. Stocking.
4. Evaluation of commercial netting.
5. Vegetation control.

Procedures:

Proposed fishing regulations for the Possum Kingdom Regulatory Authority area were discussed at a Game Management Officer-Biologist meeting prior to being presented at public hearings. Then they were presented to the Commissioners of the Texas Parks and Wildlife Department. The regulations were based upon results and findings of surveys and work done in this region, and they set seasons, bag and possession limits, and means and methods of harvest.

Fifteen major public lakes in the region were divided into 3 groups: less than 5,000 acres, more than 5,000 acres, and more than 10,000 acres. From 5 to 15 nets, based on the size of the lake, were set overnight in each lake during each quarter.

Experimental gill nets, 150 feet long with varying mesh sizes from 1 to 3½ inches, and a 20-foot seine were used to make the fish collections. The game fish species were weighed and measured individually. A representative sample of rough fish species were weighed and measured and the remainder of rough fish were counted and bulk weighed.

Seining collections were checked for game fish species primarily. Notes were made on the game fish and the forage fish species taken.

Stocking recommendations were based on seining collection data.

Gill netting data were used in considering whether or not a contract fisherman might be beneficial to a lake.

Notes were made on the types of aquatic vegetation present and whether or not it interfered with access or fishability.

Table 1 is a checklist of all fish taken in the netting and seining collections during this segment. Only common names are used in the report.

Table 1

Checklist of Fish Species

Common Name	Scientific Name
Spotted gar	Lepisosteus oculatus
Longnose gar	Lepisosteus osseus
Threadfin shad	Dorosoma petenense
Gizzard shad	Dorosoma cepedianum
Smallmouth buffalo	Ictiobus bubalus
River carpsucker	Carpiodes carpio
Gray redhorse	Moxostoma congestum
Spotted sucker	Minytrema melanops
Carp	Cyprinus carpio
Golden shiner	Notemigonus crysoleucas
Blacktail shiner	Notropis venustus
Red shiner	Notropis lutrensis
Fathead minnow	Pimephales promelas
Channel catfish	Ictalurus punctatus
Blue catfish	Ictalurus furcatus
Black bullhead	Ictalurus melas
Yellow bullhead	Ictalurus natalis
Flathead catfish	Pylodictis olivaris
Blackstripe topminnow	Fundulus notatus
Mosquitofish	Gambusia affinis
Brook silverside	Labidesthes sicculus
White bass	Roccus chrysops
Spotted bass	Micropterus punctulatus
Largemouth bass	Micropterus salmoides
Warmouth	Chaenobryttus gulosus
Green sunfish	Lepomis cyanellus
Redear sunfish	Lepomis microlophus
Bluegill	Lepomis macrochirus
Yellowbelly	Lepomis auritus
Longear sunfish	Lepomis megalotis
White crappie	Pomoxis annularis
Black crappie	Pomoxis nigromaculatus
Logperch	Percina caprodes
Freshwater drum	Aplodinotus grunniens

Findings:

Lake Pat Cleburne

Gill Netting: A total of 286 specimens of 14 species was taken in 20 netting collections made on this lake near Cleburne in Johnson County. The combined results of the 4 netting trips are shown in Table 2. It is interesting to note that game fish species comprised more than 51 per cent of the number and weight of all fish taken. This is probably due to the fact that Lake Pat Cleburne is a relatively new reservoir; it was built in 1963.

Table 2

Lake Pat Cleburne Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Gizzard shad 1/	53	18.53	10.50	4.33
Smallmouth buffalo 1/	32	11.19	40.28	16.60
River carpsucker 1/	21	7.34	19.68	8.11
Carp 1/	28	9.79	39.41	16.24
Channel catfish	43	15.04	70.17	28.92
Blue catfish	1	0.35	2.81	1.16
Yellow bullhead	8	2.80	2.90	1.20
White bass	15	5.24	8.60	3.54
Largemouth bass	14	4.90	19.20	7.91
Warmouth	1	0.35	0.12	0.04
Green sunfish	1	0.35	0.13	0.05
Bluegill	25	8.74	2.43	1.00
White crappie	40	13.99	19.25	7.93
Freshwater drum 1/	4	1.39	7.20	2.97
Total	286	100.00	242.68	100.00
Rough Fish	138	48.24	117.07	48.25
Game Fish	148	51.76	125.61	51.75

1/ Indicates rough fish species

Gizzard shad, the most frequently encountered rough fish species, comprised 18.53 per cent of the total number and 4.33 per cent of the total weight of all fish taken in the netting collections. Smallmouth buffalo, carp, and river carpsucker, in that order, were the most abundant rough fish species taken.

Channel catfish were the most abundant game fish species taken in the nets at Lake Pat Cleburne. White crappie were the next most abundant. In addition, there appears to be good populations of white bass and largemouth bass in the lake.

Seining Collections: Two seining collections were made in conjunction with the netting trips. Small gizzard shad, from 4 to 9 inches were the most abundant fish taken. The only other fish taken were 2 red shiners and 1 fathead minnow. No catfish, bass, or crappie were taken. Even though no game fish were taken, evidence of sufficient forage was found.

Vegetation: Aquatic vegetation is not a problem in this lake at this time.

Lake Nocona

Gill Netting: In the 20 netting collections made on Lake Nocona, Montague County, during 1968, 573 fish of 13 species were taken (Table 3). Overall, game fish species comprised 55.49 per cent of the total number of all fish taken, but only 20.15 per cent of the total weight.

Table 3

Lake Nocona Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Gizzard shad 1/	31	5.41	5.73	0.66
Smallmouth buffalo 1/	2	0.35	31.23	3.62
River carpsucker 1/	146	25.48	589.17	68.18
Carp 1/	73	12.74	57.59	6.67
Channel catfish	25	4.36	30.59	3.54
Flathead catfish	7	1.22	12.05	1.39
White bass	54	9.42	71.00	8.22
Largemouth bass	21	3.67	36.15	4.18
Green sunfish	1	0.17	0.09	0.01
Bluegill	55	9.60	3.98	0.46
Yellowbelly sunfish	1	0.17	0.05	0.01
White crappie	154	26.88	20.23	2.34
Freshwater drum 1/	3	0.53	6.24	0.72
Total	573	100.00	864.10	100.00
Rough Fish	255	44.51	689.96	79.85
Game Fish	318	55.49	174.14	20.15

1/ Indicates rough fish species

White crappie, bluegill, white bass, channel catfish, and largemouth bass, in that order, were the most frequently taken game fish species.

The white crappie population appears to be stunted; the average weight was slightly more than 2 ounces. Other than this, the game fish population seems to be in relatively good shape.

River carpsucker ranked first in total number and total weight among the rough fish species. They comprised more than 60 per cent of the total weight of all fish taken in the nets. No other rough fish species seems to be a problem at this time.

Seining Collections: Several seining collections were made on this lake. Brook silversides were the most abundant; however, 2 largemouth bass (1 to 3 inches) and 1 white crappie (1½ inch) were also taken. The game fish indicate successful reproduction.

Vegetation: Aquatic vegetation is not a problem in this lake at this time. The turbidity, caused by wind action and rough fish, is sufficient to prevent the development of large beds of submerged vegetation.

Possum Kingdom Lake

Gill Netting: Sixty netting collections were made during 1968 on Possum Kingdom Lake, Palo Pinto County. The results are shown in Table 4. Rough fish species comprised 52.49 per cent of the total number and 69.10 per cent of the total weight. Gizzard shad, the most frequently taken fish, comprised 28.78 per cent of the total number of the fish taken in the nets. Smallmouth buffalo comprised 8.59 per cent of the total number but more than 28 per cent of the total weight.

Table 4

Lake Possum Kingdom Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Longnose gar 1/	48	4.97	119.72	10.22
Threadfin shad 1/	26	2.69	2.89	0.25
Gizzard shad 1/	278	28.78	157.61	13.45
Smallmouth buffalo 1/	83	8.59	330.70	28.22
River carpsucker 1/	37	3.83	92.84	7.92
Carp 1/	24	2.49	77.15	6.58
Channel catfish	76	7.87	114.55	9.78
Flathead catfish	12	1.24	47.94	4.09
White bass	115	11.90	83.44	7.12
Spotted bass	6	0.62	5.01	0.43
Largemouth bass	44	4.56	61.53	5.25
Warmouth	6	0.62	1.85	0.16
Green sunfish	14	1.45	2.25	0.19
Redear sunfish	24	2.48	6.00	0.51
Bluegill	139	14.39	31.16	2.66
Yellowbelly sunfish	2	0.21	0.61	0.05
Longear sunfish	3	0.31	0.22	0.02
White crappie	18	1.86	7.54	0.64
Freshwater drum 1/	11	1.14	28.82	2.46
Total	966	100.00	1,171.83	100.00
Rough Fish	507	52.49	812.73	69.10
Game Fish	459	47.51	359.10	30.90

1/ Indicates rough fish species

Bluegill, white bass, and channel catfish, in that order, were the most frequently taken game fish species. Despite the relatively low percentage of crappie, the ones taken seem to be in good shape. Generally, the game fish population is good despite the age of the lake.

Seining Collections: Brook silversides, blacktail shiners, largemouth bass, and bluegills were taken in the seining collections. The brook silversides were the most abundant and widely distributed species.

The small bass (2 to 4 inch) indicated that there had been a good spawn in Lake Possum Kingdom.

Vegetation: Generally, aquatic vegetation is not a problem in this lake. However, some persons with lake front property have complained about the pondweeds, Potamogeton. Recommendations were made to individuals, upon request, for its control.

Lake Graham

Gill Netting: Netting results, based on 20 netting collections, indicate that rough fish species are dominant in Lake Graham, Young County. Rough fish species comprised 61.51 per cent of the total number and 80.19 per cent of the total weight. Gizzard shad alone represented 43.65 per cent of the total catch (Table 5). Since few gar were taken in the nets, it seems that the bass and crappie are the shad's primary natural predators, however, they do not seem to be very effective in controlling the shad. At this time, no other rough fish species seems to be a problem.

Table 5

Lake Graham Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	2	0.40	2.18	0.45
Gizzard shad 1/	220	43.65	44.77	9.23
Smallmouth buffalo 1/	15	2.98	116.23	23.96
River carpsucker 1/	44	8.73	145.90	30.08
Carp 1/	13	2.58	40.56	8.36
Golden shiner 1/	3	0.60	0.48	0.10
Channel catfish	29	5.75	33.70	6.95
Flathead catfish	8	1.59	42.13	8.69
Largemouth bass	20	3.97	23.15	4.77
Warmouth	4	0.79	0.69	0.14
Green sunfish	6	1.19	0.90	0.19
Redear sunfish	7	1.39	1.18	0.24
Bluegill	63	12.50	8.63	1.78
Yellowbelly sunfish	3	0.60	0.70	0.14
White crappie	54	10.71	18.71	3.86
Freshwater drum 1/	13	2.57	5.15	1.06
Total	504	100.00	485.04	100.00
Rough Fish	310	61.51	355.27	80.19
Game Fish	194	38.49	129.77	19.81

1/ Indicates rough fish species

Bluegill, white crappie, and channel catfish were the most abundant game fish species taken in the netting collections. Largemouth bass comprised 3.97 per cent of the total number of fish taken in the collections. The rough fish population, particularly the shad, should be reduced if possible.

Seining Collections: Brook silversides, blacktail shiners, gizzard shad, largemouth bass, bluegill, and blackstripe topminnow were taken in the seining collections. The shad and the silversides were the most frequently taken fish. The small bass, from 2 to 4 inches, indicated that they had spawned.

Vegetation: Lotus (Nelumbo sp.) and cattails (Typha latifolia) are becoming a problem in the upper reaches of the lake. In August we estimated that there were approximately 6 acres of lotus in the north end of the lake. The local Game Management Officer estimated approximately 200 acres of cattails scattered around the lake's shoreline. Both of these plants are likely to cover prime fishing areas if they are not controlled.

Lake Bridgeport

Gill Netting: Sixty netting collections were made during 1968 on Lake Bridgeport, Wise County. The results are shown in Table 6. Game fish species comprised 57.72 per cent of the total number and 31.43 per cent of the total weight of all fish taken in the nets.

Table 6

Lake Bridgeport Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	2	0.17	5.86	0.36
Longnose gar 1/	9	0.73	67.17	4.17
Gizzard shad 1/	37	3.04	16.20	1.01
Smallmouth buffalo 1/	219	17.98	515.09	31.97
River Carpsucker 1/	216	17.73	364.38	22.62
Carp 1/	14	1.15	64.55	4.01
Channel catfish	43	3.53	75.03	4.67
Flathead catfish	10	0.82	54.72	3.40
White bass	197	16.17	155.52	9.65
Largemouth bass	52	4.27	44.68	2.77
Green sunfish	4	0.33	0.42	0.03
Bluegill	55	4.52	7.48	0.46
White crappie	342	28.08	168.58	10.46
Freshwater drum 1/	18	1.48	71.33	4.43
Total	1,218	100.00	1,611.01	100.00
Rough Fish	515	42.28	1,104.58	68.57
Game Fish	703	57.72	506.43	31.43

1/ Indicates rough fish species

White crappie, smallmouth buffalo, river carpsucker, and white bass, in that order, were the most frequently taken fish. Of all the lakes checked during this year, Bridgeport has one of the best crappie populations. Not only are they abundant but there is also a good size range, and they are in good condition as shown by the average "K" factor, 2.67.

The smallmouth buffalo and the river carpsucker combined comprised more than 35 per cent of all fish taken in the nets. Thus these 2 species might be considered a problem in Lake Bridgeport. Since gizzard shad comprised only 3.04 per cent of all fish taken in the nets, they could hardly be considered a problem fish at this time.

Seining Collections: Few seining collections were made on this lake due to the windy weather. When collections were made, gizzard shad, brook silversides, mosquitofish, and bluegills were usually found.

Vegetation: Aquatic vegetation is not a problem in Lake Bridgeport at this time. Several patches of pondweed were found in the shallow water areas of the lake, but it is not considered to be a problem.

Lake Benbrook

Gill Netting: Twenty netting collections were made on Lake Benbrook, Tarrant County, during this segment. A total of 639 fish of 15 species was taken in the nets (Table 7). Rough fish species were dominant both in number and weight. Spotted sucker, found only in this lake during this survey, were the most frequently taken fish; they comprised 22.69 per cent of the total number. River carpsucker and gizzard shad, in that order, were the second and third most abundant fish taken in the nets at Benbrook.

Table 7

Lake Benbrook Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Gizzard shad 1/	104	16.28	40.82	4.82
River carpsucker 1/	121	18.94	418.23	49.37
Spotted sucker 1/	145	22.69	106.64	12.59
Carp 1/	40	6.26	131.05	15.47
Golden shiner 1/	14	2.19	2.80	0.33
Channel catfish	6	0.94	17.58	2.08
Flathead catfish	2	0.31	11.36	1.34
White bass	51	7.98	51.38	6.07
Largemouth bass	13	2.04	13.92	1.65
Warmouth	1	0.16	0.09	0.01
Green sunfish	2	0.31	0.26	0.03
Bluegill	60	9.39	7.40	0.87
White crappie	36	5.63	15.08	1.78
Black crappie	1	0.16	0.36	0.04
Freshwater drum 1/	43	6.72	30.15	3.55
Total	639	100.00	847.12	100.00
Rough Fish	467	73.08	729.69	86.13
Game Fish	172	26.92	117.43	13.87

1/ Indicates rough fish species

Among the game fish species, bluegill ranked first (9.39 per cent), white bass ranked second (7.98 per cent), and white crappie ranked third (5.63 per cent). Channel catfish comprised only 0.94 per cent of the fish taken in the nets. Generally, catfish are not too difficult to net and this low percentage indicates that there is not a large population of catfish in Benbrook. The reason for this situation is not fully understood, especially since fishermen report good catches of catfish.

Seining Collections: Several small largemouth bass (1 to 3 inches) were taken in the September seining collections. These small bass indicate that a natural spawn had occurred. Brook silverside, mosquitofish, and gizzard shad were found in good numbers.

Vegetation: Pondweed and lotus were found in 2 creeks on the south side of the lake, but neither plant is a problem at this time.

Lake Cisco

Gill Netting: Gizzard shad were the most frequently taken fish in the netting collections made on Lake Cisco, Eastland County, during 1968 (Table 8). Shad comprised 23.20 per cent of the total number. Bluegill, carp, and crappie, in that order, were the next most abundant species taken in the nets. Overall, game fish species comprised 51.63 per cent of the total number and 31.35 per cent of the total weight. Despite the fact that this is a fairly old lake, the fish population is in comparatively good shape.

Table 8

Lake Cisco Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Gizzard shad 1/	71	23.20	28.66	6.60
River carpsucker 1/	23	7.52	67.67	15.57
Carp 1/	47	15.36	200.44	46.13
Golden shiner 1/	7	2.29	1.52	0.35
Channel catfish	17	5.56	19.40	4.47
Flathead catfish	9	2.94	69.18	15.92
Largemouth bass	20	6.54	23.75	5.47
Green sunfish	2	0.65	0.19	0.04
Redear sunfish	6	1.96	1.23	0.28
Bluegill	69	22.55	9.35	2.15
White crappie	35	11.43	13.11	3.02
Total	306	100.00	434.50	100.00
Rough Fish	148	48.37	298.29	68.65
Game Fish	158	51.63	136.21	31.35

1/ Indicates rough fish species

Seining Collections: Few seining collections were made since only one good site was found. No specimens were taken in any of the seining collections.

Vegetation: Aquatic vegetation is not a problem in this relatively clear water lake. Apparently the water level fluctuates enough to prevent a serious problem from developing.

Lake Leon

Gill Netting: In the netting collections made on Lake Leon, Eastland County, game fish species comprised 55.89 per cent of the total fish and 19.94 per cent of the total weight of all fish taken (Table 9). White crappie comprised nearly 37 per cent of the fish taken in the nets. Even though largemouth bass were infrequently taken, the ones taken were in good shape. The average weight of the bass was more than 2 pounds. Lake Leon has been considered a "hot" bass lake by many anglers for a number of years. Also, some of the largest crappie were taken from this lake.

Table 9

Lake Leon Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	1	0.31	1.68	0.26
Gizzard shad 1/	13	4.04	1.48	0.22
Smallmouth buffalo 1/	105	32.61	442.66	67.01
River carpsucker 1/	13	4.04	37.02	5.60
Carp 1/	9	2.80	43.89	6.64
Channel catfish	39	12.11	58.21	8.81
Flathead catfish	1	0.31	12.92	1.96
Yellow bullhead	1	0.31	0.16	0.02
Largemouth bass	9	2.80	19.16	2.91
Warmouth	1	0.31	0.05	0.01
Bluegill	10	3.10	0.71	0.11
White crappie	119	36.95	39.79	6.02
Freshwater drum 1/	1	0.31	2.87	0.43
Total	322	100.00	660.60	100.00
Rough Fish	142	44.11	529.60	80.16
Game Fish	180	55.89	131.00	19.94

1/ Indicates rough fish species

Smallmouth buffalo comprised 32.61 per cent of all fish taken in the nets. Despite the large numbers of shad seen "schooling" near the surface of the water, they comprised only 4.04 per cent of the total number of fish taken.

Seining Collections: Mosquitofish and blacktail shiners were taken in the seining collections. Mosquitofish, the most frequently taken fish, are not considered to be too important as a forage species.

Vegetation: Aquatic vegetation was not a problem in Lake Leon during this study period.

Lake Grapevine

Gill Netting: Rough fish species (spotted and longnose gars, threadfin and gizzard shad, smallmouth buffalo, river carpsucker, carp, and freshwater drum) comprised 57.84 per cent of the total number and 87.77 per cent of the total weight of the fish taken in the 40 netting collections made on this Tarrant County lake. River carpsucker, smallmouth buffalo, gizzard shad, and carp were the most frequently taken rough fish species (Table 10).

Table 10

Lake Grapevine Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	8	1.14	12.19	0.93
Longnose gar 1/	11	1.57	46.01	3.50
Threadfin shad 1/	1	0.14	0.03	0.00
Gizzard shad 1/	85	12.14	95.94	7.31
Smallmouth buffalo 1/	90	12.86	458.05	34.88
River carpsucker 1/	127	18.14	385.33	29.35
Carp 1/	73	10.43	148.53	11.31
Channel catfish	13	10.43	18.76	1.43
Flathead catfish	2	1.86	8.28	0.63
White bass	83	11.86	53.48	4.07
Largemouth bass	29	4.14	15.12	1.15
Redear sunfish	1	0.14	0.35	0.02
Bluegill	48	6.86	4.82	0.37
White crappie	119	17.00	59.91	4.56
Freshwater drum 1/	10	1.42	6.38	0.49
Total	700	100.00	1,313.18	100.00
Rough Fish	405	57.84	1,152.46	87.77
Game Fish	295	42.16	160.72	12.23

1/ Indicates rough fish species

White crappie and white bass were the most common game fish species taken in the nets. Some of the best crappie taken during the year came from this lake. The average "K" factor was 2.68 and the "K" range was 0.65 to 4.55

Seining Collections: Several seining collections were made on Grapevine during the year. Blacktail, red shiners, and brook silversides were taken in good numbers. No game fish species were taken in the seining collections.

Vegetation: No aquatic vegetation was found to be a problem in this lake. In several backwater areas, some small patches of pondweeds were found; however they are not a problem.

Lake Wichita

Gill Netting: Rough fish species (spotted and longnose gars, gizzard shad, smallmouth buffalo, river carpsucker, carp, and freshwater drum) dominated the netting collections both in number and weight. The rough fish species comprised 85.85 per cent of the total number and 87.02 per cent of the total weight (Table 11). Gizzard shad, river carpsucker, and smallmouth buffalo, in that order, comprised more than 80 per cent of the total number of fish taken in the netting collections.

Table 11

Lake Wichita Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	19	2.54	32.47	2.94
Longnose gar 1/	5	0.67	10.23	0.93
Gizzard shad 1/	302	40.38	68.88	6.24
Smallmouth buffalo 1/	148	19.79	388.71	35.24
River carpsucker 1/	151	20.19	382.26	34.64
Carp 1/	15	2.01	74.16	6.73
Channel catfish	12	1.61	34.45	3.12
White bass	57	7.62	67.39	6.11
Largemouth bass	11	1.47	30.66	2.78
Bluegill	1	0.13	0.22	0.02
White crappie	25	3.34	10.53	0.95
Freshwater drum 1/	2	0.27	3.28	0.30
Total	748	100.00	1,103.24	100.00
Rough Fish	642	85.85	959.99	87.02
Game Fish	106	14.15	143.25	12.98

1/ Indicates rough fish species.

White bass and white crappie were the most frequently taken game fish; a total of 82 was taken in the netting collections. Even though relatively few largemouth bass were taken, most of them ranged in weight from 1 to almost 7 pounds.

Seining Collections: Seining collections were made in June and September in Lake Wichita, Wichita County. The following fish were taken: gizzard shad, 50; blacktail shiner, 2; red shiner, 2; brook silverside, 700; and freshwater drum, 4. The shiners are probably more desirable forage than the silversides, which were abundant in Lake Wichita.

Vegetation: In August we estimated that approximately 100 acres of the lake were covered by lotus and approximately 25 acres covered with cattails. Most of the lotus were located in the relatively shallow west end, and the cattails were scattered around most of the shoreline. The vegetation should be controlled before it gets too bad and covers prime fishing waters.

Lake Kemp

Gill Netting: Sixty netting collections were made on Lake Kemp, Baylor County, during 1968. A total of 1,474 fish of 14 species was taken. Game fish species (channel catfish, flathead catfish, white bass, largemouth bass, green sunfish, bluegill, and white crappie) comprised 45.11 per cent of the total number but only 24.81 per cent of the total weight of all fish taken (Table 12). Even though bluegill comprised 21.91 per cent of all fish taken in the nets, they are not considered to be a significant part of the sport fishery at Lake Kemp.

Table 12

Lake Kemp Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	5	0.34	12.63	0.75
Threadfin shad 1/	16	1.09	1.72	0.10
Gizzard shad 1/	145	9.84	37.38	2.23
Smallmouth buffalo 1/	121	8.21	350.27	20.86
River carpsucker 1/	401	27.20	627.12	37.35
Carp 1/	111	7.53	225.29	13.42
Channel catfish	49	3.32	49.92	2.97
Flathead catfish	11	0.75	73.43	4.37
White bass	123	8.34	76.06	4.53
Largemouth bass	109	7.39	161.90	9.64
Green sunfish	6	0.41	1.03	0.06
Bluegill	323	21.91	42.29	2.52
White crappie	44	2.99	12.41	0.74
Freshwater drum 1/	10	0.68	7.67	0.46
Total	1,474	100.00	1,679.12	100.00
Rough Fish	809	54.89	1,262.08	75.18
Game Fish	665	45.11	417.04	24.81

1/ Indicates rough fish species.

River carpsucker, gizzard shad, and smallmouth buffalo, collectively, comprised more than 45 per cent of all fish taken and more than 60 per cent of the total weight. Overall, the rough fish species comprised nearly 55 per cent of the total number and more than 75 per cent of the total weight of all fish taken in the netting collection.

Seining Collections: Due to the difficulty in making seining collections, only 1 collection was made in September. In two 20-foot drags, only 1 bluegill was taken.

Vegetation: Aquatic vegetation is not a problem in this lake at this time.

Lake Diversion

Gill Netting: Rough fish species (spotted gar, longnose gar, gizzard shad, smallmouth buffalo, river carpsucker, and carp) comprised 66.08 per cent of the total number and 85.65 per cent of the total weight of all fish taken in the nets (Table 13). Smallmouth buffalo comprised 35.70 per cent of the number and 62.85 per cent of the total weight of the fish taken in the collections. White bass and white crappie were the most frequently taken game fish species. Together they comprised 20.76 per cent of the total number of fish taken.

Table 13

Lake Diversion Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	1	0.25	1.93	0.30
Longnose gar 1/	1	0.25	12.74	1.99
Gizzard shad 1/	44	11.14	16.54	2.58
Smallmouth buffalo 1/	141	35.70	403.04	62.85
River carpsucker 1/	66	16.71	89.16	13.90
Carp 1/	8	2.03	25.82	4.03
Channel catfish	14	3.54	16.09	2.51
Flathead catfish	4	1.01	11.60	1.81
White bass	51	12.91	32.03	4.99
Largemouth bass	12	3.04	21.41	3.34
Bluegill	22	5.57	3.64	0.56
White crappie	31	7.85	7.31	1.14
Total	395	100.00	641.31	100.00
Rough Fish	261	66.08	549.23	85.65
Game Fish	134	33.92	92.08	14.35

1/ Indicates rough fish species

Seining Collections: Three blacktail shiners were taken in the only seining collection made.

Vegetation: In general, aquatic vegetation is not a problem in this lake. However, approximately 4 acres of cattails were noted along with some scattered patches of pondweeds and some musk grass (Chara sp.). Most of the vegetation is located in the still, backwater areas of the lake.

Proctor Lake

Gill Netting: Rough fish species (spotted gar, gizzard shad, smallmouth buffalo, river carpsucker, carp, and freshwater drum) were dominant both in number and weight in this Comanche County lake (Table 14). They comprised 69.78 per cent of the number and 74.22 per cent of the weight. Gizzard shad, freshwater drum, river carpsucker, and carp, in that order, were the most frequently taken rough fish.

Table 14

Lake Proctor Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	1	0.09	0.94	0.10
Gizzard shad 1/	214	18.52	25.07	2.65
Smallmouth buffalo 1/	42	3.64	102.08	10.79
River carpsucker 1/	202	17.49	302.96	32.03
Carp 1/	134	11.60	108.45	11.47
Channel catfish	47	4.07	55.90	5.91
Black bullhead	8	0.69	1.89	0.20
Yellow bullhead	10	0.87	2.98	0.31
Flathead catfish	5	0.43	29.64	3.13
Largemouth bass	19	1.65	41.55	4.39
Warmouth	2	0.17	0.19	0.02
Green sunfish	1	0.09	0.07	0.01
Redear sunfish	1	0.09	0.08	0.01
Bluegill	34	2.94	3.42	0.36
White crappie	222	19.22	108.25	11.44
Freshwater drum 1/	213	18.44	162.49	17.18
Total	1,155	100.00	945.96	100.00
Rough Fish	806	69.78	701.99	74.22
Game Fish	349	30.22	243.97	25.78

1/ Indicates rough fish species.

White crappie were the most frequently taken fish; a total of 222 crappie was taken during the year. They accounted for nearly 20 per cent of all fish. Channel catfish, bluegill, and largemouth bass, in that order, comprised more than 8 per cent of all fish taken in the collections.

Seining Collections: Gizzard shad and small largemouth bass (2 to 3 inches) were the most frequently taken fish in the seining collections. Also, logperch, bluegills, and redear sunfish were taken. The small bass indicated natural reproduction.

Vegetation: Aquatic vegetation is not a problem in this lake. Apparently the water level fluctuates enough to control the vegetation.

Lake Waco

Gill Netting: A total of 744 fish of 19 species was taken in the netting collections in Lake Waco, McLennan County. Game fish species comprised 44.48 per cent of the total number and 25.01 per cent of the total weight (Table 15). White crappie were the most frequently taken fish. A total of 159 crappie was taken during the year. In addition, largemouth and channel catfish were taken in good numbers.

Table 15

Lake Waco Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Spotted gar 1/	4	0.54	11.85	1.46
Longnose gar 1/	4	0.54	6.03	0.74
Gizzard shad 1/	157	21.10	53.74	6.60
Smallmouth buffalo 1/	77	10.35	221.66	27.21
River carpsucker 1/	72	9.68	137.93	16.93
Gray redhorse 1/	9	1.21	14.10	1.73
Carp 1/	43	5.78	145.78	17.90
Golden shiner 1/	15	2.02	2.71	0.33
Channel catfish	55	7.39	60.32	7.41
Black bullhead	1	0.14	0.14	0.01
Flathead catfish	6	0.80	17.10	2.09
White bass	1	0.14	0.64	0.07
Largemouth bass	68	9.13	41.69	5.12
Warmouth	1	0.14	0.17	0.02
Redear sunfish	13	1.74	1.07	0.13
Bluegill	26	3.49	3.87	0.48
Longear sunfish	1	0.14	0.08	0.01
White crappie	159	21.37	78.74	9.67
Freshwater drum 1/	32	4.30	17.01	2.09
Total	744	100.00	814.63	100.00
Rough Fish	413	55.52	610.81	74.99
Game Fish	331	44.48	203.82	25.01

1/ Indicates rough fish species.

Seining Collections: Threadfin shad, red shiners, blackstripe topminnows, and white crappie were taken in the seining collections.

Vegetation: Aquatic vegetation is not a problem in this lake.

Lake Brownwood

Gill Netting: A total of 928 fish of 15 species was taken in the netting collections made on Lake Brownwood, Brown County. Rough fish (longnose gar, gizzard shad, smallmouth buffalo, river carpsucker, carp, and freshwater drum) comprised 67.67 per cent of the total number and 80.62 per cent of the total weight (Table 16). Gizzard shad comprised more than 30 per cent of all fish taken. Smallmouth buffalo and river carpsucker are also well established in Lake Brownwood.

White crappie comprised 19.40 per cent of all fish taken. Thus they appear to be the most abundant game fish species taken in the nets. Channel catfish, white bass, and flathead catfish were taken in good numbers.

Table 16

Lake Brownwood Netting Results - 1968

Species	Total Number	Per Cent of Total Number	Total Weight (Pounds)	Per Cent of Weight
Longnose gar 1/	44	4.74	67.43	5.51
Gizzard shad 1/	286	30.82	170.30	13.92
Smallmouth buffalo 1/	128	13.79	444.71	36.35
River carpsucker 1/	92	9.91	180.50	14.75
Carp 1/	19	2.05	92.33	7.55
Channel catfish	39	4.20	42.50	3.47
Flathead catfish	26	2.80	112.39	9.19
White bass	31	3.34	16.94	1.38
Largemouth bass	9	0.97	4.86	0.40
Warmouth	1	0.11	0.10	0.01
Green Sunfish	1	0.11	0.04	0.00
Redear sunfish	1	0.11	0.31	0.03
Bluegill	12	1.29	0.35	0.03
White crappie	180	19.40	59.50	4.87
Freshwater drum 1/	59	6.36	31.11	2.54
Total	928	100.00	1,223.37	100.00
Rough Fish	628	67.67	986.38	80.62
Game Fish	300	32.33	236.99	19.38

1/ Indicates rough fish species.

Seining Collections: A total of 836 fish of 6 species was taken in the seining collections. The various species and their total number are as follows: gizzard shad, 5; blacktail shiner, 85; brook silverside, 700; largemouth bass, 38; green sunfish, 1; bluegill, 7. The bass, which ranged from 1 to 2 inches, indicated successful reproduction. The silversides probably provide a good deal of forage.

Vegetation: There are no problems with aquatic vegetation in this lake.

Stocking Records

On the basis of our findings, the following lakes were stocked with largemouth bass. The total number of fish is also given:

Lake	Number
Cleburne	225,000
Grapevine	50,000
Benbrook	115,000
Whitney	250,000
Hubbard Creek	200,000
Garza-Little Elm	617,000

There were also 5,700 channel catfish stocked in Lake Benbrook during June 1968.

Most of the bass were supplied by the Eagle Mountain, Lewisville, and Possum Kingdom Fish Hatcheries. The catfish and some of the bass were provided by the Fort Worth National Fish Hatchery.

Fish Harvest Regulations

A meeting of all concerned Game Management Officers and Biologists in the Possum Kingdom Regulatory Authority area was held in Mineral Wells in May to discuss the proposed regulations. No changes in the fishing regulations were proposed.

Public hearings were held in 32 counties in the Possum Kingdom Regulatory Authority Area in June 1968. The proposed regulations were adopted by the Parks and Wildlife Commission.

Discussion and Recommendations:

Of the 15 public lakes checked during this segment, game fish species in 5 lakes comprised 50 per cent or more of the total number of fish taken. However, rough fish species, by weight, were dominant in 14 of the 15 lakes checked during 1968.

In Lakes Graham, Leon, Benbrook, Grapevine, Wichita, Diversion, and Brownwood the rough fish species comprised more than 80 per cent of the total weight of all fish taken. Some consideration should be given to population control in these lakes.

Aquatic vegetation control work should be done at Lakes Graham and Wichita to prevent lotus and cattails from covering prime fishing waters. If these plants go unchecked they will surely cause many areas to be inaccessible to the sport fisherman.

This job should be continued, checking the other major lakes in the region, so that the current status of the fish populations will be known. These data will be valuable in managing the fishery resources of this area.

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