SEGMENT COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-5-R-14

REGION 1-B FISHERIES STUDIES

Job No. 4 Population Control Recommendations

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ABSTRACT

During this segment, 12 surveys were made on three lakes and three rivers in Region 1-B, including Moss Creek Lake, Valley Creek Lake, Elm Creek Lake, Main Concho River, San Saba River, and South Concho River.

The criteria for considering treatment procedures were that rough fish percentages exceed 80 per cent by either weight or number.

Waters not currently meeting the criteria outlined were Moss Creek Lake, Valley Creek Lake and South Concho River. However, a selective treatment for gizzard shad was recommended for Moss Creek Lake to increase the extremely low harvest of the abundant game species in the reservoir.

Rough fish exceeded the criteria, which would indicate the possible need for population control, in Elm Creek Lake, Main Concho River and San Saba River. However, other factors and conflicting interests do not warrant such controls in these waters.

SEGMENT COMPLETION REPORT

State of Texas

Project No. F-5-R-14 Name: Region 1-B Fisheries Studies

Job No. 4 Title: Population Control Recommendations

Period Covered: March 1, 1966 to February 28, 1967

Objectives:

To determine those waters which would benefit from population control.

Procedures:

The survey schedule set forth in the job description for this segment was followed as closely as possible. There were minor deviations in the number of gill nets set and number of seining drags made due to water level fluctuation. A list of waters worked is given in Table 1. When more than one trip was needed, the survey results were combined for that lake or stream. Surveys were not conducted on Spring and Dove Creeks because only the lower portions of these streams can be considered public waters. These portions are now, in essence, part of the Twin Buttes Reservoir which was surveyed under Job 5 of this segment.

Netting was done with standard 150-foot gill nets with mesh sizes varying from 1 to 3½ inches. Dimensions of the seines used are described along with their catches in the findings.

All fish captured in nets were counted, weighed, and measured. A sample number of fish were examined to determine sexual development and condition ("K" factor). Fish taken in seines were counted and a length range was determined. A few specimens of each species were preserved in 10 per cent formalin solution and confirmed identifications were made in the laboratory.

Water conditions, such as temperature, turbidity and hydrological data were recorded. This information will be reported only when pertinent to the findings.

The statistics for each lake or stream were examined to determine which waters could be considered for partial or complete renovation under job description criteria. These criteria are that the rough or undesirable fish percentages surpass 80 per cent by either weight or number and that water levels permit economical chemical treatment. However, in some cases, conflicting interest and other factors do not warrant such controls.

Table 1

Waters Surveyed in 1966

Name	County	Number of Visits
Moss Creek Lake	Howard	2
Valley Creek Lake	Runnels	2
Elm Creek Lake	Runnels	2
Main Concho River	Concho - Tom Green	3
South Concho River	Tom Green	1
San Saba River	Menard - Schleicher	2

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	Lepisosteus osseus
Gizzard shad	Dorosoma cepedianum
Carp	Cyprinus carpio
Plains minnow	Hybognathus placita
Golden shiner	Notemigonus crysoleucas
Emerald shiner	Notropis atherinoides
Red shiner	Notropis lutrensis
Sand shiner	Notropis stramineus
Blacktail shiner	Notropis venustus
Bullhead minnow	Pimephales vigilax
River carpsucker	Carpiodes carpio
Smallmouth buffalo	Ictiobus bubalus
Gray redhorse	Moxostoma congestum
Black bullhead	Ictalurus melas
Yellow bullhead	Ictalurus natalis
Channel catfish	Ictalurus punctatus
Flathead catfish	Pylodictis olivaris
Mosquitofish	Gambusia affinis
White bass	Roccus chrysops
Warmouth	Chaenobryttus gulosus
Redbreast sunfish	Lepomis auritus
Green sunfish	Lepomis cyanellus
Orangespotted sunfish	Lepomis humilis
Bluegill	Lepomis macrochirus
Longear sunfish	Lepomis megalotis
Redear sunfish	Lepomis microlophus
Spotted bass	Micropterus punctulatus
Largemouth bass	Micropterus salmoides
White crappie	Pomoxis annularis
Logperch	Percina caprodes
Freshwater drum	Aplodinotus grunniens

Moss Creek Lake

Findings:

Located in Howard County, 9 miles East of Big Springs, is a 145-acre lake originally built for municipal water supply. This reservoir is now used for recreational purposes managed by the city of Big Springs. The Colorado River Municipal Water District has control of the water rights and sells limited amounts of water to oil companies for pumping operations.

This years' survey shows game fish are abundant and have a good "K" (condition) factor (Table 2). Largemouth bass fingerling and other small Centrarchid were very abundant. Food competition amoung these small fishes may become critical. The main problem, however, is the large number of gizzard shad, (40 per cent of fish netted). This species has steadily increased in number since the selective

Table 2

Survey Results of Moss Creek Lake
July 14 and October 6, 1966

Results of 8 gill nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	65	40.38	13.83	.21	7.71	1.32
Carp	17	10.56	60.49	3.55	33.75	3.00
Golden shiner	1	.62	.14	.14	.08	2.32
River carpsucker	2	1.24	4.50	2.25	2.51	3.17
Black bullhead	11	6.83	1.83	.16	1.02	1.84
Channel catfish *	25	15.53	45.84	1.83	25.57	1.84
Flathead catfish *	2	1.24	18.42	9.21	10.28	2.15
White bass *	13	8.08	25.72	1.97	14.36	2.92
Bluegill *	9	5.59	.59	.06	.33	2.91
Longear sunfish *	1	.62	.07	.07	.04	3.20
Redear sunfish *	4	2.48	.38	.09	.21	2.90
Largemouth bass *	5	3.11	6.86	1.37	3.83	2.30
White crappie *	6	3.72	.57	.09	.31	1.97
Totals	161	100.00	179.24		100.00	
Game Fish *	65	40.37	98.45		54.93	
Rough Fish	96	59.63	80.79		45.07	

Seining results (2 drags with a 100' by 8' by ½-inch mesh seine and 16 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Gizzard shad	217	4-7
Plains minnow	1	2½
Golden shiner	20	2½-5
Red shiner	35	1-2
Bullhead minnow	3	1-2
Black bullhead	5	4½
Channel catfish	1	6
Mosquitofish	27	1-2½
Warmouth sunfish	4	2½-4
Green sunfish	1	2
Orangespotted sunfish	24	2-3
Bluegill	138	1-4½
Longear sunfish	58	2-4½
Redear sunfish	66	2-4
Largemouth bass	109	1½-9
White crappie	63	2-6
Logperch	15	2½-5
Total	787	

treatment of the lake in 1958 (Job 16-a-14, Project F-14-D-3).

Fishing success, which was excellent after the shad eradication, has also decreased. The "Evaluation of Impoundment Renovation" study, Job 8, Project F-5-R-13, revealed that the catch per man-hour was less than one-half fish per person per hour in 1965. From this job, it was recommended that Moss Creek Lake receive a selective kill of gizzard shad. This was not accomplished due to personnel changes.

Conclusions and Recommendations:

Controlling agencies have been consulted and plans are being made for a selective shad control on Moss Creek in the Fall of 1967. The rainfall and resulting water influx will be the deciding factor. A job description will be submitted under the Statewide Rough Fish Control Project for this lake when plans can be finialized.

Valley Creek Lake

This 210-acre lake is the water supply for the city of Ballinger in Runnels County. Only a small portion is restricted by the city and the remainder is used for recreation.

This reservoir was visited on March 9 and again on September 27, 1966. It was almost full on both occasions. Seven nets were set and 16 seining drags were made (Table 3). The netting results are very similar to those of last years survey. Gizzard shad accounted for 56 per cent of fish netted which is an increase of about 6 per cent over last year. River carpsucker dominated the weight percentage with 28 per cent. Game fish (mainly channel catfish, largemouth bass and white crappie) were present in fair numbers accounting for almost 27 per cent by number and 32 per cent by weight of fish netted.

Seining produced an abundance of small forage fish, the majority of which was gizzard shad.

Conclusions and Recommandations:

This lake does not currently qualify for a chemical treatment; however, several factors warrant periodic sampling. The Soil Conservation Services is presently in the process of constructing 21 retention dams on the Valley Creek watershed above this reservoir. It is believed that these floodwater retarding structures will have considerable influence on the present fish population of Valley Creek Lake. The water level stabilization and the decreasing turbidity may prove to be more beneficial to the problematic species than to the game fish, although this remains to be seen.

Elm Creek Lake

This 25-acre lake was created several years ago when the city of Ballinger, Runnels County, built a small dam on Elm Creek for municipal water supply. Now it is used only for recreation and limited irrigation. The city owns public access from the dam to the first low water crossing, a distance of about one mile. Above this crossing the shoreline is privately controlled, but the public can fish by boat.

Table 3

Survey Results of Valley Creek Lake
March 9 and September 27, 1966

Results of 7 Gill Nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	2	.72	5.18	2.59	3.74	.44
Gizzard shad	158	56.62	20.71	.13	14.98	1.66
Carp	3	1.08	23.66	7.89	17.10	2.76
River carpsucker	30	10.75	39.12	1.30	28.28	2.56
Channel catfish *	13	4.66	19.98	1.54	14.44	1.75
Flathead catfish *	1	.36	.21	.21	.16	1.56
Warmouth *	1	.36	.09	.09	.06	3.08
Bluegill *	9	3.22	.65	.07	.47	3.35
Longear sunfish *	2	.72	.12	.06	.09	2.98
Largemouth bass *	6	2.16	10.09	1.68	7.29	2.98
White crappie *	43	15.41	13.48	.31	9.74	2.79
Freshwater drum	11	3.94	5.05	.46	3.65	2.18
Totals	279	100.00	138.34		100.00	
Game Fish *	75	26.89	44.62		32.25	
Rough Fish	204	73.11	93.72		67.75	

Seining results (4 drags with a 100' by 8' by ½-inch mesh seine and 12 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Gizzard shad	711	3-7
Red shiner	1	1½
Blacktail shiner	2	2-3
Bullhead minnow	34	1½-2
River carpsucker	2	12-14
Mosquitofish	125	1-2
Warmouth	2	4-5
Orangespotted sunfish	1	4
Bluegill	132	½-4
Longear sunfish	5	3-5
Largemouth bass	6	4-7
White crappie	9	3-5
Total	1030	

Five nets were set during the two visits made. Only eight seining drags could be made due to shoreline obstructions. Rough fish, primarily longnose gar, gizzard shad, and river carpsucker, dominated the netting results with 75 per cent by number and 94 per cent by weight (Table 4). White crappie was the major game fish collected but had an average weight of only 0.17 of a pound. Seining produced only six species with mosquitofish being the most prominant.

Conclusions and Recommendations:

Renovation procedures are not justifiable at this time. Preliminary plans are being made by the cities of Winters and Ballinger to construct a larger reservoir on Elm Creek to provide their public water needs. If these plans materialize, it may be feasible to chemically treat, not only Elm Creek Lake, but the major bodies of this watershed. This would include New Winters Lake, the new proposed reservoir, Elm Creek Lake and the segments of Elm Creek between these impoundments.

This lake should be carried under this job for the next segment in order to have current data available if a watershed treatment becomes appropriate.

Main Concho River

The main Concho River travels some 56 miles from its origin in San Angelo, through Tom Green and Concho Counties, to its confluence with the Colorado River. In this distance, it is retarded by about 19 small dams. These structures vary from 4 to 12 feet in height and back water up the river bed from ½ to one mile. These small impoundments supply water for irrigation. Due to this withdrawal and the three large reservoirs which collect all the run-off from the upper watershed, the Main Concho River flows only during periods of heavy rainfall on the immediate watershed.

Three collection trips were made to the Main Concho River at different locations. Thirty six seining drags and 9 gill net sets were made. The netting results (Table 5) show that rough fish accounted for 90 per cent by number and 96 per cent by weight of the sample. Longnose gar alone comprised almost 30 per cent of both weight and number.

Conclusions and Recommendations:

The competition for food and space and the drastic water level fluctuation appears to be too great for game fish production. Although the criteria for renovation is exceeded, a chemical treatment of the Main Concho River cannot be justified. The immediate reinfestation of rough fish and very limited public fishing access prohibits this type of management.

San Saba River

The San Saba River rises in eastern Schleicher County where several intermittent spring-fed streams run together. It then continues about 46 miles through Menard County before leaving Region 1-B. In the upper portions it is generally clear and supports a moderate to heavy growth of aquatic vegetation. There is considerable withdrawal for irrigation during the spring and summer which usually terminates the flow except during local rains.

Table 4

Survey Results of Elm Creek Lake
March 9 and September 27, 1966

Results of 5 Gill Nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	27	10.97	77.05	2.85	32.07	.40
Gizzard shad	116	47.16	63.72	.55	26.53	1.96
Carp	2	.82	6.24	3.12	2.60	2.36
River carpsucker	20	8.13	42.69	2.13	17.77	2.64
Smallmouth buffalo	7	2.84	27.35	3.91	11.40	3.38
Black bullhead	6	2.44	3.43	.57	1.43	2.64
Channel catfish *	3	1.22	4.14	1.38	1.72	1.93
Bluegill *	1	.41	.08	.08	.03	3.71
White crappie *	56	22.76	9.90	.17	4.12	3.15
Freshwater drum	8	3.25	5.60	.70	2.33	2.55
Totals	246	100.00	240.20		100.00	
Game Fish *	60	24.39	14.12		5.87	
Rough Fish	186	75.61	226.08		94.13	

Seining results (8 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Longnose gar	2	10-12
Gizzard shad	9	6-8
Emerald shiner	3	2-2½
Bullhead minnow	41	1½-2½
Mosquitofish	203	1-2½
Bluegill	81	½-4
Total	339	

Table 5

Survey Results of Main Concho River
August 26, October 13 and December 15, 1966

Results of 9 Gill Nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	136	29.89	228.70	1.68	28.62	.37
Gizzard shad	79	17.36	70.64	.89	8.84	2.00
Carp	5	1.10	18.85	3.77	2.36	2.56
River carpsucker	155	34.07	313.86	2.02	39.28	2.57
Smallmouth buffalo	28	6.16	135.55	4.84	16.96	3.15
Gray redhorse	1	.22	2.43	2.43	.31	2.21
Channel catfish *	6	1.31	15.25	2.54	1.91	1.77
Flathead catfish *	1	.22	5.18	5.18	.64	1.60
Warmouth *	2	.44	.20	.10	.03	3.64
Green sunfish *	1	.22	.32	.32	.04	3.89
Bluegill *	19	4.18	2.33	.12	.29	4.13
Longear sunfish *	2	.44	.31	.15	.04	4.16
Largemouth bass *	1	.22	.27	.27	.03	2.37
White crappie *	13	2.86	3.10	.24	.39	2.87
Freshwater drum	6	1.31	2.11	.35	.26	2.22
Totals	455	100.00	799.10		100.00	
Game Fish *	45	9.89	26.96		3.37	
Rough Fish	410	90.11	772.14		96.63	

Seining results (12 drags with a 30' by 6' by ¼-inch mesh seine and 24 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Gizzard shad	41	1½-6
Carp	5	10-14
Plains minnow	3	1-2
Red shiner	1541	1-2
Blacktail shiner	2	1-2
Bullhead minnow	272	1½-2
River carpsucker	1	6
Mosquitofish	43	1-2
Warmouth	1	3
Green sunfish	15	2½-5
Orangespotted sunfish	44	1½-3½
Bluegill	188	1½-4
Longear sunfish	7	2-4
Largemouth bass	7	2½-6
White crappie	2	3-6
Total	2172	

A total of 20 species were taken from the San Saba River during the two collection trips. Rough fish dominated the netting collection with 89 per cent by number and 96 per cent by weight. White crappie and channel catfish were the most prominent desirable species taken in gill nets.

The seining collection (Table 6) produced numerous forage species. Also, 36 small largemouth bass and 17 spotted bass were taken with seines.

Conclusions and Recommendations:

Although the game fish population in the San Saba River is limited, fishing success is equal to or better than other rivers in Region 1-B. Due to the desirable habitat for game fish and the abundance of small forage species present, some effort should be made to resolve a suitable management practice for this potentially productive water.

South Concho River

The South Concho River originates in South Tom Green County at Anson Springs. These are fairly stable springs with a discharge of about 8 c.f.s. to 12 c.f.s. throughout most of the year. This clear stream continues for approximately 4 miles until it is retarded by Christoval Dam located in the county park at Christoval. This small impoundment is used for public recreation and irrigation. From this point the South Concho flows about 10 miles until it reaches Twin Buttes Reservoir. Several small dams are located in this segment of the river which provides water for the increasing irrigation withdrawals.

Table 6
Survey Results of San Saba River
August 24 and September 20, 1966

Results of 7 gill nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	29	9.86	67.62	2.33	15.95	.40
Gizzard shad	121	41.16	58.86	.48	13.88	1.72
Carp	6	2.04	31.31	5.22	7.39	2.36
River carpsucker	62	21.08	95.81	1.54	22.60	2.42
Smallmouth buffalo	29	9.87	127.56	4.40	30.10	3.10
Gray redhorse	8	2.72	10.99	1.37	2.59	2.05
Channel catfish *	4	1.36	8.56	2.14	2.02	1.99
Bluegill *	3	1.02	.24	.08	.06	3.51
Redear sunfish *	1	.34	.11	.11	.02	3.29
White crappie *	25	8.50	9.13	.36	2.17	2.97
Freshwater drum	6	2.05	13.68	2.28	3.22	2.22
Totals	294	100.00	423.87		100.00	
Game Fish *	33	11.22	18.04		4.27	
Rough Fish	261	88.78	405.83		95.73	

Table 6 Continued

Seining Results

(4 drags with a 100' by 8' by ½-inch mesh seine, 10 drags with a 30' by 6' by ½-inch mesh seine and 14 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Longnose gar	1	18
Gizzard shad	116	1½-8
Sand shiner	316	1½-2½
Blacktail shiner	4319	1-3
Channel catfish	1	4
Mosquitofish	232	1-2½
Redbreast sunfish	7	2-4
Green sunfish	2	3-5
Bluegill	157	1-5
Longear sunfish	14	2-4
Redear sunfish	1	3½
Spotted bass	17	1-6
Largemouth bass	36	3-6
White crappie	8	2-4
Logperch	2	3-3½
Total	5229	

Only one survey was made on the South Concho because the lower portion is connected with Twin Buttes Reservoir. Game fish had a slight edge in the per cent number of fish netted in this relatively small sample (Table 7). However, the majority of game fish taken were sunfish of unutilizable size. Carp dominated the weight of the netting sample with almost 58 per cent. The seining collection was also small with only 270 fish taken in 16 drags.

Table 7

Survey Results of South Concho River
September 22, 1966

Results of three gill nets

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	1	1.96	.15	.15	.33	
Carp	4	7.84	26.00	6.50	57.83	
Yellow bullhead	17	33.33	7.25	.43	16.12	
Channel catfish *	1	1.96	1.25	1.25	2.78	1.71
Bluegill *	18	35.30	1.90	.11	4.23	3.86
Longear sunfish *	2	3.92	.17	.09	.38	3.90
Redear sunfish *	2	3.92	.47	.24	1.04	3.48
Largemouth bass *	5	9.81	6.65	1.33	14.79	2.50
White crappie *	1	1.96	1.12	1.12	2.50	3.60
Totals	51	100.00	44.96		100.00	
Game Fish *	29	56.87	11.56		25.72	
Rough Fish	22	43.13	33.40		74.28	

Table 7 Continued

Seining results (16 drags with a 20' by 6' by 1/8-inch mesh seine)

Species	Number	Size Range in Inches
Mosquitofish	157	1½-2½
Green sunfish	15	2½-5
Bluegill	39	1-4½
Longear sunfish	13	1½-4
Redear sunfish	28	2½-4½
Largemouth bass	18	3-8
Total	270	

Conclusions and Recommendations:

When and if Twin Buttes Reservoir reaches normal capacity, the majority of South Concho River will be included in the lake. The remainder of this river will then offer very little potential as a fishery with the increasing withdrawal for irrigation and the limited public access.

It is recommended that this water be checked in conjunction with a survey of Twin Buttes Reservoir during the next segment.

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Date: April 5, 1967

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