

SEGMENT COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-5-R-15

REGION I-B FISHERIES STUDIES

Job No. 4 Population Control Recommendations

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ABSTRACT

During this segment, surveys were conducted on 4 public lakes and 2 public rivers in Region I-B to collect data in order to determine if chemical control of undesirable fish was needed. The main criterion for considering treatment procedures was that rough fish percentages exceed 80 per cent by either weight or number.

Moss Creek Lake did not meet the criteria set forth for renovation but a chemical control of gizzard shad was justified by the extremely low harvest of the abundant game fish. This was effectuated under Job 16-a-55 of Project F-14-D-10.

Mountain Creek Lake did not meet the criteria for chemical treatment; however, some control of the sunfish and golden shiner should be attempted.

Valley Creek Lake did exceed the basic criteria for a chemical treatment and plans will be discussed with controlling authorities.

Rough fish exceeded the basic criteria for renovation in Elm Creek, Main Concho River and San Saba River. However, other factors and conflicting interests do not warrant such controls in these waters at this time.

SEGMENT COMPLETION REPORT

STATE OF Texas

PROJECT NO. F-5-R-15

NAME Region I-B Fisheries Studies

JOB NO. 4

TITLE Population Control Recommendations

PERIOD COVERED March 1, 1967 to February 29, 1968

Objectives:

To determine those waters which would benefit from population control.

Procedures:

During this segment, field trips were made to 4 reservoirs and 2 rivers in connection with this job. A list of the waters surveyed and the number of visits is given in Table 1. The results of the 2 or more surveys made are combined for each lake or stream.

Netting was done with standard 150-foot gill nets composed of six 25-foot sections of mesh varying from 1 to 3½ inches. The number of nets set at each body of water is given in the survey results. The dimensions of the seines used are described along with their catches in the findings. A 10-foot, ½-inch mesh sportsman trawl was used at Moss Creek Lake.

All fish captured in nets were counted and weighed. A sample number of game fish was examined to determine sexual development and conditions ("K" factor). All fish taken with seines and trawl were separated according to species, counted, and a length range was determined. A few specimens of each species were preserved in formalin and confirmed identification was made in the laboratory.

Water temperature, turbidity, and other hydrological data were recorded but will be reported only when pertinent to the findings.

Current data, along with that of past surveys for each lake or stream, were examined to determine which waters could be considered for partial or complete renovation. The criteria for treatment specified that rough or undesirable fish percentages must surpass 80 per cent by either weight or number and that water levels permit economical chemical treatment. Other factors included water usage, interest of controlling agency and public, and the estimated cost benefit ratio.

Table 1

<u>NAME</u>	<u>COUNTY</u>	<u>NUMBER OF VISITS</u>
Elm Creek Lake	Runnels	2
Moss Creek Lake	Howard	2
Mountain Creek Lake	Coke	2
Valley Creek Lake	Runnels	2
Main Concho River	Concho & Tom Green	3
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.

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

Findings:

Elm Creek Lake

Elm Creek Lake is located adjacent to Ballinger City Park, Runnels County. This 25-acre reservoir was built several years ago on Elm Creek as a municipal water supply. Presently, it is used only for recreation which is limited to bank and small boat fishing.

As in the past, undesirable fish continue to dominate both weight and number of the netting sample as shown in Table 2. Longnose gar, gizzard shad, river carpsucker and smallmouth buffalo accounted for about 88 per cent by weight of the 1966 and 1967 netting collections. Only 4 utilizable game fish were taken. However, several small largemouth bass were collected with seines.

Conclusions and Recommendations: Renovation procedures are not immediately justifiable. As reported last segment under this job, preliminary plans are under way by the cities of Winters and Ballinger to construct a larger reservoir on Elm Creek for municipal water supply. If these plans materialize, a pre-impoundment treatment of the watershed would be of great benefit. Surveys should be continued on this small lake to have current data available if a watershed treatment becomes feasible.

Moss Creek Lake

This 145-acre impoundment, located in Howard County, is owned by the city of Big Spring. The Colorado River Municipal Water District has complete control of the water rights and uses it as a reserve water supply. The city of Big Spring controls only the recreation.

The game fish population of this clear, deep reservoir has been very desirable in the past few years. However, the harvest of these abundant game fish has steadily decreased. From the data collected under the past 2 segments of this job and that of Job 8, F-5-R-13, a partial rotenone treatment was recommended. This treatment was effectuated the first week of November 1967. A complete description of the treatment, as well as the pre-treatment and post-treatment surveys, is presented in the report for Job 16-a-55 of the Statewide Rough Fish Control Project, F-14-D-10. To prevent duplication, the survey data will not be presented in this report.

Conclusions and Recommendations: Although an excellent reduction of gizzard shad was achieved, reintroduction is expected from Powell Lake on the watershed or through water pumped from J. B. Thomas Reservoir. However, the harvest of game fish is also expected to be greatly improved.

This lake should be included in the new management job to be initiated during the next segment in order to determine the benefits received from this partial treatment, and to provide additional management recommendations.

Table 2

Survey Results, Elm Creek Reservoir, May 23, 1967 and January 17, 1968. Results of 6 gill nets.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	59	21.22	121.63	2.06	32.62	
Gizzard shad	130	46.76	69.49	.53	18.64	
Carp	1	.36	5.61	5.61	1.50	
River carpsucker	43	15.47	100.93	2.35	27.08	
Smallmouth buffalo	8	2.88	38.05	4.76	10.20	
Black bullhead	9	3.23	6.00	.67	1.61	
Channel catfish*	3	1.08	11.46	3.82	3.08	1.88
Flathead catfish*	1	.36	8.14	8.14	2.18	1.95
Warmouth*	1	.36	.09	.09	.02	3.80
Bluegill*	4	1.44	.32	.08	.09	3.53
Largemouth bass*	1	.36	3.74	3.74	1.00	3.50
White crappie*	14	5.04	3.61	.26	.98	3.03
Freshwater drum	4	1.44	3.74	.93	1.00	
Total	278	100.00	372.81		100.00	
Game Fish *	24	8.64	27.36		7.35	
Rough Fish	254	91.36	345.45		92.65	

Seining Results Elm Creek Reservoir (30 x 6 x ¼-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Gizzard shad	800	1-3
Mosquitofish	50	1-2½
Orangespotted sunfish	20	2-3
Bluegill	50	1½-3
Longear sunfish	20	2-4
Largemouth bass	150	1-2
White crappie	300	1-2½
Logperch	5	3-4
Total	1,395	

Mountain Creek Lake

Mountain Creek Lake was constructed in 1950 by the city of Robert Lee, Coke County, as a city water supply. This 77-acre impoundment is located on Mountain Creek in the northern limits of Robert Lee.

It was chemically renovated in 1961 because of a very high river carp-sucker population which exceeded 85 per cent of both number and weight of the 1960 netting sample. Since that time, only one river carpsucker has been collected in the annual surveys.

During this period of study, game fish surpassed rough fish in both number and weight of the netting samples (Table 3). The main problem; however, is the overabundance of stunted sunfish and large golden shiners.

Conclusions and Recommendations: Mountain Creek Lake does not meet the criteria for renovation; however, an attempt should be made to control the sunfish and golden shiner populations. This could possibly be achieved by additional stocking of fingerling largemouth bass, channel catfish, or some other predator species. Adult flathead catfish were released in this reservoir in January 1967, but no benefits from this stocking have been evident. This reservoir should be included in the new mangement job next segment.

Valley Creek Lake

Valley Creek Lake is the water supply for the city of Ballinger in Runnels County. It is greatly utilized for fishing, skiing, boating, and camping. In the past, the water level fluctuated regularly with the heavy withdrawal of water for municipal use during the summer. During the past 2 years, the Soil Conservation Service has completed about 20 retention dams on the immediate watershed. These impoundments have revived springs which have maintained Valley Creek Lake at maximum capacity through most of the year.

Survey results during the past 2 years have indicated an increase in the rough fish populations and a similar decrease in game fish. In 1966, game fish accounted for 27 per cent by number and 32 per cent by weight of fish netted. During this period of study, game fish comprised only 13 per cent by number and 11 per cent by weight (Table 4). Seining collections (Table 4) revealed an abundance of small forage fishes.

Conclusions and Recommendations: Valley Creek Lake meets the criteria for population control consideration. Treatment proceedings will be discussed with city officials and sportsmen of Ballinger. Also, further investigation of the watershed will be needed before definite recommendations can be made. This work should be continued under the new management job of this project during the next segment.

Table 3

Survey Results, Mountain Creek Reservoir, May 17, 1967 and January 25, 1968.
Results of 6 gill nets.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Gizzard shad	7	2.10	9.03	1.29	5.95	
Golden shiner	145	43.54	28.79	.20	18.99	
Black bullhead	3	.90	2.97	.99	1.96	
Channel catfish *	1	.30	1.60	1.60	1.05	2.17
Flathead catfish*	9	2.70	76.20	8.47	50.27	2.14
Warmouth *	2	.61	.23	.11	.15	3.47
Bluegill*	135	40.55	15.34	.11	10.12	4.07
Redear sunfish *	6	1.80	1.14	.19	.75	3.69
Largemouth bass*	13	3.90	10.83	.83	7.14	2.49
White crappie *	12	3.60	5.48	.46	3.62	2.79
Total	333	100.00	151.61		100.00	
Game Fish*	178	53.46	110.82		73.10	
Rough Fish	155	46.54	40.79		26.90	

Seining Results Mountain Creek Reservoir (30 x 6 x 1/4-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Golden shiner	24	1 1/2-5
Mosquitofish	1	2 1/2
Green sunfish	1	4
Bluegill	10	2-3
Redear sunfish	8	2-3
Total	44	

Table 4

Survey Results, Valley Creek Lake, March 29 and May 24, 1967. Results of 8 gill nets.

Species	Number	Per Cent by No.	Total Wt. Pounds	Avg. Wt. Pounds	Per Cent by Wt.	Average "K"
Longnose gar	14	2.88	65.24	4.66	15.85	
Gizzard shad	272	55.96	37.44	.14	9.09	
Carp	21	4.32	96.14	4.58	23.36	
River carpsucker	102	20.99	146.36	1.43	35.56	
Black bullhead	1	.21	.80	.80	.20	
Channel catfish*	16	3.29	22.34	1.40	5.43	1.83
Bluegill*	9	1.85	.93	.10	.22	4.20
Redear sunfish*	1	.21	.26	.26	.07	4.06
Largemouth bass*	5	1.03	16.16	3.23	3.92	2.66
White crappie*	30	6.17	5.81	.19	1.41	2.76
Freshwater drum	15	3.09	20.09	1.34	4.89	
Total	486	100.00	411.57		100.00	
Game Fish*	61	12.55	44.50		11.05	
Rough Fish	425	87.45	366.07		88.95	

Seining Results Valley Creek Lake (100 x 10 x ½-inch mesh seine, 30 x 6 x ¼-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Gizzard shad	327	3-8
Red shiner	37	1-3
Blacktail shiner	64	1-5
Mosquitofish	6	1-2
Redbreast sunfish	1	2
Green sunfish	10	1-3
Bluegill	54	1-5
Longear sunfish	86	2-5
Redear sunfish	30	1-6
Largemouth bass	7	1½-6
White crappie	242	2-5
logperch	2	3-4
Total	866	

Main Concho River

The main Concho River begins in San Angelo and travels about 56 miles through Tom Green and Concho Counties before it empties in the Colorado River. Many small dams, which impound water for irrigation, are found along its route. Three large reservoirs on the main tributaries collect all the runoff from the upper watershed. Therefore, the flow is limited to periods of heavy runoff and the water level fluctuates drastically.

This year the Main Concho River was sampled at 3 locations. The netting results (Table 5) were very similar to that of previous years with rough fish accounting for 89 per cent by number and 92 per cent by weight. Although surplus largemouth bass fry have been stocked almost annually for several years at various locations in Tom Green County, no largemouth bass were taken in gill nets. Seining collections (Table 5) produced a large number of forage species along with 17 bass fingerlings.

Conclusions and Recommendations: Chemical control of the abundant rough fish in this public water cannot be justified at this time. Reinfestation of undesirable fish would occur almost immediately, even if the majority of this water could be renovated. The only management effort that is considered to be feasible, at this time, would be the stocking of advanced largemouth bass fingerlings at 1 or 2 locations in the city limits of San Angelo.

San Saba River

About 46 miles of the San Saba River is located in Region I-B from its origin in eastern Schleicher County until it leaves through Menard County. Its flow is maintained through the fall, winter and spring by many clear springs. Irrigation withdrawals during the dry months reduce or terminate the flow.

Two collections were made on the San Saba River this segment. Netting results (Table 6) continue to reflect domination by rough fish. River carpsucker and gizzard shad alone accounted for almost 70 per cent of the number of fish netted. Seining samples produced many forage fish, the majority of which were blacktail shiners. Several small centrarchids, including largemouth and spotted bass, were collected.

Conclusions and Recommendations: Even with the large rough fish populations, the San Saba River provides a fair fishery for interested sportsmen. Good catches of channel catfish, largemouth bass, spotted bass, and sunfish are quite common.

Chemical removal of rough fish would be almost impossible and very impractical at this time.

Table 5

Survey Results, Main Concho River, May 3, June 2, and August 24, 1967. 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	34	10.05	53.03	1.56	11.80	
Gizzard shad	150	44.38	71.58	.48	15.93	
Carp	7	2.07	30.07	4.29	6.69	
River carpsucker	96	28.41	208.01	2.17	46.29	
Smallmouth buffalo	7	2.07	39.43	5.63	8.78	
Channel catfish*	4	1.18	8.33	2.08	1.85	2.05
Flathead catfish*	2	.59	15.08	7.54	3.36	2.25
White bass*	2	.59	4.68	2.34	1.04	3.09
Bluegill*	5	1.49	.58	.12	.13	3.63
White crappie*	24	7.10	7.35	.31	1.64	3.03
Freshwater drum	7	2.07	11.18	1.60	2.49	
Total	338	100.00	449.32		100.00	
Game Fish*	37	10.95	36.02		8.02	
Rough Fish	301	89.05	413.30		91.98	

Seining Results Main Concho River (30 x 6 x 1/4-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Longnose gar	2	8-16
Gizzard shad	218	1-6
Red shiner	301	1-2 1/2
Fathead minnow	42	1-2 1/2
Bullhead monnow	208	1-2 1/2
River carpuscker	9	2 1/2-3
Smallmouth buffalo	2	4-5
Mosquitofish	53	1-2
Warmouth	19	1-3
Green sunfish	18	1-3
Orangespotted sunfish	4	1 1/2-2
Bluegill	162	1-4
Lonear sunfish	85	1/2-4
Largemouth bass	17	1 1/2-6
White crappie	20	1 1/2-5
Total	1,160	

Table 6

Survey Results San Saba River, April 28 and September 20, 1967. 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	42	12.31	83.69	1.99	13.86	
Gizzard shad	139	40.76	65.68	.47	10.89	
Carp	4	1.18	21.09	5.27	3.49	
River carpsucker	98	28.74	207.37	2.12	34.36	
Smallmouth buffalo	28	8.21	187.88	6.71	31.14	
Gray redhorse sucker	5	1.46	2.91	.58	.48	
Channel catfish*	3	.88	2.97	.99	.49	1.69
Flathead catfish*	1	.30	7.71	7.71	1.28	1.89
Bluegill *	2	.59	.37	.18	.06	4.55
Largemouth bass*	2	.59	2.15	1.07	.36	2.40
White crappie*	11	3.23	3.87	.35	.64	3.09
Freshwater drum	6	1.75	17.78	2.96	2.95	
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Total	341	100.00	603.47		100.00	
Game Fish *	19	5.59	17.07		2.83	
Rough Fish	322	94.41	586.40		97.17	

Seining Results San Saba River (30 x 6 x 1/4-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Gizzard shad	201	1-4
Red shiner	200	1/2-1 1/2
Sand shiner	405	1-2
Blacktail shiner	1,716	1-2 1/2
Bullhead minnow	11	1-2
River carpsucker	30	2 1/2-4
Spotted sucker	2	5
Channel catfish	2	2-3
Mosquitofish	323	1/2-1 1/2
Green sunfish	8	1-2 1/2
Orangespotted sunfish	24	1-2 1/2
Bluegill	93	1-3
Longear sunfish	6	2-3
Redear sunfish	1	2 1/2
Spotted bass	2	3-4
Largemouth bass	19	1-4
White crappie	20	1-3
Logperch	1	3
Total	3,064	

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Date March 14, 1968

Approved by Marion Toole
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