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. 11 Pre-inundation Investigation for Robert Lee Reservoir

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ABSTRACT

Construction of the Robert Lee Dam and related facilities is about 60 per cent complete. Information concerning progress and closure dates, maps and hydrological data was secured.

Fish population sampling continues to reflect domination by undesirable species. However, stocking of largemouth bass fry in newly impounded water in the reservoir area appears to be somewhat successful.

The rearing of brood game fish in ranch ponds is progressing satisfactorily. Plans are to release about 2,000 adult largemouth bass in the reservoir before the 1969 spawning season.

SEGMENT COMPLETION REPORT

State of Texas

Name: Region I-B Fisheries Studies

Project No. F-5-R-15

Title: Pre-inundation Investigation

Job No. 11

For Robert Lee Reservoir

Period Covered: March 1, 1967 to February 29, 1968

Objectives:

To develop a pre-inundation management program for Robert Lee Reservoir and associated waters.

Procedures:

Liaison with the controlling authority, Colorado River Municipal Water District, was continued. Information concerning construction progress and closure dates, hydrological data, maps and water usage was obtained.

The current fish population of the river, in and below the reservoir area, was sampled with gill nets, seines and rotenone. Fish species and population relative abundance were determined and recorded.

The rearing of brood game species in ranch tanks was employed to assure adequate stocking. These fish were checked periodically for survival and growth.

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.

COMMON NAMES	SCIENTIFIC NAMES
Spotted gar	Lepisosteus oculatus
Longnose gar	Lepisosteus osseus
Gizzard shad	Dorosoma cepedianum
Carp	Cyprinus carpio
Plains minnow	Hybognathus placita
Red shiner	Notropis lutrensis
Sharpnose shiner	Notropis oxyrhynchus
Fathead minnow	Pimephales promelas
Bullhead minnow	Pimephales vigilax
Longnose dace	Rhinichthys cataractae
River carpsucker	Carpiodes carpio
Smallmouth buffalo	Ictiobus bubalus
Black bullhead	Ictalurus melas
Channel catfish	Ictalurus punctatus

COMMON NAMES	SCIENTIFIC NAMES
Flathead catfish	Pylodictis olivaris
Red River pupfish	Cyprinodon rubrofluviatilis
Zebra minnow	Fundulus zebrinus
Mosquitofish	Gambusia affinis
White bass	Roccus chrysops
Green sunfish	Lepomis cyanellus
Orangespotted sunfish	Lepomis humilis
Longear sunfish	Lepomis megalotis
Redear sunfish	Lepomis microlophus
Largemouth bass	Micropterus salmoides
White crappie	Pomoxis annularis
Freshwater drum	Aplodinotus grunniens

Findings:

Basic Reservoir Information

The basic construction plans, including the complete physical description of the dam and reservoir, have not been altered from that reported last segment and will not be repeated in this report. At the present time, construction of the dam and related facilities is slightly ahead of schedule being about 60 per cent complete. The coring of the 4.2 mile earthen dam is almost finished. Construction of the gated morning glory service spillway is well underway and should be ready for use in late summer of 1968. Without unseen delays, impoundment of the natural flow of the river and normal runoff will begin in September 1968. Completion of the dam and facilities is expected to be March 1, 1969.

Development of the 5 public recreation areas, totaling 2,000 acres, will begin very soon. These areas (Figure 1) will include improved boat ramps, tables, cooking grill, camping areas, etc.

Fishing regulations have been discussed with District Authorities. Recommendations were made for the waters of the new reservoir to be included in the existing fishing regulation of Coke County in the Permian Basin Regulatory Area.

Three retention dams have been constructed on the Colorado River in the lower basin area (Figure 2). Each of these earthen structures back waters up the riverbed 1½ to 2 miles and cover 20-to 50-surface acres. These retarding structures were built to supply water for construction purposes and to keep runoff water out of construction area.

Fish Population

The existing fish population was sampled at various locations in the reservoir area and below the basin in the Colorado River. Netting results in the basin were very similar to that of last year with rough fish accounting for 94 per cent by number and 93 per cent by weight (Table 1). One largemouth bass was taken in gill nets and 8 were collected with seines. This much sought-after game species was not collected in this area last year. Creel checks also revealed

Figure 1

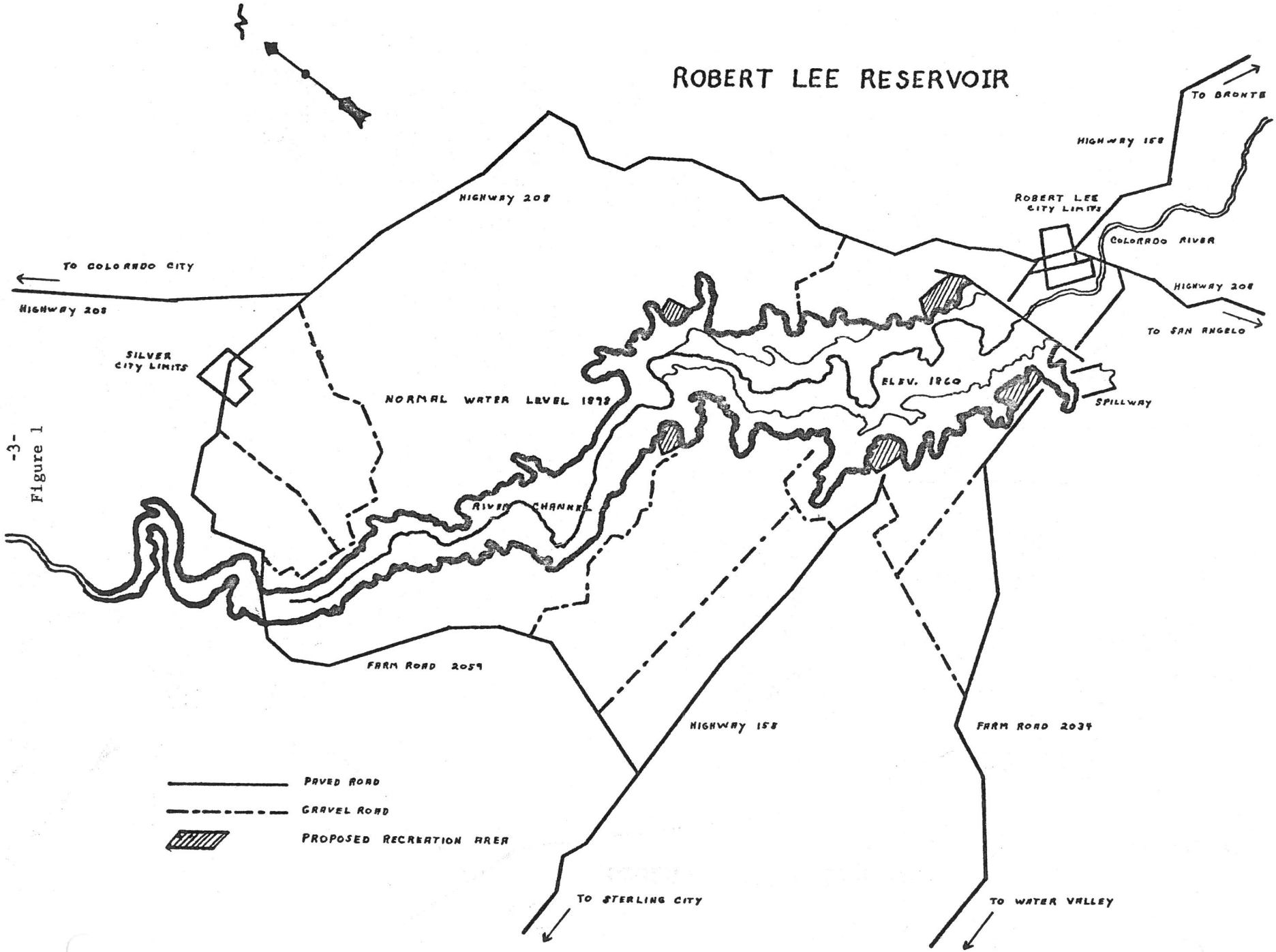
ROBERT LEE RESERVOIR
TO BRONTE
HIGHWAY 158
HIGHWAY 208
ROBERT LEE CITY LIMITS
COLORADO RIVER
TO COLORADO CITY
HIGHWAY 208
HIGHWAY 208
TO SAN ANGELO
SILVER CITY LIMITS
NORMAL WATER LEVEL 1898
ELEV. 1860
SPILLWAY
RIVER CHANNEL
FARM ROAD 2059
HIGHWAY 158
FARM ROAD 2034
PAVED ROAD
GRAVEL ROAD
PROPOSED RECREATION AREA
TO STERLING CITY
TO WATER VALLEY

Figure 2.

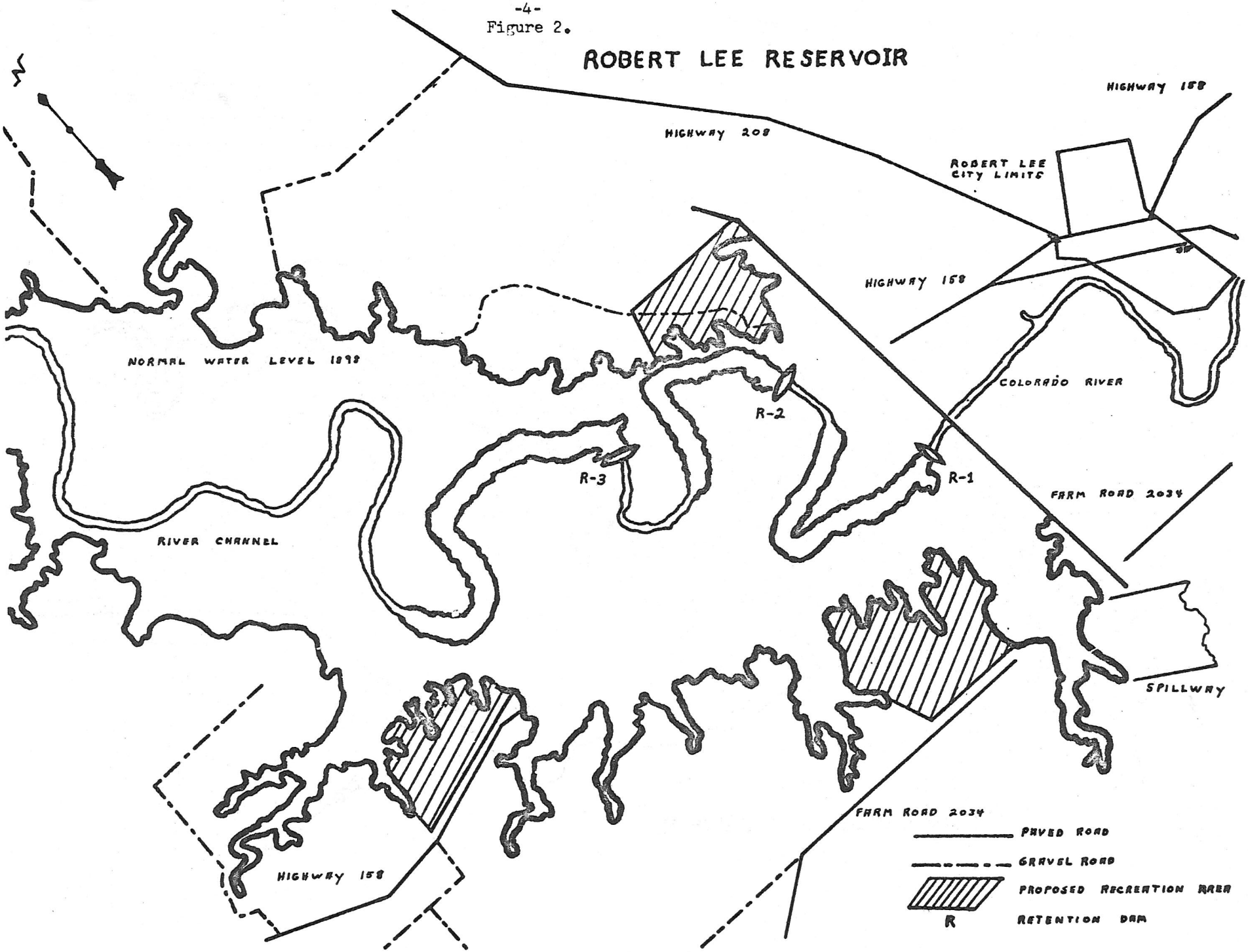
ROBERT LEE RESERVOIR
HIGHWAY 158
HIGHWAY 208
ROBERT LEE CITY LIMITS
HIGHWAY 158
NORMAL WATER LEVEL 1898
COLORADO RIVER
R-2
R-3
R-1
FARM ROAD 2034
RIVER CHANNEL
SPILLWAY
FARM ROAD 2034
HIGHWAY 158
PAVED ROAD
GRAVEL ROAD
PROPOSED RECREATION AREA
R
RETENTION DAM

Table 1

Survey Results Colorado River Reservoir Area, April 26, May 17, July, 1967 and January 26, 1968. Results of 11 gill nets.

Species	Number	Per Cent by No.	Total Wgt. Pounds	Avg. Wt. Pounds	Per Cent by Wgt.	Average "K"
Longnose gar	134	32.13	164.37	1.22	31.59	
Gizzard shad	91	21.82	109.46	1.20	21.05	
Carp	9	2.16	46.74	5.19	8.98	
River carpsucker	150	35.97	150.53	1.00	28.94	
Smallmouth buffalo	1	.24	6.33	6.33	1.22	
Black bullhead	1	.24	.64	.64	.12	
Channel catfish	12	2.88	12.57	1.04	2.42	1.80
Flathead catfish	9	2.16	21.67	2.40	4.16	1.57
Green sunfish	2	.48	.27	.13	.05	4.11
Largemouth bass	1	.24	.55	.55	.11	2.36
Freshwater drum	7	1.68	7.05	1.00	1.36	
Total	417	100.00	520.18		100.00	
Game Fish *	24	5.76	35.06		6.74	
Rough Fish	393	94.24	485.12		93.26	

Seining Results Colorado River Reservoir Area (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
Spotted gar	30	12-18
Longnose gar	115	6-24
Gizzard shad	15,240	1½-10
Plains minnow	133	2-3½
Red shiner	6,582	½-2½
Sharpnose shiner	8	2-2½
Fathead minnow	11	1-2
Bullhead minnow	1,368	1-2
Longnose dace	7	1½-2½
River carpsucker	22	6-12
Channel catfish	4	8-12
Red River pupfish	1	1
Zebra minnow	12	2-2½
Mosquitofish	20	1-2
White bass	1	8
Green sunfish	6	2-4
Orangespotted sunfish	47	1½-2½
Longear sunfish	81	1½-4
Redear sunfish	1	3
Largemouth bass	8	8-10
Total	23,697	

a sizeable number of largemouth bass are present, especially in the waters held by the 3 retention dams. Although channel catfish were relatively scarce in the netting samples, they were very abundant in nearly all sections of the river when checked with rotenone sampling, electro-shocker sampling, and hook and line. The shallow areas of the river continues to support an enormous minnow population.

Sampling results from below the reservoir area are given in Table 2. Longnose gar, gizzard shad, and river carpsucker continue to dominate the netting collection. Largemouth bass and white crappie were additions to the game fish when compared to last year's sampling. Also, a large number of small flathead catfish were taken with hook and line during the June collection trip. It is believed that these desirable predators moved upstream following a recent heavy influx of water.

Seining samples (Table 2) produced a larger amount of forage than found during the previous year. This could possibly be attributed to the time of the year the samples were collected and a larger amount of water in the river.

Rare or endemic fish were not found in the course of this study. Therefore, measures to preserve such species were unnecessary.

Table 2

Survey Results Colorado River Below Reservoir Area, April 12 and June 22, 1967.
Results of 6 gill nets.

Species	Number	Per Cent by No.	Total Wgt. Pounds	Avg. Wt. Pounds	Per Cent by Wgt.	Average "K"
Longnose gar	44	20.27	59.25	1.34	17.67	
Gizzard shad	57	26.27	63.65	1.11	19.00	
Carp	11	5.07	56.50	5.13	16.85	
River carpsucker	84	38.71	99.39	1.18	29.66	
Smallmouth buffalo	6	2.76	36.18	6.03	10.80	
Channel catfish*	3	1.39	9.63	3.21	2.87	1.89
Flathead catfish*	3	1.39	5.27	1.75	1.57	1.95
Largemouth bass*	1	.46	1.27	1.27	.38	2.59
White crappie*	2	.92	.20	.10	.06	3.08
Freshwater drum	6	2.76	3.80	.63	1.14	
Total	217	100.00	335.14		100.00	
Game Fish*	9	4.16	16.37		4.88	
Rough Fish	208	95.84	318.77		95.12	

Seining Results Colorado River Below Reservoir Area (30 x 6 x ¼-inch mesh seine and 20 x 6 x 1/8-inch mesh seine).

Species	Number	Size Range in Inches
Longnose gar	8	7-10
Gizzard shad	213	1-2½
Plains minnow	1	3
Red shiner	243	1½-2
Fathead minnow	20	1½-2
Bullhead minnow	20	1½-2
Longnose dace	8	1½-2½
River carpsucker	15	2½-5
Smallmouth buffalo	3	3-5
Mosquitofish	4	2-3
Green sunfish	2	4
Orangespotted sunfish	3	2-4
Longear sunfish	7	2-4½
White crappie	7	2½-4
Total	554	

Stocking Plans

Because of anticipated demands of hatchery produced fish during the 1969 and 1970 stocking season, desirable game fish are being reared in ranch tanks to supply Robert Lee Reservoir with adequate brood stock. These fish, mainly largemouth bass, will be released in the new reservoir as soon as sufficient water is impounded. Also, these adult predators will help to control some of the undesirable species already present in the river.

Currently, about 50 private ponds and 2 small city lakes at Robert Lee are being used to rear and hold potential brood fish. These waters have been checked periodically with various size seines, gill nets and hook and line. As the food supply is depleted, additional forage is supplied. The most common forage species used was the red shiner. These fish are obtained by seining in the Colorado River.

Most of the ponds were stocked with advanced fingerling bass in the late fall of 1966 with the remaining ones receiving fish early in 1967. The growth rate of these fish varied considerably as expected, and survival was considerably lower than desired. The best growth encountered was a 2½-to 3-pound bass in less than 1 year. Periodic sampling reveals that 75 per cent of the potential brood bass ranged between 3/4 and 1¼-pounds by late fall of 1967. Also, it should be noted that limited natural spawning occurred in more than one-half of the rearing ponds. This is beneficial in that it provides additional food for the larger bass and possibly more brood size fish the following year.

The need for pond-rearing channel catfish and sunfish is of less importance. Fish sampling in the river in the reservoir area indicates an abundance of small channel catfish. Therefore, the need for stocking this species is not critical. Furthermore, sunfish can be produced in a shorter period of time and successfully stocked as the reservoir is filling.

Current plans are to initiate the transferring of the largemouth bass from the rearing ponds to the reservoir as soon as permanent impoundment begins. As stated earlier in this report, this should occur in September 1968. The number of brood fish stocked will increase with the influx of water. It is hoped that about 2,000 adult bass will be available for release by the natural spawning season of 1969.

The new water impounded by the 3 retention dams in the lower reservoir basin was stocked with 113,000 largemouth bass fry in May 1967. Sampling in this area indicated good survival and growth of these small fish. It is felt that this effort will be of great value in establishing an adequate brood bass population as the reservoir fills.

Conclusions and Recommendations:

It is recommended that this job be continued in order to take advantage of the pre-impoundment management opportunities offered.

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Approved by: Marion Toole
Coordinator

Date: April 29, 1968

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