

Report of Fisheries Investigations
Resurvey of Waters of Region 8-B

by

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Dingell-Johnson Project F-6-R-7, Job B-11
July 1, 1959 - December 31, 1959

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A B S T R A C T

Four lakes including Casa Blanca Lake, Fort Brown Lake, Campacuas Lake and Llano Grande Lake were re-surveyed in an effort to discover any changes in the fish populations.

In Casa Blanca Lake, near Laredo, Webb County, threadfin shad (Dorosoma petenense), gizzard shad (D. cepedianum), black bass (Micropterus salmoides), and white crappie (Pomoxis annularis) showed relative increases in numbers while river carpsucker (Carpoides carpio) and freshwater drum (Aplodinotus grunniens) showed relative decreases. These changes are mostly an improvement over past years and are probably due to the additional water volume of the lake.

It was found that carp (Cyprinus carpio), gizzard shad and Rio Grande cichlids (Cichlasoma cyanoguttatum) have become established in Fort Brown Lake, by entering through the untended pump screens. Although submerged vegetation in this lake has not reached a critical stage, its control is worthy of some consideration.

Netting and seining samples on Llano Grande and Campacuas Lake revealed that rough fish remain dominant despite the rotenone treatment in May 1959. During the first part of this segment, 7,075 fingerling black bass were stocked in Campacuas Lake.

Job Completion Report

State of TEXAS

Project No. F-6-R-7

Name: Fisheries Investigations and Surveys
of the Waters of Region 8-B.

Job No. B-11

Title: Resurvey of the Waters of Region 8-B.

Period Covered:

July 1, 1959 - December 31, 1959

OBJECTIVES

To determine the present status of waters and fish populations which have been previously surveyed in Project F-6-R.

PROCEDURE

Experimental gill nets were used in all cases to gather information concerning the relative abundance and weights of fish species. Seining collections were made only on Llano Grande and Campacuas Lake in addition to the netting collections.

Netted specimens were weighed (in grams) and measured (in millimeters) in the field. Sex, state of sexual development, and the occurrence of parasites of the individual specimens were also noted and recorded in the field. Seined specimens were preserved in 10 percent formalin and taken to the regional fisheries laboratory for identification.

FINDINGS

Casa Blanca Lake

A total of 16 experimental gill nets was set in Casa Blanca Lake during this resurvey period. Eight collections were made in October and eight were made in December 1959. The 16 nets took 492 fish of 11 species which weighed 213,796 grams. On the basis of these netting results compared with those of the previous resurvey (F-6-R-5, Job B-11), threadfin shad (Dorosoma petenense), gizzard shad (D. cepedianum), black bass (Micropterus salmoides), and white crappie (Pomoxis annularis) showed relative increases in numbers, while river carpsuckers (Carpiodes carpio) and freshwater drum (Aplodinotus grunniens) showed relative decreases.

Table 1 shows the numbers of fish collected in the 16 nets at the eight stations on the lake. According to this table, rough fish comprised 50.41 percent by number and 59.74 percent by weight as compared to the netting results of 1958 when these species comprised 70.32 percent by number and 90.96 percent by weight of the total net catch. Threadfin shad appear to be well established in this lake, comprising 9.95 percent of the netted specimens, whereas none was netted in the previous resurvey. No seining collections were made during this segment.

Table 2 shows the weights (in grams) of fish collected and Table 3 shows the lengths, weights, and "K" factors of the fish. No significant changes in the condition of the fish, as expressed by the "K" factors, were found.

No chemical analyses of water were made during this resurvey period. However, Secchi disk readings, taken at each netting station, were found to range from 11- to 28-inches. This is somewhat less than the 54-inch maximum reading found in the previous resurvey.

Fort Brown Lake

During this resurvey period, two experimental gill nets were set in Fort Brown Lake, at Brownsville. A total of 70 fish of seven species was collected. Four species were classified as game fish and three species were classified as rough fish.

Black bass and channel catfish (Ictalurus punctatus) were the only species stocked in the lake following rotenone treatment in 1958. However, this resurvey revealed that gizzard shad, carp (Cyprinus carpio), Rio Grande cichlids (Cichlasoma cyanoguttatum), bluegill sunfish (Lepomis macrochirus), warmouth bass (Chaenobryttus gulosus), blue catfish (Ictalurus furcatus) and white crappie are now present in the lake. Since this lake is dependent on the Rio Grande for its water, all incoming water has to be "screened" to prevent the entry of fish.

At the time of the renovation, the City of Brownsville agreed to install and maintain inlet screens. Project personnel have seen the screens filled with debris which stopped them up. Consequent water flow over the screens and "blow out" holes in them have allowed rough fish from the river to become established in the lake.

Attempts were made in Job S-1, (F-6-R-7) to net carp from the lake but mostly Rio Grande cichlids were removed. Attempts to get large flathead (Pylodictus olivaris) and blue catfish from the stilling basin below Anzalduas Reservoir were cancelled when the International Boundary and Water Commission decided against draining the basin. Catfish, if stocked, should make an effective natural control on the cichlids and sunfish.

The rough fish comprised about 43 percent by number and about 70 percent by weight of the netted specimens taken in this resurvey. Table 4 shows the numbers of fish caught during this study at the two net stations. Also, the percentage of each species is given in this table.

Table 5 shows the weights of the species collected by station and Table 6 shows the average, minimum and maximum lengths, weights, and "K" factors.

On the basis of these netting collections, carp ranked first by weight and second by number. Despite the established populations of rough fish, black bass and channel catfish and blue catfish appear to be in good condition and anglers are able to catch nice strings of bass and catfish.

The noxious vegetation in the lake, primarily Najas sp., Chara sp. and Ceratophyllum sp., will, in time, create a definite fisheries problem. Since this is a very shallow ox-bow lake, annual plant control will probably be necessary to lessen the problem. As yet, no summer kill of fish due to decaying vegetation has been observed or reported.

Llano Grande and Campacuas Lakes

Five seining collections and eight gill net collections were made on Llano Grande and Campacuas Lakes during this segment. Three gill nets in Campacuas Lake took a total of 23 fish of 5 species weighing 10,456 grams. Rough species, gizzard shad and carp, were found to comprise 56.52 percent by number and 86.10 percent by weight of the fish netted despite the rotenone treatment in May 1959 (Project F-14-D-3, Job 16a-18). Gizzard shad appeared to be the most abundant species in the lake, comprising 52.17 percent by number (Table 7). Three species of game fish (channel catfish, warmouth bass, and white crappie) comprised 43.48 percent by number and 13.90 percent by weight. One white crappie, taken during this resurvey, was undoubtedly missed by the rotenone treatment in May 1959 since none was restocked in the lake.

Eight channel catfish, which were stocked in June 1959, were recaptured during this resurvey. The catfish ranged from 7- to 8-inches in length; thus showing a physical growth of over 6 inches in the initial six month period. All of the catfish were lively and thus returned to the lake after length and weight measurements were recorded. On July 8, 1959, 7,075 fingerling largemouth bass from 2 to 3 inches in length were stocked in Campacuas Lake.

Two seining collections were made in "Green's Ditch" during this resurvey. It was found that tetra (Astyanax fasciatus), gizzard shad, carp and Rio Grande cichlids were present in this drainage canal although it was treated with rotenone in conjunction with Campacuas Lake.

Five netting collections in Llano Grande Lake took 88 fish of eight species. It was found that rough species remain dominant in this lake as well as "Paradise Creek" which flows into this lake on the west end.

According to the net collections, as shown in Table 9, rough fish (alligator gar (Lepisosteus spatula), spotted gar (Lepisosteus productus), gizzard shad, carp and Rio Grande cichlids) comprised 87.50 percent by number and 96.69 percent by weight (Table 10).

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Approved by Marion Toole
Director Inland Fisheries Division

Date June 9, 1960

Table 1. Numbers of Fish Taken in Experimental Gill Nets from Casa Blanca Lake, October and December 1959.

Species	S T A T I O N S								Total	Percent
	1	2	3	4	5	6	7	8		
<u>Dorosoma petenense</u>	12	9	10	0	11	4	0	3	49	9.95
<u>Dorosoma cepedianum</u>	9	16	6	9	17	15	6	16	94	19.11
<u>Ictiobus bubalus</u>	0	0	1	3	5	0	7	3	19	3.86
<u>Carpoides carpio</u>	4	6	8	5	18	8	11	1	61	12.40
<u>Cyprinus carpio</u>	0	0	1	1	0	1	0	0	3	0.61
<u>Ictalurus punctatus*</u>	0	0	5	2	1	6	3	5	22	4.47
<u>Micropterus salmoides*</u>	3	1	1	4	3	2	5	0	19	3.86
<u>Lepomis macrochirus*</u>	4	1	0	0	2	1	0	3	11	2.24
<u>Pomoxis annularis*</u>	36	50	14	17	19	21	13	22	192	39.02
<u>Aplodinotus grunniens</u>	0	0	1	1	3	2	2	3	12	2.44
<u>Cichlasoma cyanoguttatum</u>	0	1	0	0	1	8	0	0	10	2.04
Total	68	84	47	42	80	68	47	56	492	100.00
Percent by Station	13.82	17.07	9.55	8.54	16.26	13.82	9.55	11.39		100.00
Rough Fish	25	32	27	19	55	38	26	26	248	
Percent Rough Fish	36.76	38.09	57.45	45.24	68.75	55.88	55.32	46.43	50.41	
Game Fish*	43	52	20	23	25	30	21	30	244	
Percent Game Fish	63.24	61.91	42.55	54.76	31.25	44.12	44.68	53.57	49.59	

* Indicates Game Fish

Table 2. Grams of Fish Taken in Experimental Gill Nets
from Casa Blanca Lake, October and December 1959

Species	Stations								Total	Percent
	1	2	3	4	5	6	7	8		
<u>Dorosoma petenense</u>	787	549	465	0	828	264	0	125	3,018	1.41
<u>Dorosoma cepedianum</u>	699	1,417	633	1,093	2,345	1,854	779	2,361	11,181	5.23
<u>Ictiobus bubalus</u>	0	0	2,070	5,811	9,483	0	12,729	5,726	35,819	16.75
<u>Carpilodes carpio</u>	4,423	5,854	11,113	6,039	20,710	7,795	10,408	1,247	67,589	31.61
<u>Cyprinus carpio</u>	0	0	373	893	0	0	0	0	1,266	0.60
<u>Totalurus punctatus*</u>	0	0	7,144	3,260	0	7,995	3,303	786	22,488	10.51
<u>Micropterus salmoides*</u>	8,846	145	1,928	4,141	3,159	230	5,684	0	24,133	11.29
<u>Lepomis macrochirus*</u>	155	0	0	0	77	36	0	193	461	0.22
<u>Pomoxis annularis*</u>	6,415	8,672	3,043	3,783	5,122	4,323	2,592	5,051	39,001	18.24
<u>Aplodinotus grunniens</u>	0	0	794	0	1,400	1,035	714	1,789	5,732	2.68
<u>Cichlasoma cyanoguttatum</u>	0	0	0	0	335	2,773	0	0	3,108	1.46
Total	21,325	16,637	27,563	25,020	43,459	26,305	36,209	17,278	213,796	
Percent by Station	9.97	7.78	12.89	11.71	20.32	12.31	16.93	8.09	100.00	
Rough Fish	5,909	7,820	15,448	13,836	35,101	13,721	24,630	11,248	127,713	
Percent Rough Fish	27.71	47.00	56.05	55.30	80.77	52.16	68.02	65.10	59.74	
Game Fish*	15,416	8,817	12,115	11,184	8,358	12,584	11,579	6,030	86,083	
Percent Game Fish	72.29	53.00	43.95	44.70	19.23	47.84	31.98	34.90	40.26	

* Indicate Game Fish

Table 3. Lengths, Weights, and "K" Factors of Fish Taken
from Casa Blanca Lake, October and December 1959

Species	Standard Length			Weight in Grams			"K" Factor			Rank by No.	Rank by Wt.
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.		
<u>Dorosoma petenense</u>	115	170	141.94	35	95	61.59	1.74	2.63	2.11	4	9
<u>Dorosoma cepedianum</u>	130	263	177.04	42	332	119.53	1.62	2.37	1.98	2	6
<u>Ictiobus bubalus</u>	350	430	385.11	1,361	2,438	1,885.21	2.90	4.16	3.31	6	3
<u>Carpiodes carpio</u>	265	400	335.52	482	1,984	1,122.77	2.21	4.49	2.87	3	1
<u>Cyprinus carpio</u>	225	320	261.67	373	978	748.00	2.60	2.98	2.76	10	10
<u>Ictalurus punctatus</u>	349	510	419.73	751	2,934	1,550.46	1.54	2.27	1.95	5	5
<u>Micropterus salmoides</u>	175	485	326.68	115	3,204	1,270.16	1.97	3.48	2.55	6	4
<u>Lepomis macrochirus</u>	92	125	103.27	34	83	45.00	3.38	4.35	3.97	8	11
<u>Pomoxis annularis</u>	120	310	194.06	42	879	202.77	1.09	3.19	2.45	1	2
<u>Aplodinotus grunniens</u>	195	360	279.92	150	1,021	525.83	1.68	2.63	2.15	7	7
<u>Cichlasoma cyanoguttatum</u>	162	195	182.70	200	445	347.80	5.32	6.48	5.62	9	8

Table 4. Numbers of Fish Taken in Experimental Gill Nets
from Fort Brown Lake, September 1959.

Species	Station		Total	Percent
	1	2		
<u>Dorosoma cepedianum</u>	1	0	1	1.42
<u>Cyprinus carpio</u>	7	11	18	25.72
* <u>Ictalurus punctatus</u>	4	3	7	10.00
* <u>Ictalurus furcatus</u>	1	4	5	7.14
* <u>Micropterus salmoides</u>	4	2	6	8.57
* <u>Lepomis macrochirus</u>	16	6	22	31.43
<u>Cichlasoma cyanoguttatum</u>	0	11	11	15.72
Total	33	37	70	
Percent	47.14	52.86		100.00
Rough Fish	8	22	30	
% Rough Fish	24.24	59.46	42.86	
*Game Fish	25	15	40	
% Game Fish	75.76	40.54	57.14	

* Indicates Game Fish

Table 5. Grams of Fish Taken in Experimental Gill Nets from Fort Brown Lake, September 1959.

Species	Station		Total	Percent
	1	2		
<u>Dorosoma cepedianum</u>	462	0	462	1.24
<u>Cyprinus carpio</u>	7,286	16,841	24,127	64.95
* <u>Ictalurus punctatus</u>	2,274	1,779	4,053	10.92
* <u>Ictalurus furcatus</u>	680	3,191	3,871	10.42
* <u>Micropterus salmoides</u>	1,408	65	1,473	3.96
* <u>Lepomis macrochirus</u>	1,210	417	1,627	4.38
<u>Cichlasoma cyanoguttatum</u>	0	1,531	1,531	4.13
Total	13,320	23,824	37,144	
Percent	35.86	64.14		100.00
Rough Fish	7,748	18,372	26,120	
Percent Rough Fish	58.17	77.12	70.32	
*Game Fish	5,572	5,452	11,024	
Percent Game Fish	41.83	22.88	29.68	

* Indicates Game Fish

Table 6. Lengths, Weights, and "K" Factors of Fish Taken from Fort Brown Lake, September 1959.

Species	Standard Length.			Weight in Grams			"K" Factor			Rank by No.	Rank by Wt.
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.		
<u>Dorosoma cepedianum</u>	-	278	278.00	-	462	462.00	-	2.15	2.15	7	7
<u>Cyprinus carpio</u>	304	410	355.17	851	2,098	1,340.39	2.08	4.04	2.94	2	1
<u>Ictalurus punctatus</u>	290	360	319.86	418	794	579.00	1.35	2.33	1.78	4	2
<u>Ictalurus furcatus</u>	290	431	354.40	331	1,503	774.20	1.23	1.88	1.54	6	3
<u>Micropterus salmoides</u>	116	306	191.17	32	794	245.50	2.11	2.77	2.38	5	6
<u>Lepomis macrochirus</u>	94	150	123.73	38	124	76.23	3.08	5.16	3.74	1	4
<u>Cichlasoma cyanoguttatum</u>	140	164	147.91	100	205	139.18	3.11	5.61	4.24	3	5

- Indicates only one fish.

Table 7. Numbers and Grams of Fish Taken in Experimental Gill Nets from Campacus Lake, November 1959.

Species	Stations						Total No.	Total Wt.	Percent	
	No.	1 Wt.	No.	2 Wt.	No.	3 Wt.			No.	Wt.
<u>Dorosoma cepedianum</u>	3	574	4	1,048	5	1,257	12	2,879	52.17	27.53
<u>Cyprinus carpio</u>	0	0	1	6,124	0	0	1	6,124	4.35	58.57
<u>Ictalurus punctatus*</u>	0	0	1	109	7	804	8	913	34.78	8.73
<u>Chaenobryttus gulosus*</u>	0	0	1	150	0	0	1	150	4.35	1.44
<u>Pomoxis annularis*</u>	0	0	0	0	1	390	1	390	4.35	3.73
Total	3	574	7	7,431	13	2,451	23	10,456		
Percent by Station	13.04	5.48	30.43	71.07	56.53	23.45			100.00	100.00
Rough Fish	3	574	5	7,172	5	1,257	13	9,003		
Percent Rough Fish	100.00	100.00	71.43	96.51	38.46	51.29	56.52	86.10		
Game Fish*	0	0	2	259	8	1,194	10	1,453		
Percent Game Fish	0.00	0.00	28.57	3.49	61.54	48.71	43.48	13.90		

* Indicates Game Fish

Table 8. Lengths, Weights and "K" Factors of Fish Taken from Campacus Lake, November 1959.

Species	Standard Length			Weight in Grams			"K" Factor			Rank by No.	Rank by Wt.
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.		
<u>Dorosoma cepedianum</u>	135	270	208.33	45	390	239.92	1.83	2.28	2.07	1	2
<u>Cyprinus carpio</u>	-	240	240.00	-	315	315.00	-	2.28	2.28	3	1
<u>Ictalurus punctatus</u>	175	210	192.50	93	140	114.13	1.47	1.83	1.60	2	3
<u>Chaenobryttus gulosus</u>	-	150	150.00	-	150	150.00	-	4.44	4.44	3	5
<u>Pomoxis annularis</u>	-	240	240.00	-	390	390.00	-	2.82	2.82	3	4

- Indicates only one fish.

Table 9. Numbers of Fish Taken in Experimental Gill Nets
from Llano Grande Lake, November 1959.

Species	Stations					Total	Percent
	1	2	3	4	5		
<u>Lepisosteus spatula</u>	3	0	5	3	0	11	12.50
<u>Lepisosteus productus</u>	8	1	1	1	2	13	14.77
<u>Dorosoma cepedianum</u>	4	1	10	17	13	45	51.13
<u>Cyprinus carpio</u>	0	4	1	1	1	7	7.96
* <u>Ictalurus punctatus</u>	0	0	3	1	0	4	4.54
* <u>Micropterus salmoides</u>	0	0	0	0	1	1	1.14
* <u>Chaenobryttus gulosus</u>	0	1	0	4	1	6	6.82
<u>Gichlasoma cyanoguttatum</u>	0	0	0	0	1	1	1.14
Total	15	7	20	27	19	88	
Percent by Station	17.04	7.96	22.72	30.68	21.60		100.00
Rough Fish	15	6	17	22	17	77	
Percent Rough Fish	100.00	85.71	85.00	81.48	89.47		87.50
*Game Fish	0	1	3	5	2	11	
Percent Game Fish	0.00	14.29	15.00	18.52	10.53		12.50

* Indicates Game Fish

Table 10. Grams of Fish Taken in Experimental Gill Nets from Llano Grande Lake, November 1959.

Species	Stations					Total	Percent
	1	2	3	4	5		
<u>Lepisosteus spatula</u>	15,648	0	25,600	21,150	0	62,398	63.33
<u>Lepisosteus productus</u>	7,996	1,134	1,021	1,021	2,041	13,213	13.41
<u>Dorosoma cepedianum</u>	791	155	1,680	3,130	2,195	7,951	8.07
<u>Cyprinus carpio</u>	0	6,192	2,495	1,843	1,134	11,664	11.84
<u>Ictalurus punctatus*</u>	0	0	2,295	90	0	2,385	2.42
<u>Micropterus salmoides*</u>	0	0	0	0	567	567	0.58
<u>Chaenobryttus gulosus*</u>	0	56	0	198	52	306	0.31
<u>Cichlasoma cyanoguttatum</u>	0	0	0	0	35	35	0.04
Total	24,435	7,537	33,091	27,432	6,024	98,519	
Percent by Station	24.80	7.65	33.59	27.84	6.12		100.00
Rough Fish	24,435	7,481	30,796	27,144	5,405	95,261	
Percent Rough Fish	100.00	99.26	93.06	98.95	89.72	96.69	
Game Fish*	0	56	2,295	288	619	3,258	
Percent Game Fish	0.00	0.74	6.94	1.05	10.28	3.31	

* Indicates Game Fish

Table 11. Lengths, Weights and "K" Factors of Fish Taken
from Llano Grande Lake, November 1959.

Species	Standard Length		Weight in Grams		"K" Factor		Rank by No.	Rank by Wt.			
	Min.	Max.	Avg.	Min.	Max.	Avg.					
<u>Lepisosteus spatula</u>	590	940	810.64	2,041	8,732	5,672.55	0.91	1.12	1.01	3	1
<u>Lepisosteus productus</u>	450	590	500.77	794	1,588	1,016.85	0.69	0.93	0.81	2	2
<u>Dorosoma cepedianum</u>	120	270	190.04	42	459	172.24	1.91	2.89	2.29	1	4
<u>Cyprinus carpio</u>	260	430	346.43	465	2,495	1,484.00	2.65	3.81	3.21	4	3
<u>Ictalurus punctatus</u>	150	466	253.50	90	2,041	596.25	1.61	2.67	1.98	6	5
<u>Micropterus salmoides</u>	-	270	270.00	-	567	567.00	-	2.88	2.88	7	6
<u>Chaenobryttus gulosus</u>	100	110	101.67	49	56	51.00	3.25	5.60	4.81	5	7
<u>Cichlasoma cyanoguttatum</u>	-	90	90.00	-	35	35.00	-	4.79	4.79	7	8

- Indicates only one fish.

Table 12. Success of Gill Netting on All Lakes in Terms of Numbers and Pounds of Fish Caught.

Lake and Date	Number of Nets Set	Number of Feet of Nets	Number of Fish Caught	Average Number of Fish Per Net	Average Number of Fish Per Foot of Net	Pounds of Fish Caught	Average Pounds of Fish Per Net	Average Pounds of Fish Per Foot of Net
Lake Casa Blanca, Oct. & Dec. 1959	16	2,000	492	30.75	0.246	470.92	29.43	0.235
Lake Fort Brown, September 1959	2	250	70	35.00	0.280	81.81	40.91	0.327
Lake Llano Grande, November 1959	5	625	88	17.60	0.141	217.00	43.40	0.347
Lake Campacuas, November 1959	3	375	23	7.67	0.061	23.03	7.68	0.061

