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JOB COMPLETION REPORT

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FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

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FISHERIES INVESTIGATIONS AND SURVEYS OF THE WATERS OF REGION 2-A

Job No. B-30 Resurvey of Possum Kingdom Lake

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## ABSTRACT

Gill net collections at bi-monthly intervals made use of previously established net stations where possible. Data concerning length, weight, sexual maturity and food habits were recorded for specimens taken.

Net collections between November 1, 1961 and October 31, 1962 took 15 of the 24 species that reach nettable size in Possum Kingdom Lake. The known species that were not taken in the 1961-1962 netting were not abundant in the previous segment.

The results of netting done in 1958-1959 and 1961-1962 are considered adequate but those of 1960-1961 were not believed to be representative, as netting attempts were hampered by bad weather conditions.

Gizzard shad proved to be the most numerous species in the catch both in 1958-1959 and the 1961-1962 netting. The percentage of this species was reduced from 47.85 to 37.49 with the number and pounds per 100 feet of gill net reflecting this change.

Smallmouth buffalo decreased in abundance in the catch as did white crappie but carp, channel catfish, largemouth bass, redear sunfish and bluegill sunfish showed an increase.

JOB COMPLETION REPORT

STATE OF Texas

Project No. F-4-R-9

Name: Fisheries Investigations and Surveys of the Waters of Region 2-A

Job No. B-30

Title: Resurvey of Possum Kingdom Lake

Period Covered: November 1, 1961 - October 31, 1962

Objectives:

To conduct investigations to obtain current information concerning the fish population and factors influencing that population.

Techniques Used:

Gill net collections were made at bi-monthly intervals using previously established net stations when possible. The information obtained was compared with that from previous collections to determine any changes that might have occurred.

Seine sampling was abandoned after it became apparent that the raised water level had inundated the heavily vegetated shoreline to a depth that rendered previous seine stations unusable. The newly flooded brush areas could not be seined successfully.

All fish species taken in the nets were identified, weighed, measured and examined for evidence of sexual maturity and food habits. The data obtained was recorded on forms prepared for that purpose to facilitate comparison with collections from previous net sampling.

Results:

Net collections from Possum Kingdom Lake between November 1, 1961 and October 31, 1962 produced 15 of the 24 species that reach nettable size (Table 1). Yellow bullhead, spotted bass, warmouth, green sunfish and yellowbelly sunfish are known to be present in reasonable numbers, but do not appear in the net collections with much regularity. Shortnose gar, Texas grey redhorse and striped mullet have been represented in past collections by only one or two specimens that were introduced by bait dealers and only three have been reported with two having been observed by fishery biologists.

Tables 2, 3, and 4 present the results of net collections from 1958-1959, 1960-1961, and 1961-1962. The collections from 1960-1961 was not a representative sample as it was made during very adverse weather conditions.

The gizzard shad percentage in the 1958-1959 collection was 47.85 but dropped to 37.49 in the 1961-1962 netting. The number and pounds per 100 feet gill net also reflected this change in the makeup of the fish population.

A slight change in the carp and buffalo percentages was noted. The smallmouth buffalo percentage was 0.89 in 1958-1959 and 0.28 in 1961-1962 while carp showed the opposite trend with 0.21 per cent in 1958-1959 rising to 0.28 per cent in 1961-1962. This change is slight but is reflected in the catches of the contract netters who are

complaining that their catch of buffalo has fallen off while the carp take is rising. This has resulted in one of the three contract fisherman leaving Possum Kingdom Lake in November 1962.

A slight increase in the percentage of channel catfish and largemouth bass was noted. These species made up 5.49 and 2.51 per cent respectively of the 1958-1959 net catch but provided 5.57 and 3.02 per cent of the 1961-1962 total. This change is noticeable in the results of sport fishing where there has been a decided rise in the take of channel catfish on trotlines and largemouth bass on artificial lures. The majority of the bass taken are either yearling or young of the year depending on the time of the year.

White crappie showed a slight drop in percentage of number taken with 6.05 in 1958-1959 and 5.48 in 1961-1962 but the percentage of weight indicates that the fish were heavier. In the 1958-1959 catch, white crappie make up 2.33 per cent of the total while this species provides 3.68 per cent of the 1961-1962 weight. The average length also rose from 180 to 193 millimeters. This is also reflected in the catch of the sport fishermen at the various crappie fishing barges on the lake where there has been a general trend toward large crappie.

One of the more pronounced changes has occurred in the sunfishes, where the redear and bluegill have made significant gains in percentages of both number and weight along with gains in average length. The redear sunfish made up 2.85 per cent of the number and 0.86 per cent of the weight in the 1958-1959 netting but rose to 9.35 per cent of the number and 3.69 per cent of the weight in 1961-1962. Bluegill sunfish offered a more distinct change with 7.15 per cent of the number and 1.90 per cent of the weight in 1958-1959 rising to 24.83 and 8.77 per cent respectively in 1961-1962.

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Date: January 13, 1963

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Table 1. Checklist of Fishes from Possum Kingdom, June 1, 1953 through October 31, 1962.

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Scientific Name	Common Name
<u>Lepisosteus platostomus</u>	Shortnose gar
<u>Lepisosteus oculatus</u>	Spotted gar
<u>Lepisosteus osseus</u>	Longnose gar
<u>Dorosoma cepedianum</u>	Gizzard shad
<u>Carpionoxys carpio</u>	River carpsucker
<u>Ictiobus bubalus</u>	Smallmouth buffalo
<u>Moxostoma congestum</u>	Gray redhorse
<u>Cyprinus carpio</u>	European carp
<u>Notropis oxyrinchus</u>	Sharpnose shiner
<u>Notropis fumeus</u>	Ribbon shiner
<u>Notropis umbratilis</u>	Redfin shiner
<u>Notropis venustus</u>	Blacktail shiner
<u>Notropis lutrensis</u>	Plains red shiner
<u>Notropis stramineus</u>	Southern sand shiner
<u>Notropis atrocaudalis</u>	Spottail shiner
<u>Pimephales vigilax</u>	Bullhead minnow
<u>Ictalurus punctatus</u>	Channel catfish
<u>Ictalurus natalis</u>	Yellow bullhead
<u>Pylodictus olivaris</u>	Flathead catfish
<u>Fundulus notatus</u>	Blackstripe topminnow
<u>Gambusia affinis</u>	Mosquito fish
<u>Roccus chrysops</u>	White bass
<u>Micropterus punctualatus</u>	Spotted bass
<u>Micropterus salmoides</u>	Largemouth black bass
<u>Chaenobryttus gulosus</u>	Warmouth
<u>Lepomis cyanellus</u>	Green sunfish
<u>Lepomis punctatus</u>	Spotted sunfish
<u>Lepomis microlophus</u>	Redear sunfish
<u>Lepomis macrochirus</u>	Bluegill sunfish
<u>Lepomis auritus</u>	Yellowbelly sunfish
<u>Pomoxis annularis</u>	White crappie
<u>Pomoxis nigromaculatus</u>	Black crappie
<u>Percina caprodes</u>	Logperch
<u>Aplodinotus grunniens</u>	Freshwater drum
<u>Astyanax mexicanus</u>	Rio Grande tetra
* <u>Mugil cephalus</u>	Striped mullet

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\* Note- This species is a marine form that has probably been introduced by bait dealers.

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Table 2. Possum Kingdom Lake netting results, 1958-1959

Species	Number	Per Cent	Weight (lbs)	Per Cent of Weight		Average length (mm)	Number Per 100 feet of net	Pounds Per 100 feet of net	"K"	
				Weight	Length				Range	Average
Spotted gar*	20	0.85	45.54	2.18	546	0.20	0.45			
Longnose gar*	229	9.75	707.57	33.85	690	2.24	6.94			
Gizzard shad*	1,124	47.85	595.43	28.49	230	11.02	5.84	1.15-3.00	1.90	
Smallmouth buffalo*	21	0.89	70.91	3.39	323	0.20	0.69	2.50-4.20	3.28	
River carpsucker*	134	5.70	144.09	6.89	263	1.31	1.41	1.80-3.30	2.57	
Carp*	5	0.21	8.57	0.41	282	0.05	0.08	2.20-2.40	2.93	
Channel catfish	129	5.49	232.19	11.11	350	1.26	2.28	1.10-2.40	1.72	
White bass	236	10.05	124.44	5.95	219	2.31	1.22	2.45-3.20	2.43	
Largemouth bass	59	2.51	46.28	2.21	288	0.58	0.45	1.90-3.70	2.33	
Spotted bass	2	0.09	1.62	0.08	240	0.02	0.01	1.80-2.10	1.95	
Warmouth	3	0.13	0.88	0.04	150	0.03	0.01	3.00-3.00	3.00	
Redear sunfish	67	2.85	17.95	0.86	156	0.66	0.18	1.30-4.00	3.20	
Bluegill sunfish	168	7.15	39.72	1.90	131	1.65	0.39	3.10-5.00	4.00	
Yellowbelly sunfish	1	0.04	0.20	0.01	130	0.01		3.80-3.80	3.80	
Longear sunfish	1	0.04	0.35	0.02	160	0.01		2.90-2.90	2.90	
White crappie	142	6.05	48.79	2.33	180	1.39	0.48	1.90-3.40	2.61	
Black crappie	2	0.09	0.56	0.03	172	0.02		2.40-2.50	2.45	
Drum	6	0.26	5.18	0.25	228	0.06	0.05	2.10-3.00	2.47	
Totals	2,349	100.00	2090.27	100.00	-	23.02	20.48			

\* Indicates rough fish species.

Table 3. Possum Kingdom Lake netting results 1960-1961.

Species	Number	Per Cent of Number	Weight (lbs)	Per Cent of Weight	Average Length (mm)	Number Per 100 feet of net	Pounds Per 100 feet of net	"K" Range	"K" Average
Longnose gar*	1	3.57	1.49	9.18	660	0.10	0.15	-	-
Gizzard shad *	2	7.14	1.09	6.71	235	0.20	0.11	1.85-1.95	1.90
River carpsucker*	1	3.57	1.24	7.64	290	0.10	0.12	2.30-2.30	2.30
Channel catfish	10	35.72	7.14	43.99	269	1.00	0.71	1.10-1.95	1.52
White bass	1	3.57	.64	3.95	245	0.10	0.06	2.00-2.00	2.00
Spotted bass	2	7.14	1.15	7.08	235	0.20	0.12	1.75-2.30	2.02
Largemouth bass	1	3.57	1.00	6.16	280	0.10	0.10	2.10-2.10	2.10
Redear sunfish	2	7.14	.63	3.89	155	0.20	0.06	3.90-3.90	3.90
Bluegill sunfish	7	25.00	1.50	9.24	137	0.70	0.15	2.95-4.60	3.71
White crappie	1	3.57	.35	2.16	180	0.10	0.04	2.70-2.70	2.70
Total	28	100.00	16.23	100.00		2.80	1.62		

\* Indicates rough fish species.

Table 4. Possum Kingdom Lake netting results, 1961-1962.

Species	Number	Per Cent		Average Length (mm)	Number Per 100 feet of net	Pounds Per 100 feet of net	"K"	
		of Number	of Weight (lbs)				Range	Average
Spotted gar*	6	0.56	18.34	614	0.08	0.25	-	-
Longnose gar*	56	5.29	152.09	701	0.79	2.15	-	-
Gizzard shad*	397	37.49	184.03	224	5.59	2.59	1.76-2.70	2.17
Smallmouth buffalo*	3	0.28	25.15	473	0.04	0.35	3.25-3.25	3.25
River carpsucker*	28	2.65	44.59	314	0.40	0.63	2.30-2.65	2.46
Carp*	3	0.28	4.36	298	0.04	0.06	2.35-3.10	2.60
Channel catfish	59	5.57	82.63	336	0.83	1.16	1.41-1.65	1.51
Flathead catfish	3	0.28	4.47	358	0.04	0.07		
White bass	42	3.97	32.78	281	.59	.46	2.22-2.68	2.49
Largemouth bass	32	3.02	31.19	259	.45	.44	2.20-2.50	2.28
Redear sunfish	99	9.35	25.69	119	1.40	0.36	3.27-3.85	3.66
Bluegill sunfish	263	24.83	61.14	136	3.70	0.86	3.84-4.83	4.16
White crappie	58	5.48	25.66	193	0.82	0.36	2.39-3.00	2.62
Black crappie	1	0.10	.31	170	0.01	0.01	2.90-2.90	2.90
Drum	9	0.85	4.83	215	0.13	0.07	1.95-2.81	2.37
Total	1059	100.00	697.26	100.00	14.91	9.82		

\* Indicates rough fish species