

JOB COMPLETION REPORT

STATE OF TEXAS

Project No. F5R3 Name Fisheries Investigations and Surveys of the Waters of Region 3-B.

Job. No. B-4 Title Inventory of Species Present in Oak Creek Reservoir at Blackwell, Texas.

Period Covered: June 22, 1953 - May 1, 1956

ABSTRACT

1. Eighty-four gill net collections and fifty-seven seining collections were made during inventory, reservoir conditions were noted, water analysis taken periodically, and stomach analysis and parasitism examination made of 389 individuals.

2. Excepting algae and pondweeds, there is no aquatic vegetation in the lake; and the reservoir was in a state of continuous readjustment during inventory.

3. Twenty-seven species of seven families were identified from the 5,542 individuals captured in seining and netting. The distribution of these fauna seemed uniform over the lake; however exact duplication of netting and seining collection work was impossible because of fluctuation in the lake level, and because much of the inundated area was covered with dense concentrations of mesquite.

4. White crappie were probably the most important game species present in the reservoir; however evidence indicated relatively high percentages for channel catfish and largemouth bass, and white bass and flathead catfish were probably increasing. The lake is very popular with fishermen.

5. Stomach analysis from 51.92% of the fish examined indicated that natural controls may have been exerted upon the yellow bullhead population by channel catfish and flathead catfish and that yellow bullheads could have exerted a similar control on several species of sunfishes.

6. River carpsuckers and carp have not yet increased to any apparent significance where their numbers are of detriment to the game species.

OBJECTIVES

To determine the species present, their relative abundance and to determine the principal ecological factors influencing their distribution.

PROCEDURE

Eighty-four gill net collections were made at twelve netting locations in Oak Creek Reservoir. Experimental nylon gill nets, measuring 125 feet long by 8 feet in depth and made up in five, 25 feet sections were used. Mesh size for these nets increased progressively in each following section at one-half inch intervals, beginning with one-inch mesh and terminating with a three-inch mesh section.

Fifty-seven seining collections were made at fourteen seining locations in the reservoir. In nearly all collections, both 26 feet $\frac{1}{4}$ inch mesh bag seines and 15 feet $\frac{1}{4}$ inch mesh common sense seines were used. To estimate relative abundance a count was made

of all individuals taken in two hauls with a 26 feet $\frac{1}{4}$ inch mesh bag seine for each collection. In addition to that work other seining collections were made to determine seasonal distribution of species and to secure samples of fry after the spring spawning of fishes. For this latter work, four feet common sense seines with $\frac{1}{4}$ inch mesh and 1/16 inch mesh were used.

Water analysis for dissolved carbon dioxide and oxygen content was taken periodically and surface temperature, pH, and climatic conditions were recorded for each netting and seining collection. Turbidity was taken for six collections.

Samples from netting collections were weighed, measured and sexed in the field. A sample of each species was examined for stomach content, and organs requiring laboratory study were preserved in 10% formalin.

FINDINGS

Oak Creek Reservoir is located approximately three miles southeast of Blackwell, Texas. The impoundment creating the reservoir is about six miles east of the confluence of Bushy and Oak Creeks. The dam is 3,800 feet long, earth fill construction, and was completed in 1952, by Campbell Construction Company of Dallas, for the municipalities of Sweetwater, Bronte, and Blackwell. The impounded water is conserved for the municipal and industrial consumption of those cities.

When at emergency spillway level, the lake will have 1,500 surface acres and will store about 52,900 acre feet of water. At that elevation the reservoir would have about twenty miles of shoreline.

The contributing watershed of 222 square miles is primarily San Angelo sandstone formation and topsoils are usually Frio clays, black lime sands and sandy loams. Climate for the watershed is semi-arid, having an average rainfall of 24.35 inches. Reliable information pertaining to the average annual discharge of Oak Creek was not available. However, there is no permanent stream flow above the reservoir and run-off is extremely variable. Vegetative cover for the area is predominantly mesquite-grassland association and the area is employed for farming and ranching.

The area about the reservoir is a producing oil field, and when the reservoir is at spillway elevation; four of these wells are within the inundated area and are located on islands constructed to place them above maximum lake elevations. One reported pollution from this source was reported, but insufficient evidence was obtained to establish positive proof. Before the reservoir impounded any significant portion of water the old stream bed containing an estimated 275 acre feet of water was treated in an attempt to eradicate the fish populations. This work proved to be unsuccessful as will be discussed under a later category. The City of Sweetwater has initiated a charge for fishing at the lake. These fees are fifty cents per day for a family or twenty-five cents per day for an individual. A charge of five dollars per year is made for each family or individual desiring a year's permit.

RESERVOIR CONDITIONS

Aquatic Vegetation:

Excepting algae and a few concentrations of pond weeds (Potamogeton natans) there is no aquatic vegetation in the lake. Willows (Salix niger) and Pecan (Hicoria sp.) are numerous near the mouth of Bushy Creek. The remaining shore vegetation is mesquite (Prosopis juliflora).

Temperatures and Fluctuations:

Oak Creek Reservoir

Year	Month	El.	AF.	Air Temp.	Water Temp.
1953	July	76.3	7,130		
1953	August	76.2	7,060		
1953	September		13,000		
1953	October	82.2	11,700		
1953	November	83.1	12,520	82	69
1953	December	82.5	11,970	67	62
1954	January	82.0	11,520		
1954	February	81.7	11,250	49	49
1954	March	81.1	10,730	68	64
1954	April	80.6	10,310	70	66
1954	May	85.7	15,120	69	72
1954	June	88.7	18,730		
1954	July	88.6	18,600		
1954	August	87.4	17,070	89	86
1954	September	86.3	15,770	83	80
1954	October	85.4	14,800		
1954	November	84.8	14,180	68	71
1954	December	85.2	14,590		
1955	January	84.8	14,180	49	52
1955	February	84.4	13,780		
1955	March	85.2	14,590	60	59
1955	April	84.8	14,180		
1955	May	84.4	13,780	72	72
1955	June	89.1	19,270		
1955	July	88.8	18,870	81	79
1955	August	89.0	19,130		

Although not shown in the above data Oak Creek Reservoir impounded it's first run-off in 1952. This quantity was estimated to be about 1,500 acre feet. From that capacity the volume increased to a maximum of 19,130 acre feet in August 1955. The lake had receded slightly from this maximum when work was completed; however the data on this fluctuation was unavailable.

Water Analysis:

Oak Creek Reservoir

Year	Month	Turbidity	Air Temp. (F)	Water Temp. (F)	pH	Diss O ₂	Diss CO ₂	Alk.
1953	November		82	69	8.2	10.00	0.0	
1953	December		67	62	8.4	11.50	0.0	
1954	February		49	49	8.2	11.50	0.0	
1954	March	18	68	64	8.3	13.50	2.0	
1954	April		70	66	8.4	11.30	5.00	
1954	May	18	69	72	8.4	11.30	3.00	92
1954	August		89	86	8.6	9.50	9.00	
1954	September	18	83	80	8.3	10.00	6.00	70

1954	November		68	71	8.3	12.50	0.00	
1955	January		49	52	8.2	13.30	0.00	
1955	March		60	59	8.2	14.20	7.50	66
1955	May	12	72	72	8.4	12.00	0.00	
1955	July		81	79	8.4	9.50	2.00	
1955	September		81	80	8.4	10.50	3.00	
1955	October		80	76	8.1	11.00	0.00	48
1955	December		72	71	8.2	12.50	1.0	
1956	February		57	54	8.2	10.50	0.00	
1956	April	18	64	62	8.2	13.50	2.00	

As shown above the reservoir was murky at times and its water contained less total alkalinity than other reservoirs in this area. Where an error was obvious in technique or the standardization of reagents questioned; data is omitted.

FISH POPULATIONS

As previously stated the water retained in the stream bed within the reservoir area, about 275 acre feet volume, was treated with 5% rotenone at an estimated rate of 3 pounds per acre foot; to eradicate existing fish populations prior to the impoundment of run-off. Restocking was from the State Hatchery at San Angelo and included the release of an estimated 25,000 largemouth bass fry, and unknown numbers of sunfishes and golden shiners. As shown in the tables for netting the first year's work resulted in extremely meager samples (.0029 fish per feet net set), and the reservoir was regarded as being in a constant state of readjustment during the remainder of inventory.

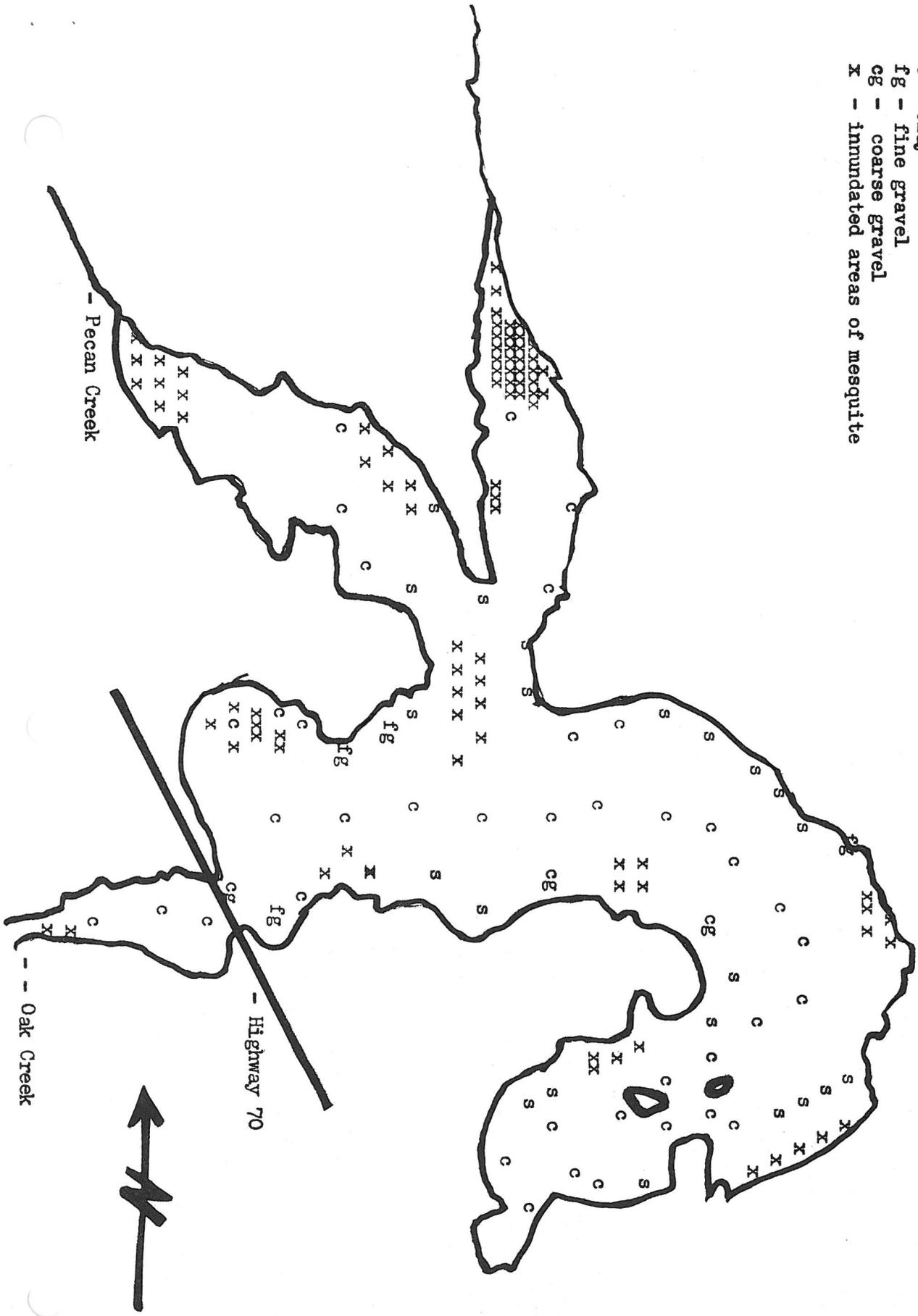
Species Distribution:

As shown in the checklist 5,542 individuals representing twenty-seven species and seven families were taken during inventory. Seining was the primary basis of distribution; however since the basin was not cleared of dense mesquite all work at this reservoir was difficult. Two seining beaches were cleared where seining collections could be obtained on a regular basis. The remaining sampling was done where areas were located free of obstructions and depending upon reservoir fluctuations. The species collected are as follows:

Common Name	Family Name	Scientific Name
Longnose gar	<u>Lepisosteidae</u>	<u>Lepisosteus osseus</u>
Gizzard shad	<u>Clupeidae</u>	<u>Dorosoma cepedianum</u>
Gray redhorse sucker	<u>Catostomidae</u>	<u>Moxostoma congestum</u>
River carpsucker	<u>Catostomidae</u>	<u>Carpionodes carpio</u>
Smallmouth buffalo	<u>Catostomidae</u>	<u>Ictiobus bubalus</u>
Carp	<u>Cyprinidae</u>	<u>Cyprinus carpio</u>
Golden shiner	<u>Cyprinidae</u>	<u>Notemigonus crysoleucas</u>
Spottail shiner	<u>Cyprinidae</u>	<u>Notropis venustus</u>
Redhorse shiner	<u>Cyprinidae</u>	<u>Notropis lutrensis</u>
Plains minnow	<u>Cyprinidae</u>	<u>Hybognathus placita</u>
Parrot minnow	<u>Cyprinidae</u>	<u>Pimephales vigilax</u>
Channel catfish	<u>Cyprinidae</u>	<u>Ictalurus punctatus</u>
Yellow bullhead	<u>Cyprinidae</u>	<u>Ictalurus natalis</u>
Flathead catfish	<u>Cyprinidae</u>	<u>Pylodictus olivaris</u>

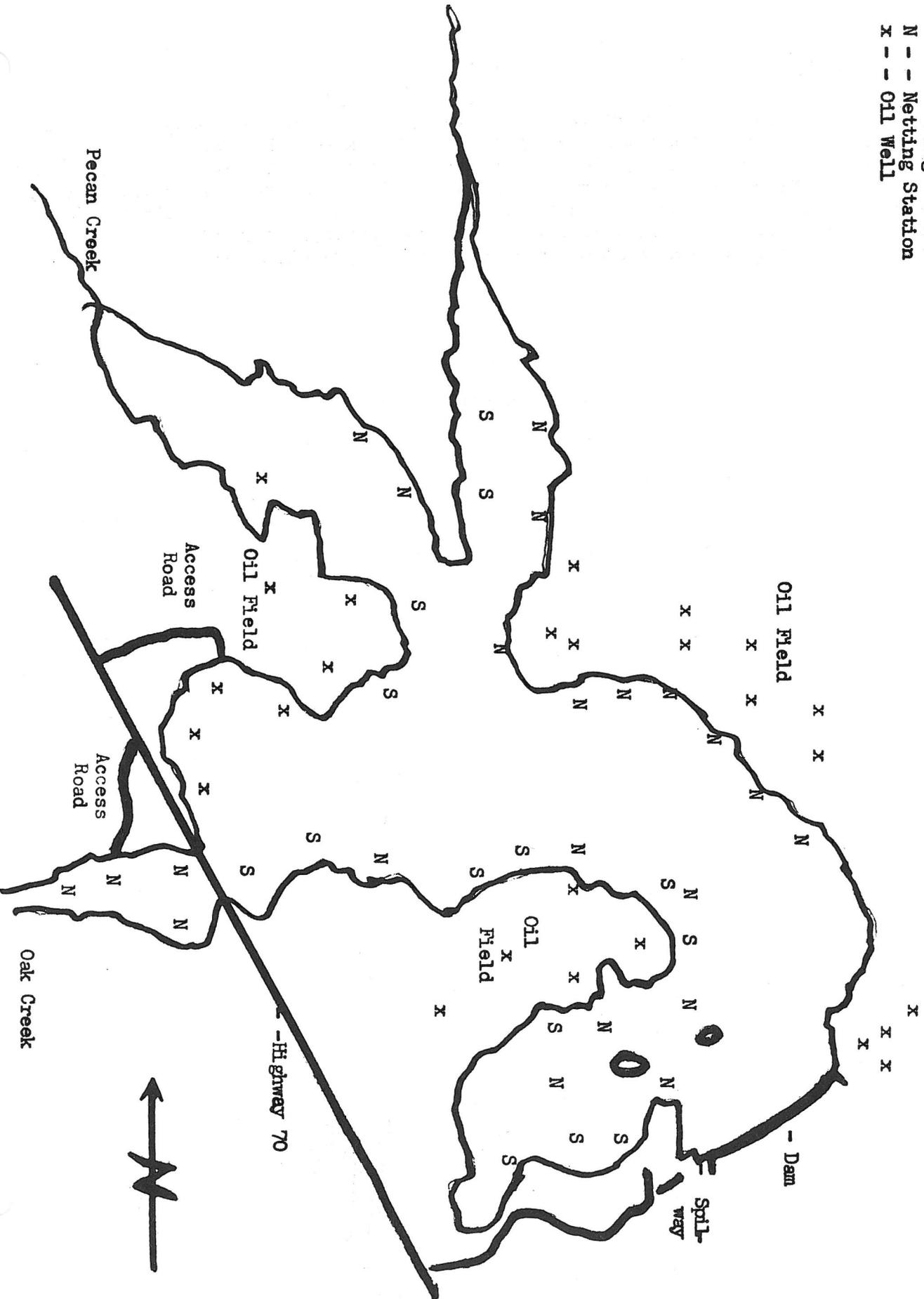
BOTTOM TYPES AND INUNDATED VEGETATION
IN OAK CREEK RESERVOIR

- Symbols
s - sand
c - clay
fg - fine gravel
cg - coarse gravel
x - inundated areas of mesquite



OAK CREEK RESERVOIR

Symbols:
S - - - Seining Station
N - - - Netting Station
x - - - Oil Well



Seining Collections:

It was impossible to maintain exact seining stations because of reservoir fluctuations; however an attempt was made to repeat sampling as near to a designated area as was possible. Only nineteen species were captured during the initial year, four species were added during the second segment and checklist was increased by four species during the last year's work. Technique was modified somewhat by improved nylon seines. The included data does not include or take into account unsuccessful seining attempts. The approximate location of seining stations are shown on the preceding map.

Seining Collections From Oak Creek Reservoir June 22, 1953 through June 30, 1954.

Species	June	July	August	September	November	December	February	March	April	May	June	Total	Percent
Mosquitofish	21	43	112	38	17	0	0	0	12	116	100	459	26.40
Redhorse shiner	138	121	38	0	21	0	18	31	21	39	25	452	26.00
Spottail shiner	0	0	8	21	5	9	31	0	21	0	20	115	6.60
Parrot Minnow	0	0	0	0	0	0	6	4	0	11	12	33	1.90
Largemouth bass	2	8	7	3	0	0	4	21	16	14	12	87	5.00
White crappie	2	3	0	6	0	0	0	6	2	3	11	33	1.90
Green sunfish	4	0	6	12	11	10	9	12	4	18	8	94	5.40
Longear sunfish	4	0	0	5	9	3	4	8	6	9	8	56	3.20
Bluegill	10	28	21	22	13	8	7	2	5	21	14	151	8.70
Redear sunfish	0	0	0	2	0	4	0	4	0	12	9	31	1.80
Yellowbelly sunfish	0	0	0	0	0	1	0	2	0	0	0	3	.10
Spotted sunfish	1	0	0	25	0	0	0	7	0	11	13	37	2.10
Orangespotted sunfish	0	0	0	0	5	0	0	0	0	0	2	7	.40
Total	182	203	192	114	81	35	79	97	87	254	234	1558	100.0

Seining Collections from Oak Creek Reservoir July 1, 1954 through May 1, 1955.

Species	July	August	October	November	December	February	March	April	May	Total	Percent
Mosquitofish	13	21	0	0	0	24	12	10	24	104	7.05
Redhorse minnow	68	102	44	30	22	110	6	73	58	513	34.80
Spottail shiner	0	0	13	0	6	0	21	14	8	62	4.21
Parrot minnow	0	11	7	0	23	8	11	16	21	97	6.58
Plains minnow	0	21	8	4	11	5	6	13	8	76	5.15
Golden shiner	0	0	0	4	16	7	21	28	31	107	7.25
Gizzard shad	4	4	6	0	0	20	0	31	16	81	5.49
River carpsucker	0	0	0	2	4	0	1	1	6	14	.95
Longnose gar	0	0	0	0	2	0	0	0	4	12	.81
Largemouth bass	2	4	2	1	9	0	0	4	16	38	2.57
White bass	0	0	0	0	2	0	4	13	2	21	1.42
Bluegill	21	13	6	13	4	2	6	12	18	95	6.45
Green sunfish	4	16	9	2	4	0	21	8	11	71	4.82
Redear sunfish	0	0	10	0	2	2	0	8	2	24	1.63
Longear sunfish	0	0	0	13	2	0	0	6	12	33	2.24
Yellowbelly sunfish	38	26	19	11	0	4	0	8	2	108	7.33
Warmouth bass	0	2	2	0	0	4	3	1	6	18	1.22
Total	150	220	126	80	103	186	112	252	245	1474	100.00

Seining Collections from Oak Creek Reservoir.

Species	June	September	October	February	April	Total			Percent	
						1953-54	1954-55	1955-56		
Mosquitofish	3	2	5	0	0	459	104	10	573	14.40
Redhorse shiner	21	6	21	12	4	452	513	64	1029	25.80
Spottail shiner	0	0	0	0	0	115	62	0	177	4.43
Parrot minnow	8	5	9	8	12	33	97	42	172	4.30
Largemouth bass	1	4	2	1	1	87	38	9	134	3.35
White crappie	16	21	21	18	20	33	0	96	129	3.22
Green sunfish	21	0	3	0	0	94	71	24	189	4.73
Longear sunfish	0	0	2	0	1	56	33	3	95	2.37
Bluegill	10	4	8	17	14	151	95	53	299	7.48
Redear sunfish	0	0	4	4	2	31	24	10	65	1.62
Yellowbelly sunfish	0	0	0	0	0	3	108	0	111	2.77
Spotted sunfish	0	0	0	0	0	37	0	0	37	.94
Orangespotted sunfish	8	0	0	7	6	7	0	24	31	.79
White bass	12	6	6	7	12	0	21	43	64	1.60
Warmouth bass	0	0	0	0	0	0	18	0	18	.45
Plains minnow	21	56	20	20	23	0	76	140	216	5.40
Golden shiner	21	48	149	100	120	0	107	438	545	13.64
Gizzard shad	0	0	0	0	0	0	81	0	81	2.02
River carpsucker	2	0	4	1	0	0	14	7	21	.52
Longnose gar	0	0	0	0	0	0	12	0	12	.35
	144	152	257	195	214	1558	1474	963	3995	100.01

Note: Work during the third year was modified as amended for that period. Included data is from collections where actual counts were made.

Netting Collections:

As in seining exact duplication of netting was impossible except in a few instances. Only the netting stations pertinent in other discussions are shown on the preceding map. As the included charts are regarded as the best available expression of a total interrelationship; populations for the most important species and the apparent influences upon each species are discussed separately; where evidence of such influence was obtained.

Netting Collections from Oak Creek Reservoir August 1953 through June 1954.

Species	August	September	November	December	January	February	March	April	May	June	Total
Gizzard shad	No. 0	0	0	12	3	12	21	1	18	8	75
	% 0	0	0	13.7	12.0	30.8	50.0	4.6	72.0	22.3	25.00
River carpsucker	No. 4	2	1	19	11	4	5	4	0	12	62
	% 50.0	50.0	9.1	21.6	44.0	10.3	11.0	18.2	0	33.3	20.30
Carp	No. 0	0	0	1	0	0	0	0	0	0	1
	% 0	0	0	1.1	0	0	0	0	0	0	.30
Longnose gar	No. 0	0	0	0	0	0	0	0	0	1	1
	% 0	0	0	0	0	0	0	0	0	2.7	.30
Drum	No. 0	0	0	4	0	0	0	0	0	0	4
	% 0	0	0	4.6	0	0	0	0	0	0	1.30
Yellow bullheads	No. 0	0	4	24	3	7	8	3	0	7	56
	% 0	0	36.3	27.3	12.0	18.0	19.1	13.7	0	19.5	18.70
Channel catfish	No. 0	0	1	1	0	3	3	9	0	2	19
	% 0	0	9.1	1.1	0	7.7	7.2	41.0	0	5.6	6.40
Largemouth bass	No. 4	1	5	17	4	5	3	4	2	1	46
	% 50.0	25.0	45.4	19.4	16.0	12.9	7.2	18.2	8.0	2.7	15.30
White crappie	No. 0	0	0	4	0	2	0	0	0	5	11
	% 0	0	0	4.6	0	5.10	0	0	0	13.9	3.60
Sunfishes	No. 0	1	0	6	4	6	2	1	5	0	25
	% 0	25.0	0	6.8	16.0	15.4	4.8	4.6	20.0	0	8.40
Total	8	4	11	88	25	39	42	22	25	36	300

Netting Collections from Oak Creek Reservoir May 1, 1954 through May 31, 1955.

Species	July	Aug.	Sept.	October	November	December	January	February	March	April	May	Total	Percent
Gizzard shad	No. 0	12	0	0	0	0	8	12	21	16	114	183	16.28
	% 0	30.77	0	0	0	0	40.00	23.52	37.5	14.81	20.21		
River carpsucker	5	4	1	4	85	2	3	1	9	21	43	178	15.84
	26.2	10.25	1.60	7.01	78.7	4.65	15.0	1.96	16.08	19.44	7.61		
Longnose gar	0	0	0	0	0	0	0	0	0	2	11	13	1.15
	0	0	0	0	0	0	0	0	0	1.85	1.95		
Gray redbhorse sucker	0	0	0	0	0	0	0	0	0	0	2	2	.17
	0	0	0	0	0	0	0	0	0	0	3.54		
Drum	0	0	0	0	0	0	0	2	1	0	8	11	.97
	0	0	0	0	0	0	0	3.93	1.78	0	1.41		
Yellow bullheads	2	4	2	6	9	8	3	13	6	28	116	197	17.54
	11.01	10.25	3.36	10.52	8.30	18.60	15.01	25.49	10.71	25.58	20.56		
Flatheads	0	0	0	0	0	0	0	0	0	0	2	2	.19
	0	0	0	0	0	0	0	0	0	0	3.54		
Channel catfish	3	2	2	5	1	2	1	0	0	3	126	145	12.91
	15.65	5.12	3.39	8.77	.92	4.65	5.00	0	0	2.77	22.34		
Largemouth bass	0	0	1	0	1	3	1	0	3	3	4	16	1.43
	0	0	1.69	0	.92	6.97	5.00	0	5.35	2.77	.71		
White bass	0	8	0	0	0	1	0	8	0	0	0	17	1.52
	0	20.51	0	0	0	2.32	0	15.68	0	0	0		
White crappie	0	0	2	0	0	1	0	1	11	7	21	43	3.83
	0	0	3.36	0	0	2.32	0	1.96	19.64	6.48	3.72		
Sunfishes	9	9	51	42	12	26	4	14	5	28	117	317	28.21
	47.20	23.7	86.45	73.68	11.11	6.46	20.00	27.45	8.92	25.52	20.74		
Total Number	19	39	59	57	108	43	20	51	56	108	564	1,124	100.00

Netting Collections from Oak Creek Reservoir.

Species	June		July		September		October		December		February		April		Total	Total	Total	Total	Percent
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	1953-54	1954-55	1955-56	1953-56	
Gizzard shad	No.	16	5	0	0	0	0	0	0	0	0	0	0	0	75	183	21	279	14.68
	%	44.44	6.57	0	0	0	0	0	0	0	0	0	0	0					
River carpsuckers	No.	6	8	5	0	0	0	0	3	5	4.5	12	12.5	62	178	39	279	14.68	
	%	16.66	10.53	27.78	0	0	0	0	8.58	4.5	12.5	12.5	12.5	1	13	0	14		
Longnose gar	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	11	0	15	.78
	%	0	0	0	0	0	0	0	0	0	0	0	0	0					
Freshwater drum	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	11	0	15	.78
	%	0	0	0	0	0	0	0	0	0	0	0	0	0					
Yellow bullhead	No.	6	20	2	0	0	0	0	1	57	0	0	0	0	56	207	90	353	18.57
	%	16.66	26.3	11.1	0	0	0	0	2.85	51.36	0	0	0	0	19	145	28	192	10.10
Channel catfish	No.	2	14	2	0	0	0	0	4	2	3.13	3	3.13	19	145	28	192	10.10	
	%	5.55	18.42	11.1	0	0	0	0	11.42	1.8	3.13	3	3.13	46	16	7	69	3.63	
Largemouth bass	No.	2	1	0	0	0	0	0	0	4	0	0	0	0	11	103	130	244	12.84
	%	5.55	1.31	0	0	0	0	0	62.8	3.61	0	0	0	1	0	0	1	1	.05
White crappie	No.	0	1	0	0	0	0	0	22	39	51	12	12.5	11	103	130	244	12.84	
	%	0	1.31	0	0	0	0	0	62.8	35.13	53.12	12.5	12.5	1	0	0	1	1	.05
Carp	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sunfishes (combined)	No.	4	23	9	0	0	0	0	3	1	2	2	2.09	25	317	55	397	20.89	
	%	11.1	30.2	50.0	0	0	0	0	8.58	.9	2.09	2.09	2.09	25	317	55	397	20.89	
Flathead catfish	No.	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	2	4	.21
	%	0	0	0	0	0	0	2.77	2.86	0	0	0	0	0	0	2	2	4	.21
White bass	No.	0	0	0	0	0	0	0	0	0	0	12	12	17	0	0	12	29	1.52
	%	0	0	0	0	0	0	0	0	0	0	12	12.5	17	0	0	12	29	1.52
Golden shiner	No.	0	4	0	0	0	0	0	1	3	16	16	16.66	0	0	24	24	24	1.26
	%	0	5.26	0	0	0	0	0	2.86	2.7	16.66	16.66	16.66	0	0	24	24	24	1.26
		36	76	18	36	35	111	96	317	1175	408	1900	100.00						

The above data by month is for the final year of inventory. Actual catches by month for the preceding twenty-four months is included in completion reports for F5R1 and F5R2.

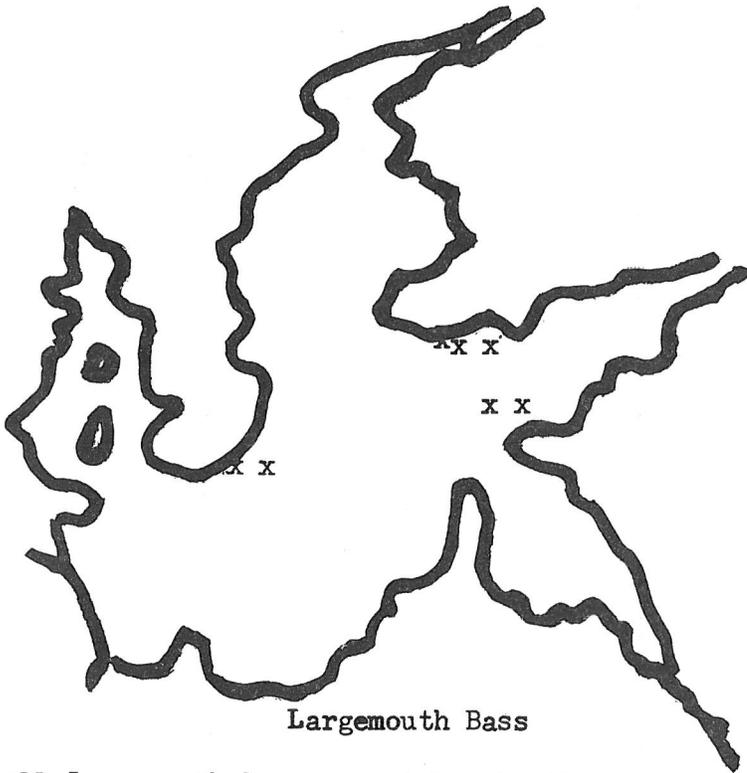
Netting Collections from Oak Creek Reservoir.
Comparative Data on Fish Populations for Principal Species

Species	No. captured	Weight Comparison (% by Weight)			Numerical Comparison (% by Number)				
		1953-54	1954-55	1955-56	Average	1953-54	1954-55	1955-56	Average
<u>Dorosoma cepedianum</u>	279	23.20	16.28	16.25	1857	25.00	8.01	5.14	12.71
<u>Carpoides carpio</u>	279	52.70	15.84	29.50	33.68	20.30	36.18	9.55	22.01
<u>Ameiurus natalis</u>	353	4.40	17.54	14.29	12.08	18.50	14.29	22.05	18.28
<u>Lepisosteus osseus</u>	14	2.70	1.15	0	1.28	.30	6.41	0	2.23
<u>Ictalurus punctatus</u>	192	1.50	12.91	10.33	8.24	6.40	10.53	6.86	7.93
<u>Micropterus salmoides</u>	69	2.20	1.43	3.02	2.21	15.30	3.02	1.70	6.67
<u>Pomoxis annularis</u>	244	5.20	3.83	21.47	10.16	3.60	2.82	31.37	12.59
<u>Sunfishes</u>	397	5.10	28.21	4.92	12.74	8.40	13.72	13.48	11.86

Netting Collection from Oak Creek Reservoir
Comparative Physical Condition of Principal Species.

	1953-1954		1954-1955		1955-1956		Total No.	% Catch	Average "K"
	No.	"K" Range	No.	"K" Range	No.	"K" Range			
<u>Dorosoma cepedianum</u>	25	1.66-2.10	24	1.51-2.45	12	1.75-1.84	279	21.86	1.79
<u>Carpiodes carpio</u>	25	1.97-2.29	20	2.00-2.59	12	2.28-2.43	279	20.43	2.27
<u>Cyprinus carpio</u>	1	2.42					1	100.00	2.42
<u>Lepisosteus osseus</u>	1	4.01	5	2.52			14	42.85	2.17
<u>Ameiurus natalis</u>	26	1.39-2.32	16	2.24-2.59	20	2.47-2.72	353	17.56	2.43
<u>Totalurus punctatus</u>	19	2.07-2.89	8	1.86-2.42	14	1.82-1.86	192	21.35	2.17
<u>Apolodnotus grunniens</u>	4	2.11-2.17	8	2.38-2.55			15	80.00	1.52
<u>Microppterus salmoides</u>	46	2.32-2.70	8	2.33-2.47	4	2.33-3.25	69	84.09	2.60
<u>Pomoxis annularis</u>	11	3.05-3.60	20	2.42-2.68	24	2.32-3.25	244	22.54	2.87
<u>Sunfishes</u>	25	3.10-3.60	12	3.92-4.25	12	3.66-4.64	397	12.34	3.92

LOCALITIES HAVING HIGH PERCENTAGES OF
GAME FISH IN OAK CREEK RESERVOIR



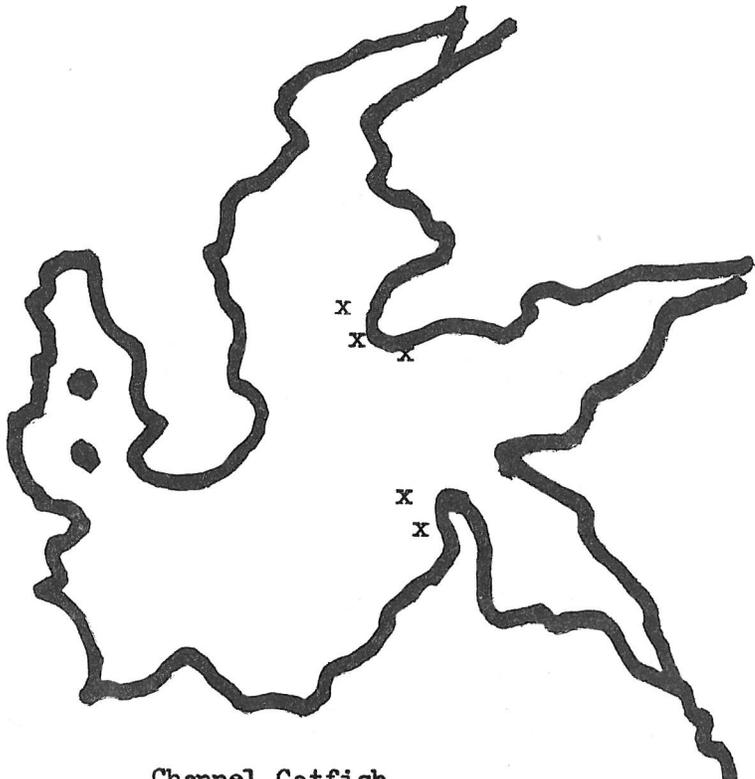
Largemouth Bass

All Largemouth Bass were taken in the indicated localities

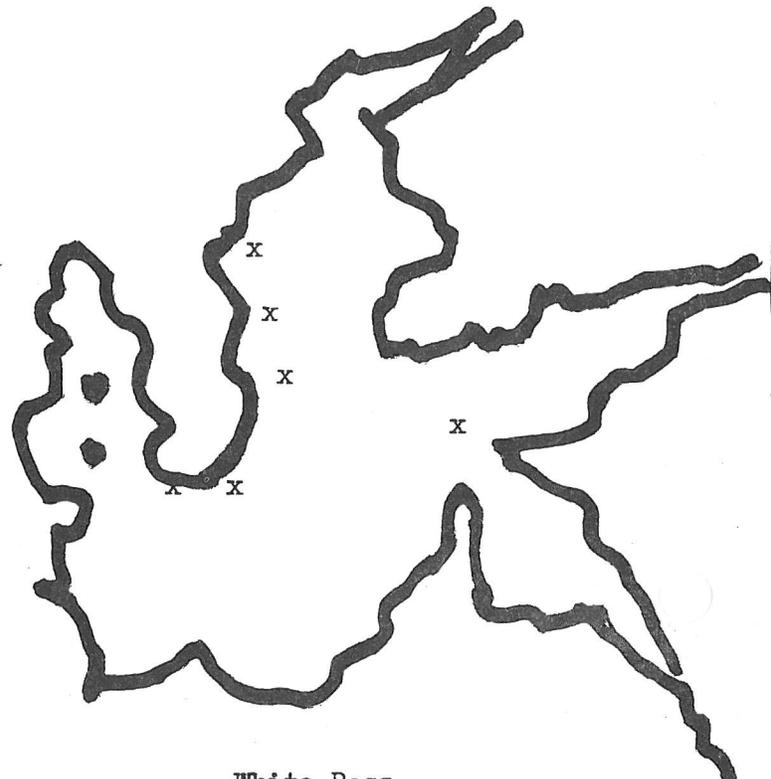


White Crappie

Greatest numbers of White Crappie were taken as indicated



Channel Catfish



White Bass

STOMACH ANALYSIS AND FOOD HABITS

The following data is included as taken from specimens netted in the field, and is on a volumetric displacement basis. It is considered probable that for some species the small number of stomachs obtained is insufficient to indicate the food habits of the population.

Stomach Analysis for Principal Species

White Bass

Number Stomachs	Fish Examined	Shad	Others
7	29	98%	Insects 2%

Largemouth Bass

Number Stomachs	Fish Examined	Shad	*Fish Remains	Sunfish	Insects	Crustaceans
12	34	71%	14	13%	1%	1%

White Crappie

Number Stomachs	Fish Examined	Shad	Insects
30	62	78%	2%

Channel Catfish

Number Stomachs	Fish Examined	Shad	Yellow Bullheads	Fish Remains	Algae
23	56	12%	29%	40%	19%

Yellow Bullheads

Number Stomachs	Fish Examined	Shad	Sunfish	Fish Remains	Algae	Insects	Other
121	204	13%	9%	31%	11%	3%	% Silt and unidentifiable material including fluid 33%

Flathead Catfish

Number Stomachs	Fish Examined	Yellow Bullheads	Channel Catfish
4	4	88%	12%

* The greatest quantity of this portion of largemouth bass diet was believed to be the two common shiners.

As shown in the above data 389 individuals of six species were opened and examined for stomach content, sexual development, and parasitism. Of that number 202 stomachs (51.92%) contained food. In addition to the above data a number of stomach contents were observed when fishermen cleaned fish at the lake.

FISH POPULATION TENDENCIES AND INFLUENCES

Largemouth bass. There was a gradual decline in the number of largemouth bass captured by netting during the inventory period. However because these fish are not easily entrapped by gill nets and because of the increase in reservoir area which made several locations (where these fish were captured at the beginning of work) no longer suitable for netting; this apparent decline may be the result of sampling. All individuals captured were in excellent condition, and the lake continues to maintain a favorable reputation for this species. Spawning was apparently successful in all three seasons, and probably occurred from mid-April to the last week in May.

Channel Catfish. These fish were in the process of becoming established during the last two year's work, were in excellent condition, and apparently increasing each year. There was probably some competition between this species and yellow bullheads and this latter species offered a significant portion of the food found in channel catfish. Spawning was apparently successful in the first two years; however no evidence was obtained of successful activity in the third segment.

Yellow bullheads. The number of this species increased tremendously in the second segment and receded with almost equal suddenness during the last year's work. The reason for this fluctuation may be explainable in the increase in the channel catfish and flathead catfish populations. Yellow bullheads were the most important food item for flatheads and were possibly the most important food for channel catfish. The spawning activity of these fish was not observed nor was there sufficient evidence regarding their other requirements. The increase of bullheads occurred at approximately the same time as the increase and decline of several species of the sunfishes. Since sunfish were a significant portion of bullhead's food; the latter species may have helped serve as a natural control of sunfishes.

Flathead Catfish. During inventory, 18 flathead catfish were transported to Oak Creek Reservoir from Lake Nasworthy. Prior to that time no record was obtained of any catches of this species from the reservoir, nor did they occur in netting collections. During the last segment several flatheads were known to have been taken by sportsmen; more individuals were captured than in the total for the other two segments. Although the number of stomachs examined is too small to furnish reliable data on the food habits for this species; it is believed that yellow bullheads may be a preferred food, and that flatheads may have a tendency to provide a natural control for this species.

Sunfishes. As indicated in seining collections bluegill were the dominant species for this reservoir during inventory. There was also an apparently cyclic sub-dominance fluctuation among other species that resulted with green sunfish having a sub-dominance during the first segment and relinquished this position to spotted sunfish during the second twelve-month period. During the final year's work orangespotted sunfish were evolving to a sub-dominant position. Longear sunfish (regarded as the most probable dominant species under native conditions) maintained a static population. From March 1954 through April 1955 sunfish were taken of sufficient size to furnish pan fish; however during the last 13 months of inventory not one individual was collected or known to have been taken of sufficient size to furnish sport or food. For this reason the sunfishes of Oak Creek are regarded as primarily forage species. It is believed that these species may spawn at almost any time during the year.

White Bass. This species was of questionable significance during the period of work. However population increases were noted in the last segment's work. No spawning activity was observed; however this activity is believed to occur from February to April.

White Crappie. This species is believed to furnish most of the game fish harvest from the reservoir, and is probably the most desired fish by sportsmen. The reservoir has an excellent reputation as a fishing spot for this species. Probable spawning period March - May.

River Carpsuckers. At inventory completion the numbers of these fish indicate that their development as a population is considerably slower than evidence from other work done in this area would lead one to expect. Carpsuckers are not yet regarded as a management problem; however there is little doubt that in the future these fish will gain dominance of the fish populations as is indicated by all other work for this region. Virtually all individuals examined were in advanced stages of sexual development, and since there is apparently no utility for the species they may be regarded as a potential management problem.

Cyprinids and Other Forage Species. The obvious trend of the redhorse shiner to gain dominance over spottail shiners, who held original dominance in the stream condition, is illustrated in the Seining Collection Data. The decline in mosquito-fish and increases in golden shiners and plains minnows are attributed to the increase of the reservoir volume. The small percentages for gizzard shad are considered to be a result of the difficulty involved in seining rather than to any lack of numbers for that population. Only one carp was taken in all collections, and gray redhorse suckers were found only in the stream pools above the reservoir. Longnose gar and drum were taken infrequently and were of unknown significance.

RECOMMENDATIONS

From the evidence obtained during inventory it was concluded that Oak Creek Reservoir was producing desirable quantities and yields of game fish, and that no corrective action is required at this time; however all available methods of persuasion should be extended to encourage free access to this reservoir for sportsmen.

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Approved by

Marion Toole
Chief Aquatic Biologist

Date April 4, 1957

