

**SURVEY REPORT**

**OKLAHOMA FISHERIES MANAGEMENT PROGRAM**



**FISH MANAGEMENT SURVEY AND RECOMMENDATIONS**

**FOR**

**WILEY POST MEMORIAL**

**1991**

**JOB PERFORMANCE**

**OKLAHOMA FISHERIES MANAGEMENT PROGRAM**

**FEDERAL AID PROJECT NO. F-44-D-6**

**FISH MANAGEMENT SURVEY AND RECOMMENDATIONS**

**FOR**

**WILEY POST MEMORIAL LAKE**

**1991**

**PREPARED BY:**

**KEITH R. THOMAS**

**AND GREG L. SUMMERS**

**OKLAHOMA FISHERY RESEARCH LABORATORY**

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## JOB PERFORMANCE REPORT

State: Oklahoma Project No. F-44-D-6

Project Title: Survey Recommendations - Wiley Post Memorial Lake

Period Covered: January 1, 1991 - December 31, 1991

### ABSTRACT

Wiley Post Memorial Lake, also known as Maysville City Lake, was surveyed in 1991. Sampling methods included spring electrofishing and fall gill netting.

Largemouth bass abundance was low, but some fish sampled were quality to trophy in size and in good condition. White crappie numbers were low. Small to medium size crappie made up the population. Channel catfish were not abundant; fish were medium in size with an occasional large fish available for harvest. Bluegill sunfish abundance was good although most fish were small. Gizzard shad numbers were low and individuals were large.

Recommendations call for major modifications to the lake shoreline and surrounding watershed to eliminate turbidity and siltation problems. Eight hundred grow-out channel catfish are requested for stocking in 1992. Further fish population surveys will be conducted in order to follow the stunted crappie situation and the saugeye stocking success.

### INTRODUCTION

Wiley Post Memorial Lake, also known as Maysville City Lake, is a 122.3 hectare (302 A) impoundment located approximately four miles northeast of Maysville in McClain County (S-35-T5N-R2WIM). The lake impounds Gaddis Creek (Figure 8).

Wiley Post Memorial Lake is relatively shallow with an average depth of 2.1 meters and a maximum depth of 5.5 meters. The lake has chronic turbidity problems due to high run-off from the north side and shoreline erosion. The upper arms here both silted in and sediment prohibits boat traffic. High turbidity and lack of suitable habitat most limit the quality of fishing at Wiley Post Memorial Lake. A survey performed by the McClain County Soil Conservation agent in 1981 confirms these problems. The dam is riprap while all other banks are clay and mud. An old road bed underlies the two arms in the north and there are a few scattered tree stumps, broken concrete, and brush piles throughout the lake. Water milfoil (Myriophyllum spp.) once existed in the lake, but turbidity has limited it's success.

Previous surveys reported low numbers of largemouth bass with poor reproduction and recruitment. Bass numbers remained low in 1991, but they were in good condition. This would indicate the anglers are harvesting more than the available surplus of bass. Crappie numbers and condition have fluctuated in the past three surveys. Channel catfish were of catchable size and in fair condition. Further fish management surveys need to be conducted in order to evaluate the crappie population and accumulate more trend data on all species.

Fish stockings for the last five years include 5,086 grow-out channel catfish. Saugeye will be stocked for five years starting in 1992 as part of a research project sponsored by the Oklahoma Department of Wildlife Conservation and the Walleye Technical Committee of the North-Central Division of the American Fisheries Society. They will be evaluated as to their utility in controlling stunted crappie numbers, and will provide good angling opportunities.

Habitat improvements conducted at Wiley Post Memorial include the placement of two marked brush piles and several unmarked brush piles.

The overall goal for Wiley Post Memorial Lake is to reduce its siltation and turbidity problems and eventually produce a quality bass/crappie fishery.

#### SURVEY RESULTS - 1991

##### Largemouth Bass

1. Largemouth bass abundance was low during the spring electrofishing. A catch rate (C/f) of 16.6 fish per hour was above the previous survey's number, but was below the 1981 C/f (Table 1) and the optimum range for a healthy population (Table 3). Catch rates by length group (Table 4) have stayed relatively stable over the past three surveys.
2. The largest bass sampled was approximately 3 kilograms. The bass population was primarily large bass with very few small fish present (Table 3). The median length range (MLR) was 334 to 439 mm (Table 1). Only one fish in the sample was below 200 mm indicating low reproduction and/or poor recruitment. Proportional Stock Density (PSD) and Relative Stock Density (RSD<sup>15</sup>) values were above recommended percentages of 40 to 60 for balanced populations (Table 3). The mean weight for the 1991 sample was 1,032.68 g (Table 1).
3. Fish collected were in good condition with mean relative weights ( $W_r$ 's) ranging from 85 to 122 (Figure 1).

4. The opportunities will be limited for catching limits of largemouth bass at Wiley Post Memorial. Over harvest of bass will continue without some type of enforced protective length limit.

#### White Crappie

1. Abundance of white crappie was low; the spring electrofishing C/f was below previous survey catch rates (Table 1). The fall gillnet C/f of 0.19 was slightly above the 1984 C/f, but was still considered low (Table 2).
2. The largest crappie sampled during fall gill netting was 520 g (Table 2). The MLR of 137 - 252 mm indicated a population of medium sized individuals (Table 2). The mean weight during gill netting was 152 g and increased greatly over the last two surveys (Table 2). Samples showed little fluctuation in white crappie size distribution over the last three surveys (Tables 3 and 4).
3. Crappie were in good condition with  $W_r$ 's over 100 for most size classes (Figure 5).
4. Crappie fishing will be limited, but persistent anglers will be able to harvest a few larger sized fish. Harvest will include mostly small to medium sized white crappie. Trend data indicate a stunted population.

#### Channel Catfish

1. Channel catfish numbers were low with a C/f of 0.17 fish per net hour sampled which was below the 1984 survey C/f of 0.30 (Table 2). Catch rates by length group did not change significantly compared to the 1981 and 1984 gill netting values (Table 4).
2. The biggest channel catfish collected during fall gill netting was approximately 1.1 kg (Table 2). The mean weight was 497 g and the MLR was 285 - 426 mm (Table 2).
3. The condition of channel catfish sampled was good with  $W_r$ 's ranging from 88 to 107 (Figure 6).
4. Angling opportunities for channel catfish should be fair for harvesting stocked grow-out fish 200 to 250 mm or more in length.

#### Bluegill Sunfish

1. Bluegill are the principal forage species in Wiley Post

Memorial Lake. Abundance was good during spring electro-fishing. The 1991 C/f was 72.0 fish per hour and was above the previous two survey's C/f's (Table 1). Catch rates by length group showed the majority of fish are 81 to 160 mm (C/f = 68.0, Table 4).

2. Bluegill collected were predominantly all stock size with no large individuals observed (Table 3). This indicates the possibility of a stunted bluegill sunfish population. The MLR was 95 to 122 mm (Table 1). The largest individual was 62 g with a mean weight of 30.83 g (Table 1).
3. Bluegill samples showed adequate condition with  $W_r$ 's over 100 (Figure 3).
4. Angling for harvestable size bluegill will be poor.

#### Gizzard Shad

1. Gizzard shad are the second most abundant forage species in Wiley Post Memorial Lake. The gillnet C/f was 0.88 fish per net hour (Table 2).
2. The largest shad sampled in fall gillnet sets was 208 g (Table 2). The mean weight was 70 g and the MLR was 177 to 191 mm. Both surpassed previous survey values (Table 2). Only 5 shad were collected while electrofishing and the sample is too small to evaluate.
3. Condition of gizzard shad was fair during fall gill netting in 1991 (Figure 7).
4. The majority of the shad sampled were too large for most predators to utilize.

#### Other Species

Freshwater drum numbers were low (Table 2). Other sunfish species observed during spring electrofishing were green, longear, orangespotted, and hybrid bluegill x green sunfish.

## RECOMMENDATIONS

### Fish Harvest Regulations

1. A 14 inch length limit on largemouth bass should be imposed by the City of Maysville.

### Habitat Improvements

1. One or more settling ponds need to be constructed on the incoming creeks to trap sediments before the runoff reaches the lake.
2. Vegetative cover and gully shaping are needed to reduce turbidity and runoff.
3. Riprap should be placed on all windward banks to reduce shoreline erosion, thereby maintaining shoreline depth. Silted in shoreline areas should be dredged to regain a 3:1 slope.
4. Once these recommendations are completed, artificial habitat in the form of brush piles, rows, tire reefs, and stake beds can be planted.

### Fish Population Surveys

1. Further fish management surveys need to be conducted in order to evaluate the crappie population situation and accumulate more trend data on other species. A follow up survey is planned for 1994.

### Fish Stocking

1. Stock approximately 800 grow-out channel catfish in 1992.
2. Stock 15,000 saugeye (50 per A) for five years starting in 1992.

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Table 1. Total number (N), Effort (hours), catch rate per hour (C/f), Total weight of sample (g), mean weight (g), median length range (mm), and maximum weight (g) during spring electrofishing at Wiley Post Memorial Lake.

Species	Year	N	Effort	C/f	T wt.	$\bar{X}$ wt.	MLR	Max. Wt.
Large-mouth Bass	1981	101	3.25	31.1	85,197	843.53	340-371	2,665
	1984	70	5.50	12.7	69,147	987.81	240-460	3,000
	1991	29	1.75	16.6	29,946	1,032.62	334-439	2,910
White Crappie	1981	90	3.25	27.7	5,027	55.86	128-147	564
	1984	193	5.50	35.1	5,045	26.14	123-131	740
	1991	40	1.75	22.9	2,183	54.57	128-142	506
Bluegill	1981	5	0.50	10.0	364	72.80	97-178	154
	1984	50	2.00	25.0	577	11.54	91-117	42
	1991	36	0.50	72.0	1,110	30.83	95-122	62
Gizzard Shad	1981	238	0.50	119.0	11,009	46.26	162-170	124
	1984	116	2.00	58.0	2,047	17.65	142-163	130
	1991	5	0.50	10.0	426	85.20	208-210	102
<hr/> Gear - 1981 Coffelt VVP-15 1984 Smith-Root GPP 5.0 1991 Smith-Root GPP 5.0								

Table 2. Species, year, number (N), catch per net hour (C/f), mean weight (g), median length range (mm), and maximum weight (g) for fish collected by gillnet from Wiley Post Memorial Lake.

Species	Year	N	C/f	$\bar{X}$ wt.	MLR	Max. wt.
White Crappie	1981	126	1.31	26.02	125 - 133	400
	1984	15	0.16	64.73	126 - 132	740
	1991	11	0.19	152.18	137 - 252	520
Channel Catfish	1981	32	0.33	522.06	302 - 398	2,268
	1984	27	0.30	622.22	348 - 463	2,980
	1991	10	0.17	497.00	285 - 426	1,108
Carp	1981	7	0.07	680.43	334 - 421	1,162
	1984	1	0.01	710.00	401 - 401	710
	1991	0	-	-	-	-
F.W. Drum	1981	6	0.06	40.50	141 - 186	68
	1984	1	0.01	44.00	173 - 173	44
	1991	4	0.07	70.50	189 - 190	72
Gizzard Shad	1981	109	1.14	52.83	165 - 180	394
	1984	5	0.06	19.40	131 - 158	45
	1991	51	0.88	70.00	177 - 191	208

Total units of effort = 1981 (96 hrs.), 1984 (90 hrs.), and 1991 (58 hrs.).

Table 3. Proportional Stock Density (PSD) and Relative Stock Density (RSD<sup>15</sup>) measurements for select species sampled during spring electrofishing periods at Wiley Post Memorial Lake.

Species	N	# Stock	# Quality	# Trophy	PSD %	RSD <sup>15</sup> %
<u>LM Bass</u>						
1981	101	99	75	37	76	37
1984	70	57	42	33	74	58
1991	29	28	24	17	86	61
<u>Wht. Crappie</u>						
1981	90	44	8	0	18	0
1984	193	128	6	0	5	0
1991	40	27	3	0	23	0
<u>Bluegill</u>						
1981	5	5	1	0	20	0
1984	50	50	0	0	0	0
1991	36	35	0	0	0	0
<u>Gizz. Shad</u>						
1981	238	72	0	0	0	0
1984	116	16	0	0	0	0
1991	5	5	0	0	0	0

Table 4. Catch rates by length group (mm) per hour for spring electrofishing and gill netting at Wiley Post Memorial Lake.

Spring Electrofishing

<u>Largemouth Bass</u>	<u>&lt; 200</u>	<u>201 - 300</u>	<u>301 - 360</u>	<u>&gt; 361</u>
1981	0.6	7.7	9.2	13.5
1984	2.5	2.5	1.5	6.0
1991	0.6	2.3	2.9	11.0

<u>White Crappie</u>	<u>&lt; 130</u>	<u>131 - 200</u>	<u>201 - 300</u>	<u>&gt; 301</u>
1981	21.2	4.0	2.2	0.3
1984	25.6	8.4	0.0	1.1
1991	9.1	10.3	1.1	0.6

<u>Bluegill</u>	<u>&lt; 80</u>	<u>81 - 160</u>	<u>161 - 200</u>	<u>&gt; 201</u>
1981	0.0	16.0	4.0	0.0
1984	3.0	8.5	0.0	0.0
1991	4.0	68.0	0.0	0.0

Fall Gillnetting

<u>Channel Catfish</u>	<u>&lt; 280</u>	<u>281 - 410</u>	<u>411 - 610</u>	<u>&gt; 611</u>
1981	0.1	0.1	0.1	0.0
1984	0.1	0.1	0.1	0.0
1991	0.0	0.1	0.1	0.0

50 mm LENGTH-FREQUENCY AND MEAN RELATIVE WEIGHTS WITH 95% CONFIDENCE LIMITS

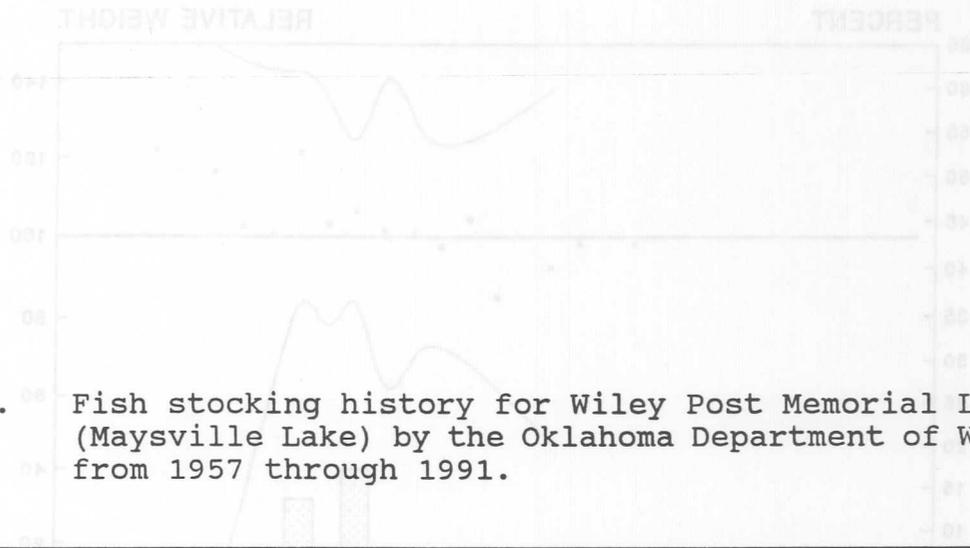


Table 5. Fish stocking history for Wiley Post Memorial Lake (Maysville Lake) by the Oklahoma Department of Wildlife from 1957 through 1991.

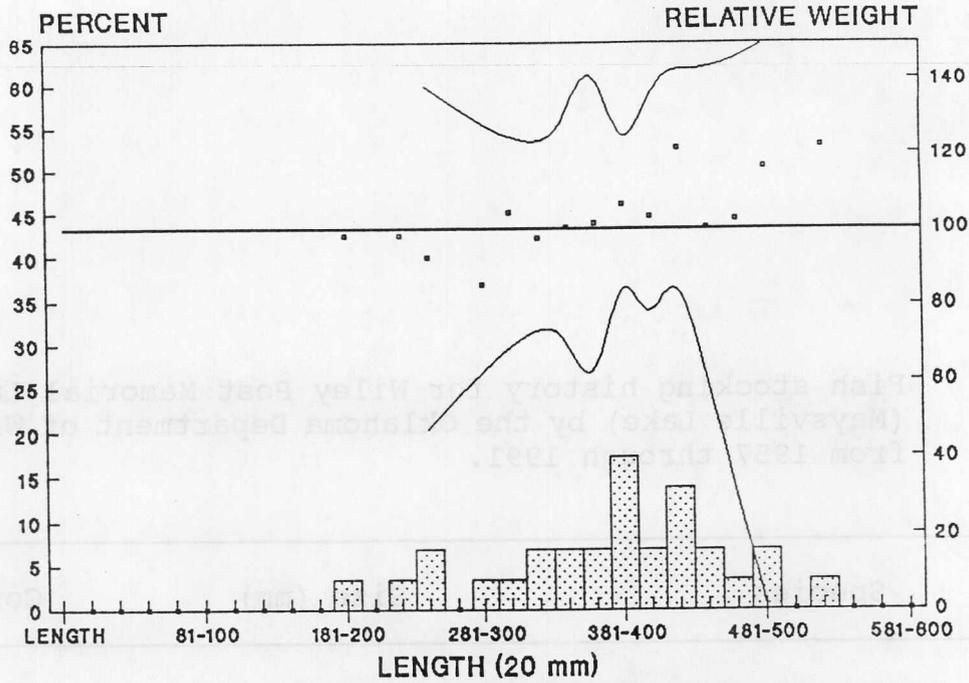
Year	Species	Size (mm)	Count
1957	Northern Largemouth Bass	N/A	1,350
1957	Channel Catfish	N/A	900
1957	Crappie	N/A	175
1972	Channel Catfish	127	7,550
1980	Northern Largemouth Bass	64 - 130	66,782
1983	Florida Variety LMB	fry	60,000
1987	Channel Catfish	203	2,000
1991	Channel Catfish	254 - 279	3,086



WILEY POST - 1991 - WHITE CRAPPIE  
GEAR - SPRING ELECTROFISHING  
N = 40

Figure 1 .

20 mm LENGTH-FREQUENCY AND MEAN RELATIVE WEIGHTS WITH 95% CONFIDENCE LIMITS

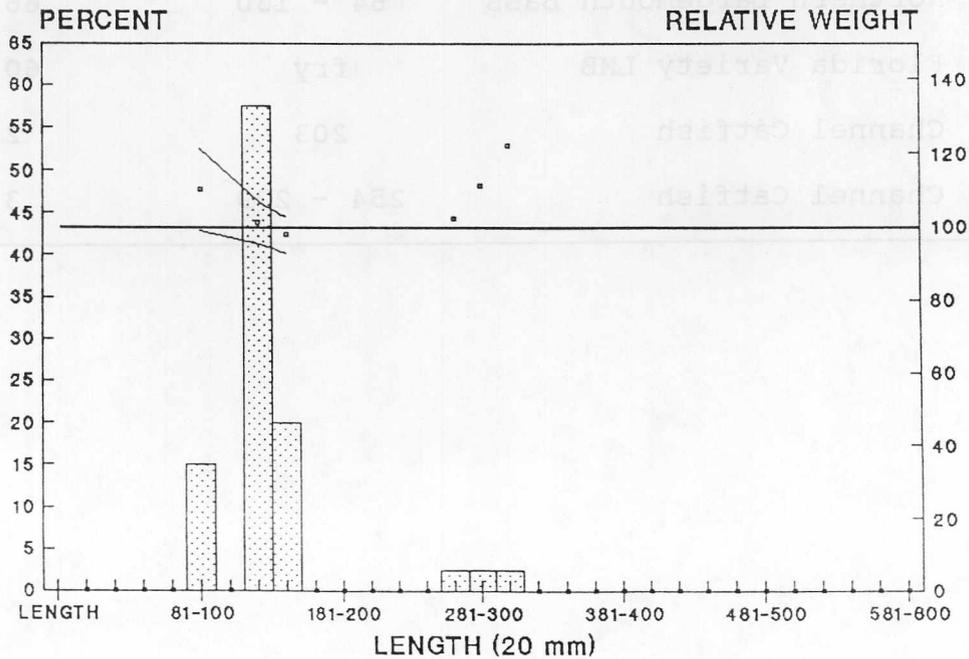


WILEY POST - 1991 - LARGEMOUTH BASS  
GEAR - SPRING ELECTROFISHING

N = 29

Figure 2 .

20 mm LENGTH-FREQUENCY AND MEAN RELATIVE WEIGHTS WITH 95% CONFIDENCE LIMITS



WILEY POST - 1991 - WHITE CRAPPIE  
GEAR - SPRING ELECTROFISHING

N = 40

Figure 3 . 20 mm LENGTH-FREQUENCY AND MEAN RELATIVE WEIGHTS WITH 95% CONFIDENCE LIMITS

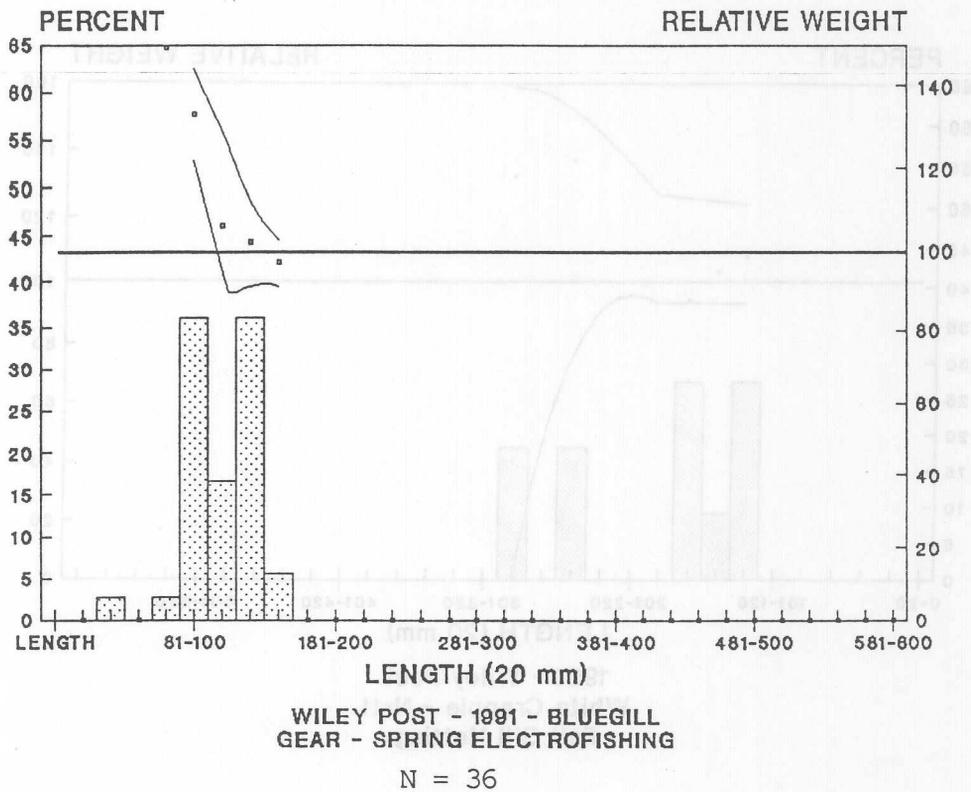


Figure 4 . 20 mm LENGTH-FREQUENCY AND MEAN RELATIVE WEIGHTS WITH 95% CONFIDENCE LIMITS

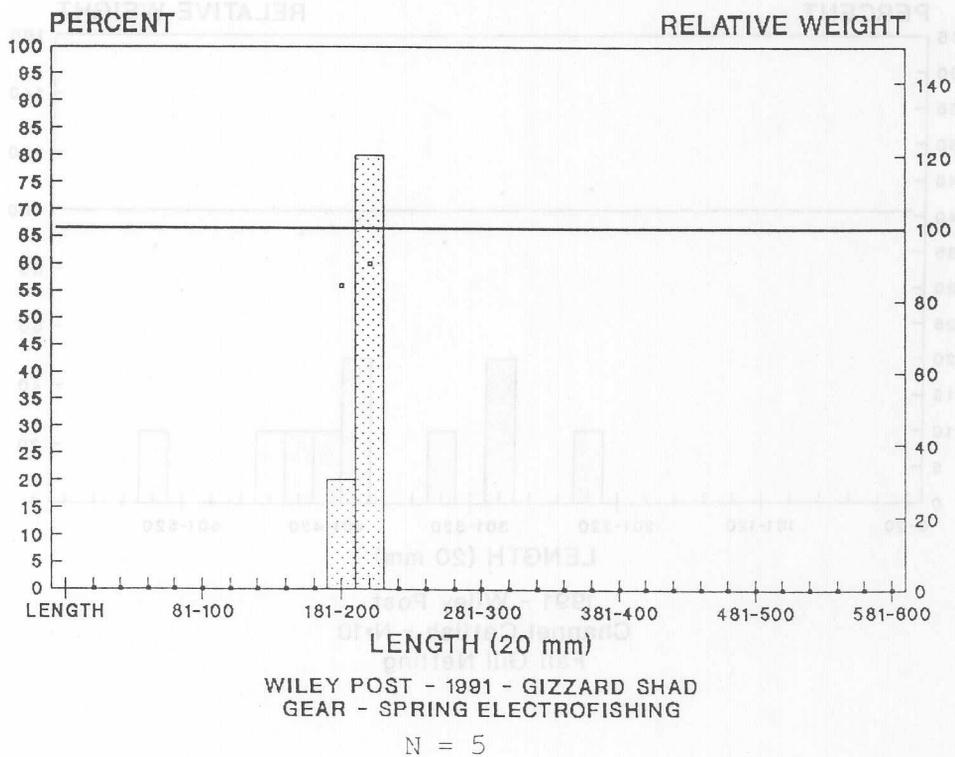
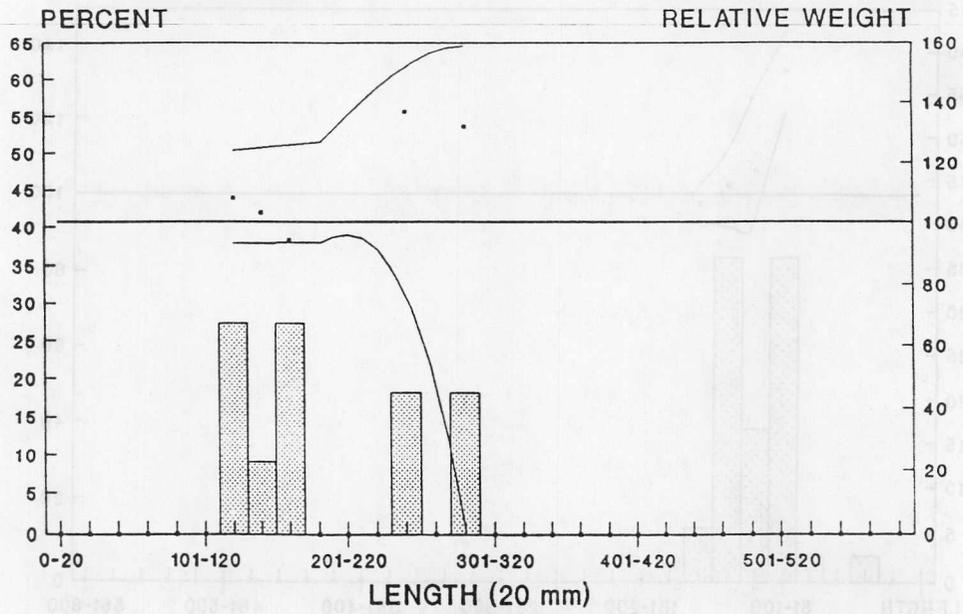


FIGURE 5

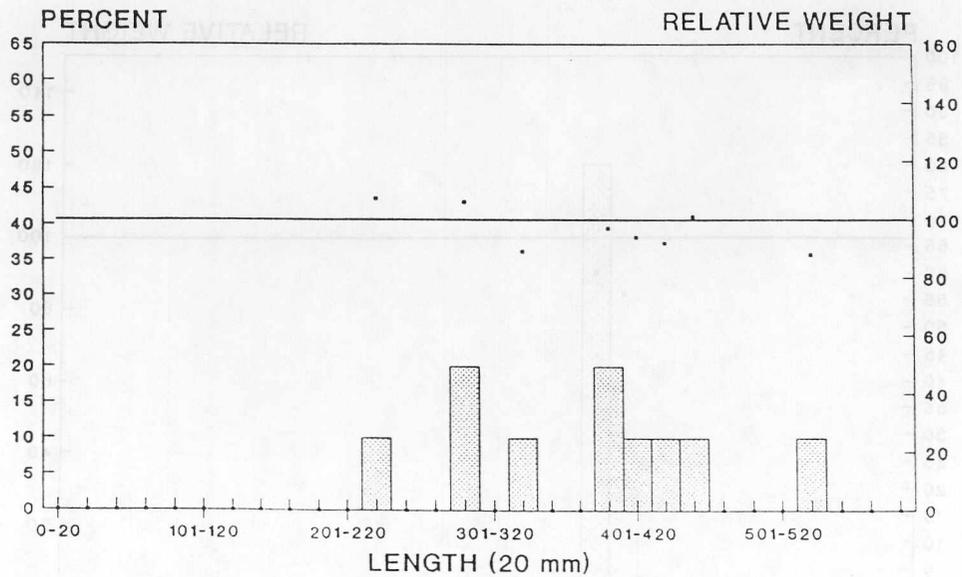
Length Frequency and Mean Relative Weights with 95% Confidence Limits



1991 - Wiley Post  
White Crappie - N=11  
Fall Gill Netting

FIGURE 6

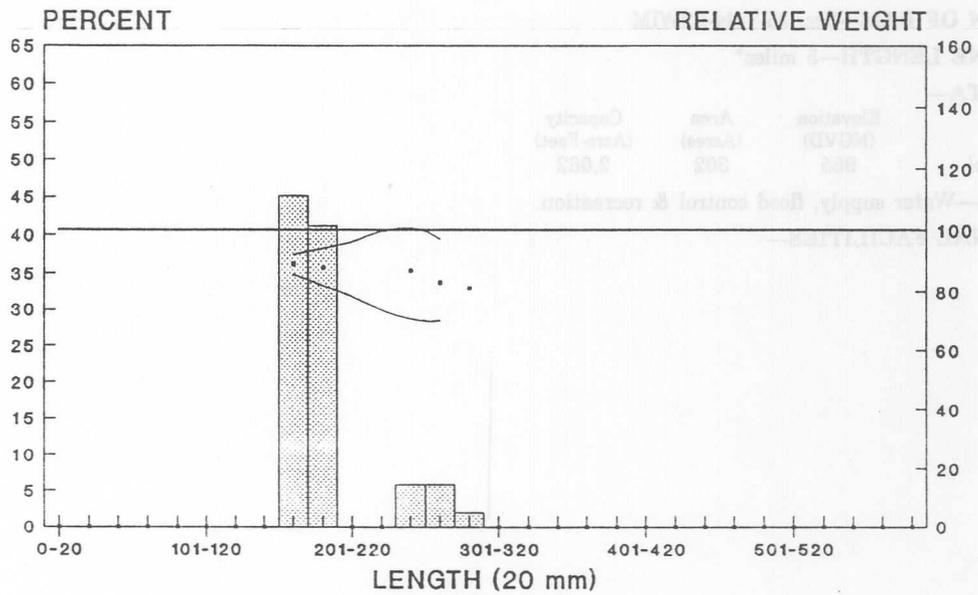
Length Frequency and Mean Relative Weights with 95% Confidence Limits



1991 - Wiley Post  
Channel Catfish - N=10  
Fall Gill Netting

FIGURE 7.

Length Frequency and Mean Relative Weights with 95% Confidence Limits



1991 - Wiley Post  
Gizzard Shad - N=51  
Fall Gill Netting

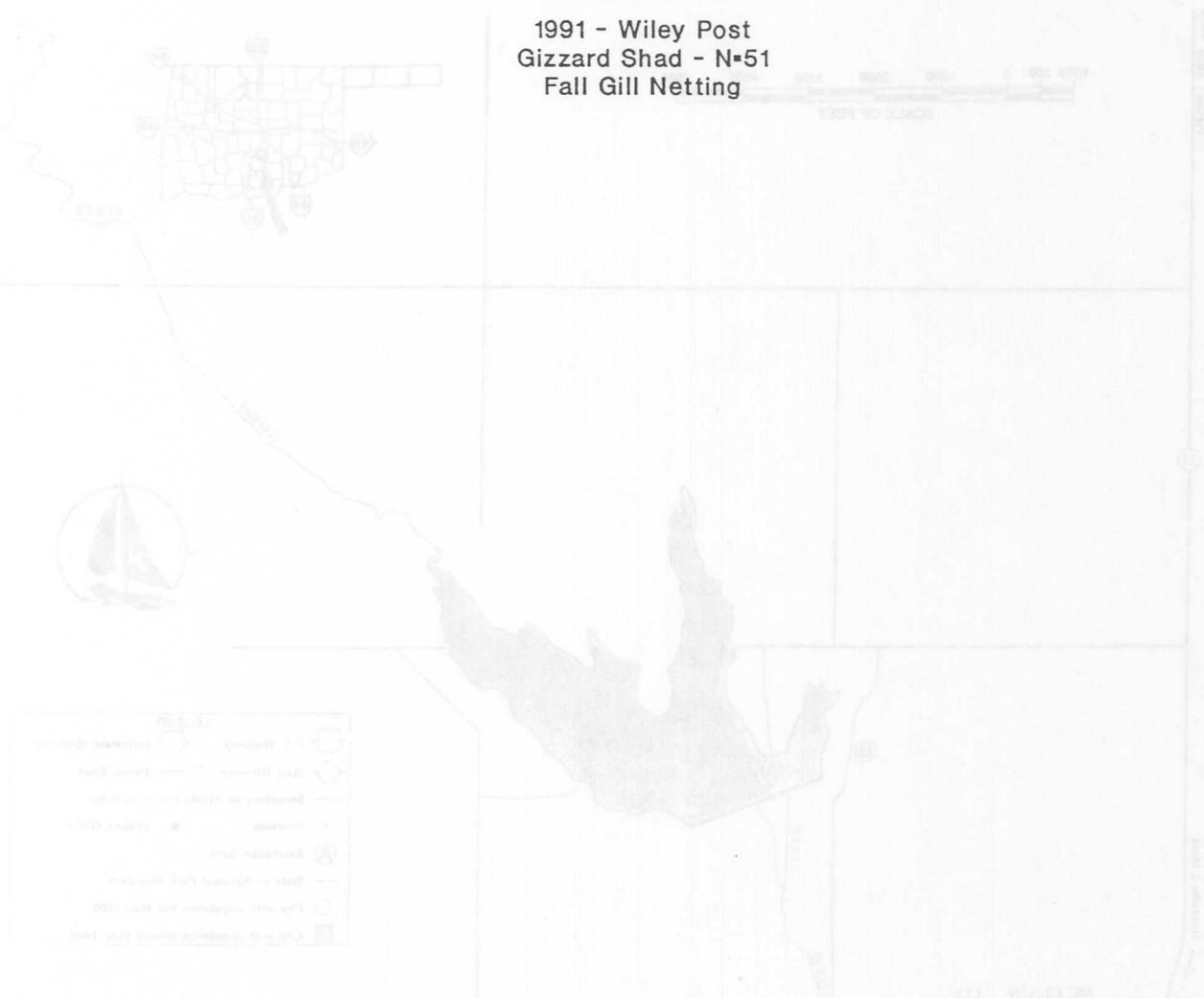


Figure 8 .

# WILEY POST MEMORIAL LAKE

## FINN CREEK SITE 34

**OWNER**—City of Maysville

**YEAR OF CONSTRUCTION**—1971

**COUNTY**—McClain

**LOCATION OF DAM**—Sec. 35-T5N-R2W1M

**SHORELINE LENGTH**—5 miles\*

**LAKE DATA—**

	Elevation (NGVD)	Area (Acres)	Capacity (Acre-Feet)
Normal Pool	965	302	2,082

**PURPOSE**—Water supply, flood control & recreation

**ADDITIONAL FACILITIES**—

