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Three-Year Creel Census of Lake Catherine, Lake Hamilton, and Lake Ouachita, Arkansas


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A THREE-YEAR CREEL CENSUS OF LAKE CATHERINE, LAKE HAMILTON, AND LAKE OUACHITA, ARKANSAS

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INTRODUCTION

"Studies of the fishery resources of three lakes located in series on the Ouachita River in West Central Arkansas were conducted during the summers of 1955, 1956, and 1957. Lake Catherine, the lower lake, is a 3,000 acre lake that was impounded in 1923 by the Arkansas Power and Light Company. Lake Hamilton, created just above Lake Catherine in 1931, by the same company, consists of 7,200 acres. Lake Ouachita, which covers approximately 40,000 acres, was impounded in 1952 by the Corps of Engineers and is located just above Lake Hamilton.

"The pattern of high original reservoir productivity followed by gradual decline (in terms of angling success and desirable fish production) has been evidenced in these lakes. Reports from residents and fishermen on Lake Catherine have indicated that fishing was excellent for the first few years following impoundment, but has declined in recent years. Many believe that the same course is true in Lake Hamilton. On the other hand, Lake Ouachita, since it has been constructed, has attracted hundreds of thousands of fishermen as a result of the angling success that can be had in this new lake.

"The Arkansas Game and Fish Commission recognized that here was an unusual opportunity to study factors pertaining to fish production and fishing success in three lakes of widely different ages, all located in the same watershed. Therefore, in June, 1955, the Game and Fish Commission inaugurated a Dingell-Johnson Federal Aid to Sport Fish Restoration Project (F-5-R) which was a three year comparative fisheries study of Lake Catherine, Lake Hamilton, and Lake Ouachita. The objectives of this study were to investigate and compare fishing resources of these lakes of different ages and to make recommendations for management." (Hulsey and Stevenson, 1958.)

A creel census was one phase of the comparative

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fishery study of these lakes. The purpose of this census was to compare angling success and harvest of fish in the lakes and to collect data for future evaluation of experimental management techniques (Stevenson and Hulsey, 1958).

METHODS

The creel census was conducted by one man working six days a week during the summer. The creel census clerk, except for the early part of 1955, was a permanent employee of the Lake Hamilton State Fish Hatchery who worked on this project during the summer months and is the junior author of this paper. A schedule was set up so that each lake was checked approximately two days each week and checking rotated on different days among the three lakes. An eight-hour day was worked and the census periods were adjusted so as to check each lake alternately from daylight to noon and from noon to thirty minutes after dark. Different areas were visited at each trip to a lake in order to record catches and fishing pressure in various sections. Since there are a number of commercial boat docks on each lake, it was decided that checking fishermen at these sites would give comparable data. Periodically, the daily census was made by boat where both boat and bank fishermen were checked. However, most of the information was obtained from fishermen returning to commercial boat docks. The same form for recording data was used each summer. The catch for each fisherman was recorded by number and size of species, as well as information on hours per fishing trip, methods of fishing, time of day most fish caught, and the residence of each one in a party. A record of the daily weather conditions including barometric readings was kept.

LAKE CATHERINE

Reports from boat dock operators and residents indicate that fishing pressure is greater on Lake Catherine in the winter and spring than during any of the three summer months. During colder weather, good catches of largemouth bass and crappie have been made in the vicinity of the steam generating plant where exhausted cooling water is expelled into the lake. This water is usually 10° F warmer than the lake water. During the summer months, most

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of the fishermen on the lake are local residents and sportsmen from Malvern, a nearby town. Summer fishing consists of considerable still-fishing for sunfish and trotline sets for catfish.

Table I gives a list of commercial boat docks on Lake Catherine where fishermen were checked. There are ten public docks renting boats. Two of these, however, the F. F. A. Camp and Camp Tanako, cater to clubs and other organizations using their grounds throughout the summer for short periods of camping. Most of the out-of-state fishermen were recorded at Lake Catherine State Park where there are cottages for rent and the natural park facilities are available for camping privileges. Since many lake residents use their own boats, an estimate of these was made by counting visible boats by cottages on the lake. Twenty-seven private fishing boats were counted. No attempt was made to calculate the number of boats launched from trailers; however, the number was considered small.

Table II gives a summary of fishing effort and success. The number of fishermen contacted on Lake Catherine was considerably greater in 1957 than in 1955 or 1956. Two hundred and twenty-eight fishermen were contacted as compared with 87 in 1955 and 123 in 1956. The catch-per-man-hour varied slightly during the three years with 0.73 in 1955; 0.91 in 1956; and 0.84 fish in 1957 giving an average of 0.83 fish per man-hour of effort over the three years. The pounds of fish caught per man-hour effort dropped from 0.42 in 1955 and 0.49 in 1956 to 0.28 in 1957. This revealed a reduction in size of fish caught in 1957. Approximately two-thirds of the fishermen used live bait, fishing first for crappie and frequently, as a result of poor success, would fish for sunfish. Approximately ninety-three percent of the fishermen censused were from Arkansas and most of these were local residents.

Fourteen species of fish were represented in the creel during the three summers.¹ The species composition of catch, in order of average percent of the total, is given in Table III. The principal fishery in all three years was that of bluegill

¹Names of fish used are the accepted common names as listed in American Fisheries Society, Special Publication No. 1, 1948.

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TABLE I
COMMERCIAL BEST LANDINGS ON LAKE CATHERINE
WHERE FISHERMEN WERE CONTACTED

Name of Landing	Location	Number of Rental Boats
Barney's Landing	North side, by Gulpha Creek	4
Camp Tanako	South side, about mid- way between dams	6
Clem's Landing	North side, immediately above Rimmel Dam	14
Cordell's Landing	North side, immediately below Carpenter Dam	14
Fada's Landing	North side, about three miles above Rimmel Dam	12
F. F. A. Camp	South side, about midway between dams	10
Grady's Landing	South side, about two miles below Carpenter Dam	12
Knittel's Landing	North side, by Wilson's sawmill	17
Lake Catherine State Park	South side, about one mile above Rimmel Dam	14
Roy and Tucker's Landing	North side, in Spencer Bay	12
TOTAL	10	115

TABLE II

CREEL CENSUS, LAKE CATHERINE

	1955	1956	1957	Average	Total
Total Hours Checked	176	168	144		488
Number Fishermen					
Contacted (Trips)	87	123	228		438
Total Fishermen-Hours	409	412	865		1686
Hours Fished per Trip	4.7	3.35	3.84	3.96	
Total Fish Caught	302	374	735		1411
Fish Caught per Hour	0.73	0.91	0.84	0.83	
Fish Caught per Trip	3.47	3.04	3.22	3.24	
Total Weight Fish (Lbs.)	174.0	202.4	239.0		615.4
Pounds Caught per Hour	0.42	0.49	0.28	0.40	
Pounds Caught per Trip	2.0	1.63	1.05	1.56	
Artificial Bait Fishermen	48%	29%	25%	34%	
Live Bait Fishermen	52%	71%	75%	66%	
Period Most Fish Caught	5 to 9 A.M.	6 to 11 A.M.	6 to 10 A.M.	5:40 to 10 A.M.	
Depth Most Fish Caught	5 to 20 ft	10 to 12 ft	4 to 12 ft	6.3 to 14.6 ft	
Fishermen from Arkansas	98%	91%	89%	92.67%	
Out-of-State-Fishermen	2%	9%	11%	7.33%	
Successful Trips	85%	83%	70%	79.0%	

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TABLE III

SPECIES COMPOSITION OF CATCH, LAKE CATHERINE

Species	1955	1956	1957	Avg.
1. Bluegill Sunfish				
A. Percent of Total	61.0	40.0	31.0	44.0
B. Average Lgth. (In.)	5.8	6.1	6.8	6.2
C. Average Wgt. (Lbs.)	0.2	0.3	0.4	0.3
2. Largemouth Bass				
A. Percent of Total	13.0	22.0	5.0	13.3
B. Average Lgth. (In.)	12.7	10.9	10.1	11.2
C. Average Wgt. (Lbs.)	1.8	0.8	0.7	1.1
3. Drum				
A. Percent of Total	4.0	5.0	20.0	9.7
B. Average Lgth. (In.)	9.5	12.7	11.7	11.3
C. Average Wgt. (Lbs.)	0.7	1.0	0.8	0.8
4. Longear Sunfish				
A. Percent of Total	10.0	12.0	7.0	9.7
B. Average Lgth. (In.)	4.5	5.7	6.0	5.4
C. Average Wgt. (Lbs.)	0.1	0.2	0.3	0.2
5. White Bass				
A. Percent of Total	0.0	1.0	20.0	7.0
B. Average Lgth. (In.)	-	10.0	11.3	10.7
C. Average Wgt. (Lbs.)	-	0.5	0.7	0.6
6. White Crappie				
A. Percent of Total	0.0	13.0	5.0	6.0
B. Average Lgth. (In.)	-	8.4	8.8	8.6
C. Average Wgt. (Lbs.)	-	0.3	0.5	0.4
7. Green Sunfish				
A. Percent of Total	6.0	1.0	5.0	4.0
B. Average Lgth. (In.)	5.5	6.0	6.9	6.1
C. Average Wgt. (Lbs.)	0.2	0.3	0.4	0.3
8. Redear Sunfish				
A. Percent of Total	0.0	1.0	4.0	1.7
B. Average Lgth. (In.)	-	7.8	7.6	7.7
C. Average Wgt. (Lbs.)	-	0.4	0.4	0.4

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TABLE III (Continued)

SPECIES COMPOSITION OF CATCH, LAKE CATHERINE

Species	1955	1956	1957	Avg.
9. Warmouth Bass				
A. Percent of Total	1.0	1.0	3.0	1.7
B. Average Lgth. (In.)	5.0	4.9	7.1	5.7
C. Average Wgt. (Lbs.)	0.3	0.2	0.4	0.3
10. Black Crappie				
A. Percent of Total	3.0	0.0	0.0	1.0
B. Average Lgth. (In.)	8.4	-	-	8.4
C. Average Wgt. (Lbs.)	0.5	-	-	0.5
11. Channel Catfish				
A. Percent of Total	1.0	1.0	0.0	0.7
B. Average Lgth. (In.)	11.5	15.2	-	13.4
C. Average Wgt. (Lbs.)	1.4	1.9	-	1.7
12. Flathead Catfish				
A. Percent of Total	0.0	2.0	0.0	0.7
B. Average Lgth. (In.)	-	15.5	-	15.5
C. Average Wgt. (Lbs.)	-	1.8	-	1.8
13. Rook Bass				
A. Percent of Total	0.0	1.0	0.0	0.3
B. Average Lgth. (In.)	-	7.0	-	7.0
C. Average Wgt. (Lbs.)	-	0.3	-	0.3
14. Spotted Bass				
A. Percent of Total	1.0	0.0	0.0	0.3
B. Average Lgth. (In.)	11.0	-	-	11.0
C. Average Wgt. (Lbs.)	0.7	-	-	0.7

sunfish. The percent of bluegills in the creel decreased from 61%, in 1955; to 40%, in 1956; and to 31%, in 1957. The average size increased slightly. Age-growth studies, however, revealed a stunted population (Hulsey and Stevenson, *op. cit.*). Large-mouth bass comprised 13% of the total catch in 1955; 22% in 1956; and 5% in 1957. The average size of

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these diminished, with lengths of 12.7 inches, 10.9 inches, and 10.1 inches; and weights of 1.8 pounds, 0.8 pound, and 0.7 pound from 1955 through 1957. The percent of drum caught and retained by fishermen increased to 20% of the catch in 1957. In 1955 and 1956, the percentages were 4% and 5% respectively. The higher number of drum recorded in 1957 was indicative of poorer fishing success for the more desirable fish. Longear sunfish appeared to be abundant in this lake and although numerous undersized fish were caught, many were released by the bream fishermen. The catch ranged from 10% in 1955; to 12% in 1956; to 7% in 1957. White bass made up 20% of the catch in 1957 with an average length of 11.3 inches and a weight of 0.7 pound. Many of these were caught in the headwaters immediately below Carpenter Dam. In 1956, 1% of the catch was white bass and none was recorded in 1955. White crappie were abundant in 1956, constituting 13% of returns, whereas none was recorded in 1955 and 5% in 1957. The size of white crappie averaged 8.4 inches and 0.3 pounds in 1956 and 8.8 inches weighing 0.5 pound in 1957. Green sunfish were fairly abundant in the catch of all three years, however the percentage dropped in 1956. Redear sunfish increased to 4% of the catch in 1957. Warmouth bass constituted an average of 1.7% of the catch. Black crappie made up 3% of the creel in 1955 but none was reported for 1956 and 1957. One percent of the catch in 1955 and 1956 was channel catfish with none recorded in 1957. Catfish caught by licensed commercial fishermen were not included in these data. Two percent of the catch in 1956 was flathead catfish. Rock bass and spotted bass comprised the smallest average percent of catch with 0.3% each.

LAKE HAMILTON

Lake Hamilton is the most developed lake in the state from the standpoint of number of permanent homes, week-end cottages, and tourist facilities. Many residents own their own boats and fish in the early mornings and late evenings. Several of these fishermen were contacted by boat. The majority of the data was collected, however, by visiting public boat docks and questioning returning fishermen at these points. It was found that the more experienced fishermen, as a rule, used their own boats;

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but, data collected at public docks was considered comparable to data collected on other lakes. Table IV shows a list of public boat docks on Lake Hamilton that were regularly visited for creel census purposes. These were representative of various fishing areas on the lake.

Table V gives a summary of fishing effort and success on Lake Hamilton. The number of fishermen contacted in 1957 was considerably greater than those in 1956 and slightly greater than those censused in 1955. Since the same method of censusing was used each year, it can be assumed that fishing pressure was the greatest in 1957. The catch-per-man-hour was greatest in 1956 with 1.18 fish while in 1955, the catch-per-man-hour was 0.73 and in 1957, 0.84 fish giving an average of 0.92 fish per man-hour effort over the three years. Pounds caught per hour averaged slightly more in 1957 with 0.57 pounds as compared with 0.42 in 1955 and 0.50 pound in 1956. Fishing with artificial bait was more popular than live bait. During the three years, 47%, 66%, and 72% of the fishermen used artificial bait respectively. Many of the tourists used live bait. A type of fishing employed by fishermen seeking large bass was that of trolling with adult gizzard shad. This method resulted in slow fishing but was often effective in catching "lunkers." Early morning and late afternoon "spot-casting" for bass, feeding near the surface on schools of shad, was the most popular type of fishing. Surface lures cast into the feeding area were usually effective in catching one to two-pound bass. More out-of-state fishermen were found on Lake Hamilton in 1957 than in previous years. Fifty-eight percent (58%) were from out-of-state in 1957 as compared with 27% in 1955, and 33% in 1956.

Table VI shows the species composition and average size of fish caught from Lake Hamilton. Eleven species were recorded. Largemouth bass comprised the highest percentage of the creel. In 1956, the percentage dropped to 22% from 34% in the previous year but increased to 38% to 1957. An average weight of approximately one pound for largemouth bass remained fairly constant all three years. Bluegill sunfish ranked slightly below largemouth bass in average percent of total fish checked in the creel over the three years. Harvest of bluefill increased in 1956 and 1957 over that of 1955. The percentages showed these to make up 11% of the catch in

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1955, 44% in 1956 and 35% in 1957.

TABLE IV

COMMERCIAL BOAT LANDINGS ON LAKE HAMILTON WHERE FISHERMEN WERE CONTACTED

Name of Landing	Location	Number of Rental Boats
Chamber's Landing	Near mouth of Hot Springs Creek	18
Chestnut Landing	West end of Big Mazarn area	6
Dean's Landing	Hot Springs Creek	8
File's Landing	Three miles above Car- penter Dam	18
Henderson's Landing	Glazypeau Creek, below Blakely Mt. Dam	8
Hook's Landing	North side, one-half mile above Dam	6
Little Joe's Landing	West end, above Little Mazarn Creek	8
Little Mazarn Landing	Little Mazarn Creek	6
Mack's Landing	North side, one mile above Dam	10
Miller's Landing	West side, near High- way #270	6
Moore's Landing	South side, by High- way #7	6
Morris' Landing	South side, on Fouche Loupe Creek	10
Sam's Landing	West side, by Highway #270	6
Stewart's Landing	West side by Highway #70	12
TOTAL	14	128

The percentage bluegill in 1956 surpassed large-mouth bass but was less in 1955 and 1957. The average size of bluegill checked, increased from an average length of 5.0 inches, (0.2 pound) in 1955

TABLE V

CREEL CENSUS, LAKE HAMILTON

	1955	1956	1957	Average	Total
Total Hours Checked	176	168	144		488
Number Fishermen					
Contacted (Trips)	182	115	195		492
Total Fishermen-Hours	630	397	606		1633
Hours Fished per Trip	3.6	3.45	3.57	3.57	
Total Fish Caught	457	470	518		1445
Fish Caught per Hour	0.73	1.18	0.84	0.92	
Fish Caught per Trip	2.5	4.08	2.6	3.06	
Total Weight Fish (Lbs.)	267.5	199.4	343.4		810.3
Pounds Caught per Hour	0.42	0.50	0.57	0.50	
Pounds Caught per Trip	1.50	1.73	1.76	1.66	
Artificial Bait Fishermen	47%	66%	72%	62%	
Live Bait Fishermen	53%	34%	28%	38%	
Period Most Fish Caught	5 to 10 A.M.	6 to 11 A.M.	6 to 12 A.M.	5:40 to 11 A.M.	
Depth Most Fish Caught	8 to 20 ft	10 to 15 ft	4 to 18 ft	7.3 to 17.67 ft	
Fishermen from Arkansas	73%	67%	42%	61%	
Out-of-State-Fishermen	27%	33%	58%	39%	
Successful Trips	86%	75%	74%	78%	

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TABLE VI

SPECIES COMPOSITION OF CATCH, LAKE HAMILTON

Species	1955	1956	1957	Avg.
1. Largemouth Bass				
A. Percent of Total	34.0	22.0	38.0	31.3
B. Average Lgth. (In.)	11.0	11.4	11.6	11.3
C. Average Wgt. (Lbs.)	0.8	0.8	1.0	0.9
2. Bluegill Sunfish				
A. Percent of Total	11.0	44.0	35.0	30.0
B. Average Lgth. (In.)	5.0	5.7	6.3	5.7
C. Average Wgt. (Lbs.)	0.2	0.3	0.4	0.3
3. White Crappie				
A. Percent of Total	23.0	10.0	1.0	11.3
B. Average Lgth. (In.)	10.0	8.2	10.3	9.5
C. Average Wgt. (Lbs.)	0.6	0.3	0.8	0.6
4. Black Crappie				
A. Percent of Total	15.0	15.0	2.0	10.7
B. Average Lgth. (In.)	10.0	10.1	10.8	10.3
C. Average Wgt. (Lbs.)	0.5	0.5	0.7	0.6
5. Longear Sunfish				
A. Percent of Total	4.0	2.0	18.0	8.0
B. Average Lgth. (In.)	5.0	5.5	6.3	5.6
C. Average Wgt. (Lbs.)	0.1	0.2	0.3	0.2
6. Drum				
A. Percent of Total	3.0	6.0	3.0	4.0
B. Average Lgth. (In.)	11.0	13.0	9.9	11.3
C. Average Wgt. (Lbs.)	0.7	1.1	0.7	0.8
7. Channel Catfish				
A. Percent of Total	5.0	0.0	0.6	1.9
B. Average Lgth. (In.)	14.0	-	14.0	14.0
C. Average Wgt. (Lbs.)	1.9	-	1.9	1.9
8. Green Sunfish				
A. Percent of Total	2.0	0.0	2.0	1.3
B. Average Lgth. (In.)	5.0	-	7.3	6.2
C. Average Wgt. (Lbs.)	0.2	-	0.4	0.3

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TABLE IV (Continued)

SPECIES COMPOSITION OF CATCH, LAKE HAMILTON

Species	1955	1956	1957	Avg.
9. Rock Bass				
A. Percent of Total	3.0	0.0	0.0	1.0
B. Average Lgth. (In.)	7.0	-	-	7.0
C. Average Wgt. (Lbs.)	0.3	-	-	0.3
10. Spotted Bass				
A. Percent of Total	0.0	1.0	0.0	0.3
B. Average Lgth. (In.)	-	7.0	-	7.0
C. Average Wgt. (Lbs.)	-	0.5	-	0.5
11. Redear Sunfish				
A. Percent of Total	0.0	0.0	0.4	0.1
B. Average Lgth. (In.)	-	-	9.0	9.0
C. Average Wgt. (Lbs.)	-	-	0.4	0.4

to 5.7 inches (0.3 pound), 1956, to 6.3 inches (0.4 pound) in 1957. White crappie showed up well in 1955 constituting 23% but decreased to 10% in 1956 and 1% in 1957. The harvest of black crappie was comparatively the same in 1955 and 1956 with 15% of the total, but declined to 2% in 1957. Intensive crappie fishing normally occurs during April and May and this period was not included in the census. However, reports from fishermen revealed that crappie fishing was poor in 1957. Longear sunfish made up 18% of the total in 1957, increasing from 2% in 1956 and 4% in 1955. Drum were recorded all three years. In 1955, drum constituted 3%; in 1956, 6%; and in 1957 3% of the total. Many drum were caught by fishermen but released as undesirable and consequently not recorded. Channel Catfish comprised 5% of the catch in 1955; none was recorded in 1956 and they made up 0.6% of the catch in 1957. Green sunfish, rock bass, spotted bass, and redear sunfish made up an average of 1.3%, 1.0%, 0.3%, and 0.1% respectively of the creel during the three years. No yellow pike perch (walleye) were recorded in the census although reputable sources reported four walleye caught during the three-year

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period. In earlier years, walleye were caught in considerable numbers but the population has apparently diminished as the lake aged.

LAKE OUACHITA

Since its impoundment in the winter and early spring of 1952-53, Lake Ouachita has provided excellent fishing as is generally characteristic of all new impoundments. By the end of the summer and continuing on through 1956, phenomenal catches of small size black crappie and largemouth bass were made. These catches appeared to be made up of those fish that were stocked during the initial filling period and the first-year class spawned from the original stocking. This is especially true of the black crappie that was non-existent in the lake area prior to stocking from the Lake Hamilton Hatchery. Lake Ouachita is apparently changing from a crappie lake to a largemouth bass lake, as the survey indicates.

Table VII shows the public landings, together with the number of available rental boats, where fishermen were contacted. In the vicinity of each landing, there is a public access area where private boats may be launched. On several occasions returning fishermen were censused at these areas. In addition to the locations listed, there are six other main access areas provided by the Corps of Engineers. No attempt was made to interview fishermen at these other access points.

Reference to Table VIII shows data obtained from interviewing anglers on Lake Ouachita. In 1955, the number of fish caught per hour was 1.3. There was a decline in 1956 with 0.75 fish per hour and in 1957 with 0.80 fish per hour. The three-year average was 0.95 fish per-man-hour. Pounds-caught-per-hour was highest in 1955, averaging 0.66, lowest in 1956 with 0.48 pound, and increasing to 0.63 in 1957. The average size of fish caught increased in 1956 and 1957. In 1955 and 1956, live bait fishermen surpassed those using artificial bait, but in 1957, 55% of the fishermen used artificial bait. The percentage of out-of-state fishermen increased in 1957, averaging 42% of the total. This was undoubtedly due to the out-of-state publicity given Lake Ouachita and increased tourist accommodations. The creation and opening of other public fishing waters within the state that were more accessible

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TABLE VII

COMMERCIAL BOAT LANDINGS ON LAKE OUACHITA
WHERE FISHERMEN WERE CONTACTED

Name of Landing	Location	Number of Rentas Boats
Brady Mountain Landing	South Side	82
Crystal Springs Landing	South Side	87
Denby Point Landing	South Side	72
Highway 27 Landing	West End	50
Iron Forks Landing	North Side	50
Little Fir Landing	West End	30
Mountain Harbor Landing	South Side	82
Navy Landing	North Side	62
Spillway Landing	South Side	50
Shangri-La Landing	South Side	60
Three Sisters Landing	North Side	50
TOTAL	11	675

to the residents of Arkansas had a tendency to attract some of the native fishermen to these waters.

Table IX gives the species composition of the catch in Lake Ouachita. Black crappie constituted the highest average percentage of all fish in the creel with an average of 43.7% of the total over the three years. Crappie were the dominant fish in the creel in 1955 and 1956. Black crappie comprised 48% of the catch in 1955, 54% in 1956, but dropped to 29% in 1957. The average size of black crappie increased from 10.0 inches (0.5 pound), in 1955, to 10.3 inches (0.6 pound), in 1956, to 10.9 inches (0.8 pound), in 1957. In 1955, white crappie represented 6% of the catch and 1% in 1957. None was recorded in 1956. It is possible that early in 1955 a few black crappie were erroneously recorded as white crappie since black crappie were stocked in the lake and this stock appeared to account for the heavy harvest at this time. Largemouth bass were second in abundance in the creel. They increased from 15% in 1955, to 18% in 1956, to 38% in 1957. The average size was found to increase

TABLE VIII

CREEL CENSUS, LAKE OUACHITA

	1955	1956	1957	Average	Total
Total Hours Checked	176	168	144		488
Number Fishermen					
Contacted (Trips)	309	421	301		1031
Total Fishermen-Hours	1337	2150	1329		4816
Hours Fished per Trip	4.3	5.1	4.4	4.6	
Total Fish Caught	1754	1608	1064		4426
Fish Caught per Hour	1.3	0.75	0.80	0.95	
Fish Caught per Trip	5.7	3.82	3.53	4.35	
Total Weight Fish (Lbs.)	878	1035.2	802.9		2716.1
Pounds Caught per Hour	0.66	0.48	0.63	0.59	
Pounds Caught per Trip	2.90	2.45	2.34	2.56	
Artificial Bait Fishermen	19%	44%	55%	39%	
Live Bait Fishermen	81%	56%	45%	61%	
Period Most Fish Caught	5 to	6 to	6 to	5:40 to	
	11 A.M.	11 A.M.	12 A.M.	11:20 A.M.	
Depth Most Fish Caught	6 to	12 to	4 to	7.33 to	
	20 ft	25 ft	25 ft	23.33 ft	
Fishermen from Arkansas	72%	80%	58%	70%	
Out-of-State Fishermen	28%	20%	42%	30%	
Successful Trips	97%	92%	86%	91.67%	

A THREE-YEAR CREEL CENSUS

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TABLE IX

SPECIES COMPOSITION OF CATCH, LAKE OUACHITA

Species	1955	1956	1957	Avg.
1. Black Crappie				
A. Percent of Total	48.0	54.0	29.0	43.7
B. Average Lgth. (In.)	10.0	10.3	10.9	10.4
C. Average Wgt. (Lbs.)	0.5	0.6	0.8	0.6
2. Largemouth Bass				
A. Percent of Total	15.0	18.0	38.0	23.7
B. Average Lgth. (In.)	10.0	11.3	11.7	11.0
C. Average Wgt. (Lbs.)	0.9	1.0	1.1	1.0
3. Longear Sunfish				
A. Percent of Total	18.0	16.8	10.0	14.9
B. Average Wt. (In.)	6.0	6.1	6.2	6.1
C. Average Wgt. (Lbs.)	0.3	0.3	0.3	0.3
4. Bluegill Sunfish				
A. Percent of Total	8.0	6.0	20.0	11.3
B. Average Lgth. (In.)	5.0	6.4	7.7	6.4
C. Average Wgt. (Lbs.)	0.2	0.3	0.4	0.3
5. White Crappie				
A. Percent of Total	6.0	0.0	1.0	2.3
B. Average Lgth. (In.)	11.0	-	11.3	11.2
C. Average Wgt. (Lbs.)	0.5	-	0.8	0.7
6. Green Sunfish				
A. Percent of Total	3.0	2.0	0.6	1.9
B. Average Lgth. (In.)	6.0	6.8	7.0	6.6
C. Average Wgt. (Lbs.)	0.3	0.3	0.5	0.4
7. Smallmouth Bass				
A. Percent of Total	1.0	1.0	0.1	0.7
B. Average Lgth. (In.)	9.0	12.5	18.0	13.2
C. Average Wgt. (Lbs.)	0.4	0.9	2.5	1.3
8. Rock Bass				
A. Percent of Total	1.2	0.3	0.0	0.5
B. Average Lgth. (In.)	7.0	7.8	-	7.4
C. Average Wgt. (Lbs.)	0.4	0.5	-	0.5

A THREE-YEAR CREEL CENSUS

TABLE IX (Continued)

SPECIES COMPOSITION OF CATCH, LAKE OUACHITA

Species	1955	1956	1957	Avg.
9. Spotted Bass				
A. Percent of Total	0.0	1.0	0.2	0.4
B. Average Lgth. (In.)	-	11.8	10.5	11.2
C. Average Wgt. (Lbs.)	-	0.8	0.9	0.9
10. Warmouth Bass				
A. Percent of Total	0.0	0.4	0.7	0.4
B. Average Lgth. (In.)	-	6.8	7.0	6.9
C. Average Wgt. (Lbs.)	-	0.4	0.4	0.4
11. Channel Catfish				
A. Percent of Total	0.3	0.1	0.0	0.1
B. Average Lgth. (In.)	8.0	16.0	-	12.0
C. Average Wgt. (Lbs.)	0.6	2.6	-	1.6
12. Flathead Catfish				
A. Percent of Total	0.0	0.2	0.0	0.1
B. Average Lgth. (In.)	-	26.6	-	26.6
C. Average Wgt. (Lbs.)	-	7.7	-	7.7
13. Walleye Pike				
A. Percent of Total	0.0	0.1	0.1	0.07
B. Average Lgth. (In.)	-	21.0	24.0	22.5
C. Average Wgt. (Lbs.)	-	3.8	5.1	4.5
14. Redear Sunfish				
A. Percent of Total	0.0	0.0	0.1	0.03
B. Average Lgth. (In.)	-	-	9.0	9.0
C. Average Wgt. (Lbs.)	-	-	0.4	0.4

from 10.0 inches (0.9 pound) in 1955, to 11.3 inches (1.0 pound) in 1956, to 11.7 inches (1.1 pounds) in 1957. Fishermen reported numerous small-sized largemouth bass (less than 10.0 inches) as having been caught and subsequently released during the summer of 1955. In the early years of impoundment, many thousands of these small largemouth bass were caught and reportedly removed from the lake. Longear sunfish have long been a popular pan fish in the Ouachita River and its tributaries. In Lake

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Ouachita they have grown to an especially desirable size and have as a result provided a lot of family-type fishing. In 1955, longear sunfish comprised 18% of the catch averaging 6.0 inches and 0.3 pound. In 1956 they made up 16% of the catch and averaged 6.1 inches, 0.3 pound. In 1957, their relative numbers decreased to 10% and their average size remained about the same (6.2 inches, 0.3 pound). The percentage of bluegill sunfish caught in 1955 and 1956 was comparatively small but increased in 1957. In 1955, bluegills constituted 8%, in 1956, 6% and in 1957, 20% of the total catch. The average size increased from 5.0 inches (0.2 pound) in 1955, to 6.4 inches (0.3 pound) in 1956, to 7.7 inches (0.4 pound) in 1957. In 1955 and 1956, green sunfish made up 3.0% and 2.0%, respectively, of the creel but dropped to 0.6% in 1957. Green sunfish have reached a desirable size and have long provided good fishing in the Ouachita River. During the early years of impoundment they provided a substantial part of the lake fishing but as populations of crappie and largemouth bass increased, green sunfish have become a minor part of the catch. Prior to impoundment, smallmouth bass were abundant in the Ouachita River but creel census data showed only 1.0% of the catch was smallmouth bass in 1955 and 1956 and 0.1% in 1957. Even though rock bass and warmouth bass are known to be present in considerable numbers in the tributaries of Lake Ouachita, their percentage of the creel was small. In the tributary waters, they are an active fish and provide good sport fishing. The few recorded in the census were caught in the South Fork arm of the lake. Spotted bass were not numerous, averaging 0.4% of the total. No white bass were recorded. Few channel and flathead catfish were reported. This is probably due to emphasis placed on other types of fishing in this lake. An endemic population of yellow pike perch (walleye) was reported existing in the river before the lake was constructed; however, none was tabulated in the catch in 1955 and only 0.1% in 1956 and 1957. No redear sunfish were recorded in 1955 and 1956 and only 0.1% of the catch was redear in 1957. It was believed that redear constituted a slightly larger portion of the harvest than was revealed by the census. Fishermen in the Avant area, a rather inaccessible region on the North side of the lake, reported catches of large redear not included in the census.

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COMPARISON OF FISHING EFFORT AND SUCCESS ON THE THREE LAKES

Fishing success on Lake Ouachita, the newest lake, has been good in so far as individual fishing effort is concerned. A new lake attracts a variety of fishermen, including family groups, and these numbers must be taken into consideration where averages are calculated. Since party groups were more numerous on Lake Ouachita, the census data may not be truly representative of individual fishing success when compared with data collected from the other lakes.

Table X and Figure 1 show a comparison of three-year averages of data relative to fishing success. The number of hours fished per trip varied from 3.96 on Lake Catherine, to 3.54 on Lake Hamilton, to 4.60 on Lake Ouachita. Fish caught per man-hour effort averaged 0.83, Lake Catherine; 0.92, Lake Hamilton; and 0.95, Lake Ouachita. Pounds caught per hour were 0.40 on Lake Catherine, 0.50 on Lake Hamilton, and 0.59 on Lake Ouachita. The number of fish caught per trip was greater on Lake Ouachita with 4.35 as compared with 3.24 on Lake Catherine and 3.06 on Lake Hamilton. Pounds of fish caught per trip were likewise greater on Lake Ouachita with 2.56 as compared with 1.56 on Lake Catherine and 1.66 on Lake Hamilton. More fishermen (66%) used live bait on Lake Catherine and on Lake Ouachita (61%) than on Lake Hamilton (38%). Out-of-state fishermen were comparatively few on Lake Catherine with 7.3% as compared with 39% on Lake Hamilton and 30% on Lake Ouachita. Determination of a successful fishing trip may be somewhat questionable. In this survey, a successful trip was listed where a fisherman caught at least one keeper fish. On this basis there were 75.7% successful trips on Lake Catherine, 78.0% on Lake Hamilton, and 91.7% on Lake Ouachita.

COMPARISON OF SPECIES COMPOSITION

Since Lake Catherine and Lake Hamilton are old lakes, a three-year creel census did not necessarily show trends in species composition. On the other hand a definite change was noted in Lake Ouachita in that there was a reduction in the harvest of crappie in 1957 and an increase in the percentage of largemouth bass and bluegill sunfish in

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TABLE X

THREE-YEAR AVERAGE OF DATA COLLECTED FROM
CREEL CENSUS ON LAKES CATHERINE,
HAMILTON, AND OUACHITA

	Lake Cather- ine	Lake Hamil- ton	Lake Ouach- ita
Hours Fished per Trip	3.96	3.54	4.6
Fish Caught per Hour	0.83	0.92	0.95
Fish Caught per Trip	3.24	3.06	4.35
Pounds Caught per Hour	0.40	0.50	0.59
Pounds Caught per Trip	1.56	1.66	2.56
Artificial Bait Fishermen	34%	62%	39%
Live Bait Fishermen	66%	38%	61%
Out-of-State Fishermen	7.3%	39%	30%
Successful Trips	75.7%	78.0%	91.7%

the creel for that year. In an attempt to compare species harvest in all lakes, the average percent by number of species in the creel for three years was taken.

Table XI and Figure 2 show the three-year average of species composition. Fourteen species were represented in the creel on Lake Catherine with bluegill sunfish, largemouth bass, longear sunfish, drum, white bass, and crappie (both species), respectively, the most common. Eleven species were recorded from Lake Hamilton with largemouth bass, bluegill sunfish, crappie and longear sunfish representing the major groups. Fourteen species were recorded from Lake Ouachita with crappie, largemouth bass, longear sunfish, and bluegill sunfish comprising most of the catch. Bluegill sunfish made up 44% of fish caught on Lake Catherine, 30% on Lake Hamilton, and 11.3% on Lake Ouachita. Largemouth bass constituted 31.3% of the harvest on Lake Hamilton, 23.7% on Ouachita, and 13.3% on Catherine. Crappie, both black and white, made up 46.0% of the Ouachita creel, 22% of the Hamilton creel, but only 7.0% of the fish caught in Catherine. Black crappie were the dominant crappie species in Ouachita, white crappie in Catherine, and about equally divided between black and white in Hamil-

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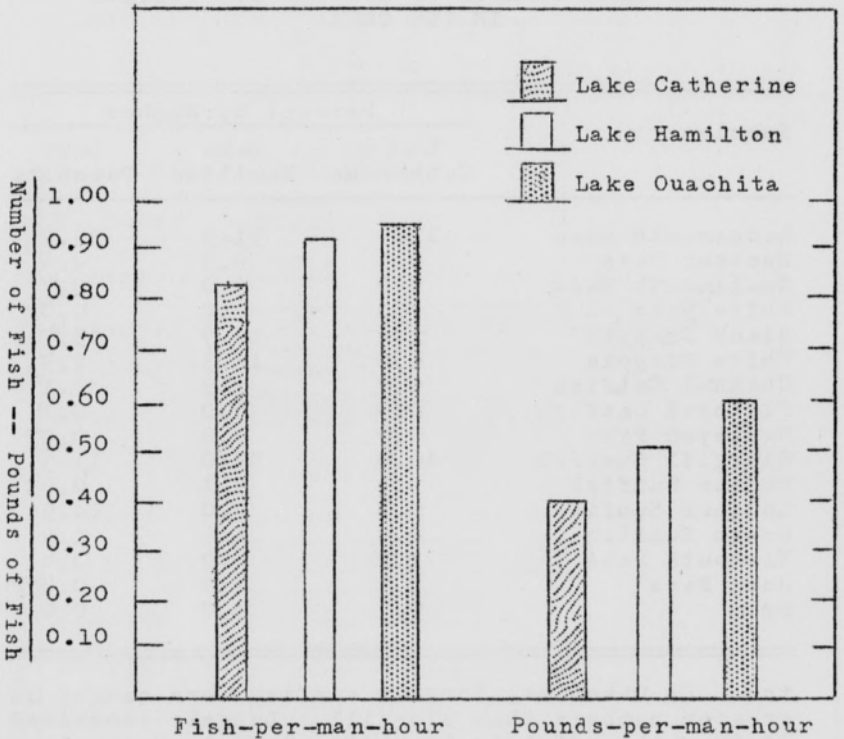


Fig. 1. Comparison of catch in terms of fish-per-man-hour and pounds-per-man-hour effort.

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TABLE XI
THREE-YEAR AVERAGE OF SPECIES COMPOSITION
IN THE CREEL

Species	Percent by Number		
	Lake Catherine	Lake Hamilton	Lake Ouachita
Largemouth Bass	13.3	31.3	23.7
Spotted Bass	0.3	0.3	0.4
Smallmouth Bass	0.0	0.0	0.7
White Bass	7.0	0.0	0.0
Black Crappie	1.0	10.7	43.7
White Crappie	6.0	11.3	2.3
Channel Catfish	0.7	1.9	0.1
Flathead Catfish	0.7	0.0	0.1
Walleyed Pike	0.0	0.0	0.07
Bluegill Sunfish	44.0	30.0	11.3
Redear Sunfish	1.7	0.1	0.03
Longear Sunfish	9.7	8.0	14.9
Green Sunfish	4.0	1.3	1.9
Warmouth Bass	1.7	0.0	0.4
Rook Bass	0.3	1.0	0.5
Drum	9.7	4.0	0.0

ton. On Ouachita, longear sunfish were caught in greater numbers than bluegill. Longear comprised 14.7% of the catch in Ouachita, 9.7% in Catherine, and 8.0% in Hamilton. White Bass made up 7% of the creel in Catherine but none was recorded from the other lakes. Catching of drum was usually incidental to the intent of the fishermen, although many were recorded in the creels of bank fishermen. These fish are edible but not highly regarded as food. Nine and seven-tenths percent (9.7%) of the creel on Lake Catherine and 4.0% from Lake Hamilton were drum.

METHODS OF FISHING

Fishermen using live bait out-numbered artificial bait fishermen on Lakes Catherine and Ouachita. Worms and crickets were the most popular live bait used on Lake Catherine, since bream constituted the

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Percent of Catch

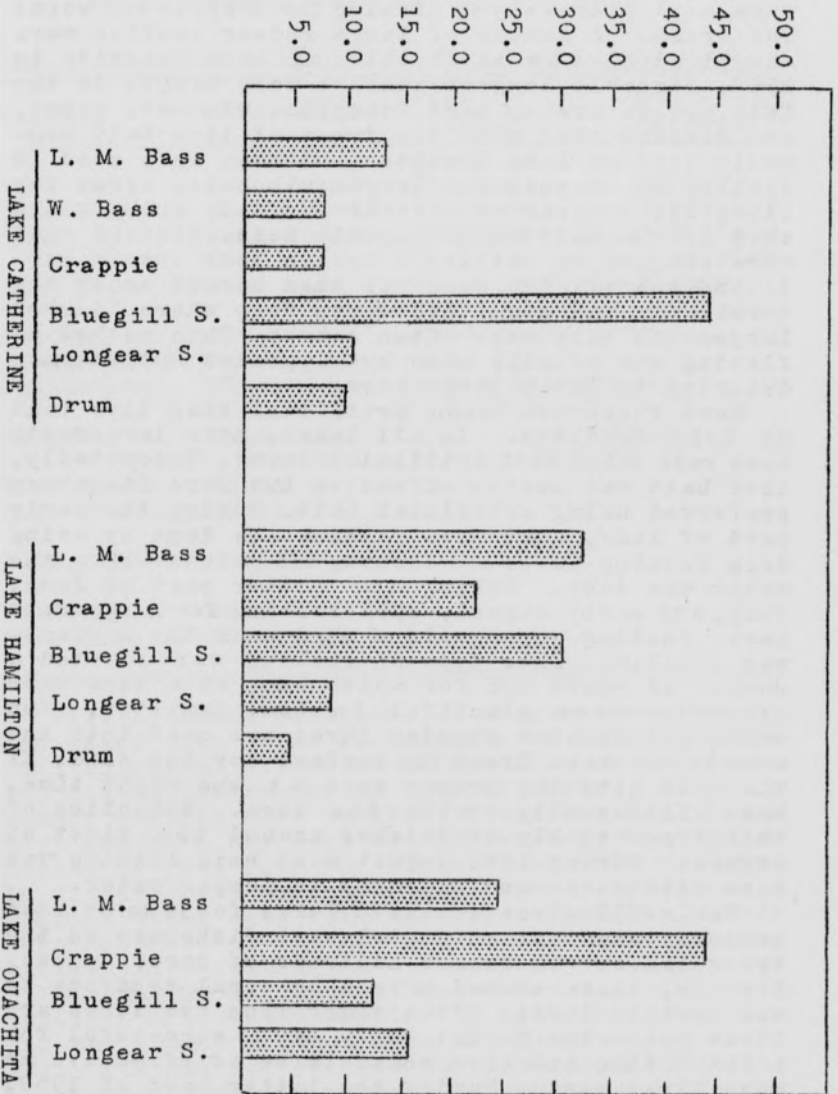


Fig. 2. Three-year average of major species composition catch.

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major portion of the fishing. Minnows and worms were used extensively on Lake Ouachita. Minnows were used primarily in fishing for crappie and worms for bream. A number of large reardear sunfish were caught along the north side of Lake Ouachita in 1957. Sizeable longear sunfish were caught in the Twin Creeks area of Lake Ouachita. Minnows, worms, and gizzard shad were the types of live bait commonly used on Lake Hamilton. Minnows were used in fishing for crappie and largemouth bass, worms for bluegill, longear and reardear sunfish, and gizzard shad used as bait for largemouth bass. Gizzard shad were snagged by casting a treble hook into a surfacing school. The shad was then hooked under the dorsal fin and permitted to run deep where "jumbo" largemouth bass were often caught. This method of fishing was usually slow but appealed to fishermen desiring to catch large bass.

More fishermen used artificial than live bait on Lake Hamilton. In all lakes, more largemouth bass were taken with artificial lures. Undoubtedly, live bait was just as effective but more fishermen preferred using artificial bait. During the early part of June, most bass fishing was done by using deep running lures and fishing off points where the water was deep. During the latter part of June, July, and early August, spot casting for largemouth bass, feeding on schools of shad near the surface, was popular. This type of fishing was started a number of years ago for white bass at a time when they were more plentiful in Lake Hamilton. Top water and shallow running lures are cast into the area as the bass break the surface for the shad. If the lure hits the proper spot at the right time, bass will usually strike the lure. Schooling of this type usually diminishes around the first of August. During late August most bass fishing was done with deep running lures in deeper water.

Table XII gives a list of lures found to be most commonly used by artificial bait fishermen on the three lakes. There are hundreds of lures in use, however, there seemed to be a seasonal tendency to use certain lures. Often times when new lures are first put on the market, they may be successful for a short time and then cease to be as effective as when first used. During the latter part of 1957, the plastic worm became quite popular and effective in catching bass and replaced some of the older more established lures.

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TABLE XII

SOME COMMONLY USED ARTIFICIAL LURES

Surface	Underwater	Deep Running	Multi-purpose
Spot Tail	Peco Perch	Upperman	Bomber
Skip Jack	River Runt	Black Eel	Water Dog
Lucky 13	Hell Bender	Mr. Champ	Hawaiian Wiggler
Jerk Bait	Baby Zara	Plastic Worm	Shimmy Wiggler
Shadrac	Hot Shot	Lead Head	
Devil Horse	Pan Master	Spin Fin	
Jitter Bug	Mirro-lure	H & H Spinner Bait	
Chugger	Swimming Minnow		
Zara Spook	Sonic		
Pogo Stick	Martin Lizzard		
Crippled Minnow	Shannon Spinner		
Darter	Lazy Ike		
Hula Popper	Little Mo		

Fishing around weed beds, in comparatively shallow water with worms or crickets or using artificial flies, was effective in catching sunfish during most of the summer in Lake Catherine. In early summer crappie were caught in Spencer Bay, Tigre Bay, and in a bay west of Spencer Bay, by fishing depths of from four to twelve feet with minnows. Largemouth bass were caught in areas off the main channel using deep running lures. A number of drum were recorded in the creel but these were usually incidental to fishing for the more desirable bream.

Fishing for largemouth bass with artificial bait appeared to be quite popular in Lake Hamilton during the summer months. Much of this was spot casting. Fishing for crappie was less popular during the summer months as these became more difficult to locate and catch. Fishing for sunfish was popular throughout the summer in many of the marginal areas particularly in White Oaks Basin. Bays in

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the region of mouths of creeks provided fair bass fishing during the warmer weather.

The number of live bait fishermen on Lake Ouachita decreased from 1955 to 1957. This was probably due to a decrease in availability of crappie and an increased effort towards largemouth bass fishing using artificial bait. Fishing success for largemouth bass remained good all three years and, in fact, increased, percentage wise, in 1957. Fishing for bass off steep banks was effective in early June and August. During July, spot casting for bass in open water attracted many fishermen. Crappie fishing with minnows was conducted in sheltered wooded areas in water fifteen to twenty-five feet deep. Crappie fishing appeared to be best around Housley Point and the Avant area. Fishermen seeking miscellaneous sunfish were comparatively few on Lake Ouachita. Good catches of longear and bluegill sunfish could be obtained around many of the shoreline areas and, particularly, in water of inundated cultivated fields.

WEATHER CONDITIONS AND FISHING SUCCESS

Daily weather records were kept in an effort to determine what effect weather conditions might have on fishing success. Records of the weather, such as cloudy or clear, rain or fair, and barometric readings, were made each day. Ordinarily, in Arkansas, the spring rainy season is over by the first of June, and, during the summer, rains are usually local showers or thunderstorms of short duration.

It was found that impending showers did not often discourage fishermen. The number of fishermen on a lake was slightly reduced when it was raining early in the morning, particularly during the first and middle part of the week. Over a week-end, cloudy weather or local showers seemed to have little effect on numbers of fishermen. Fishing efforts undoubtedly were curtailed during a shower but records showed as many fish caught per-man-hour effort during inclement weather as on clear days.

There was found to be no correlation between barometric readings and fishing success.

CONCLUSION

In conclusion, the results of greatest significance in this creel census lie in the comparison

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of catch-per-man-hour of fishing effort and in the species composition of the creel. The summer harvest of fish does not necessarily reflect the population size but it does indicate the catchability of certain species during this season of the year and their relative abundance in the three lakes.

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