SEGMENT COMPLETION REPORT

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FEDERAL AID IN FISHERIES RESTORATION ACT

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FILE

Fisheries Investigations and Surveys of the Waters of Region 3-B

Job B-23 Study of Population and Reproduction of Channel Catfish in Lake O' the Pines

Project Leader: Joe E. Toole

J. R. Singleton
Executive Director
Texas Parks and Wildlife Department
Austin, Texas

Marion Toole
D-J Coordinator

Eugene A. Walker
Director, Wildlife Services

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ABSTRACT

Six adult channel catfish were collected from Lake O' the Pines this segment. Attempts to collect fry or fingerling catfish were unsuccessful. It is apparent from sexual condition and condition coefficients of individual adult catfish examined, that a spawn did occur in the reservoir in mid-June. During the coming segment, tests will be made at regular intervals to determine the un-ionized hydrogen sulfide gas present in the reservoir. Continued collections of adult catfish will be made to correlate spawning dates with hydrogen sulfide gas levels. Efforts will be continued to collect young channel catfish from Lake O' the Pines. Additional stocking of channel catfish in the reservoir will be recommended if un-ionized hydrogen sulfide gas levels prove to be non-toxic to young channel catfish.

SEGMENT COMPLETION REPORT

State of Texas

Project No. F-3-R-13 Name: Fisheries Investigations and Surveys of the Waters of Region 3-B

Job No. B-23 (Seg. 1 of 3) Title: Population and Reproduction Study of Channel Catfish in Lake O' the Pines

Period Covered: February 1, 1965 - January 31, 1966

OBJECTIVES:

To determine the need for stocking channel catfish (Ictalurus punctatus) in Lake O' the Pines.

TECHNIQUES USED:

During this first segment a variety of collecting techniques were used to collect adult channel catfish and attempts were made to collect fry or fingerling catfish.

Baited hoop nets, experimental gill nets and trot lines were used to collect adult channel catfish. Seining collections were made with a 26-foot nylon bag seine to collect fry or young fish.

EQUIPMENT:

Early spring collections were made with experimental gill nets only, due to a delay on receiving the nylon hoop nets and trot line materials. These nets were standardized experimental type gill nets, 8 feet in depth and 150 feet in length with mesh size ranging from 1 to 3½ inches. A total of 50 units of nets were set during the segment. Five nets were set overnight once each month from March - December, 1965.

Four nylon hoop nets with mesh sizes of 2 and 2½ inches were stretched on cypress runners and baited with commercial dog food and cottonseed cake prior to setting.

Nylon trot lines were constructed with 3/0 O'Shaugnessy hooks. Each line is 100 feet long with 30 hooks spaced 3 feet apart. Three of these lines were set and baited a total of 20 nights in the reservoir. This is a total of 1800 baited hooks.

FINDINGS:

Six adult channel catfish (Ictalurus punctatus) were collected this segment. Four of these fish were caught in gill nets, the remaining two were taken on trot lines baited with small sunfish. The baited hoop nets failed to catch any channel catfish.

The average weight of the 6 fish collected was 3.92 pounds, with individual weights ranging from 2.37 to 6.37 pounds. Table 1 contains individual weights, standard lengths, K-factors and sexual conditions for each catfish.

Table 1

Channel Catfish Collection Data from Lake O' the Pines

Date	No.	Standard Length (mm)	Weight (lb.)	K-factor	Condition
4/28/65	1	515	6.37	2.09	female-approaching ripeness
6/29/65	2	474	3.88	1.65	female - spent
6/29/65	3	408	2.37	1.54	male - spent
6/30/65	4	390	2.37	1.77	female - spent
7/1/65	5	503	4.50	1.60	male - spent
8/30/65	6	446	4.00	2.04	female - approaching ripeness

K-factor range 1.54 - 209

Average K 1.78

The first channel catfish collected this segment was netted in the Hurricane Creek area of the Reservoir on the night of April 28, 1965. This fish, a female, was the largest individual of the year, having a standard length of 515 mm and weighing 6.37 pounds. This fish contained 1.25 pounds of roe, normally developed and approaching ripeness.

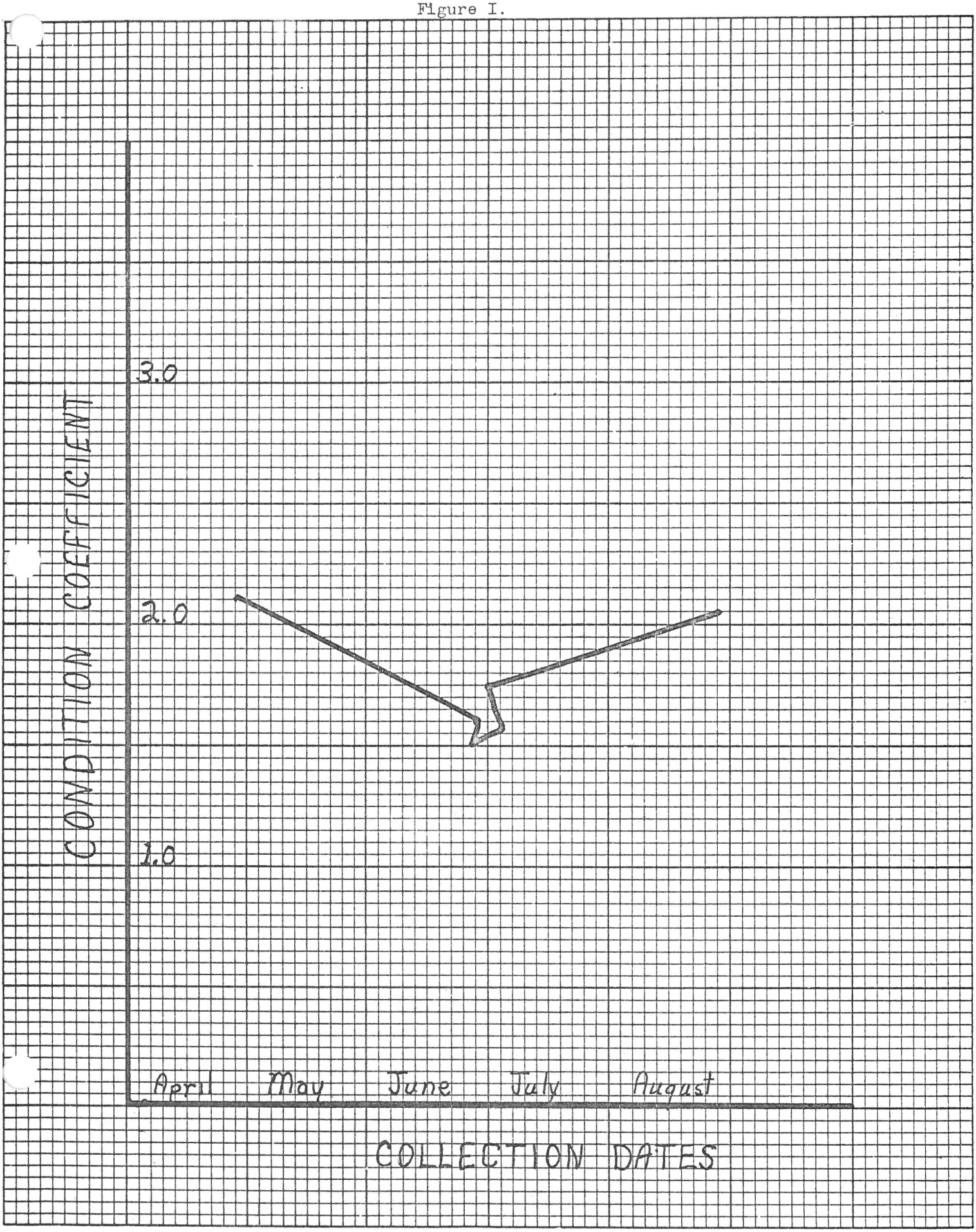
The next 4 channel catfish collected were taken in a 3-night period beginning on June 29, 1965. Two male and 2 female channel catfish were collected from the Hurricane Creek area of Lake O' the Pines. Nets and trot lines set in other areas of the reservoir continued to be unproductive.

All of the channel catfish collected in the Hurricane Creek area from June 29 to July 1, had apparently spawned successfully. Examinations of the reproductive tracts indicated no abnormalities in these specimens.

The last fish collected this segment was netted on August 30, 1965 south of highway 155 crossing. This female, weighing 4.0 pounds, contained developing roe with some darkened or decomposing eggs.

Figure 1 is a graph comparing individual K-factors with date of collection. Although only 6 individuals were represented, the 4 fish collected from June 29 to July 1, had lower coefficients of condition than the 2 fish collected in April and August. This combined with the fact that these 4 fish were in a spent condition indicates that a spawn was obtained in Lake O' the Pines in mid-June.

Figure I.


3.0
2.0
1.0
CONDITION COEFFICIENT
April
May
June
July
August
COLLECTION DATES

SEINING

Potential spawning areas were seined in an effort to capture fry or fingerling channel catfish. Some areas were baited prior to seining with commercial dog food and cottonseed cake. The Hurricane Creek area was seined most frequently because of the success of collecting adult specimens in this area. However, seining collections were made in all areas of the lake. Areas were seined at night and during the day.

No channel catfish were collected this segment by seining.

SPORT FISHING SUCCESS

Commercial camp operators on Lake O' the Pines were contacted to determine the degree of fishing success on channel catfish by sport fishermen. Limited catches were reported but the validity of many of the reports is questionable because many people confuse the black bullhead (Ictalurus melas) with the channel catfish. In general, the average fisherman has had little success in catching channel catfish in Lake O' the Pines.

WATER ANALYSIS:

Water analysis was conducted in conjunction with netting activities this segment. These tests included pH values and un-ionized hydrogen sulfide. The pH ranged from 6.6 to 7.2 for an average of 6.9. Hydrogen sulfide tests were conducted with the use of the titration method. No lethal concentrations of the gas were found. The highest concentration of un-ionized hydrogen sulfide recorded was .06 p.p.m. from a sample taken in the Johnson Creek area of the Reservoir in July. The pH value in this area at this time was 6.8. Later hydrogen sulfide checks were negative.

CONCLUSIONS AND RECOMMENDATIONS:

Collection data compiled this segment established the following facts:

1. A limited population of adult channel catfish is present in Lake O' the Pines.

2. Sexual conditions and low coefficients of condition of the catfish collected in late June, indicate a spawn occurred in the reservoir in mid-June.

3. Seining collections failed to produce any evidence of channel catfish fry or fingerlings in the reservoir.

During the coming segment, it is recommended that 2 primary objectives be pursued.

1. Increased efforts should be made to capture young channel catfish.

2. Water analysis should be run at regular intervals to determine the presence of lethal concentrations of un-ionized hydrogen sulfide gas.

In summary of the above data, it is concluded that adult fish are present in the reservoir and a probable spawn occurred. An adverse environmental factor is evidently lethal to the young channel catfish. Un-ionized hydrogen sulfide gas is, in all probability, this factor. It is recommended that bi-monthly analysis be made at permanent stations throughout the reservoir to determine if lethal concentrations are present. Continued efforts will be made to locate spawning areas and young catfish. Limited collection of adult fish will be continued to correlate probable spawning dates with hydrogen sulfide levels in the reservoir.

Additional stocking will be recommended if hydrogen sulfide levels are found to be non-toxic to channel catfish fingerlings.

Prepared by Joe E. Toole
Project Leader

Approved by Marion Toole
Coordinator

Date October 7, 1966

Charles E. Gray
Regional Supervisor