

JOB COMPLETION REPORT

STATE OF TEXAS

Project No. F4R3 Name Fisheries Investigations and Surveys of the Waters of Region 4-B.

Job No. E-2 Title A Study of the Crappie in Eagle Mountain Lake.

Period Covered Novmeber 1, 1955 to October 31, 1956

OBJECTIVES

To determine the population of crappie in Eagle Mountain Lake; the ecological factors influencing their distribution and the type of food being utilized by various sizes of crappie.

HISTORY OF LAKE

Eagle Mountain Lake is located on the West Fork of the Trinity River about 20 miles northwest of Fort Worth. The dam was completed in 1932 and impounds 9,600 surface acres of water when the lake is full. Eagle Mountain Lake is the main source of water supply for Fort Worth. A severe drought during the last few years has prevented the lake from catching enough water to fill. The lake water has reached a very low level in recent years due to the extensive demand for water by the City of Fort Worth.

The action of the wind upon the vast shallow areas of the impoundment is very effective and the lake is usually quite turbid. The water has receded so far from the original shoreline that little vegetation can be found along the present shore. The receding waterline has left some of the large groups of willows without sufficient moisture resulting in the death of vast areas of that type vegetation.

Eagle Mountain Lake offered good bass, crappie, and channel cat fishing during the first few years of its existence. As the lake became more turbid and contained less aquatic vegetation bass fishing grew less and less productive until it is no longer considered an attractive sport. Crappie fishing is still fair but not nearly as good as it was when the lake was younger. Fishing for catfish, both channel and yellow, now offers the most favorable returns from the lake.

COLLECTING METHODS

Specially constructed traps were used to sample the crappie population. The traps were six-feet long and 29-inches in diameter. The frame was welded from three-eighth inch reinforcement steel and consisted of a ring at each end of the trap and one in the middle held together with four horizontal runners. The traps were covered with chicken wire of one-inch mesh laced on with soft wire. Funnels were provided at each end of the trap with apex openings of approximately six inches. The fish were removed from the trap through a flap door cut into the wire and held closed by lacing with nylon cord. Eight traps were the maximum number used in the lake at any one time. The traps were set without bait and were very successful in catching crappie. Much time could have been saved in taking fish from the traps if a more convenient type door had been constructed.

RETURN OF TAGGED FISH

A total of 440 white crappie was tagged with a No. 1 strap-type jaw tag obtained from the National Band and Tag Company. Four of the fish were retrapped and 14 tagged fish were captured and reported by fishermen. One of the fish recaptured by the traps had only been free one day and was dead when taken from the trap. The other three fish were free 28, 29, and 91 days and had traveled one-fourth mile down lake, three-fourth mile across lake and one-third mile down lake, respectively. Each of the fish had lost from 2 to 30 grams of weight.

Table 1 shows a summary of the information from tagged fish reported by fishermen. The average time of freedom was 23 $\frac{1}{3}$ days and the average distance of travel was 1.6 miles. The fastest travel occurred when a crappie tagged and released in Fleming's Slough was caught by a fishermen the same day near Bud Cross' boat dock four miles up lake.

Lack of adequate publicity plus changing of our office location and phone number may have prevented receiving additional information concerning tagged fish.

ECOLOGICAL STUDY

Trapping of various ecological sites was hampered considerably by individuals who insisted on molesting our traps. Some of the traps were stolen, others moved, and many of the traps run when we were not on the lake. Such procedures added to the inaccuracy of the data collected to such a degree that much of it became useless. Therefore the only information collected, regarding ecological factors, was only of a very general nature.

Crappie were caught in the backwater of the creeks and sloughs from March, when trapping was first begun, to the last of April when the surface temperature of the water reached about 72°F. As the temperature continued to rise the decay of organic bottom material was accelerated until any molestation of the bottom would cause huge quantities of gas bubbles to rise. The decaying material was composed principally of leaves that had blown into the water. There was no chemical analysis made of the water, but it is probable that a high carbon dioxide content was responsible for the crappie leaving the sloughs.

Stations that afforded good catches of crappie during the summer months were difficult to locate. Two traps set in water eight feet deep on the south side of a sand island produced fair catches of fish. Several of our traps set in deep water were lost. Evidently, people were either stealing the traps or destroying the attached lines and floats causing the location of the traps to be lost.

The warm water coming from the discharge side of a power plant was only moderately productive during the cooler spring months and unproductive during the summer months. It seems that when the water warmed up above 75°F crappie no longer inhabited the area in any appreciable numbers. As we did not have material to make our traps before March we do not know how successful trapping would have been in the heated water during the colder months of the year.

The traps were quite effective in collecting species other than crappie. Some sunfish, bass, carpsucker, and a good representation of small drum were collected; but the traps were especially attractive to catfish (both channel cat and yellow cat). Evidently the crappie, and other small fish, that were lured into the traps for various reasons, served as bait for the catfish. Of course, the catfish ate all the trapped crappie adding to our difficulties of evaluating the productivity of various stations.

WILLOW BRUSH SHELTERS

Two traps were surrounded with bundles of green willows to study the effectiveness of that material for concentrating crappie. Both traps were set in water about eight feet deep, one on the north side and the other on the south side of a sandy island. Each set had a companion trap used as a control. It was located in the same type of habitat about 75 yards away but was set without brush. The traps were checked a number of times during July and August of 1956.

There was no significant difference in the number of crappie that were caught in the traps with brush and the number caught in traps without brush. Nor did placing brush around a trap improve its catching ability. But the writer would like to point out that, for a number of reasons, the experiment may not show the true reaction of crappie to brush shelters. Channel catfish invaded various traps a number of times and probably ate many of the crappie.

There is also the possibility of the wire trap itself acting as a type of shelter even when set in a location clear of all obstructions. It is believed the data obtained may have been more conclusive if the experiment could have been organized on a much larger scale.

FOOD STUDY

It was learned that traps must be checked more frequently than we were able to run ours, if desirable material was to be gathered for a food study. Therefore, the food study phase of the program was abandoned.

RECOMMENDATIONS

It is recommended that the crappie study be discontinued on Eagle Mountain Lake. The present low water condition makes boat launching and navigation on the lake very difficult. Molestation of the traps affected the quantity and quality of the data collected thus detracting from the usefulness of the survey.

A more specific information regarding crappie is urgently needed for proper management purposes, it is further recommended that a crappie study be conducted on a more desirable lake.

Prepared by Robert N. Hambric
Assistant Project Leader

Approved by Marion Toole
Marion Toole

Date March 19, 1957

Table 1. Information from Tagged Crappie Returned by Fishermen, Eagle Mountain Lake, Texas

Tag Number	Where Released	Where Caught	Miles of Travel	Days of Freedom
5	Power Plant Outlet	Boathouse in Fleming Slough	$\frac{1}{2}$ mile up lake	13
6	Power Plant Outlet	Fleming Slough	$\frac{1}{2}$ mile up lake	25
7	Power Plant Outlet	Sandy Beach Camp	$2\frac{1}{2}$ miles up and across	12
25	Power Plant Outlet	Cruise Inn	$4\frac{1}{2}$ miles down lake	47
37	Power Plant Outlet	One Mile up lake from Cruise Inn	$3\frac{1}{2}$ miles down lake	14
64	Power Plant Outlet		No travel	4
75	Power Plant Inlet	Ranch House Slough	2 miles up lake	5
77	Power Plant Inlet	Twin Points	3 miles down and across	25
87	Power Plant Outlet	Ranch House Slough	2 miles up lake	36
88	Power Plant Outlet	Fleming Slough	$\frac{1}{2}$ mile up lake	17
181	Fleming Slough	Darter Springs Slough	$\frac{1}{2}$ mile down lake	13
222	Fleming Slough	Across lake from power plant	$\frac{1}{2}$ mile across lake	99
226	Fleming slough	Near Bud Cross Boat Dock	4 miles up lake	Caught same day
275	Sandy Beach Island	Pelican Island	$3/4$ mile down lake	17