FISHING PRESSURE AND SUCCESS IN AREAS OF FLOODED STANDING TIMBER IN BULL SHOALS RESERVOIR, MISSOURI*

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ABSTRACT

In April, 1958, creel censuses on the White River Arm of Bull Shoals Reservoir, Missouri, were altered to permit separate tabulations of data from anglers who fished exclusively in three areas of flooded standing timber. The combined acreage of the timbered areas is 6.3 acres, or 0.26 per cent of the entire creel census area (2,380 acres). During 1959, nearly 15 per cent of all anglers counted were timber fishermen. Fishing pressure in that year amounted to 5,138 hours per acre in timbered areas, as compared to 97 hours per acre in the remainder of the census area. The hook-and-line harvest in timbered areas was 3,054 pounds per acre, and in the remainder of the area was about 113 pounds per acre. In 29 months, 821 timber fishermen were interviewed, of whom 94.8 per cent were successful. Their rate of catch amounted to 1.25 fish per hour. At the same time, 1,580 anglers who "still" fished in open water (the most nearly comparable group of anglers) were interviewed, of whom 90.6 per cent were successful. Their rate of catch was 1.36 fish per hour. Timber anglers caught fewer kinds of fish than other anglers. In comparison with anglers "still" fishing from boats in open water, they caught the same percentage of crappie, more bluegill and largemouth bass, but fewer channel catfish and white bass.

INTRODUCTION

There has been much discussion about the degree to which reservoir basins should be cleared of timber before they are flooded. Some of the factors considered include cost of clearing, the effects of clearing on fish production, fishing, and other recreational uses, and upon abundance of mosquitoes and other insects including those which damage timber.

Although the results of many creel census studies on large impoundments have been published, there are few, if any, published data regarding the fishery of areas of flooded standing timber. Therefore, this study was undertaken to measure fishing pressure and to evaluate the quality of fishing in such areas.

LOCATION AND METHODS

Bull Shoals Dam located on the White River near Mountain Home, Arkansas, creates a 45,440 acre impoundment of which 9,900 acres lie in Missouri. Of the many coves and arms in Missouri, the White River Arm is largest.

A 2,380 acre census area used in this study is located on the White River Arm between Mincy Creek and Beaver Creek and is about 12 miles long. The three areas of emergent flooded timber in which the special census was made were from 430 to 3,200 feet long and 50 to 60 feet wide. Their combined areas amounted to 6.3 acres or 0.26 per cent of the entire census area.

The general creel census was conducted from 1953 through 1960 (Kathrein 1953) and the census of timber fishermen was conducted from April 1, 1958 to December 31, 1960. The census was operated regularly except for a few interruptions caused by changes in personnel and the illness of a clerk. Some anglers limited part of their fishing trips exclusively to timbered areas. Others fished the edges of the timbered areas in passing, or spent part of their time "still" fishing in these areas. Since the timber creel census data presented here include only trips that were limited strictly to these areas, the measure of fishing prssure as expressed in hours per acre and the harvest of fish in pounds per acre is quite conservative.

* This project was financed by Federal Aid to Fish Restoration funds under Project No. F-1-R Missouri.

To facilitate evaluation of the quality of fishing in timbered areas, comparisons are made between creel census data obtained from anglers who "still" fished from boats in timbered areas exclusively (timber fishing) and anglers who "still" fished from boats in open water (open water fishing), the most nearly comparable type of fishing. Other methods, including casting and trotlining, were used both in the timber and in open water, but only "still" fishing with live bait was used consistently enough to provide reliable information.

RESULTS

The percentage of all anglers counted each month who fished in timbered areas varied from 6.3 to 30.1; in a period of 13 months for which complete data are available, an average of 14.3 per cent of all anglers were timber fishermen. Since only 0.26 per cent of the area is timbered, the preference of anglers for these spots is clearly shown.

In 1959, it was estimated that 7,060 anglers fished for 30,358 hours in the 6.3 acre timbered area, a fishing pressure of 5,138 hours per acre. Their catch amounted to 19,238 pounds or 3,054 pounds per acre. By comparison, fishing pressure on the remaining 1,983.7 acres of the census area amounted to 97.0 hours per acre with a harvest of 113.5 pounds per acre for a total of 220,060 pounds.

In a period of 29 months, creel census clerks interviewed 6,396 anglers of whom 821 had fished exclusively in timbered areas, and 1,580 who had "still" fished in open water. During this time, the average fishing trip for both timber anglers and those "still" fishing in open water was 5.1 hours. The percentage of successful anglers was higher for timber fishermen (94.8 per cent) than for open water anglers (90.6 per cent)or the remaining anglers including those using trotlines, artificial lures, or fishing from the bank by various methods (83.2 per cent). The rate of catch was higher for open water anglers (1.36 fish per hour) than for timber fishermen (1.25 fish per hour) or all other anglers (0.67 fish per hour). If trotline fishermen are excluded from the latter group to obtain more nearly comparable results, the rate of catch rises from 0.67 to 0.91 fish per hour. Fishing success was best in winter and spring and poorest in the fall for both timber anglers and open water anglers.

Percentage composition of the creel by species for both timber anglers and open water anglers was as follows: crappie, 63.2 and 63.5; bluegill, 28.8 and 18.8; largemouth bass, 3.4 and 2.4; white bass, 2.6 and 9.6, channel catfish, 0.6 and 0.9; others, 1.4 and 4.9. Crappie, bluegill, and carp taken in timber averaged slightly larger than those taken in open water, but white bass and channel catfish taken in timber averaged smaller. As would be expected, the general census showed that largemouth bass taken on artificial lures and catfish (both channel and flathead) taken on trotlines were considerably larger than those taken by "still" fishermen. Timber anglers creeled 12 species of fish, 17 species were taken by open water anglers, and 20 species were present in the total creel. However, the eight species not represented in the timber creel were of little significance numerically in the total harvest. These included bullheads, drum, suckers, rock bass, trout, warmouth, eel, and gar.

DISCUSSION

There are several reasons why a substantial proportion of anglers on Bull Shoals Reservoir prefer to fish in areas of flooded standing timber. They have a place to tie their boats, relax in one spot and fish the easy way. Problems with wind, water skiers, and speed boaters are reduced to a minimum. Fishing success is good in terms of catch per hour, and a high percentage of anglers are successful. Even though the catch is predominantly crappie and bluegill, there is a chance of catching any species that is important in the creel.

Although we knew that anglers made considerable use of timbered areas, we were surprised to find that fishing pressure was so high. Anglers who fished exclusively in timber exerted a pressure of 5,138 hours per acre. If the fishing time of those who fished only part-time in timber were added, it is quite reasonable to believe that total pressure could have amounted to half again as much. The calculated harvest of 3,054 pounds per acre probably is correspondingly low. The fact that

this tremendous harvest was accompanied by an average rate of catch of 1.25 fish per hour indicates that there was continuous, rapid recruitment of fish from areas outside the stands of timber.

In Missouri impoundments, the pattern of clearing varies from complete removal of timber (Clearwater Reservoir) to removal of only 5 to 10 per cent of the timber (Table Rock Reservoir). Since the situation in Bull Shoals is unique, we would not expect comparable fishing pressure or harvest of fish per acre in timbered areas of other reservoirs. In Table Rock Reservoir, for example, with 90 to 95 per cent of the timber left standing, these values doubtless would be much lower.

This study, while answering several questions, leaves several others in the realm of speculation. It would be interesting to know more about basic food production in flooded timber, the composition and size of the forage fish population, and the degree to which adult fishes are attracted to timbered areas simply because of the cover found there, to name only a few.

In conclusion, since timbered areas are popular fishing places (for good reason) and clearing large areas is expensive, the current practice of leaving much of the timber in new lake basins seems to be quite reasonable. However, standing timber is so thick in Table Rock Reservoir that it is extremely difficult to reach the upper end of some coves in a boat. Access to these areas could be improved greatly by cutting a strip of trees up the middle of each cove.

ACKNOWLEDGMENTS

The author wishes to thank P. G. Barnickol for assistance in planning this study, Hugh F. Clifford and James P. Fry for help in analyzing creel census data, Clarence W. Pumphrey and Onis V. Robbins for collecting creel census data, John L. Funk and other members of the staff for aid in preparation of this report.

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OBSERVATIONS ON THE CULTURE OF FLATHEAD CATFISH (Pylodictis olivaris) FRY AND FINGERLINGS IN TROUGHS

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ABSTRACT

Flathead catfish fry were reared to fingerling size in troughs by starting them to feed on shrimp, and marine fish. Other foods that were subsequently eaten by fry and fingerlings included beef liver, spleen, egg-yolk, cheese, canned dog food, canned salmon, and some dry cereal feed. The food was prepared by placing the meats in a blende, adding a small amount of water, and stirring until the food was "creamy" in texture. After approximately three weeks, the fish had increased in size so that they could consume the food passed through a food chopper.

No feeding was attempted until the yolk sac had been absorbed and the fish exhibited feeding behavior. After two or three days, if not fed, the fry will not feed even though food is offered.

The food was placed (with a pipette or by rubbing between fingers) in the water above the fish. Since the fish lost interest in the food as soon as it reached the bottom of the trough, that amount of food that could be consumed before it fell to the bottom and lost was considered the optimum portion. Initially, these fish were fed frequently during the daylight hours; but after about three weeks, the number of feedings was decreased to four daily.

Initial mortalities from non-feeding individuals were estimated to be less than 10 percent, while the total observed mortality up to 110 days