

usually six or seven returning fishermen on Dewey from May through the rest of the season. On Herrington, May and August were the months the first-timers came in greatest numbers, five and eight fishermen respectively. September and October were the months most returned. On Dale Hollow, 27 made their first trip in April, and May had only 11; the number of returnees ranged from 9 to 12 from July through September, and October had the highest number, with 17 repeaters.

#### HOW MANY TIMES DID THE REPEATERS FISH?

It has already been stated that there were 2,042 persons who purchased more than one 10-day license in the same county, and in a few instances, some of them bought as many as 3 to 6 licenses instead of the more economical seasonal license. Those out-of-staters who were so kind to the state with their excessive purchases seemed to scatter their trips throughout the fishing season. In the 17 counties which contain the five lakes under consideration and where there were 1,731 repeaters, there were 164 three-trippers, 26 four-trippers, 2 five-trippers, and 1 six-tripper. One five-tripper made his purchases in April (2), June, July, and October; the other in April, June, August, September, and October. A man from southern Illinois, who made six trips to Kentucky Lake, purchased his licenses in April (2), May, July, October and November.

#### WHAT WERE THE AGES AND SEXES OF THE REPEATERS?

Figure 5 is a histogram showing the age distribution of the more than 1,700 repeaters for the five lakes. If one were to take these figures as being representative of the fishing public, he could say that fishing is engaged in by all age groups from 16 to 80; and those younger than 16 fish, too, but they are not required to purchase a license. People in the prime of life (35 to 45 years of age) seem to make up most of the fishermen population. The sex of the repeaters was also determined, and for every six men who fished, there was one fisherwoman.

#### DO HUSBANDS AND WIVES FISH TOGETHER?

In tabulating the age and sex of the repeaters, it was fairly easy at the same time to ascertain when a man and woman were husband and wife by the facts that they purchased consecutive licenses, lived under the same roof, were near the same age, and had the same last name. In such instances, they were recorded as a fishing team. For the five lakes, there were 163 such teams. Kentucky Lake had 119 teams; Lake Cumberland, 39; and Dale Hollow, 5.

#### CONCLUSION

People do like to fish in Kentucky. Take the case of the man from Alabama who fished in Kentucky Lake in the spring and then moved to Indiana near Lake Michigan and then left that Great Lake's state to make two trips back to Kentucky in the fall. Also, there is the case of the fisherman from New Mexico who came to Kentucky waters in April and then moved to Georgia, but by July, he was back in Kentucky again after the limit.

## TWO NEW FISHERY RESEARCH PROGRAMS IN THE SOUTHEASTERN UNITED STATES

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#### ABSTRACT OF PAPER

Appropriations for the Bureau of Sport Fisheries and Wildlife, beginning July 1, 1961, include two items of interest to southeastern fishery managers and administrators. One is the sum of \$85,000 for research or reservoir fish productivity in the White River Interstate Reservoir Complex in northern Arkansas and southern Missouri. The other is the sum of \$105,000 for studies of methods of eliminating undesirable fish from streams and lakes in the southeastern United States.

Three reservoirs proposed for the first study are Beaver, Bull Shoals, and Norfolk. A contract is being negotiated with the University of Arkansas for certain pre-impoundment studies on Beaver Reservoir. Headquarters of the project are expected to be at Fayetteville because of the obvious advantages of the University library facilities and faculty consultation. A mobile laboratory will serve as field work headquarters.

The second program on fish control problems may be headquartered at the Warm Springs, Georgia, National Fish Hatchery. Studies will be coordinated with similar work already beginning on cold and cool water springs at the LaCrosse, Wisconsin, fish control laboratory. Both centers will work on the possibilities of employing electricity, chemicals, sound, and mechanical methods to control unwanted fish species.

## DETERMINATION OF FISHING PRESSURE FROM FISHERMEN OR PARTY COUNTS WITH A DISCUSSION OF SAMPLING PROBLEMS

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### INTRODUCTION

One of the basic and often most difficult aspects of creel surveys on large reservoirs and other large bodies of water is the problem of determining fishing pressure. Often the only feasible method of determining fishing pressure is by making counts of fishermen or fishing parties while the fishermen are in the process of fishing. The purpose of this report is to review this method of determining fishing pressure and to discuss the sampling problems involved.

Many workers have used variations of this method of determining fishing pressure. I am not aware who was the first to use the method. Among the earliest to use it were Eschmeyer (1942) and Tarzwell and Miller (1943) in their work on TVA lakes. Other example of the use of the method are Tait (1953), Kathrein (1953), DiCostanzo (1956a and 1956b), Moyle and Franklin (1957), Neuhold and Lu (1957), and Freeman and Huish (undated). Also the method is discussed in the papers of Carlander, DiCostanzo and Jessen (1958), Carlander (1956), Jessen (1956) and Robson (1960 and undated). Some of the terminology in the papers cited above is different than presented here, as well as their method of analyses and/or how the data should be interpreted, nevertheless basically the method is the same as presented here.

As part of an assignment from the 1960 Reservoir Committee, Southern Division of the American Fisheries Society, I have attempted to review creel survey methods being used in the southeast and in other sections of the country which would have general applications on large reservoirs. Because of the importance of the problem of determining fishing pressure from fishermen or party counts, I have attempted to review the method in detail, resulting in this report. I am indebted to the following members (and their associates) of the 1960 Reservoir Committee for their assistance, suggestions, criticisms and for providing material: C. E. Ruhr, chairman; Gordon Hall, Charles J. Chance, Barry O. Freeman, Clarence White, Bernard Carter, Samuel Jackson, Marion Toole, Albert Sanderson, Raymond Martin, Robert Martin, Buford Tatum, Robert Stevens, Leon Kirkland, Edward Heinen, Don Pfitzer and the late Nat Bowman. I am also indebted to Dr. Vincent Schultz, Atomic Energy Commission, Washington, D. C., and C. E. Lane, U. S. Fish and Wild Life Service, Atlanta, Georgia, for their criticisms and suggestions on an earlier draft of the manuscript. All of the above mentioned persons have contributed much to this paper; however, inasmuch as I have not always chosen to take their sound advice, the responsibility for any errors rests solely with me. Some of the literature, research and collection of data for this report was undertaken while I was working on Louisiana Federal Aid in Fish Restoration, Project F-1-R. I would like to acknowledge the contribution of data, time, etc., made