

THE DETERMINATION OF THE AGE OF FISHES FROM SCALE CHARACTERISTICS

FRANK SMITH, UNIVERSITY OF ILLINOIS

Most people will be interested in the statement that many of our common kinds of fish carry about with them a record of the number of winters which they may have passed, and that the record is accessible to anyone who is familiar with the code, and who will take scales from a suitable place on the body of the fish and examine them with a microscope of rather low power. There is much difference in the ease and certainty with which such records can be deciphered, but among some groups, including sunfishes, black bass, and allied kinds, age determination is accomplished quite easily.

The presence of "winter marks" or annuli on scales of certain kinds of fish has been known for many years to specialists, and there is already an extensive literature dealing with age determination of marine and freshwater fishes of Europe, and a few papers have appeared dealing with age studies of certain marine fishes of North America. Last year four papers from the University of Toronto dealt with rates of growth of Lake Erie fishes, including ciscoes, wall-eyed pike, yellow perch, and whitefish; and within the past few weeks a paper has been published by the Bureau of Fisheries at Washington which contains the results of similar studies on the orange-spotted sunfish which is a small form, common in Illinois and in various parts of the Mississippi Valley. This last paper is sold by the Superintendent of Documents, Washington, D. C., and is designated as: Bureau of Fisheries Document No. 938. It contains illustrations showing the appearance of scales and the annuli or winter marks when examined with the microscope.

It seems almost surprising that so little attention has been given thus far to such studies on fishes of the Mississippi Valley and of Illinois, but a beginning has been made and much greater interest doubtless will be evident in the near future. An extensive series of studies on Michigan fishes by zoologists of the University of Michigan is now in progress, and a beginning has been

made at the University of Illinois on certain Illinois fishes.

Information that is not only interesting but that may be quite important becomes available when one can learn readily the age of fishes collected in various kinds of habitats. Two year old yellow perch from a small lake in northern Michigan are only two-thirds as long as perch of the same age from Lake Erie, and a five year old perch from the former lake may be scarcely as large as a three year old one from the Great Lakes. A law fixing the same minimum size of perch that may be taken from the two kinds of situations cannot be equally well adapted to both. A decision concerning the planting of young fish of any particular kind into a certain body of water might reasonably be greatly influenced by a knowledge of the rate of growth of that kind of fish in such a body of water.

Scale studies also permit a fairly close approximation to the size which any individual fish had attained at the times when its various winter marks were formed.