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A PROPOSAL FOR THE CO-ORDINATION OF AGE-READING TECHNIQUES

by

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The importance of reliable age-determination data to many aspects of fisheries research hardly needs emphasis. In the ICNAF area, with its many separate or partially separate stocks of cod, the problems of reliability and co-ordination of age-reading criteria and techniques between observers of different countries are especially acute. The rapidly growing volume of age-composition data now becoming available for the ICNAF area, in itself a most valuable advance, nevertheless brings in its train the need for a greater degree of reliability and co-ordination than is yet available, as instanced by the discrepancies in age-length keys published in the Sampling Yearbook and the lack of agreement brought to light by the otolith exchange programme.

Much of the difficulty arises from the fact that otolith reading has hitherto been essentially subjective. It has relied heavily on personal judgement, with little opportunity for the readers generally to compare critically their standards and interpretation, and with no systematic way of recording their conclusions for future reference. The ICNAF otolith exchange programme has been of help in establishing the degree of agreement (or lack of it) between readers, but leaves unresolved the cause of disagreement (e.g. whether it concerns the interpretation of the central structures, or the distinction between true annual rings and splits or check rings, or in the formation of the edge, and so forth). So long as otoliths have to be viewed under a microscope this can only be done by readers sitting down together and comparing the same otolith, perhaps with the help of sketches. The two Age-reading Workshops organised by ICNAF, in Biarritz in 1956 and in Bergen last November, have provided just this opportunity and were certainly of great value. Yet it is clear that such meetings can only be held at rare intervals, and on neither of the two occasions did it prove possible to bring together by any means all those who actually do the age-readings in the various countries. This would matter less if the findings and conclusions of such workshops could be recorded in detail and distributed so that those not present could benefit accordingly, but this has not hitherto been possible.

It seems that what is wanted, essentially, is a quick and standard method of producing annotated photographs of otoliths of a quality suitable for age-reading. This would enable an age-reader to demonstrate exactly how he would interpret a particular otolith and for his conclusions to be accepted or challenged by others, knowing precisely what it is they are looking at and referring to. With the help of progress made at the Bergen Workshop it now seems that a satisfactory photographic technique is available. Hitherto, conventional black and white photographs have proved a poor substitute for direct vision, but the Report of the Bergen Workshop (Doc. No. 3) praises the quality of black and white transparancies demonstrated by Dr. J. Messtorff of Hamburg. A similar technique but using colour transparencies and prints from them has been developed at Lowestoft and is described, with illustrations, by Mr. R.W. Blacker in Doc. No. 33.

It is also necessary that otoliths should be prepared and illuminated in a standard way; a satisfactory grinding method giving a true surface for viewing was demonstrated at Bergen by Mr. B.C. Bedford and is described in Doc. No. 32 together with a simple device for obtaining suitable illumination. Finally, a standard terminology for describing the structure of characteristics of otoliths is required; such a terminology has been prepared by Dr. A.C. Jensen of Woods Hole and its adoption as an international terminology is recommended by the Bergen Workshop (see Appendix to Bergen Report).

It is therefore proposed that the future co-ordination of age-reading techniques might take the form of exchange among all ICNAF countries of sets of otolith photographs (both prints and, if need be, transparencies) suitably marked and annotated by the originator to show his detailed interpretation. The otoliths thus photographed could with advantage be selected in the first instance from among those which have already comprised the otolith exchange programme, although emphasis would be given to selecting only those otoliths which best illustrate the special features of each stock or which have caused the most disagreement. Probably it would be best to start with those stocks whose otoliths are the easiest to read, and as experience is gained of organising and collating this kind of exchange, to move on to those stocks whose otoliths present more difficulties.

Eventually, as andwhen a satisfactory measure of agreement is reached between countries on the interpretation of the otoliths of each stock, a selected set of annotated photographs illustrating the characteristics of the otoliths of that stock (e.g. nucleus, annual and split rings, spawning zones, etc.) might be included in an ICNAF otolith-reading manual for permanent reference and use by age-readers. Such a manual, as well as providing an effective means of co-ordinating and standardising routine otolith-reading internationally, is also likely to be invaluable for training age-readers within laboratories. It could also serve as a convenient reference against which new evidence on validation of age-reading could be assessed, and would indeed have to be kept up to date and perhaps revised from time to time as knowledge of this kind advances.

Meanwhile, what seems to be important is to find a means of bringing the age-readers themselves into closer touch with each other, to give them a "language" with which they can communicate and a tangible objective to aim at. It is suggested that the exchange of annotated otolith photographs, energetically and critically pursued, could go a long way towards achieving this, whether or not the compilation of an international otolith manual proves feasible as an end-product.

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