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International Council for the  
Exploration of the Sea

C.M. 1983/G:2  
Demersal Fish Committee

REPORT OF THE REDFISH (S. mentella, S. marinus) AGEING WORKSHOP

Bremerhaven, 14-18 February 1983

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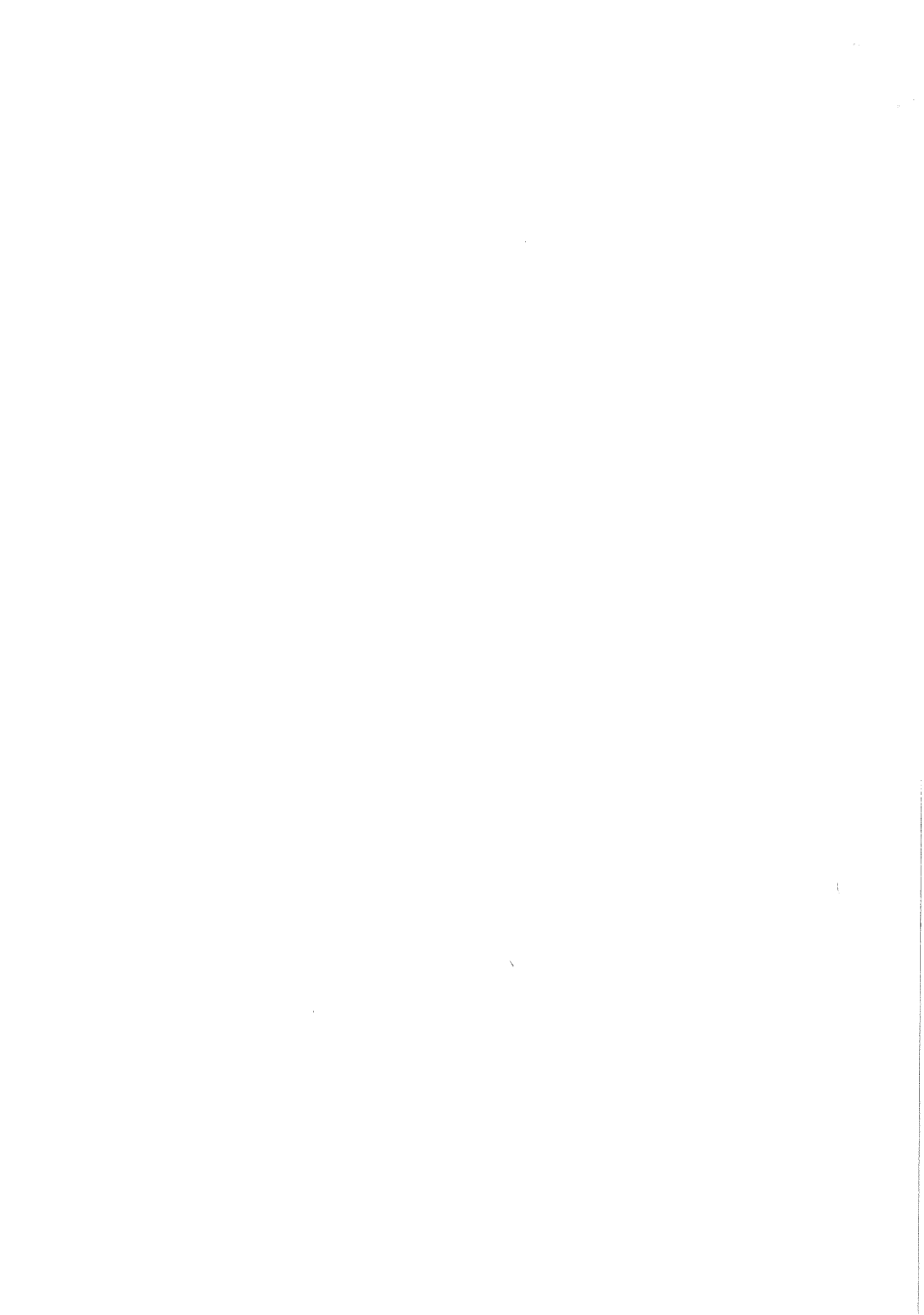
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REPORT OF THE REDFISH (*S. mentella*, *S. marinus*) AGEING WORKSHOP

As recommended by ICES (C.Res.1982/2:23), a Workshop to consider Ageing in Redfish was convened by Dr K Kosswig at the Institut für Seefischerei in Bremerhaven, Federal Republic of Germany, from 14-18 February, 1983.

Participants

Ms H Ferdinand	Denmark
Mr T I Halland	Norway
Mr J Hunt	Canada
Mr J Møller Jensen	Denmark
Dr J Kosswig (Chairman)	Federal Republic of Germany
Ms J V Magnusson	Iceland
Dr J Magnusson	Iceland
Dr P Rubec	Canada.

Participants agreed that the functions of the Workshop would be to

- 1) develop experience in the preparation and staining of redfish scales;
- 2) examine and estimate age of selected scale samples;
- 3) compare and discuss results of readings, and
- 4) make recommendations for further work.

Results

The current technique for scale staining is similar to that described in NAFO SCR. Doc. 80/VI/91 with some modifications. Scales are washed in a 3-5% KOH solution for 20-30 minutes, thoroughly rinsed in tap water, distilled water and allowed to air dry. They are then transferred to vials, after individual separation and impregnation with an 0.5-1.0% AgNO<sub>3</sub> solution in darkness for a period of 4-36 hours, depending on number and size of scales. The stained scales are covered with a small amount of glycerine and separated individually on a 10 x 10 cm Plexiglass slide. Development of the stain is accomplished by exposure to a 1000 W light source at ~30 cm for 20-60 seconds with a glass plate between the light and sample to avoid excessive heat reaction by the scales.

The stained scales are examined at 20-50X in polarized light with a stereo microscope and it is essential that the scales be rotated in the light source during examination to optimize the effect of polarization. A number of scales are examined and one giving the best visual image selected for counting stained zones assessed to be annuli. The age thus estimated is verified by comparison with one or two additional scales in the sample. Stained scales remain readable for up to 24 hours after which they must be discarded.

Approximately 100 prepared scale samples from various locations and sizes were examined by participants and ages estimated.

Discussion

Participants agreed that the staining technique for scales provided very good results and specimens were relatively easy to interpret. However, the viewing technique requires some practice and resolution of early growth, split zones, checks and compression of annuli at the periphery continue to cause problems for age readers. A significant

proportion of scales in a sample are rejected (25-50% due to regeneration, inadequate staining, poor center, etc.). Up to 30% of samples may be rejected because of inconsistency in estimated age between scales.

Comparison of estimated ages between participants showed poor initial agreement although the trend in ages was consistent and agreement improved with experience. Disagreement was assessed to be primarily a result of lack of experience with the technique, but resolution of checks, splits and early growth were also assessed to be significant factors. The last sample of scales examined (10) showed considerable improvement in group agreement. Ages ranged from 8-25 years and assigned ages were within 1 year in most cases. This improvement was assessed to be the result of learning experience and the quality of scales examined.

#### Recommendations

Participants agreed that development of experience in the estimation of age from stained scales was the most important factor in improving between reader agreement. Exchange of scale samples should be initiated as soon as possible.

Validation of ages from scales should be considered and participants suggest that scale/otolith comparisons, tagging studies and other information would be of considerable benefit for improving the reliability of redfish ageing. It is anticipated that these studies will be started in the near future.