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Bibliography of age validation studies with comments on ageing problems for stocks of commercial importance in ICNAF Subareas 2-4

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Other fish species

There are no known Canadian age validation studies for the following fish species of commercial importance in Subareas 2-4: White hake, Roundnose grenadier, Winter flounder, Argentine, Mackerel, Capelin, Salmon, Dogfish, Skates.

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Lobsters - none

Squids - none

Shrimps - none

Comments on Ageing Problems

Cod

ICNAF conducted a cod otolith exchange program during the 1960's. The results are published in various ICNAF documents. Judging

from the results of this otolith exchange and from the use of various age-length keys from different countries in the assessment of various stocks in Subareas 2 and 3, no serious problems in age determination in cod can be identified at present. Age-length keys from various countries generally produce comparable results with one or two exceptions.

Haddock

Haddock ageing has been studied in detail and there are currently no identifiable problems, although ageing by one or two countries has been inconsistent on occasion. Since haddock stocks in Subarea 3 are at such a low level, very few otoliths and scales are now collected from the commercial fishery.

Redfish

Age determination of redfish remains a fundamental difficulty. Validation studies of ages determined from otoliths have shown that redfish grow very slowly and that during their first 10 years of life one and only one annulus is laid down. After the age of about 10 years redfish otoliths (and scales) become increasingly difficult to read; it is possible to obtain age estimates but these have not been adequately validated. Age determinations by different investigators from the same material and using the same method often yield considerable differences. This has been dramatically demonstrated in ICNAF otolith exchanges.

Canadian and U.S. biologists have traditionally used otoliths for redfish age determination and USSR biologists rely almost entirely on scales. Close agreement between growth curves for the Gulf of Maine (Kelly and Wolf, 1959) and Hermitage Bay (Sandeman, 1969) probably reflect a real agreement with regard to the basic method of age determination. There is a considerable lack of agreement between the growth curves of Sandeman (1969), who used otoliths, and some USSR workers, who used scales, which has been attributed mainly to a difference in the basic method of age determination.

West German workers have recently developed a method of redfish age determination from scales, which basically involves observation

of impregnated scales under polarized light. Reportedly the peripheral growth zones on the redfish scales are rendered clearly visible with polarized light. This method appears promising; Canadian biologists are planning comparative studies of this method with the traditional method of age determination from otoliths.

Previous ICNAF otolith exchanges have apparently done little to resolve basic disagreements in age determination of redfish. However, further direct consultation might be profitable, particularly comparisons of age determinations from otoliths and those obtained from impregnated scales viewed with polarized light.

American Plaice and Yellowtail

Plaice and yellowtail have been adequately studied, although an apparent change in length at age for Scotian Shelf yellowtail in recent years requires further study. Preliminary analysis indicates that this is not due to a change in ageing techniques.

Witch and Greenland Halibut

We are fairly confident of our interpretation of witch and Greenland halibut. However, we feel that some exchange of data with other researchers in Divisions 2J and 3K might be useful.

Herring

Age determinations for herring seem to be satisfactory, although separation of spring and fall spawners in some areas and seasons is not fully resolved.

Mackerel and Capelin

We have age reading programs for mackerel and capelin. Capelin age determination presents no problems. Comparison of results from our mackerel age determinations and those from other countries indicates satisfactory agreement in year-class correspondence.

Salmon

Problems in age determination for salmon do not seem to be serious.

Cusk and Pollock

Validation is probably satisfactory for current requirements.

Atlantic halibut

More detailed study is required.

Silver hake

No validation studies have been published for Subarea 4 populations. Variation in age data reported to ICNAF strongly suggests that more study is required.

Sand launce

More detailed study is required.

White hake, Roundnose grenadier, Winter flounder, Argentine, Dogfish, Skates, Lobsters, Squids, Shrimps

Age validation studies are required.

Scallops

Validation is probably satisfactory for current requirements.