International Council for the Exploration of the Sea

C.M. 1974/F:10
Demersal Fish (Northern) Committee

Age and Growth of Redfish (Sebastes marinus L.) off Norway during Spring 1974

by

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Introduction

The problems which are raised by the age determination and therefore the stock analysis of the redfish are sufficiently well known. One method worked out by us (KOSSWIG, 1971; 1973) was brought to the knowledge of the international committees at various times. It was pointed out that this method can also be used successfully with other commercial species, especially the slow-growing types. In consideration of the fact, that it does'nt look very promising for the stocks of the very slow-growing redfish (catch in the North Atlantic 1972, 131.000 Tons), we are continuing our stock analysis more intensively. The subject of this paper is the age and growth of the Sebastes marinus L. off the Norwegian Coast.

Material and Methods

The age-determining tests were carried out on the scales. The material was collected off the Norwegian Coast on the research cruise March 1974 of the FFS "Anton Dohrn". In addition samples were taken from catches landed by German trawlers in Bremerhaven. Most of the trawlers fished near Röst. Due to the high rate of regeneration of the scales on all parts of the fish, 30 - 50 scales had to be taken from each fish. The scales were soaked in a 1 % KOH solution for an hour in order to remove the clinging mucus and fragments of skin, and afterwards had to be thoroughly washed and dried. After that they were impregnated for two hours in the dark in a 1 % silver nitrate solution. After this pre-treatment they were put on a glass slide and exposed to rays from a 500 watt lamp for several seconds and then examined under polarised light. For this the stereomicroscope used was fitted with the suitable polarisation filters. From the 880 samples taken, age determination tests could only be carried out on 475 of them, i.e. 54 %. This low percentage is due to the high rate of regeneration of the scales.

In the 475 age determining tests a control was carried out on a second and third non-regenerated scale of the same specimen. The serviceability of the method could be tested on a sample of small redfish (17 - 25 cm, 7 - 9 years old) from the Barents Sea. The correspondence between the age of scales and of otoliths was above average. The scales and otoliths were examined independently, the scales by myself and the otoliths by a qualified assistant.

Results

We are in agreement with the Russian authors that the scales of the redfish are better suited for age determination than the otoliths. The age determination of the otoliths cannot be accurately carried out because of the numerous secondary rings particularly with older specimen. The results of the age determination are set out in the table. The slow rate of growth is here once again demonstrated. Although not all our ranges of length were dealt with by CHEKHOVA in 1971, her and our results in medium lengths in the age group 14 - 20, coincide well when compared:

Age:	14	15	16	17	18	19	20
mean length:							
CHEKHOVA (1971):	36.06	36.97	38.37	38.71	39.72	41.06	41.67
KOSSWIG (1974):	34.57	36.33	37.75	39.64	40.35	41.21	41.45

References

1) CHEKHOVA, V.A., 1971: On the method for the determination of age and grwoth rate in redfish.
ICNAF Res. Doc. 71/90

2) KOSSWIG, K., 1971: Investigations into Age Determination of Redfish (Sebastes marinus L. and S. mentella TRAVIN) by means of polarized light.
ICNAF Res. Doc. 71/127

3) KOSSWIG, K. 1973: Age and Growth of Redfish (Sebastes marinus L. and S. mentella TRAVIN) off SW-Iceland
ICNAF Res. Doc. 73/109.

Age Length Key of Redfish (Sebastes marinus L.)
in the Norwegian Sea during spring 1974

	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	
Age	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Length cm																	n
30	2	1															3
1	1	1	2														5
2		2															2
3	2	2		2													6
4		2		1													3
35		1	8	7													16
6		5	6	13			1										24
7	1	1	3	26	9	2	1										43
8			2	37	5	4	1	2									51
9			1	9	20	13	5	1									49
40			1	1	13	22	12	4	2								55
1				1	9	7	13	3	7	1							41
2						6	14	8	6	2							36
3							1		5	5	5						16
4								1	4	5	2						12
45							1			1	7		1				10
6											2	4	1				7
7											4	4		1			9
8											1	6	2				9
9												5	2	2			9
50													5	4			9
1												1	4	3	1	1	10
2												1		5	1	4	11
3											1			2	4	3	10
4														1	6	5	12
55														1	1	3	5
6																5	5
7															1	4	5
8																1	1
9															1		1
	6	15	23	97	56	54	49	19	24	14	22	21	15	19	15	26	475
Mean Length	32.83	34.57	36.33	37.75	39.64	40.35	41.21	41.45	42.58	43.71	45.91	48.50	49.77	51.71	54.50	55.08	