

ANNUAL MEETING - JUNE 1965Assessment of the Crop of separate year-classes  
of the "Beaked" Redfish*Redbook 1965 (III)*

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The purpose for studying the biology of the young of the "beaked" redfish of the Northwest Atlantic is to obtain the data on the strength of their year-classes and on feasible prospects for their fishery.

The small amount of material available is really inadequate to draw conclusions on this matter, but some regularities of the distribution and size composition of the immature redfish made it possible to estimate the relative size of separate year-classes of this species.

The size composition of the young and small redfish of the local stocks in the northern, southern and Flemish Cap areas were considered according to depth. From the fact that, in the northern areas (ICNAF Div. 3K and 3L) the greatest number of the immature redfish of the northern local stock is distributed in depths of 200 - 300 m and the majority of the immature redfish belonging to the southern stock (3O and 3P) is distributed at 50 - 250 m depths, their size composition is fully justified by the samples collected just in these depths.

The curves plotted in Fig. 1 indicate the composition of the future recruitment. The similarity of these curves in Div. 3K, 3L and 3O, 3P where, as mentioned, two separate local stocks of the redfish are distributed, makes it possible to judge on the reliability of those curves. The peaks of the curves correspond to the abundant year-classes of 1958, 1960, 1961 and 1962. An analysis of the hydrographical conditions during this period showed that these years were relatively warm with the high river discharge (Elizarov, 1963) and, consequently, were characterized by the most favourable conditions for fattening of larva and pelagic young fish.

The variation in intensity of inflow of the Arctic waters of the Labrador current results in an increase or decrease in the size of the area of distribution of relatively warm waters of Atlantic origin (Elizarov, 1962 and 1963). As a result, in warm years when the warm highly productive Atlantic waters are more widely spread, surface layers of the frontal zone are mostly enriched with biogenic elements, and the conditions of fattening of larva and pelagic young fish become more favourable (Izhevsky, 1961; Elizarov, 1963).

The same relationship between the hydrographical regime and the crop of redfish was observed in other areas of the Atlantic. For instance, the strength of year-classes of the redfish also increased near the Icelandic coast during warm years.

However, Elizarov (1961 and 1963) showed that the rise of temperature in the Labrador and Newfoundland areas is usually associated with a fall of temperature in the Icelandic area. Such a difference in regime can be explained by peculiarities in the atmospheric circulation and the intensity of permanent currents in these areas. As a result, the appearance of abundant year-classes of redfish in the Icelandic area is accompanied by a reduction in the strength of their year-classes in the Labrador and Newfoundland areas. Henderson (1964) counted the average number of larvae of redfish in the Icelandic area during April-May:

1955	1956	1957	1958	1959	1960	1961	1962	1963
2.7	1.3	3.1	0.4	4.9	1.1	5.4	5.8	0.45

The results show the 1959, 1961, 1962 year-classes are rich compared with the poor year-classes of 1956, 1958, 1960, 1963. The data obtained by Henderson (1964) in the Icelandic area and Soviet data on the size composition of the immature portion of the stock of beaked redfish in various areas of the Northwest Atlantic have been included in Table 1 characterizing the strength of separate year-classes in these areas.

Table 1 shows that the abundant year-classes appear in these areas during warm years.

Table 1. Assessment of the strength of separate year-classes of the beaked redfish in areas of Iceland, Labrador and Newfoundland.

Year-classes	Icelandic area		Labrador and Newfoundland area	
	Type of regime	Characteristic of year-classes	Type of regime	Characteristic of year-classes
1955	warm	average	moderate	no data
1956	cold	poor	cold	no data
1957	moderate	average	warm	rich x/
1958	cold	poor	warm	rich
1959	warm	rich	cold	poor
1960	cold	poor	<del>poor</del> moderate	average
1961	moderate	rich	<del>rich</del> moderate	average
1962	moderate	rich	<del>rich</del> moderate	average
1963	cold	poor	<del>poor</del> warm	rich

x/ The 1957 year-class is estimated by Hansen (1958) and Templeman (1961) as a rich one.

Since rich year-classes of cod and redfish are produced in the Labrador-Newfoundland area during warm years (Elizarov, 1963), the temperature conditions in this area seem to be a sufficiently suitable regime index, the definite type of which corresponds to the definite degree of abundance of commercial fish year-classes.

The quantitative estimation of their young indicates, to some extent, the abundance of these fish.

Studies of the maturation of redfish show that rich year-classes are recruited to the spawning stock in the northern areas of the Labrador Newfoundland area in 10 years, on Flemish Cap Bank in 7 years and in the southwest area of Grand Newfoundland Bank and Saint Pierre Bank in 6 years.

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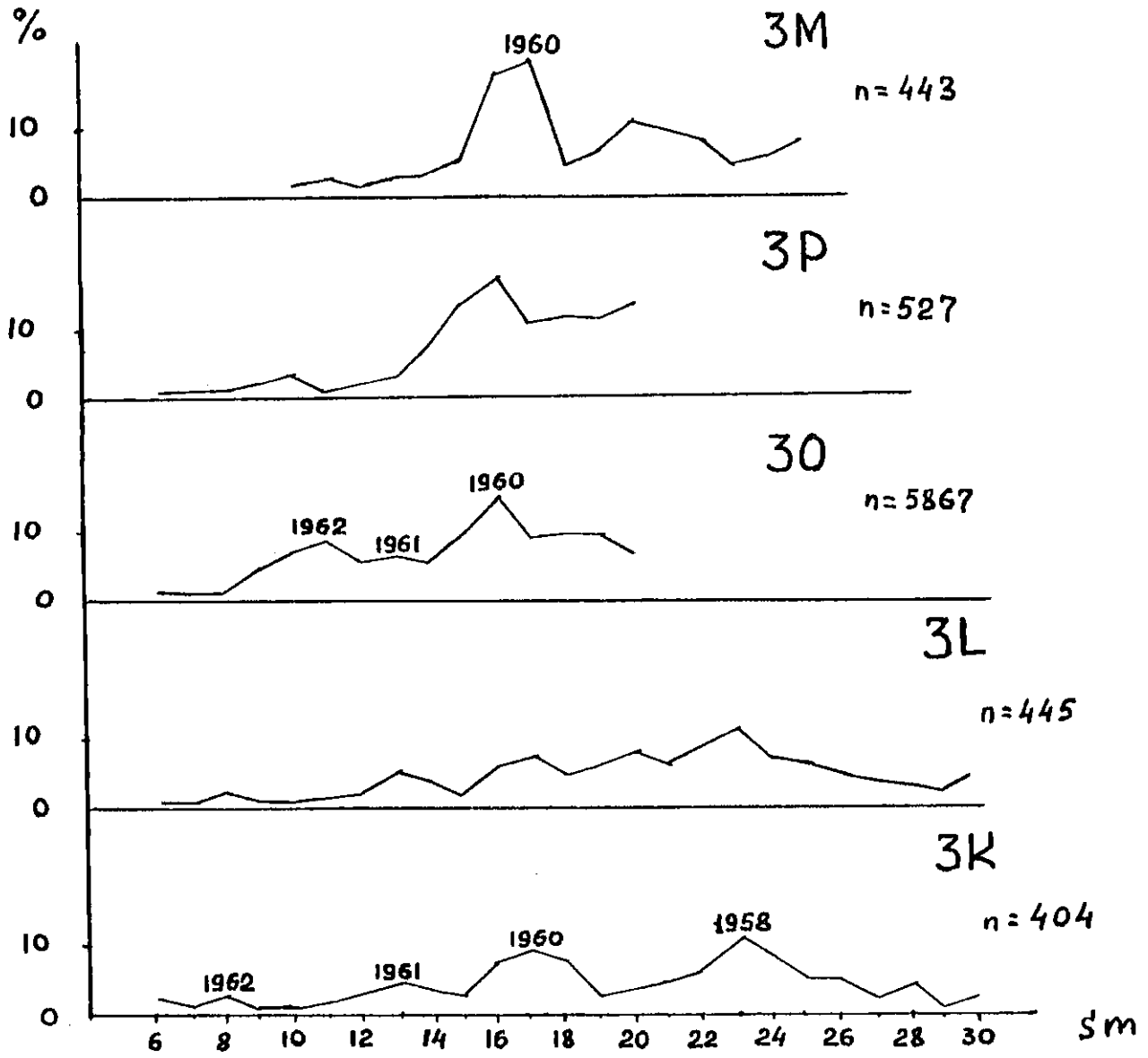


Fig. 1. Percentage size composition of the young of the beaked redfish. January-April, 1964.