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The number of rays in the second dorsal fin and the number of vertebrae
in cod from Labrador, Newfoundland and Nova Scotia

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Observations on the number of rays in the second dorsal fin (D_2) and the number of vertebrae in cod were carried out in the years 1962-1965. Concerning rays there were examined 8,616 fish and in respect of the number of vertebrae, 1,781 fish.

The mean number of rays and vertebrae has been calculated in respect of the sampling locations and of the length of fish. The sampling locations and the mean number of rays are given in Fig. 1, while the number of vertebrae is given in Fig. 2. Curves showing the relation between the number of rays and the age of fish are given in Fig. 3.

The mean number of rays in the dorsal fin (D_2) in cod ranged from 19.19 to 21.20, while the mean number of vertebrae - from 53.91 to 55.34. According to J. Schmidt (1930) the number of rays and the number of vertebrae depend upon the water temperature and salinity. This relation was considered in our investigations.

From the data given in Fig. 1 and Fig. 2 it may be seen that the average number of rays and vertebrae in cod decreases from north toward the south and southwest, the same direction as increase of the temperature of water.

On the other hand, we observe the increase of both the number of rays and the number of vertebrae in the direction from the coast toward the open oceanic waters. We find the number of rays and vertebrae to be higher in cod from South Labrador than it is in cod from the southern edge of the Great Newfoundland Bank and the Nova Scotia Shelf. Also a greater number of rays and vertebrae is found in cod from the more distant waters of Flemish Cap than in cod occurring in coastal waters.

The decrease of the number of rays and vertebrae noted in fish in the direction from the north to the south is not even. For instance, the indices of the number of rays (D_2) are lower in cod from Div.3N, 3O, 3P and 4V than in cod from the more southerly grounds. The decrease of the number of rays in cod from the above divisions seems to be connected with the influence of the waters of lower salinity from the Gulf of St. Lawrence.

Cod from Flemish Cap Bank (Div.3M) is characterized by the greatest number of rays and a great number of vertebrae. These features prove that the cod from this Bank presents a different and rather isolated stock.

It appears that the greatest number of vertebrae does not always correspond to the greatest number of rays in the dorsal fin (D_2). Such discrepancy has been observed in cod caught in Div.3K.

The number of rays of the dorsal fin (D_2) varies according to the length of fish.

In all divisions the 2-year-old cod (1963 year-class) was, in 1965, characterized by greater mean number of rays of the fin (D_2) than 3- to 6-year-old and even older fish. In comparison to 3-year-old fish, the number of rays in 2-year-old individuals was higher by 0.5. The greater number of rays of the dorsal fin (D_2) in 2-year-old cod in various divisions might be, as it seems, caused by a greater than usual passive migration of eggs and larvae of this species from the north toward the south.

(over)

In Div. 3L and 3N there was noted that in older fish the number of rays in the fin (D_2) is smaller than in younger fish.

Reference

Schmidt, J. 1930. Racial investigations, X, The Atlantic Cod (*Gadus callarias* L.) and local races of the same. *Comptes - Rendus des Travaux du Laboratoire Carlsberg*, Vol.18, No.6, Copenhagen.

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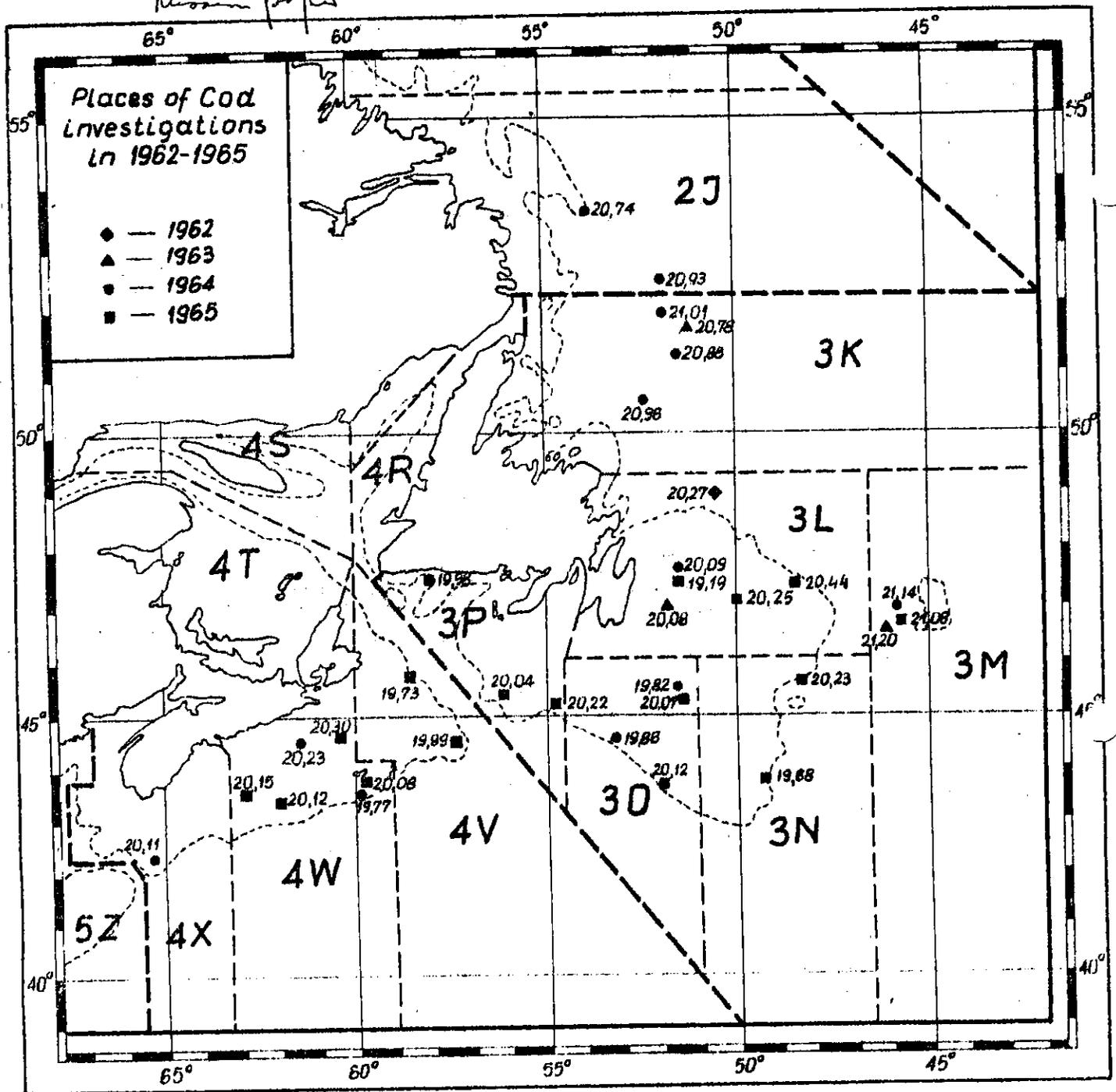


Fig. 1. Mean number of second dorsal fin rays in cod in the years 1962-1965.

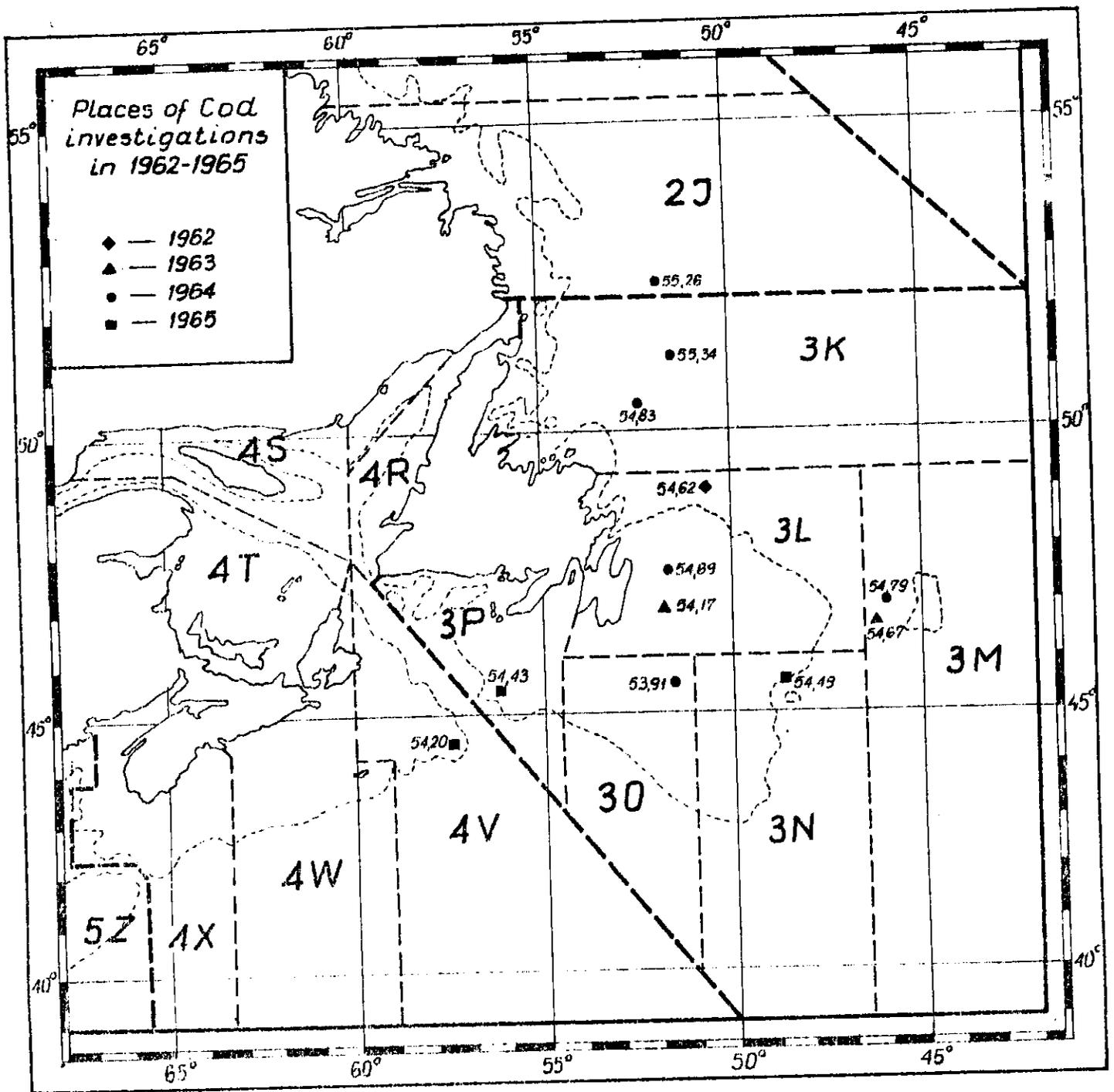


Fig. 2. Mean number of vertebrae in cod in the years 1962-1965.

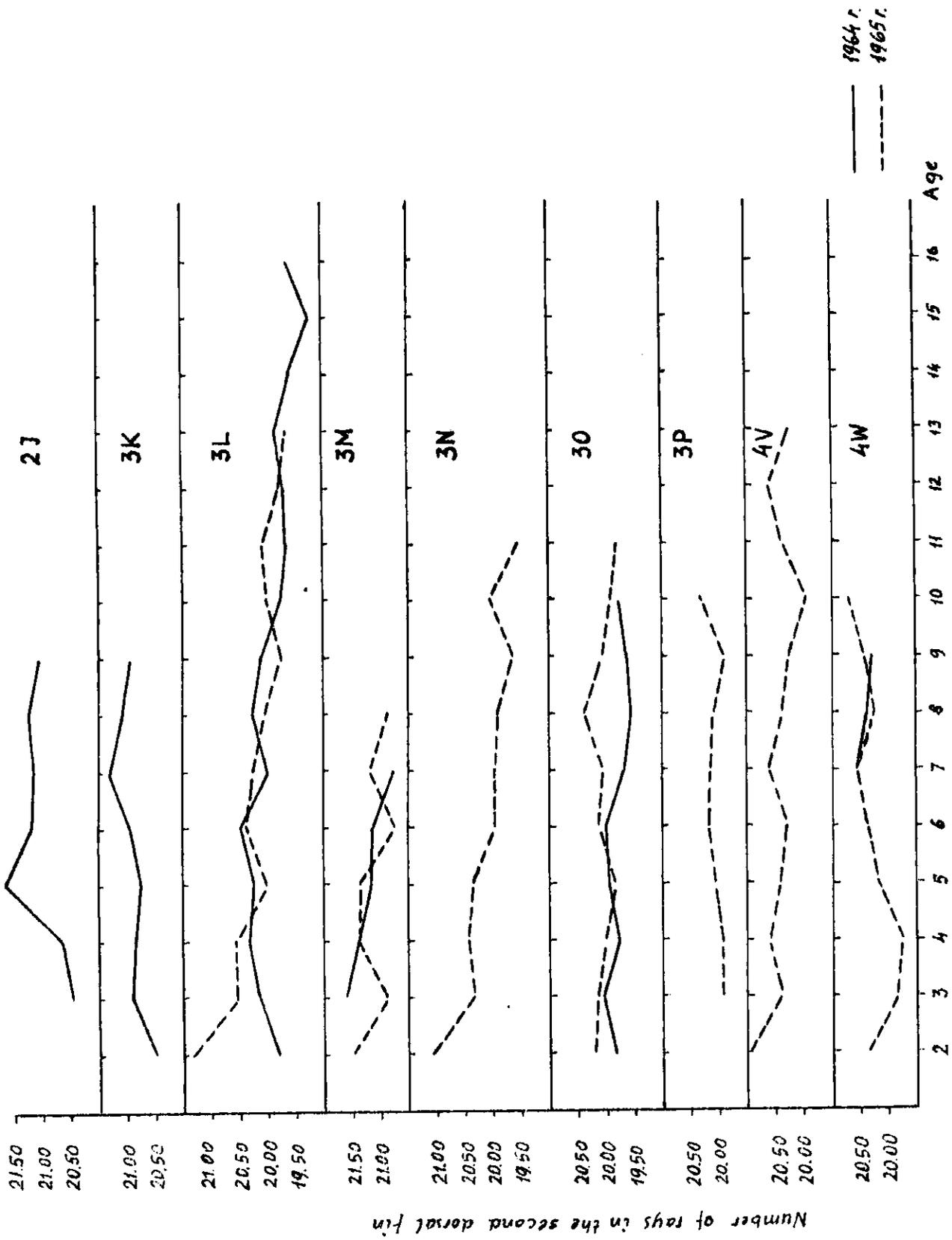


Fig. 3. The curve of the relation between mean number of rays in the second dorsal fin of cod and its length.