International Council for the Exploration of the Sea.
North Sea Committee

A preliminary note on the sole in the Dutch coastal area.

by

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Data on several fish species have been obtained from the fishing experiments which are carried out for the Dutch plaice investigations.For these investigations routine trawling is done at 20 stations,situated along three lines,from Scheveningen westward,from IJmuiden westward and from den Helder west-northwestward,all up to 3°E. As far as weather permits those "lines" are fished four times a year,in January,April,July and October.All hauls last one hour and are made with an especially devised small-meshed light ottertrawl,with 4½ cm meshes in the cod-end.

From the data obtained in this way those concerning the sole have been worked up.Age determinations have been carried out on the samples of July and October 1951 and January 1952. The age has been determined from the otoliths.These proved to be useful for reading up to an age of six years,they could be read more easily than the scales.

Fig.1 gives a picture of the relative strength of the yearclasses in the area covered by our investigations.The soles of the I group(yearclass 1950)will to a large extent have escaped through the meshes of the trawl,but the older age groups will have been representatively caught.It can be seen from the diagram that the yearclass 1947 is very strongly represented in the area.The yearclass 1948 is somewhat weaker,but still much stronger than those of 1949 and 1946.

The statistics of the English and Dutch commercial fisheries suggest that our figures are fairly representative for the stock of soles in the whole Southern North Sea.They show a sudden and considerable rise in the catches in 1949,when the 1947 yearclass has grown to a marketable size.This rise occurred in the smallest market category.After a while the catches of this category dropped again,but now those of the bigger fishes increased (see Ann.Biol.VII,1950,pp.88-91).

Table 1 shows the mean length of the different age groups at April 1st (figures interpolated from the July 1951,October 1951 and January 1952 readings).These figures show a remarkable

agreement with Bückmann's figures of the years 1920-1933 (Bückmann, Ber. d. D. Komm. f. Meeresforschung, NF. VII, 2, 1934). This might suggest that the growth of the sole is but little influenced by variation in the external factors.

Table 1. Mean length of soles of different age.

	Own observations		Bückmann's figures	
Age in years	♂	♀	♂	♀
2	19.8	20.1	19.0	19.0
3	24.5	26.2	24.4	26.0
4	27.6	29.3	27.8	30.0
5	30.2	32.2	30.0	34.0
6	32.1	34.0	32.0	36.4

It is a well-known fact that soles are caught much more during the night than at daytime. In order to study this difference we fished several times for at least 24 hours in succession at the same spot. The results are shown in the figures 2 and 3. Fig. 2 gives the diurnal variation in the numbers caught in summer, when the nights are short, and fig. 3 in winter with long nights. The difference in the catches at day and night appears to be so great that, if we have to draw conclusions on fish density and distribution from a restricted number of stations, we have to take this into account. In our observations we always multiplied the numbers caught in each haul with a correction factor for the time of the day. In this way all hauls, whether done at day or night, became comparable.

The material has also been used for the study of the distribution and migration of the different yearclasses. The investigation has shown that many complications occur and it is not yet possible with the material at hand to draw definite conclusions. This will have to be postponed until further material has been obtained.

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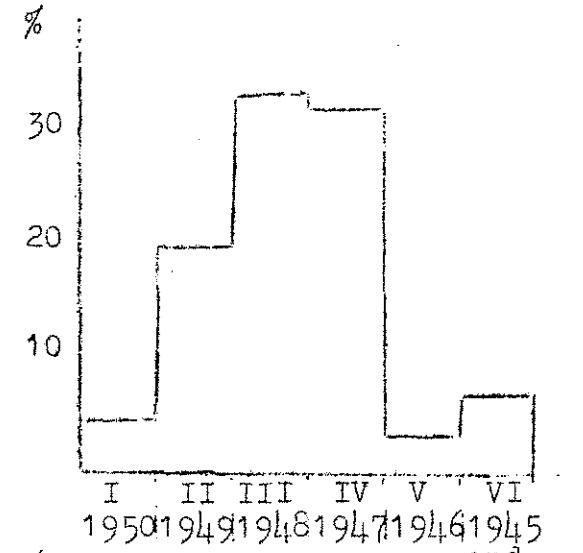

Fig.1. Relative agecomposition of the sole in the Dutch coastal area in 1951.

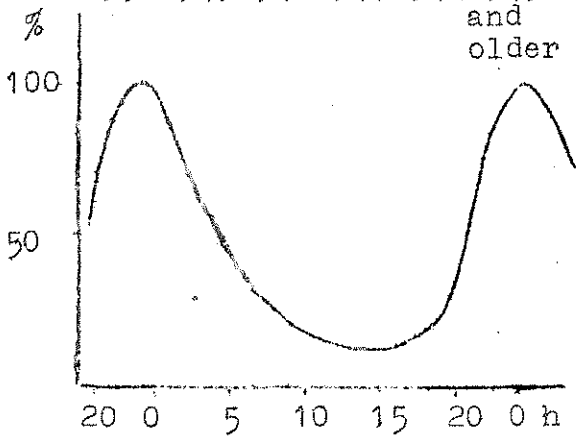

Fig.2. Diurnal variation in the numbers of soles caught, in the months May-July.

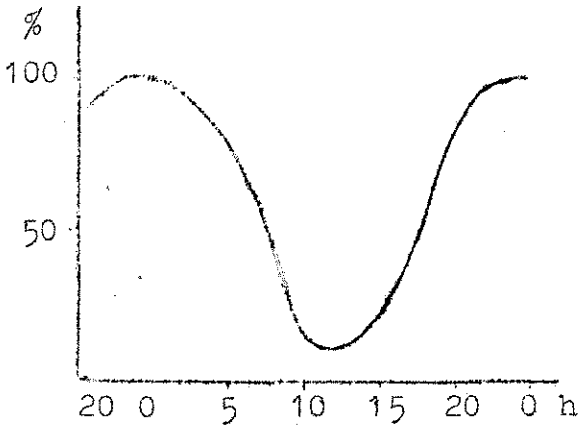

Fig.3. Diurnal variation in the numbers of soles caught, in the months January-February.