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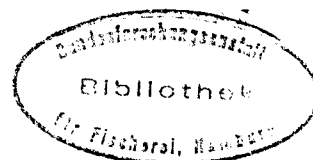
C.M.1974/F:31
Demersal Fish (Northern)
Committee.

A note on the spawning season of soles in the Irish Sea, the
Bristol Channel and the Southern Bight.

by

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INTRODUCTION

The objective of this study was to determine the exact period of spawning of soles in the Irish Sea, the Bristol Channel and the Southern Bight by means of the ovary weight expressed as a percentage of the total weight of female soles during two year cycles.

MATERIAL AND METHODS

The market samples were taken in the period October 1971-September 1973. The weight of the ovary was expressed as a percentage of the total weight (including the ovary).

The samples were grouped in three length-classes, viz. 24-29 cm, 30-34 cm and > 35 cm.

The time of capture has been estimated as follows : for the Irish Sea and the Bristol Channel 8 days before landing and for the Southern Bight 5 days before landing.

The frequency of the maturity per cm-class was also determined for the three areas.

RESULTS AND DISCUSSION

The spawning time of soles is related to the area. For the North Sea it was pointed out (ICES, 1965) that the time of spawning is dependent on the latitude. Spawning first

starts on the Belgian coast (April) and takes place successively with a total difference in time of about 3 1/2 weeks between the most Southern spawning ground (Belgian coast) and the most Northern spawning ground (Danish coast).

This relation with the latitude and consequently with the temperature is further confirmed by the fact that sole spawning in the Bay of Biscay occurs in February-March (Guillou, 1973), this being one to two months earlier than the most Southern part of the North Sea.

The results of the relative weight of the ovary are given in figure 1. From figure 1, a, two conclusions can be drawn :

1. The spawning peak of the oldest soles (>35 cm) in the Bristol Channel is found in the beginning of March, whereas in the Southern Bight and the Irish Sea the spawning peak occurs mid-April.
2. In all areas the spawning of the two smaller sole categories is delayed for a couple of weeks compared to the spawning of the older soles (>35 cm)

The marked difference in spawning period between the Bristol Channel sole stock and the sole stocks of the Irish Sea and the Southern Bight must be due to the temperature of the sea-water. This becomes clear when looking at the mean surface temperature in the three areas as given in the following table (ICES, 1962).

Mean monthly temperature in the Irish Sea, Bristol Channel and Southern Bight for the period 1905-1964.

	JAN.	FEB.	MAR.	APR.	MAY
Irish Sea 1935-1954	5.89	5.20	5.53	7.61	9.01
Bristol Channel 1905-1954	9.99	9.17	8.95	9.64	11.18
Southern Bight 1905-1954	7.26	6.29	6.47	7.65	9.96

From this table it can be seen that the Bristol Channel sole lives at much higher water temperatures before spawning than the two other stocks resulting in an earlier spawning. This confirms the previous findings in the North Sea (ICES, 1965) and in the Bay of Biscay (Guillou, 1973) indicating that the temperature dictates the spawning time.

Finally, the fact that older soles spawns earlier than the younger ones was already noticed for the North Sea (De Veen, 1965) and for the Bay of Biscay (Guillou, 1973).

From the individual data of this study it appears that the first maturity is reached at a length of about 24 cm in the 3 areas (figure 1, b). At a length of 30-31 cm all soles are mature but due to the differences in growth rate according to the area (De Clerck, 1973) this occurs at an age of 3-4 years in the North Sea, at an age of 4-5 years in the Bristol Channel and at an age of 5 years in the Irish Sea.

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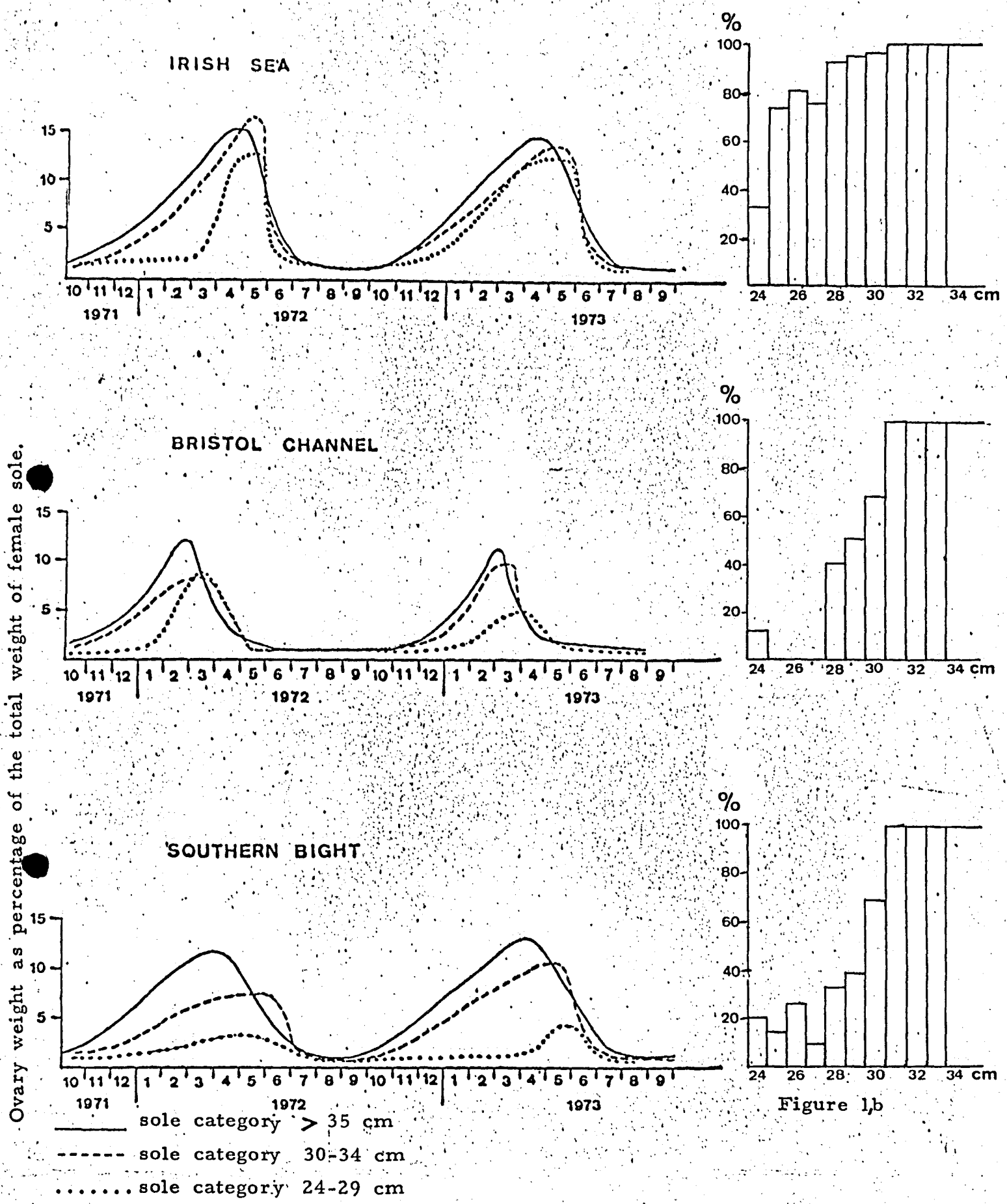


Figure 1a - The ovary weight as percentage of the total weight of female sole during the period Oct. 1971-Sept. 1973 in the Irish Sea, Bristol Channel and Southern Bight.

Figure 1b - The percentage of mature female soles per cm-class.