

ABUNDANCE OF SPRAT EGGS AND LARVAE IN THE NORTHERN BALTIC
IN 1979

by

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Abstract

In July and August of 1979, samples were taken in the northern Baltic Sea proper and the Åland Sea (ICES sub-division 29), in the Bothnian Sea (30), and in the Gulf of Finland (32), with the modified Gulf V sampler. The number of sprat eggs has decreased in recent years. Eggs were also obtained in the northern part of the Bothnian Sea (63°N). The number of sprat larvae was at the same low level as in the previous year, and the larvae were small. Thus, according to the number and size of the larvae the sprat year class 1979 is weak.

Résumé

En juillet et en août 1979, les échantillons ont été pris, à l'aide de l'échantillonneur "Gulf V" modifié, dans le nord de la Mer Baltique proprement dite et dans la Mer d'Åland (CIEM sous-division 29), dans la Mer de Bothnie (30) et dans le Golfe de Finlande (32). Le nombre des oeufs de sprat est diminué pendant les années dernières. On a obtenu des oeufs aussi dans le nord de la Mer de Bothnie (63°N). Le nombre des larves de sprat était au même niveau bas que l'année précédente, et les larves étaient petites. Ainsi, d'après le nombre et la taille des larves, le recrutement du sprat en 1979 est faible.

Introduction

The abundance of sprat eggs and larvae in the seas around Finland has been followed since 1975 (SJÖBLOM & PARMANNE 1976, 1977, 1978, 1979). Sampling was continued on the same sites in 1979 and the results are presented in this report.

Material and methods

From 15 July to 3 August and from 8 to 12 August 1979, altogether 63 samples were taken from the northern Baltic Sea proper, the Åland Sea (ICES sub-division 29), the Bothnian Sea (30) and the Gulf of Finland (32). The samples were taken with the modified Gulf V sampler (SCHNACK 1974). The mesh size of the larval net was 300 μm . Double oblique hauls were made at a towing speed of 5 knots from the surface to 5 - 10 m above the bottom. When the depth was more than 100 m, the sampler was lowered to 90 m only. The maximum towing time was 30 min. The sampling technique is described in an earlier report (SJÖBLOM & PARMANNE 1976). In 1979, sprat eggs were obtained in 33 samples and larvae in 29 samples. Altogether 1 400 sprat eggs and 111 larvae were caught.

Results

In the period 15 July to 3 August, the number of sprat eggs in the northern Baltic Sea proper was 26.4 per m^2 , in the Åland Sea 51.7 per m^2 , in the Bothnian Sea 5.2 and in the Gulf of Finland 33.2 per m^2 (Fig. 1). Eggs were obtained in the northern part of the Bothnian Sea (63°N) as well, where their density was 2.4 per m^2 . The number of sprat larvae in the northern Baltic Sea proper averaged 1.5 per m^2 and in the Gulf of Finland 0.3 per m^2 (Fig. 1).

In the period 8 to 12 August, the number of sprat eggs in the northern Baltic Sea proper had decreased to 0.2 per m^2 , in the Bothnian Sea to 2.8 per m^2 and in the Gulf of Finland to 0.2 per m^2 (Fig. 2). The abundance of sprat larvae in the northern Baltic Sea proper was 3.1 per m^2 and in the Gulf of Finland 0.7 per m^2 (Fig. 2). No larvae were caught in the Åland Sea or the Bothnian Sea.

The number of sprat eggs has decreased continuously in the last few years (Table 1). In 1979, the number of sprat eggs in subdivision 29 was only 21 % of the amount observed in 1977, and the number in the Gulf of Finland was 43 %.

In 1979, the number of larvae was at the same low level as in 1978 (Table 1). In addition, the larvae in 1979 were smaller than in the previous year (Table 2).

Discussion

The amount of pelagic fish eggs can be used to estimate the spawning biomass of pelagic fishes (c.f. SMITH & RICHARDSON 1977). If surveys are made only once a year, the sampling time may, of course, affect the results. The decline in the number of eggs suggests that the sprat stock has decreased sharply in the northern Baltic. The same trend can also be seen in the VPA, according to which the spawning stock size in 1979 was 39 % of the spawning stock in 1977 (Anon. 1980).

Since the abundance of sprat larvae was low in 1979 and the larvae were small, the year class 1979 seems to be weak. Thus the northern sprat stock size remains at a low level.

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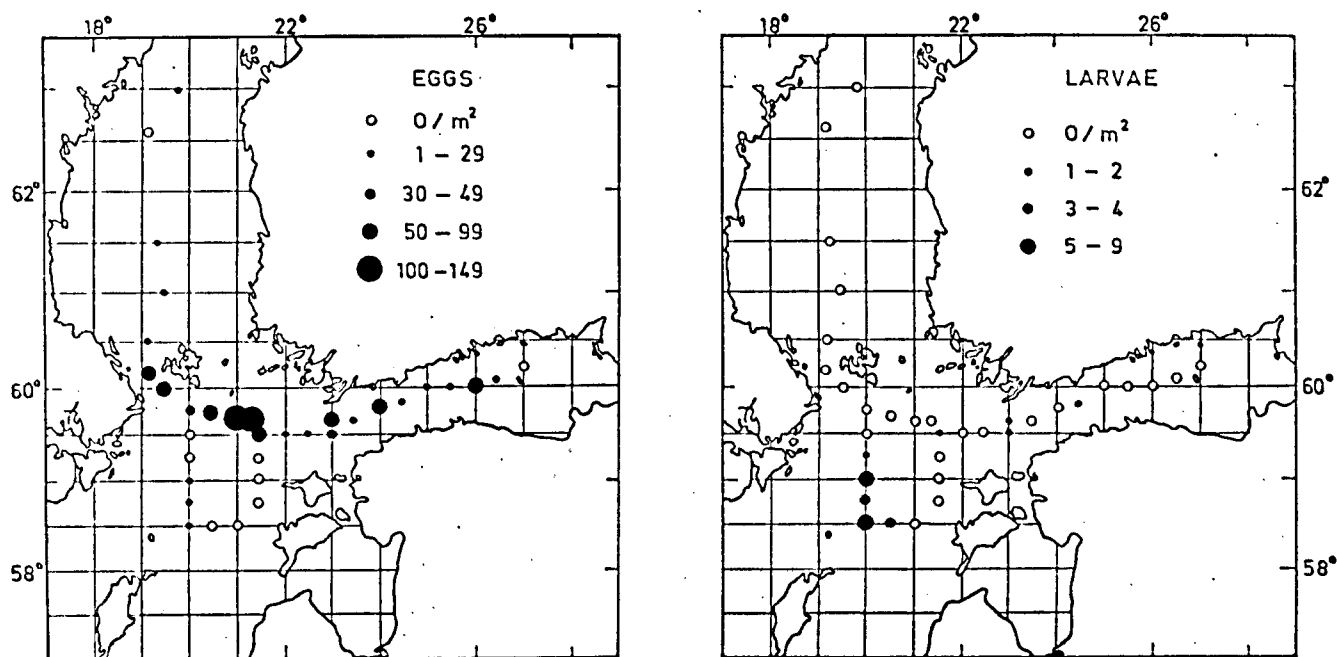


Fig. 1. Distribution of sprat eggs and larvae in the northern Baltic, 15 July - 3 August 1979.

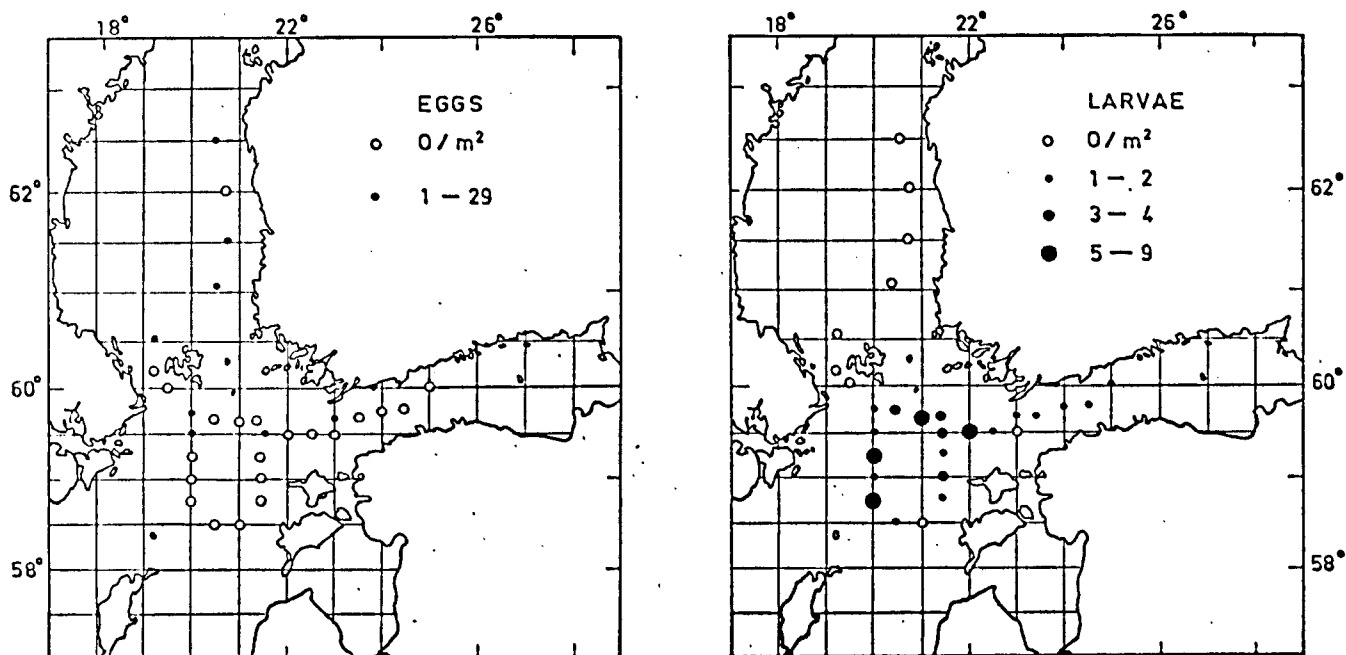


Fig. 2. Distribution of sprat eggs and larvae in the northern Baltic, 8 - 12 August 1979.

Table 1. Numbers of sprat eggs and larvae below 1 m² in the northern Baltic.

Sub-division	1975 5-14 August		1976 27 July- 4 Aug.		1977 20 July- 11 Aug.		1978 20 July- 10 Aug.		1979 15 July- 12 Aug.	
	eggs	larvae	eggs	larvae	eggs	larvae	eggs	larvae	eggs	larvae
29	-	4.6	...	4.2	75.3	2.8	48.4	1.5	16.1	1.9
32	-	1.0	-	0.1	49.0	1.1	33.5	0.5	20.9	0.4

Table 2. Length distribution (%) of sprat larvae in the northern Baltic.

Length (mm)	1975	1976	1977	1978	1979
	5-14 August	27 July- 4 Aug.	20 July- 11 Aug.	20 July- 10 Aug.	15 July- 12 Aug.
< 10	-	12.1	66.5	2.2	25.2
10-15	13.6	52.5	20.8	33.2	40.1
15-20	21.8	25.5	9.1	31.2	18.9
> 20	64.6	9.9	3.6	33.3	15.3