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Occurrence of herring larvae in the Greifswalder Bodden in 1977

by

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Summary

Investigations were performed on the herring larvae in the Greifswalder Bodden during 1977. In order to determine the numbers of larvae, 25 stations were sampled monthly in the Greifswalder Bodden. The samples were obtained double inclined hauls using specially modified bongo nets (200 u and 500 u mesh). The zooplankton, phytoplankton and the abiotic environment were studied at selected stations. A total of 8,935 larvae were caught during the four sampling trips. The mean larvae numbers/m^2 of surface were 0.62 from March 23rd to 30th, 16.13 on April 26th and 27th and 14.99 on June 1st and 2nd.

This work will be continued.

Résumé

En 1977, des larves de hareng de l'étang Greifswalder Bodden sont objet des études. Chaque mois, on fait escale à 25 stations dans l'étang Greifswalder Bodden pour y constater le stock de larves de hareng. Les échantillons sont prélevés à l'aide d'un filet Bongo spécialement varié. (Distance entre les mailles de filet 200 u et 500 u respectif). Des études portant sur le zooplancton et le phytoplancton ainsi que sur l'environnement abiotique sont effectuées à des stations choisies. Le nombre total des larves prélevées au cours de quatre voyages d'études s'élève à 8935. On a comptésur 1 m^2 de surface du 23 au mars 1977 0,62 larves, les 26 et 27 avril 1977 16,13 larves, et enfin, les 1er et 2 juin 1977 14,99 larves.

Les travaux d'études y sont continués.

Introduction

Investigations on the occurence of herring larvae in the Greifswalder Bodden have already been performed by ANWAND and WALDMANN during the period 1958 - 1961.

As a result of the increasing importance of the ruegen spring herring for the GDR fisheries in view of the fact that the whole stock spawns in out coastal waters, this work has been resumed this year.

The purpose of these studies is to use internationally comparable methods in order to obtain information regarding the numbers and distribution of herring larvae in the region of the Greifswalder Bodden.

During our studies we were confronted by several problems of a methodological and technical nature arising due to the very shallow water in which work had to be carried out (4 ... 10 m). Further difficulties were encountered on account of the great density of commercial fishing facilities (set nets).

Material and methods

A network comprising 25 stations (fig.1) was used to sample the number of herring larvae. Our network also included the stations (5 in number) used by ANWAND (1962). Not only larval samples but also samples of the phytoplankton and zooplankton were taken at 6 stations and used for work on the hydrography of the region. These stations are denoted by arrows in figure 1.

The investigations were performed from on board the r/v "Kormoran" belonging to the Sektion Biologie of the Wilhelm-Pieck-University Rostock.

The larvae were caught by means of a bongo net with a apread of twice 61 cm which had been modified to suit the shallow water conditions. Nets with mesh sizes of 200 u and 500 u were used.

Since no flow meters are currently the distance for which the nets were towed by the net openings and this was first assumed to be 100 %. The filtering capacity of the nets will be corrected after flow meters have been installed.

After the ice, which covered the water until around the middle of March, had melted, four samplings were undertaken. The first was undertaken from March 23rd to March 30th, the second on April 26th and 27th, the third on May 18th and the fourth on June 1st and 2nd, 1977.

During every sampling trip, some of the stations could not be sampled due to the proximity of fishing gear. During the third trip, only four

stations could be sampled due to weather conditions.

A total of 16 hauls were collected in the course of all trips, 3 stations being sampled four times, 13 stations being sampled three times, 2 stations being sampled twice and 6 stations being sampled once. No samples could be taken at on station.

Altogether 8,935 larvae were caught, this representing an average of ca. 150 pr station.

Initial results

The distribution of the larvae during the March sampling trip was restricted to a small stock off the Danish Wiek which petered out slowly along the eastern bodden coast of Ruegen. The larval density in the centre of this area was 4.16 larvae/m^2 of the surface and at the borders it was 0.1 larvae/m^2 of the surface. A substantially higher number was observed in the bodden during April. The greatest densities were observed along the eastern bodden coast of Ruegen with up to 29.72 larvae/m^2 of surface, to the west of Mönchgut and Hagenscher Wiek with up to 50.43 larvae/m^2 of surface and near the eastern outlet of the bodden with up to 29.26 larvae/m^2 of surface.

In contrast, only some 3 ... 5 larvae/m^2 of surface were found over large areas in the middle of the bodden.

The samplings during May, which were very incomplete, revealed a density of up to 71.11 larvae/m^2 of surface on the eastern bodden coast of Ruegen. During the sampling trip in June, numbers varying between 19.5 and 27.7 larvae/m^2 of surface were observed along the eastern bodden coast of Ruegen and north of a line joining Vilmgrund and Zickersches Höft. Between 16.1 and 19.74 larvae/m^2 of surface were found in the mouth of the sound and off the Dänische Wiek and a density of 17.5 larvae/m^2 of surface was found in the Gross Stubber region. Large areas in the central and south eastern part of the bodden revealed numbers of only 5 ... 10 and 10 ... 15 larvae/m^2 of surface respectively.

In order to gain some impression of the numbers in which the larvae were present at the time of sampling, we have compiled the mean numbers of larvae/m^2 of surface for trips 1, 2 and 4 into table 1. We are fully aware that this is of dubious value, but have nevertheless done it for informational reasons.

In view of the degree to which our material has been dealt with so far, we must dispense with any portrayal of the length distribution among the larvae caught and any corresponding considerations. This work will, however, be continued.

Table 1: Mean numbers of larvae/m^2 of surface during sampling trips 1, 2 and 4

Date	Larvae caught	of larvae/ m^2 of surface	Number of stations	Mean number of larvae/m^2 surface
23.-30.3.77	112	11.20	18	0.62
26.u.27.4.77	2549	258.09	16	16.13
1.u.2.6.77	5199	344.71	23	14.99

References

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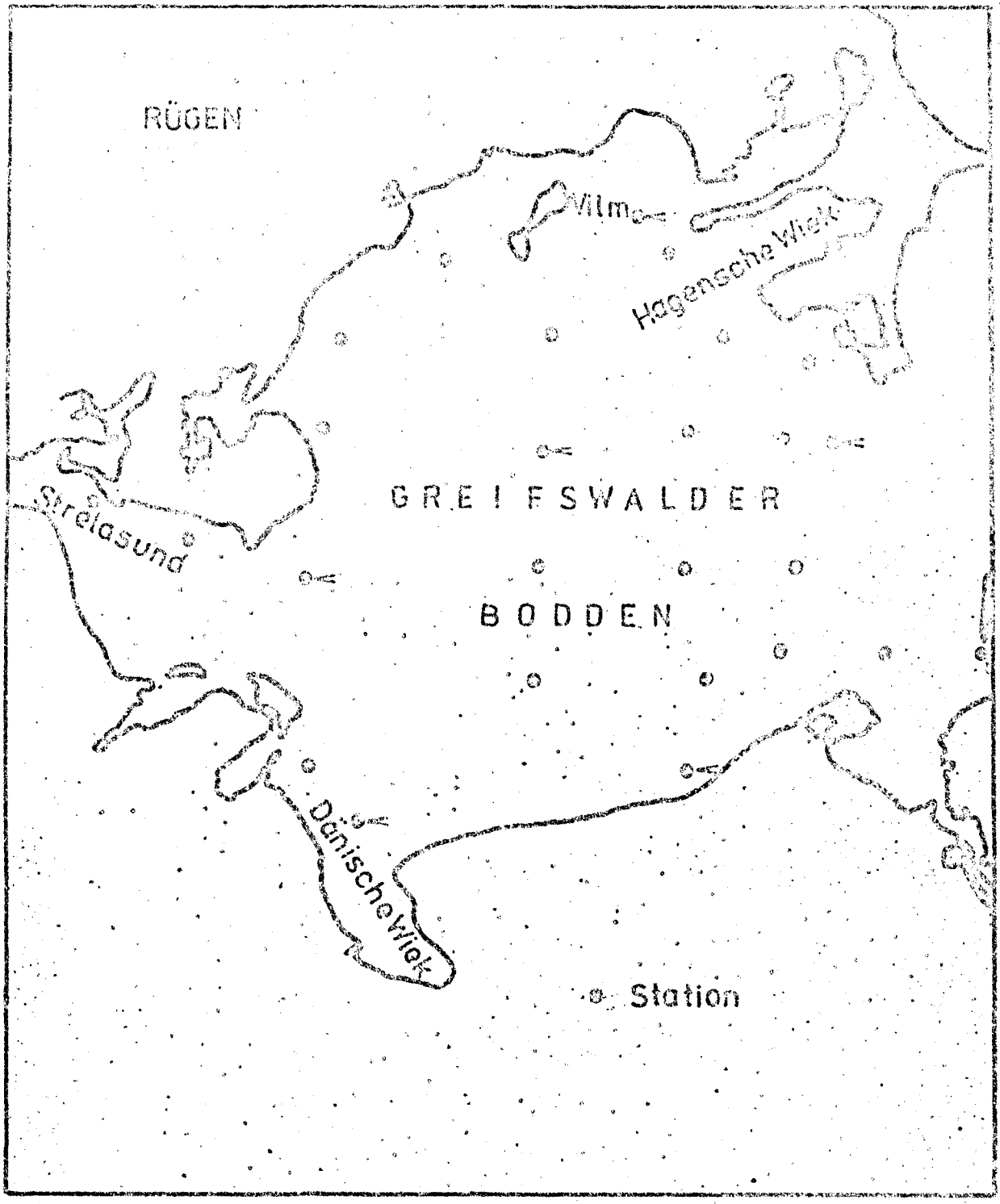
RÜGEN
Vilm
Hagensche Wiek
GREIFSWALDER
BODDEN
Stralasund
Dänische Wiek
Station