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# Preliminary results of investigations on distribution and abundance of herring larvae on Georges Bank in September-October 1972

by

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## ABSTRACT

The paper gives preliminary data on distribution and abundance of herring larvae based on the material collected in September-October 1972. The data on October collection are compared with those for the previous 1971 year.

## INTRODUCTION

Ichthyoplankton surveys were made on 22-30 September and 12-28 October in accordance with ICNAF program. They were the continuation of the works initiated in 1971.

A scheme of stations in 1972 was somewhat changed as compared with 1971 (see Fig.1).

The surveys covered the area from 40°N to 44°N and from 71°30'W to 65°W.

The following stations included in buffer zone were not made during the cruise of the research vessel "ARGUS": 1,2,3,4,35,36,39,40,43,110,111,112,113,116,120,121 and 124 (see scheme No.1). September survey covered only stations beginning from 47.

## METHODS AND MATERIALS

Ichthyoplankton was collected during 15 min oblique tows by twin sampler Bongo with a mouth diameter of 61 cm from a given depth to the surface vessel speed was 3.5 knots. Nets with mesh sizes of 0.505 and 0.333 mm were used. Fishing was begun from 100 m depth of ~~100~~ and in shallow waters, that is less than 100 m in depth, at 10 m from the bottom. Lowering speed of the sampler was below 20 m/sec and it was 8-10 m/sec when the gear was taking up.

The depth of the sampler operation and the temperature of the adequate horizon were recorded by autobathythermograph "Crab". Flow meters were used to determine the volume of the water filtered. Ichthyoplankton samples were sorted and analysed under the binocular microscope MBI-1. Total length of herring larvae was measured to within 1 mm. When samples contained a great number of larvae, we measured 100 random specimens. To accelerate the process of sample sorting we used the Folsom subsampler.

## RESULTS

The paper presents data on the larvae taken by 0.505 mm net only.

763 herring larvae were caught on 22-30 September 1972 during the ichthyoplankton survey.

All the larvae caught were from the northeastern part of Georges Bank (Fig.2). One larva (22 mm) was caught from the southeastern part of Nova Scotia shelf.

Size frequency distribution of larvae varied from 5 to 26 mm (Fig.3). Larvae of 7-11 mm in length were dominated as a result of recent hatching.

The stations with maximum catch had larvae size frequency of 5-26 mm, mean length being of 9.44 mm. The number of larvae decreased markedly to the northeast and to the east, while modal length reached 10.33 mm. This fact is indicative of their appearance here because of scattering of ichthyoplankton patch in the area of spawning. Larvae were not observed southwest and west of spawning ground. The data of observations support confirm the larvae drift after recent hatching. The direction of this drift corresponds to the direction of predominating currents, that is clockwise and towards the centre of Georges Bank.

During the survey from 12 to 28 October 10 393 larvae were caught. In 1972 larvae distribution in the area under survey was similar to that in 1971 (Fig. 4 and 5). A great difference was noted in the catches taken south of Nantucket where maximum catch in 1972 was 3 448 specimens (Fig.4) while at the same time of the previous year it consisted of 60 larvae. Larvae length varied from 6 to 22 mm, modal length was 8.64 mm. In this connection we can conclude that this area was the spawning ground for herring in 1972. Nevertheless, further analysis is needed.

As for the northern slopes of Georges Bank, the picture is quite reverse - the number of larvae in catches was considerably lower.

The results of determination of herring larvae abundance are given in Tables 1 and 2 (in numbers under $10m^2$). These tables also include the data on size composition of catches by stations.

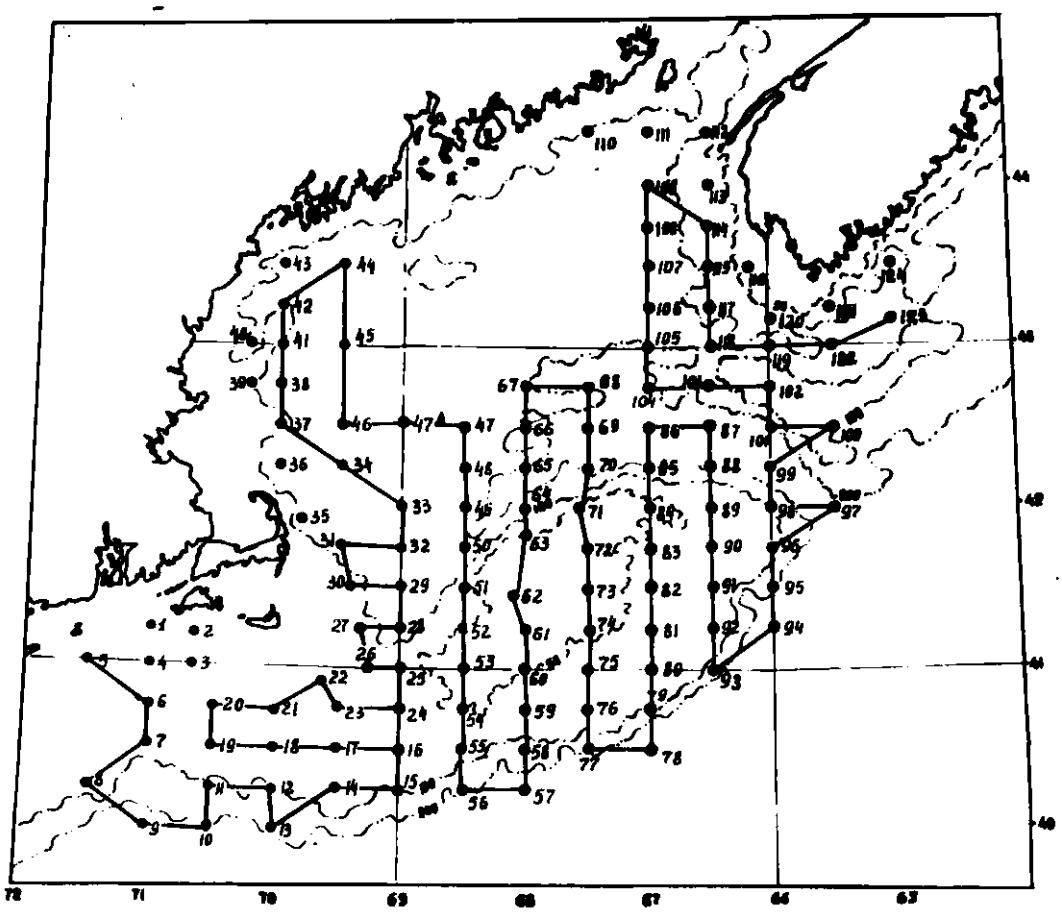

Fig.1 A scheme of stations arrangement.

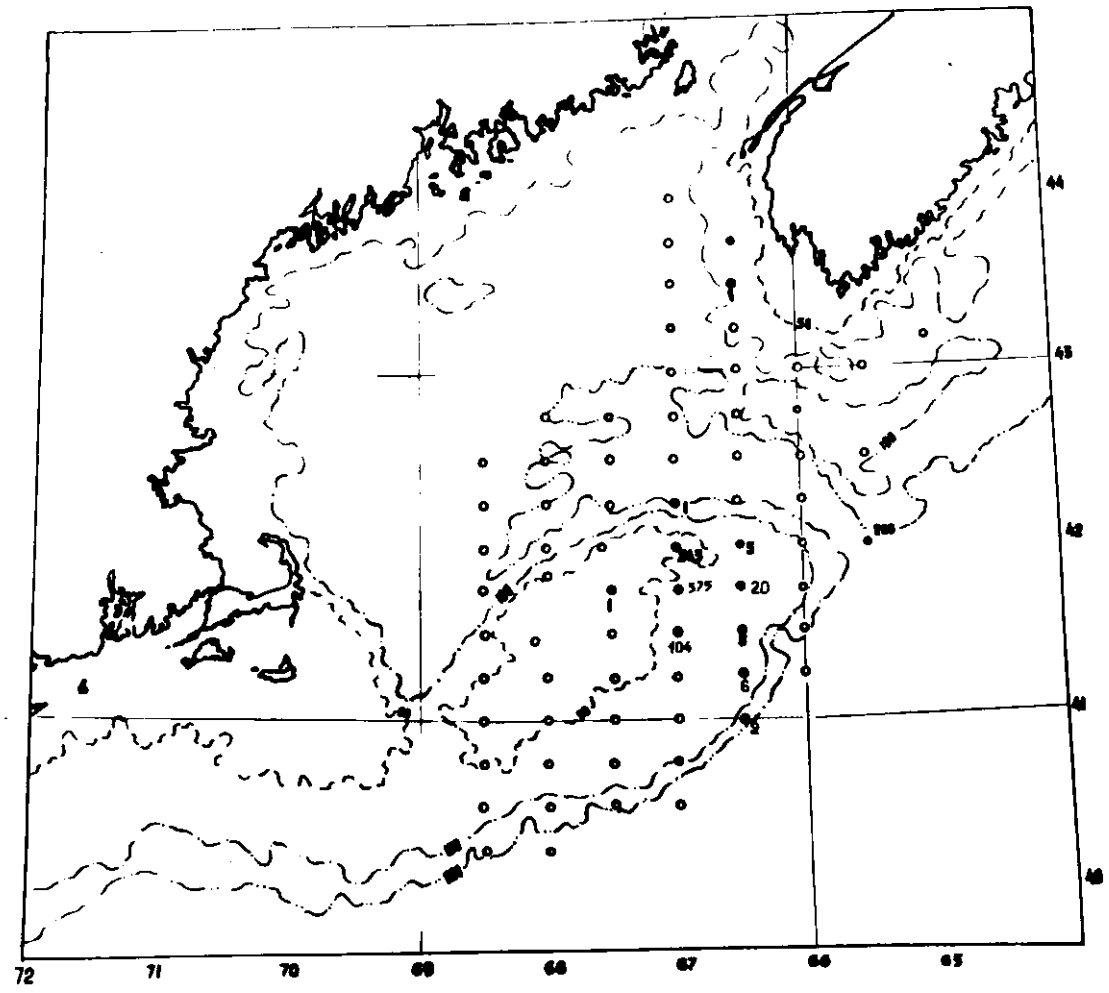


Fig.2 Distribution of herring larvae in September 1972.

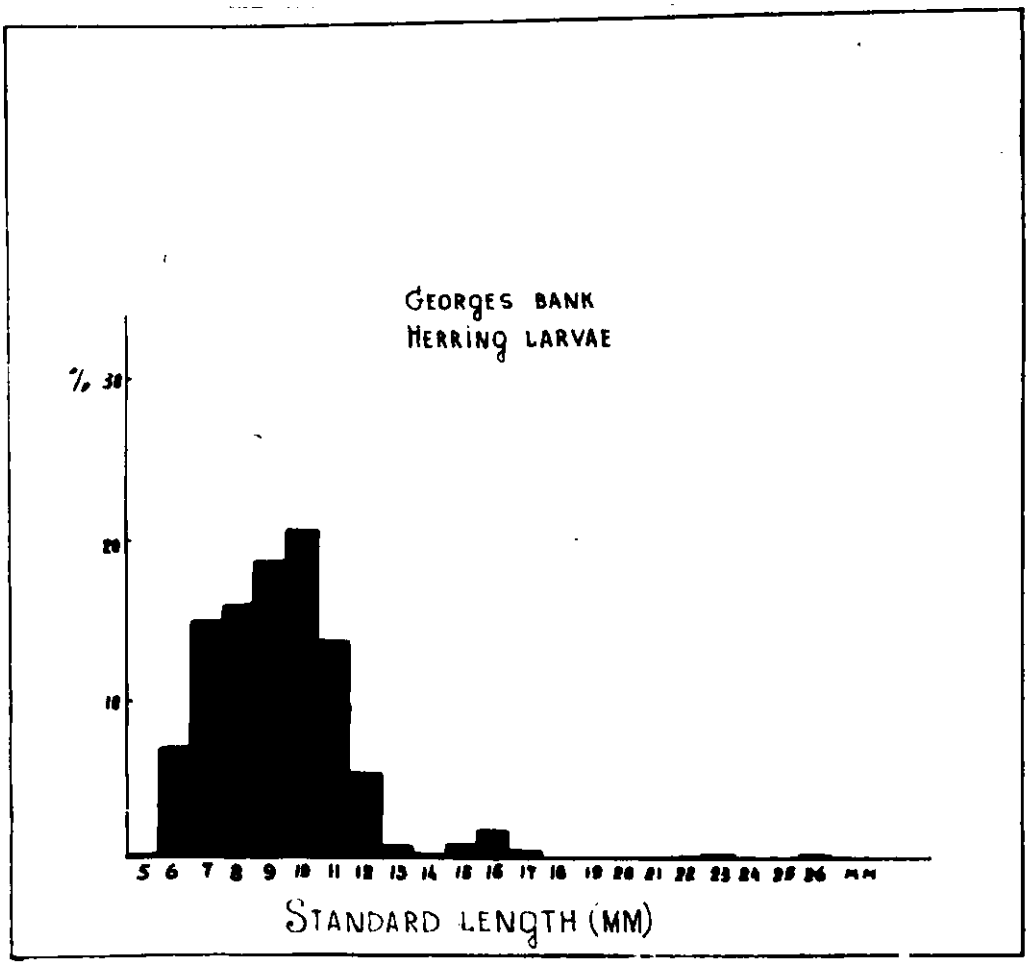


**Fig.3Length frequency of herring larvae in September 1972.**

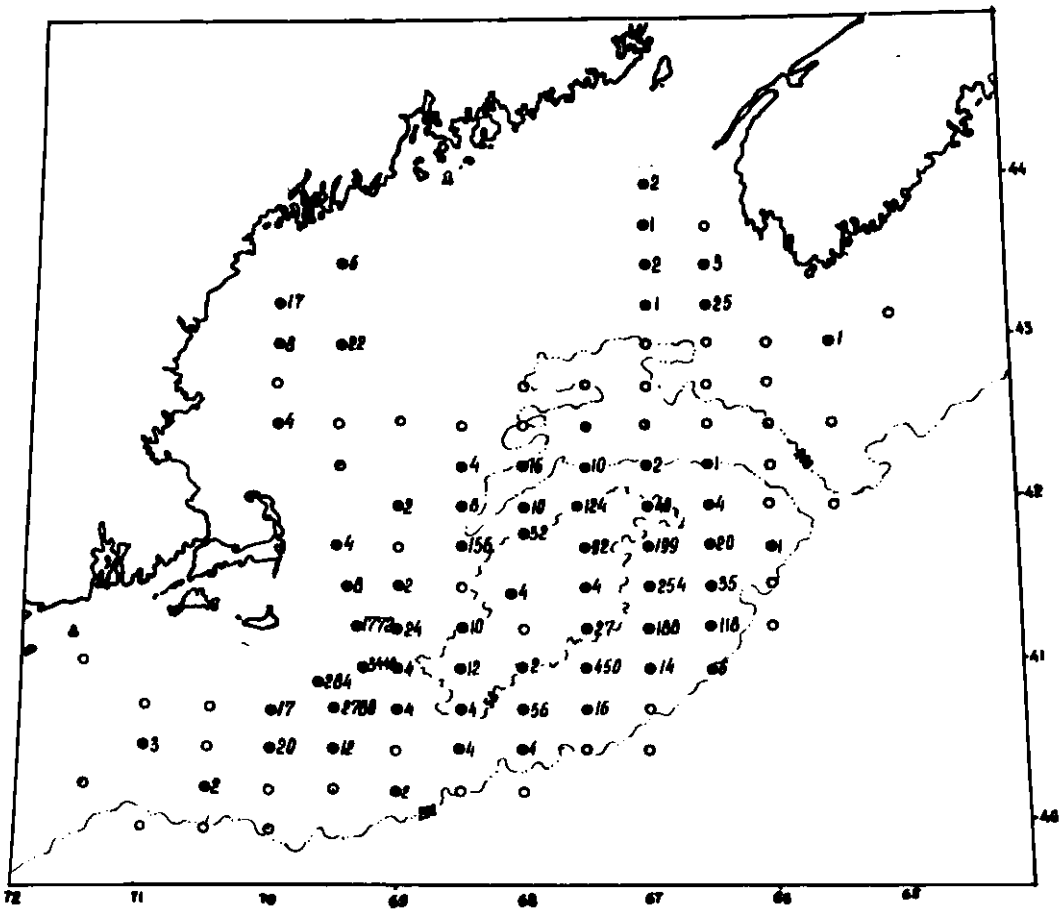

Fig.4 Distribution of herring larvae in October 1972.

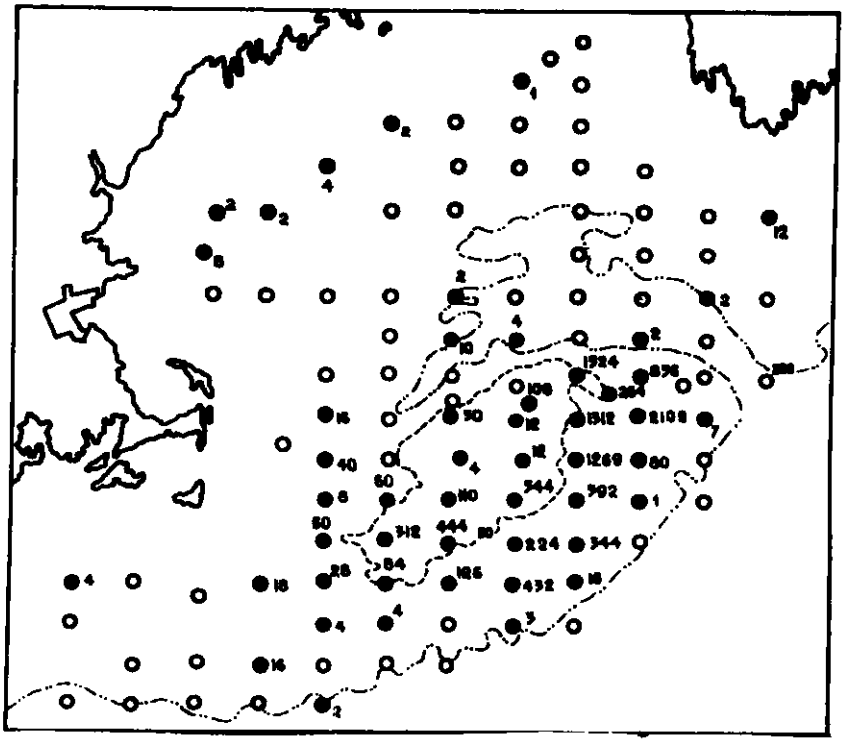

Fig.5 Distribution of herring larvae in October 1971.