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Larval Herring Distribution in the Gulf of Maine and on Georges Bank, 29 September - 20 October 1973¹

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Introduction

The October 1973 survey of the distribution of herring larvae in the Gulf of Maine, including Georges Bank, was conducted by Wieczno between September 29 and October 20, 1973. This report presents preliminary results of that survey.

Methods

Larval herring were sampled with 61 cm bongo array. Tows were single oblique and to a maximum depth of 100 m or from near bottom when the station depths was shallower at a towing speed of 3.5 knots. The nets were deployed at 50 m/min and retrieved at 10 m/min to the surface. Both .505 and .333 mm nets were used. Pursuant with the recommendations of the working group to Participants in the ICNAF Joint Larval Herring Survey² larval abundance is reported in this paper as total number per square meter and number of three size groups /<10,10-15, >15 mm/ per square meter and total number per cubic meter. The total number of herring larvae taken in the .505 mm mesh size was counted. Standard lengths of all larvae or a subsample of 100 specimens was measured to the mm below. A chart with the actual cruise track is attached and some additional stations done by Wieczno to increase the areal coverage are marked with letters.

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²ICNAF Res.Doc. 73/115

Results

A total of 18,607 larval herring /5,379 in 1972/ were captured in the 505 micron mesh net during the cruise. The production of herring larvae of Nantucket Shoals is about on the same level like in 1972. Most of the larvae taken at two stations fell into size group less than 10 mm. Dispersal of these small larvae is not evident what indicate they have recent hatched.

According to comparison shown in tabl.1 nearly five times as many larvae were produced on Georges Bank in 1973 as in 1972. Spawning is concentrated on the northern edge; the distribution of less than 10 mm larvae shows a shift of spawning area to the North-West /stat.71,84/ in comparing to the 1972 /stat.83,90/. Drift and dispersal of larvae of all ages from spawning center e.g. on the northern Georges Bank to southwesterly direction in the clockwise gyre is suggested by the distribution of successive size interval /fig.3,4,5/.

The production of herring larvae off Nova Scotia appears to be about one third greater of that in 1972 and the dominant occurrence of larvae larger than 10 mm indicate like in previous years the hatching started earlier in that area than in others.

Taking under consideration the total captured larvae and the number per square meter from ^{the} whole investigated area the larval production is indicated to be about three times greater than in 1972 /6.8 No/m² - 1972, 17.8 No/m² - 1973/

Many other species of fish larvae /Silver hake, Squirrel hake, Butterfish, flounders/ in significant numbers, were found. Appreciable numbers of juvenile Myctophidae /lantern fishes/, eel leptocephalae and other "Gulf Stream" species were collected at stations in the Slope Water zone south of the edge of the Continental Shelf .

Table 1

Comparison of larval Abundance in October 1972 and 1973

Area	Period	No of Stat.	No of Stat. incl. larvae	Total No/m ²	10 m ² /m ²
Nantucket Shoal	2.Oct.-7 Oct.1972	34	7	11.71	6.34
/Stat. 2-35/	30.Sep.-7 Oct.1973	33	5	12.06	11.8
Georges Bank	10.Oct.-22 Oct.1972	53	32	10.16	2.58
/Stat.47-99/	7 Oct.-17 Oct.1973	53	28	48.53	36.89
Nova Scotia	23.Oct.-25 Oct.1972	23	11	5.30	0.35
/Stat.100-109/ 112-124	17.Oct.-20.Oct.1973	23	13	8.23	0.14
Gulf of Maine /off-shore stations:	8.Oct.-10.Oct.1972	20	8	0.33	0
34,36-41,44-46/ /67a,b, 44a, 45a, 110-112/	20.Sep.-30 Sep.1973	19	8	2.34	0
			Mean No of larvae in 1972	6.81	2.31
			" " " " 1973	17.79	12.20







