RESTRICTED

International Commission for the Northwest Atlantic Fisheries

Serial No. 3162
(D.c.3)

ICNAF Res.Doc. 74/16
(Revised)

ANNUAL MEETING - JUNE 1974

Report of ICNAF larval herring cruise, Walther Herwig, October - November 1973 in Georges Bank - Gulf of Maine areas[1]

by

D. Schnack and G. Joakimsson

Institut für Meereskunde, Kiel, F.R.G.

During the third ICNAF Joint Larval Herring Survey, fall 1973 R.V. "Walther Herwig" worked up the standard station grid from 28. October through 8. November. The results concerning distribution, abundance, and length of herring larvae at that time are summarized in this report. The hydrographic situation is indicated by charts of temperature and salinity distribution at the surface and near the bottom.

Methods

Standard sampling methods were used (see: Res.Doc. 72/123 and 72/115). By means of a time depth recorder with deck reading unit, it was possible to sample close to the bottom (less than 2 meter distance).

The Bongo was towed at the side and not at the stern of the vessel as done in the previous years. It was suggested that larvae in the upper meters of the water column might partly be missed when sampling in the disturbed water behind the ship.

On most stations a Neuston net was towed simultaneously to the Bongo. No time was available for additional sampling to study the vertical distribution of larvae.

Temperature and salinity values were obtained on most stations from surface to bottom by BT and STD measurements. Additionally some hydrographic series were made for controll measurements.

[1] Revision of Res.Doc. 74/16 presented to the Fourth Special Commission Meeting, January 1974, FAO, Rome, Italy

Results

In general, samples from 0.505 mm net have been analysed. However in some few cases, where these samples were lost, larvae caught in 0.333 mm net are taken into account.

The numbers of larvae per 10 m^2 are given for size groups separately in figures 1 - 4. Centers of larval distribution were generally sited similar to the previous years. But on Georges Bank the peak numbers were found for all size groups somewhat more to the southeast than in 1972. High numbers of larvae were caught beyond the 100 and even 200 meter isobath east of Georges Bank. The station grid this time did not fully cover the area of distribution of herring larvae. A comparison of the generell distribution in beginning of November 1972 and 73 is given in figure 5, based on stations with at least 1 larva per m^2.

For comparing the abundance of larvae between the years see table 1:

Tab. 1: Abundance of larval herring at beginning of November

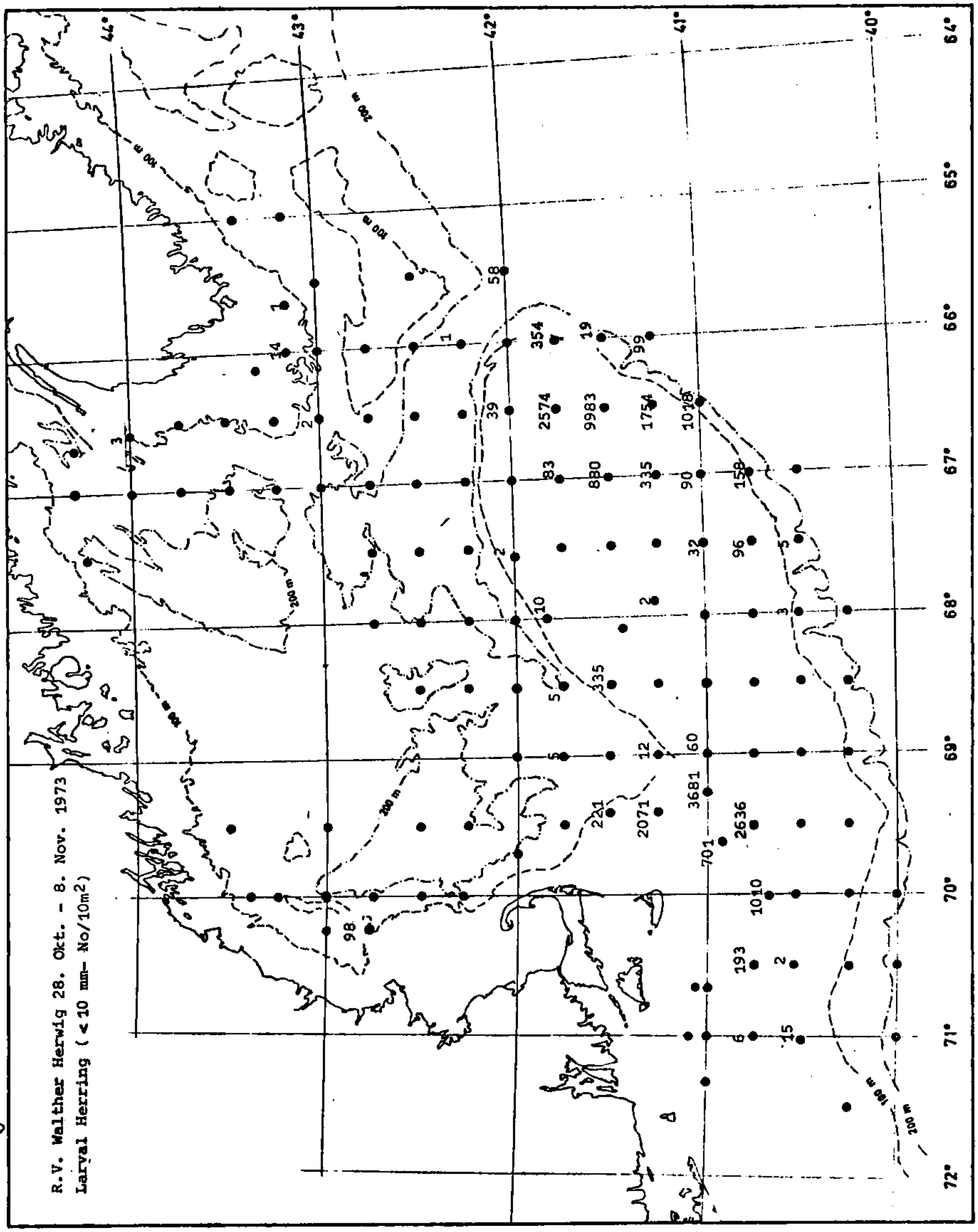
Area	Year	larvae · 10^{-9} <10	>10	total
Nantucket Shoals	1971	49	450	500
	72	230	210	440
	73	1200	400	1600
Georges Bank	1971	160	350	510
	72	50	100	150
	73	2000	1600	3600
Nova Scotia	1971	16	25	41
	72	6.5	65	71
	73	2.2	24	26

In the area off Nova Scotia total abundance appears somewhat lower than in the previous years. Few small larvae were caught but they are presumably not sampled representatively as they may staymore inshore than the stations are sited. On Georges Bank herring larvae were unusually numerous. Total abundance was about 7 times that of 1971 and some 20 times that of 1972. This was not only due to the fact that an important hatching wave had been encountered, resulting in a more than 1 order of magnitude higher number of small larvae (<10 mm). Also the larger larvae (>10 mm) were significantly more abundand (about 1/2 to 1 1/2 order of magnitude) than in the previous two years.

In the area of Nantucket Shoals the total number of herring larvae was also somewhat higher than in 1971 and 72 (about 3 to 4 times). This difference, however, is due only to the very high number of small larvae (<10 mm), whereas the abundance of larger larvae (>10 mm) was similar to the previous years.

Length frequency distribution of larvae is given in fig. 6 for the three main areas sampled. Hatching proups are not as clearly separated as in 1972. However, length frequencies as well as abundance estimates have to be discussed by comparing the results of all cruises carried out in this survey program in fall and winter 1973.

Fig. 1


R.V. Walther Herwig 28. Okt. - 8. Nov. 1973
Larval Herring (< 10 mm- No/10m²)

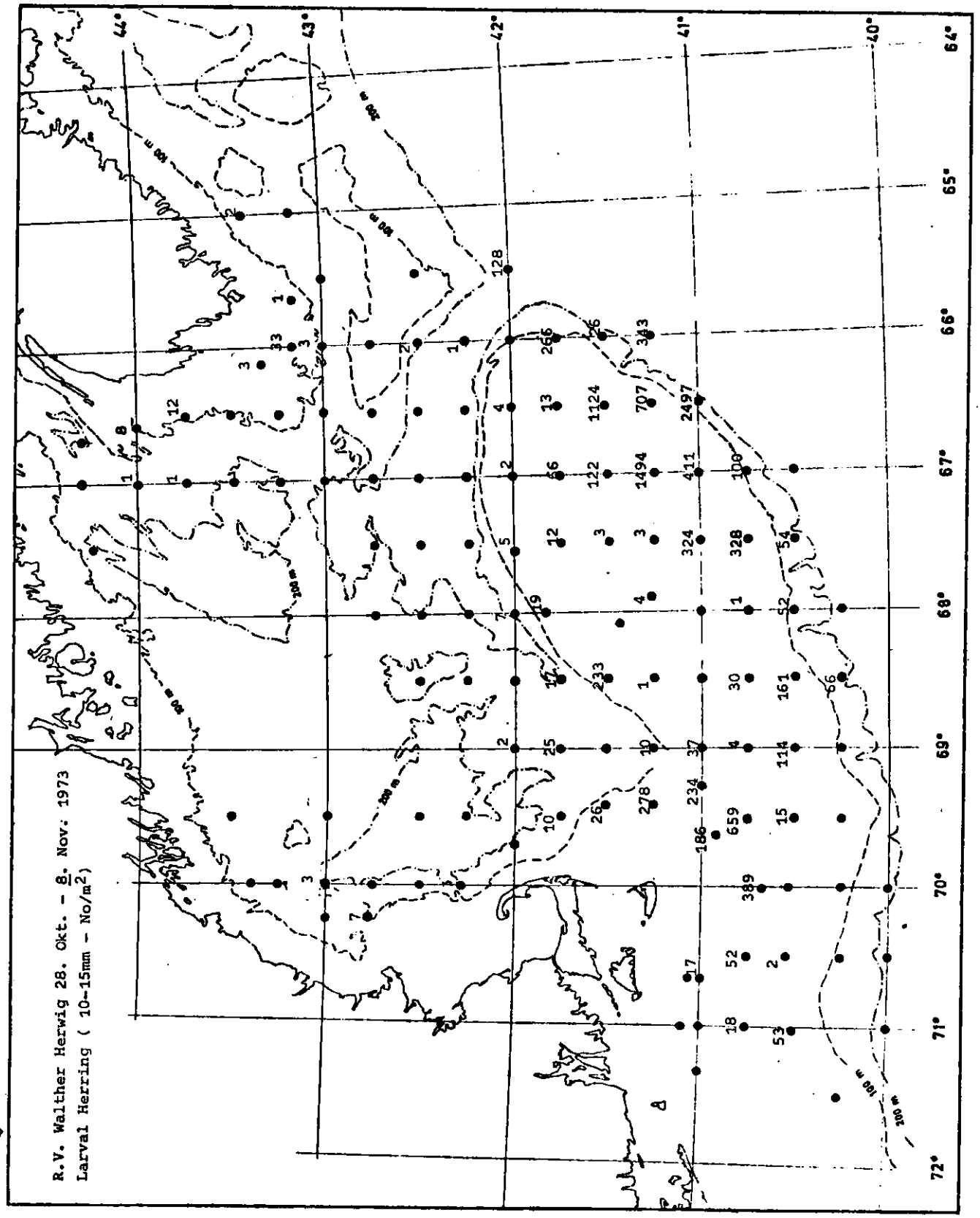

R.V. Walther Herwig 28. Okt. - 8. Nov. 1973
Larval Herring (10-15mm - No/m²)
44°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
100 m
200 m

Fig. 2

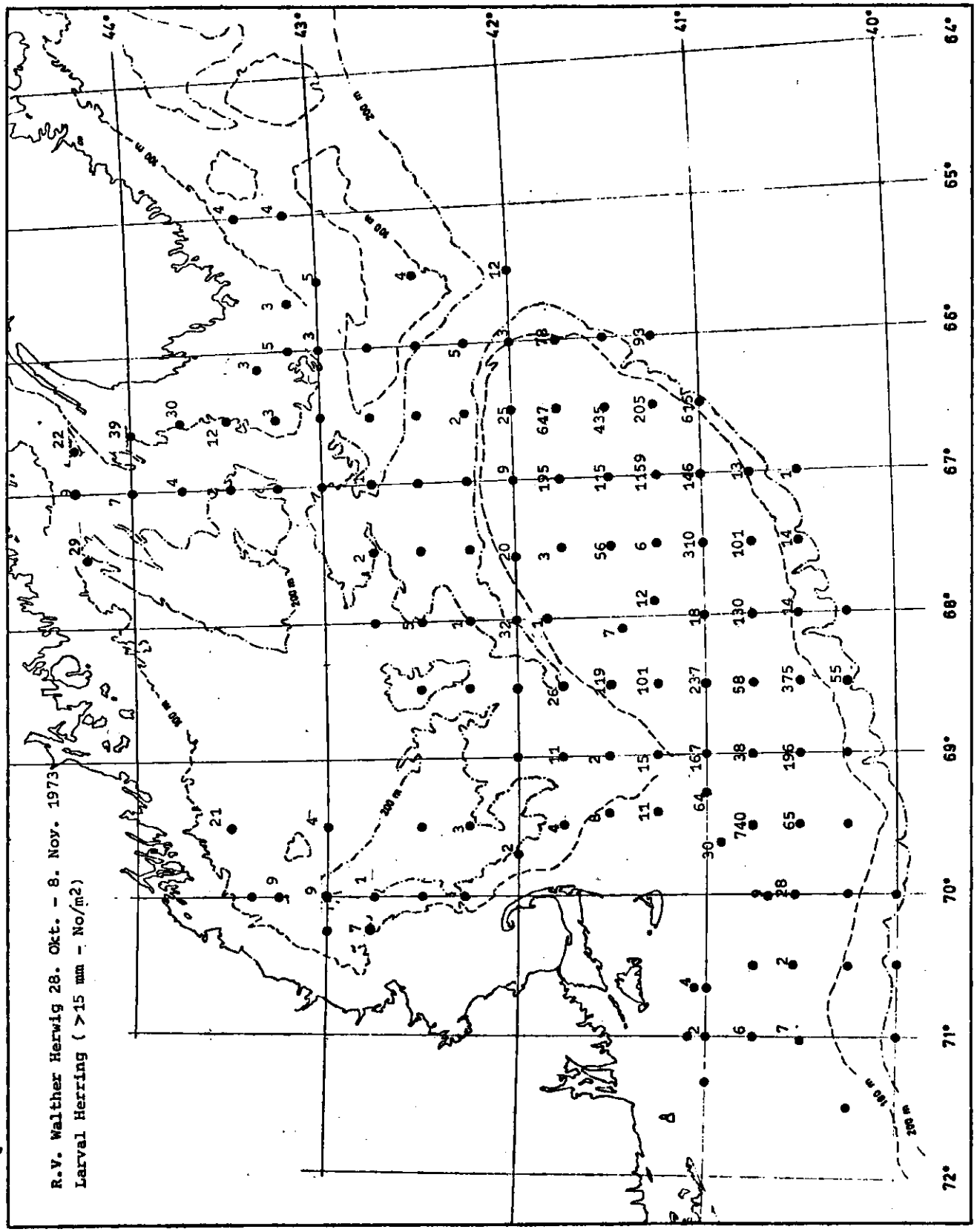

R.V. Walther Herwig 28. Okt. - 8. Nov. 1973
Larval Herring (>15 mm - No/m2)
44°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
100 m
200 m

fig. 5

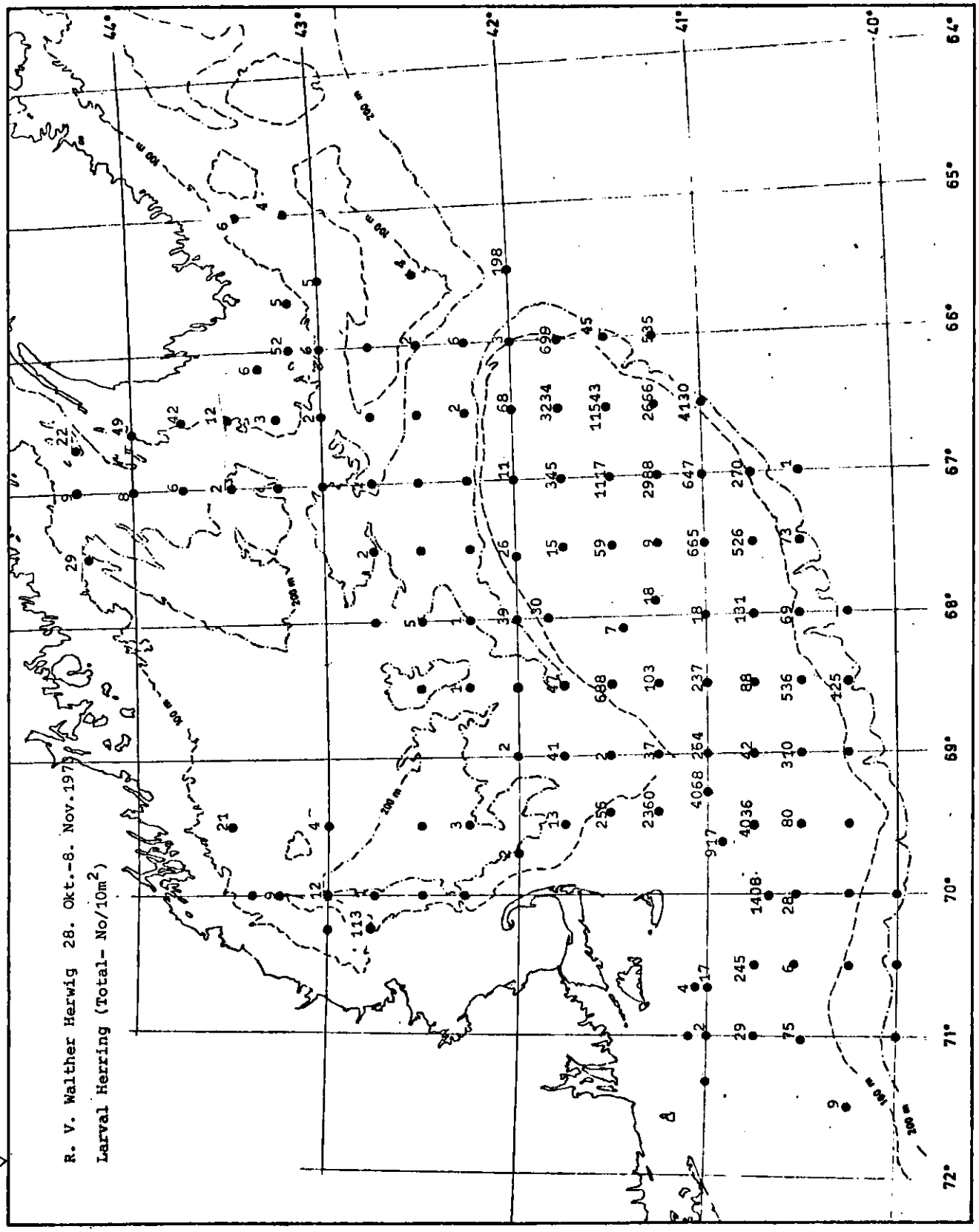

R. V. Walther Herwig 28. Okt.-8. Nov.1979
Larval Herring (Total- No/10m²)
44°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
200 m
500 m

Fig. 4

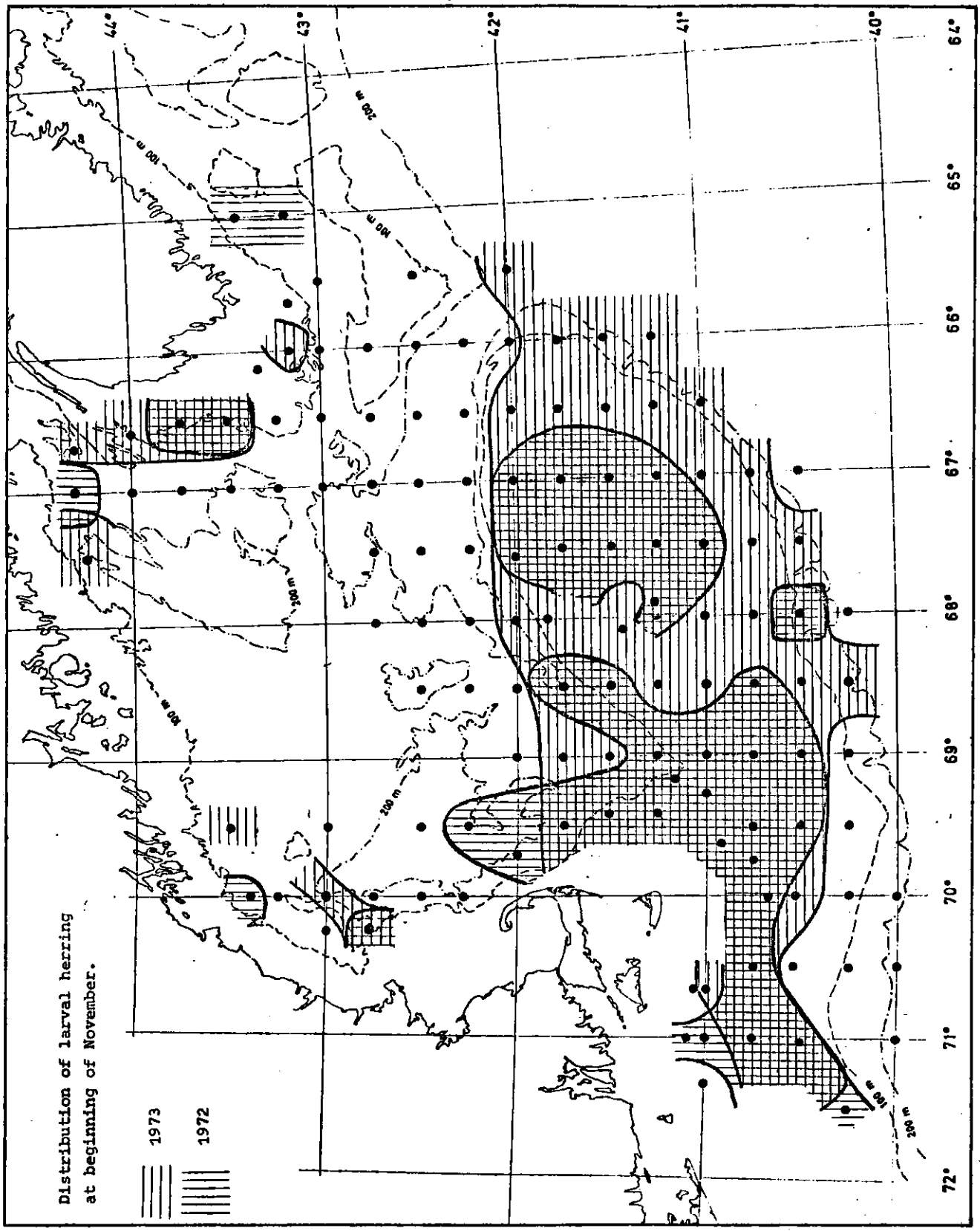
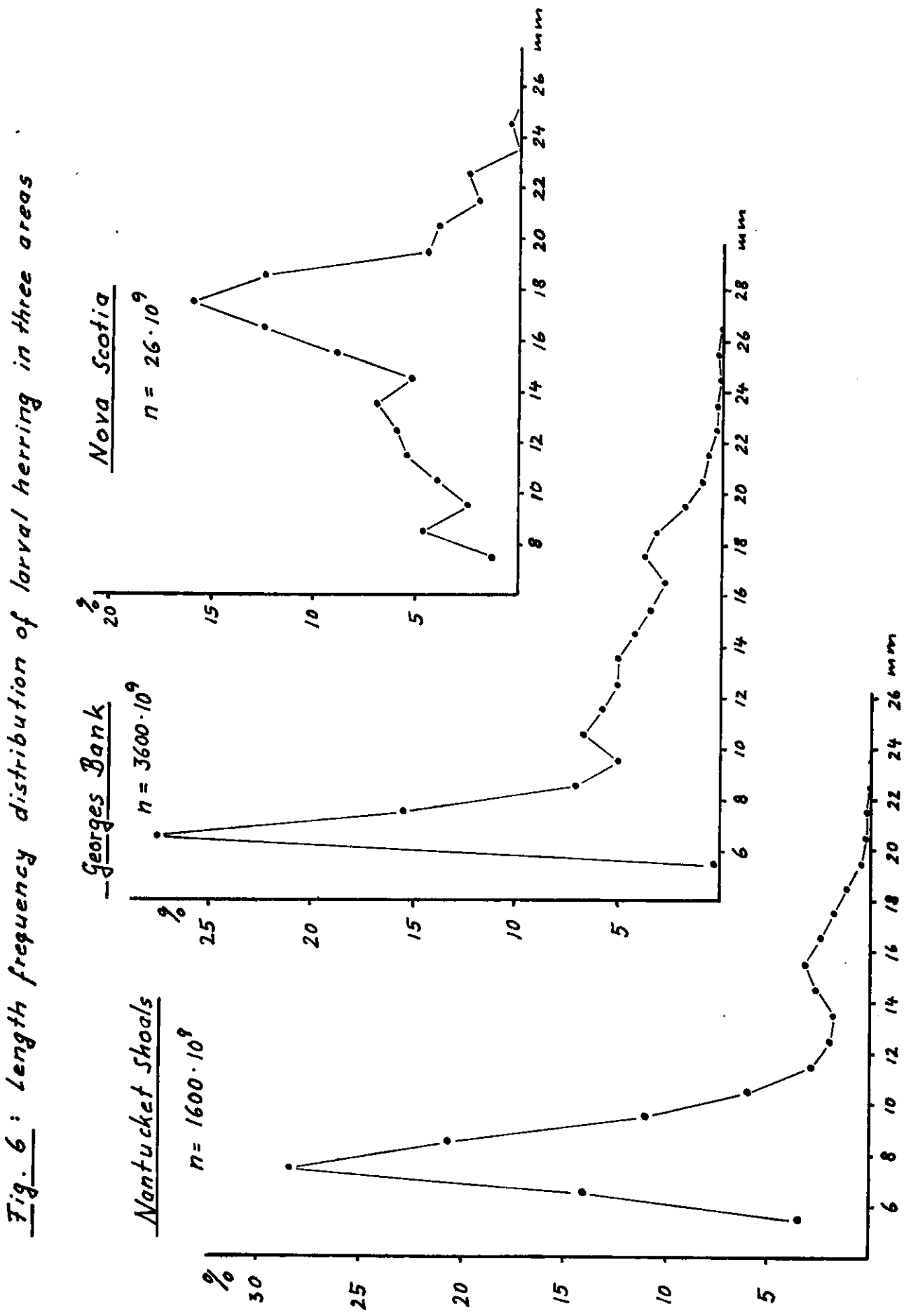

Distribution of larval herring
at beginning of November.
1973
1972
44°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
100 m
200 m

Fig. 5

Fig. 6 : Length frequency distribution of larval herring in three areas



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CORRIGENDUM

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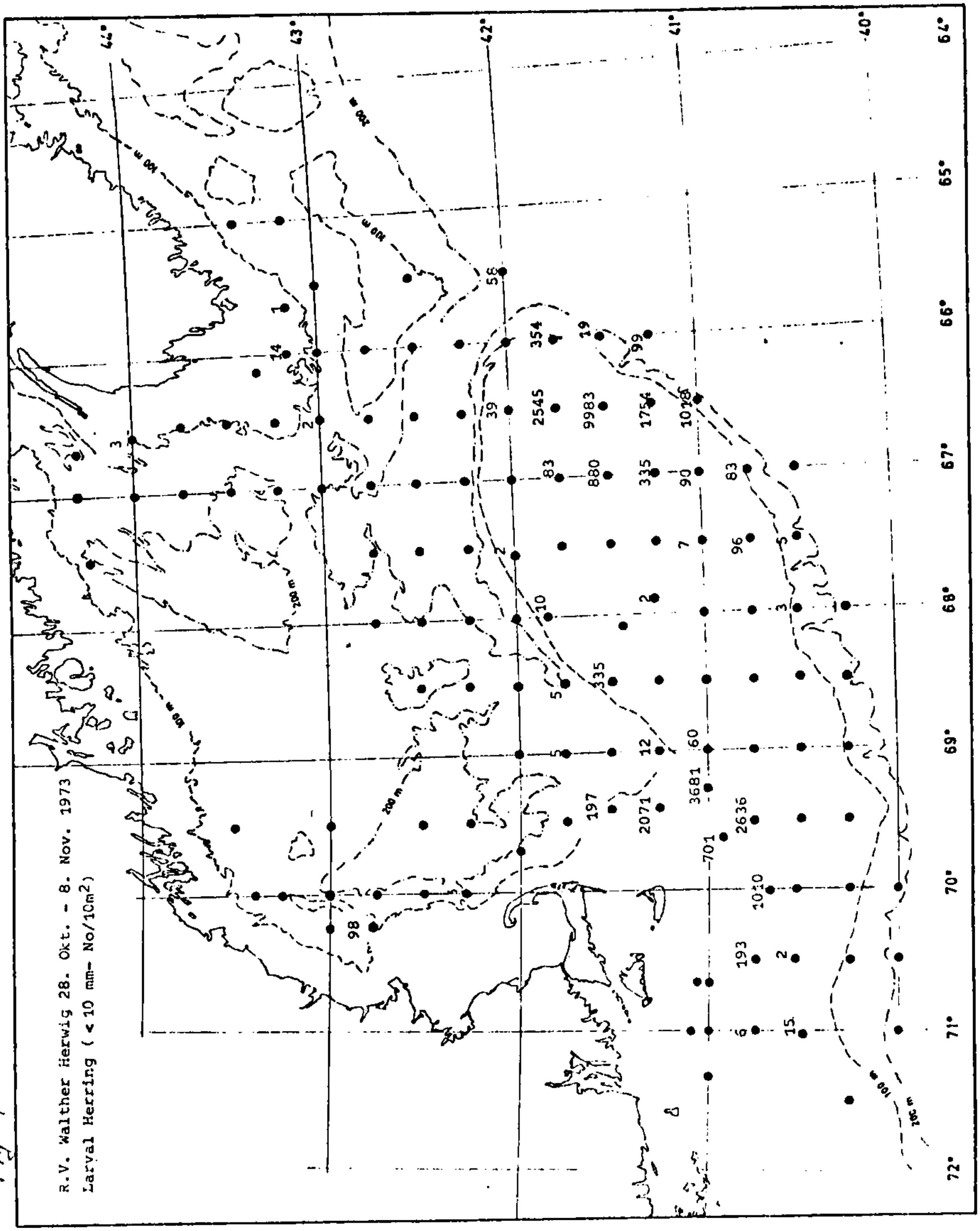


Fig 1

R.V. Walther Herwig 28. Okt. - 8. Nov. 1973

Larval Herring (< 10 mm- No/10m^2)

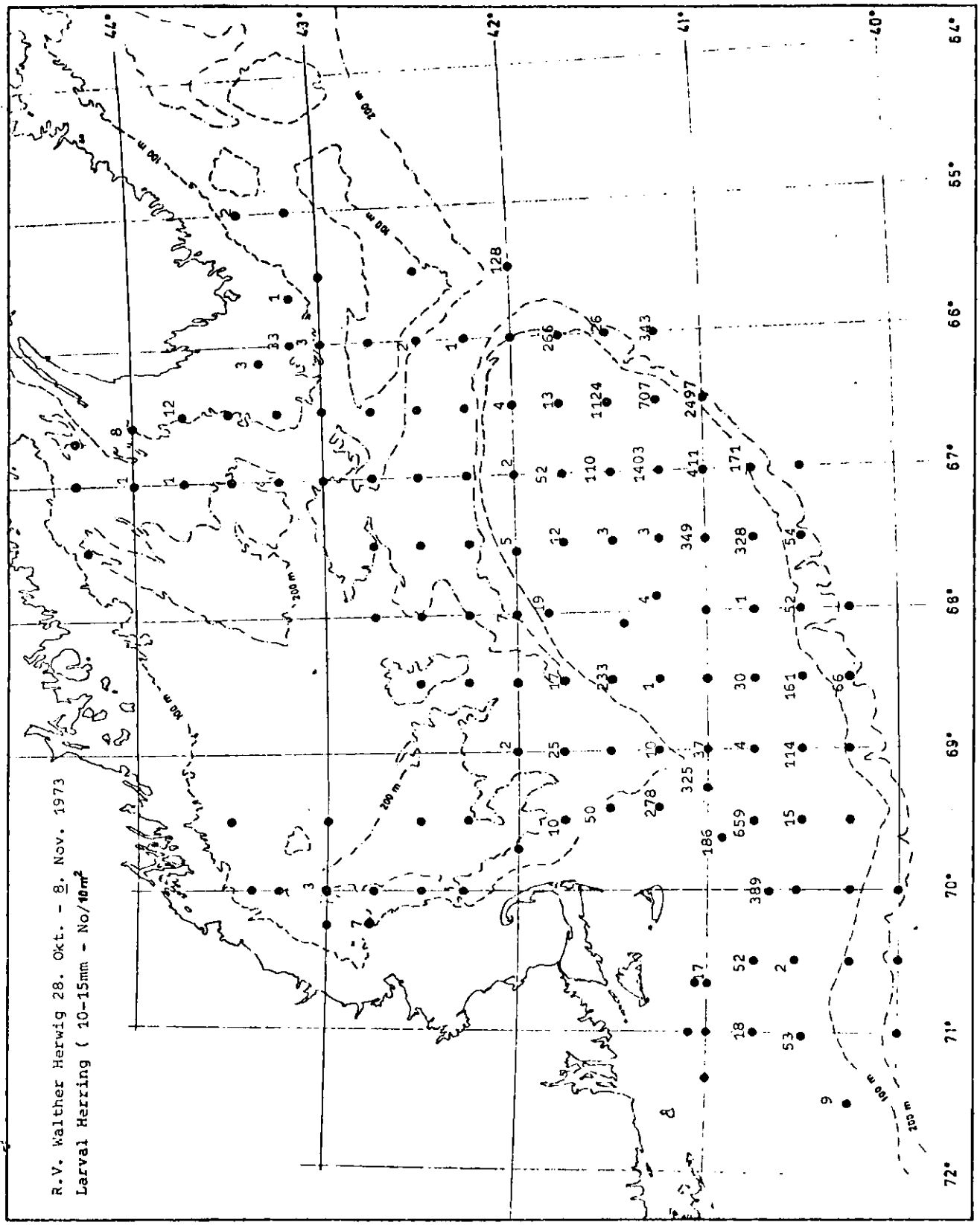

R.V. Walther Herwig 28. Okt. - 8. Nov. 1973
Larval Herring (10-15mm - No/10m²
47°
43°
42°
41°
40°
72°
71°
70°
69°
68°
67°
66°
65°
100 m
200 m

Fig. 2

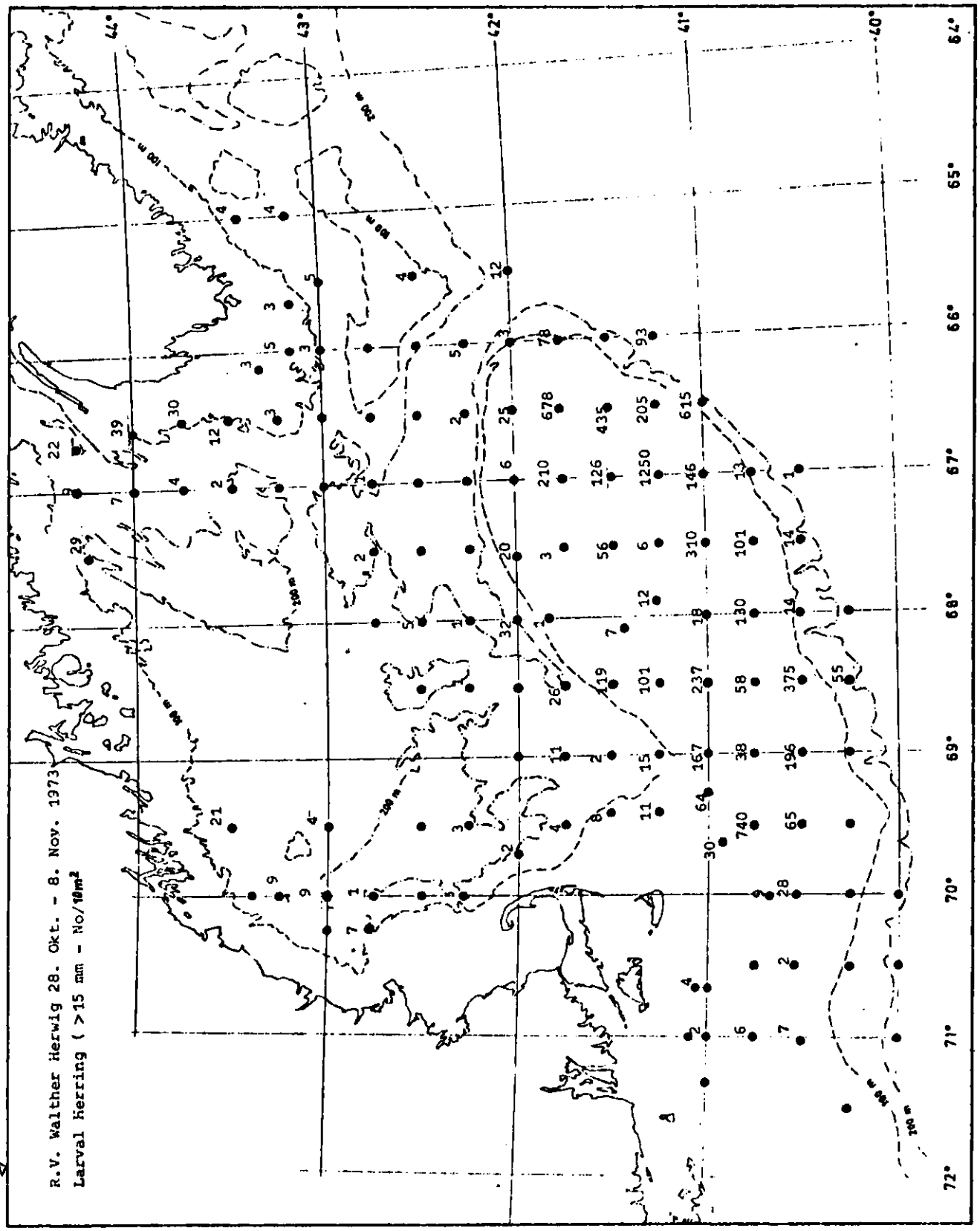

R.V. Walther Herwig 28. Okt. - 8. Nov. 1973
Larval Herring (>15 mm - No/10m²
44°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
200 m
100 m

Fig. 3

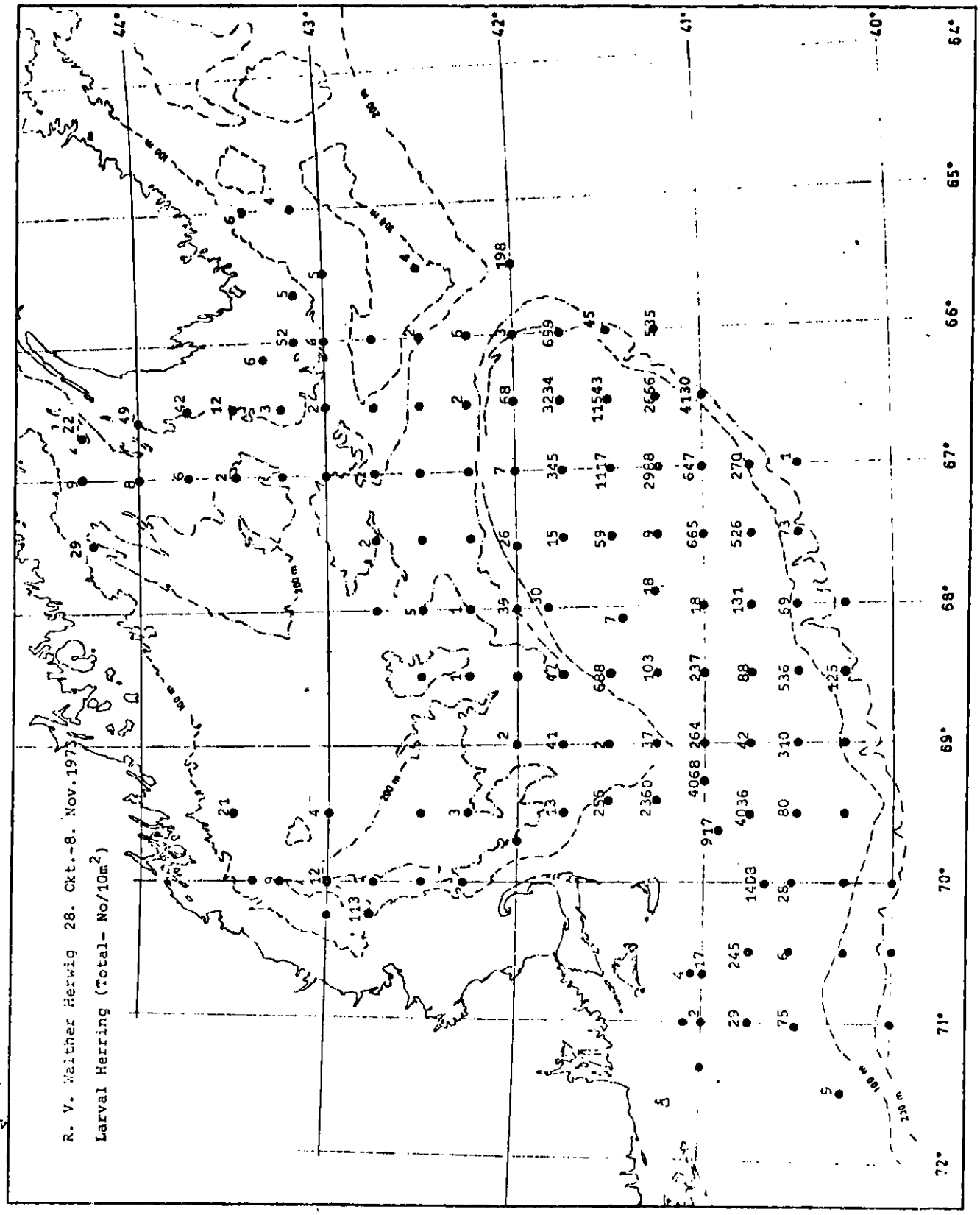

R. V. Walther Herwig 28. Okt.-8. Nov.1973
Larval Herring (Total- No/10m²)
42°
43°
42°
41°
40°
64°
65°
66°
67°
68°
69°
70°
71°
72°
100 m
200 m

Fig 4

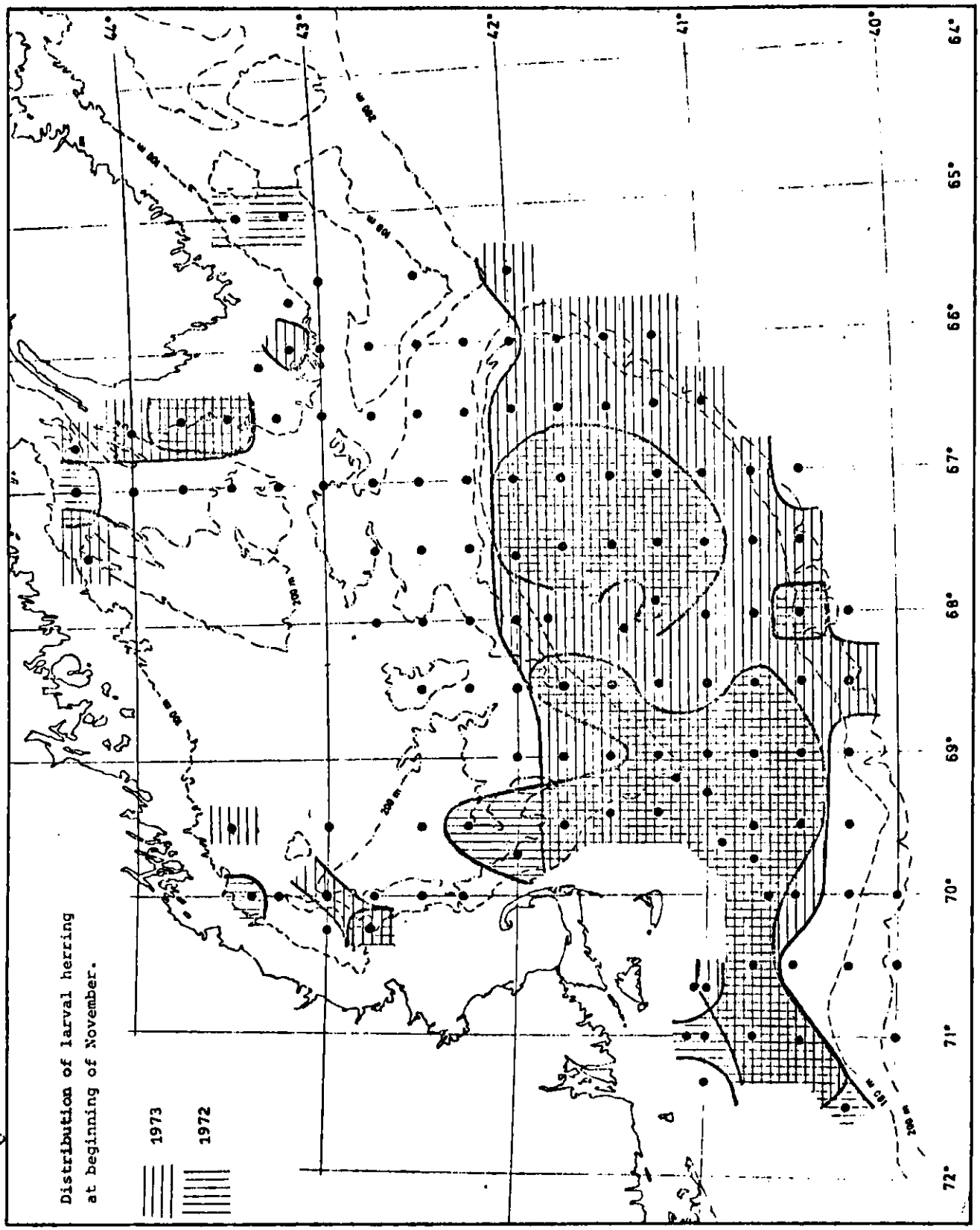
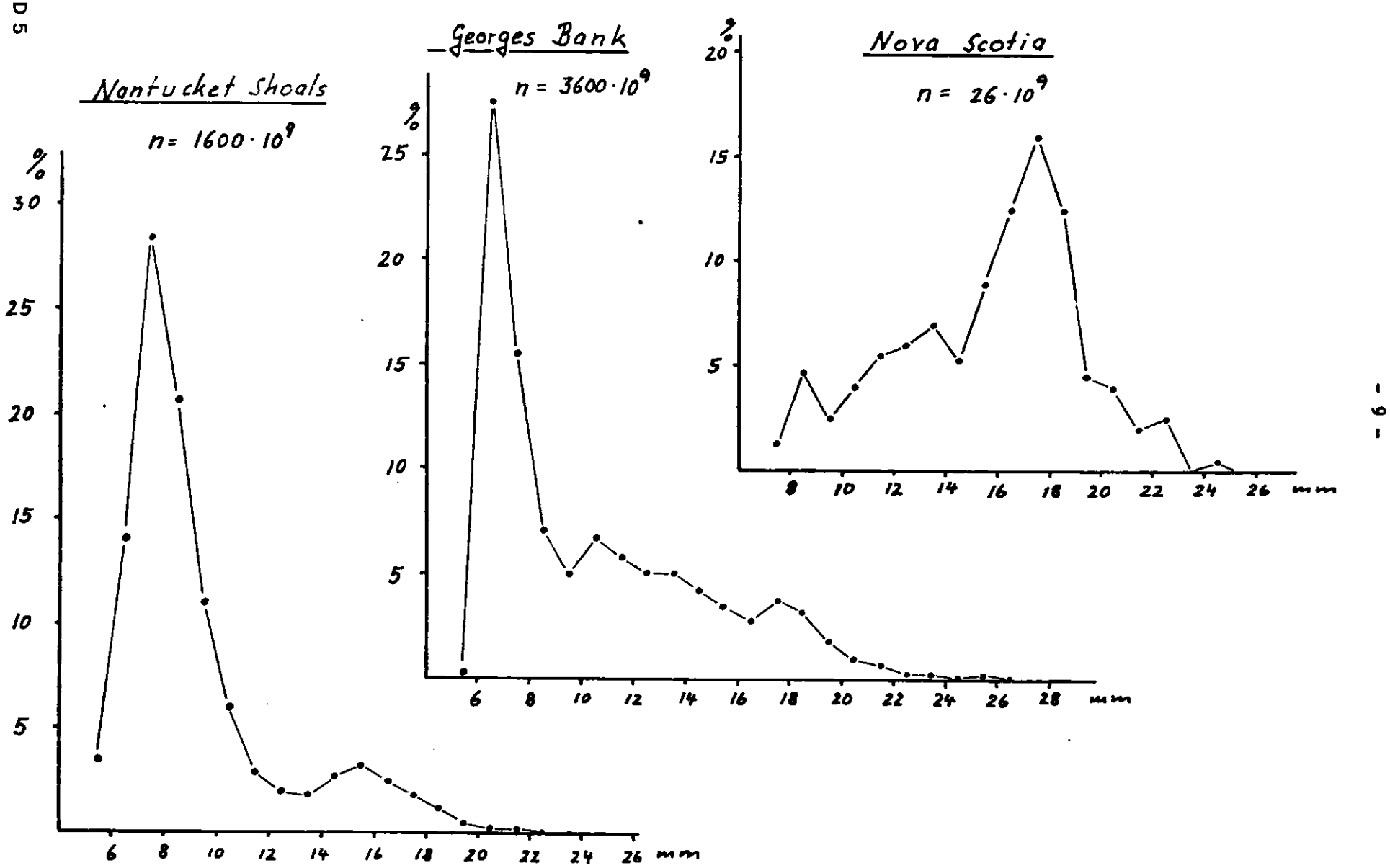
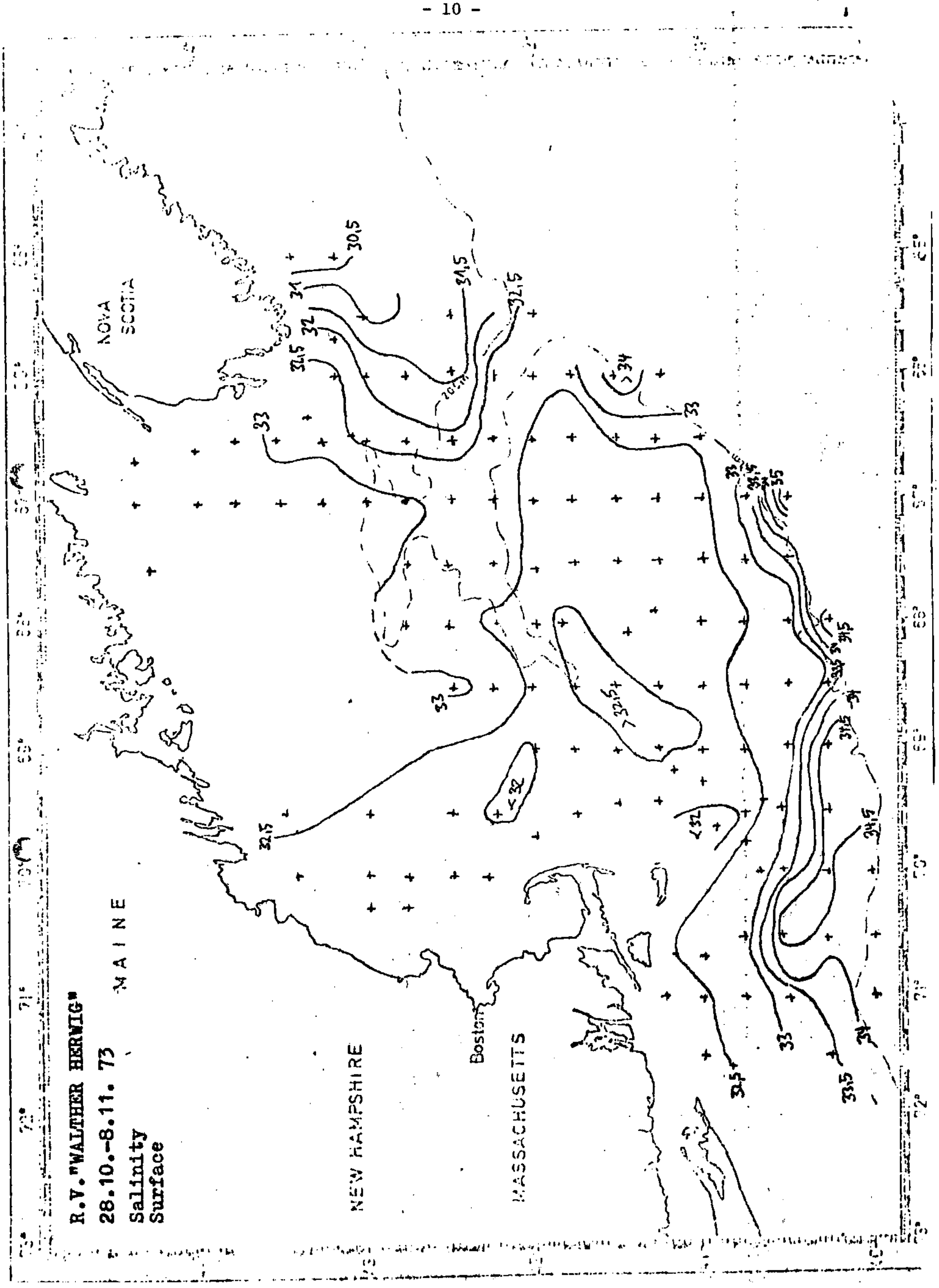

Distribution of larval herring
at beginning of November.
1973
1972
44°
43°
42°
41°
40°
72°
71°
70°
69°
68°
67°
66°
65°
64°
200 m

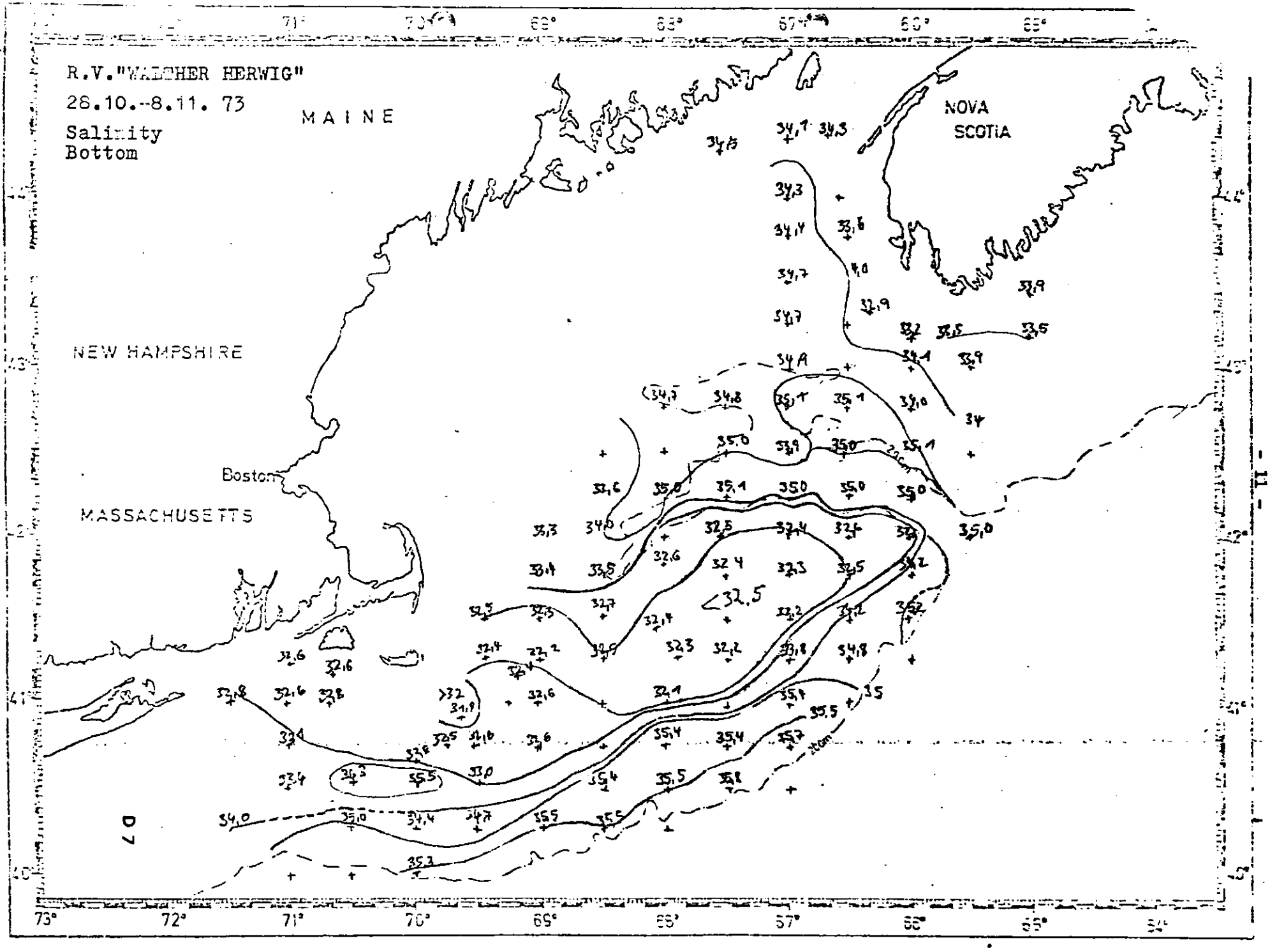
Fig. 5

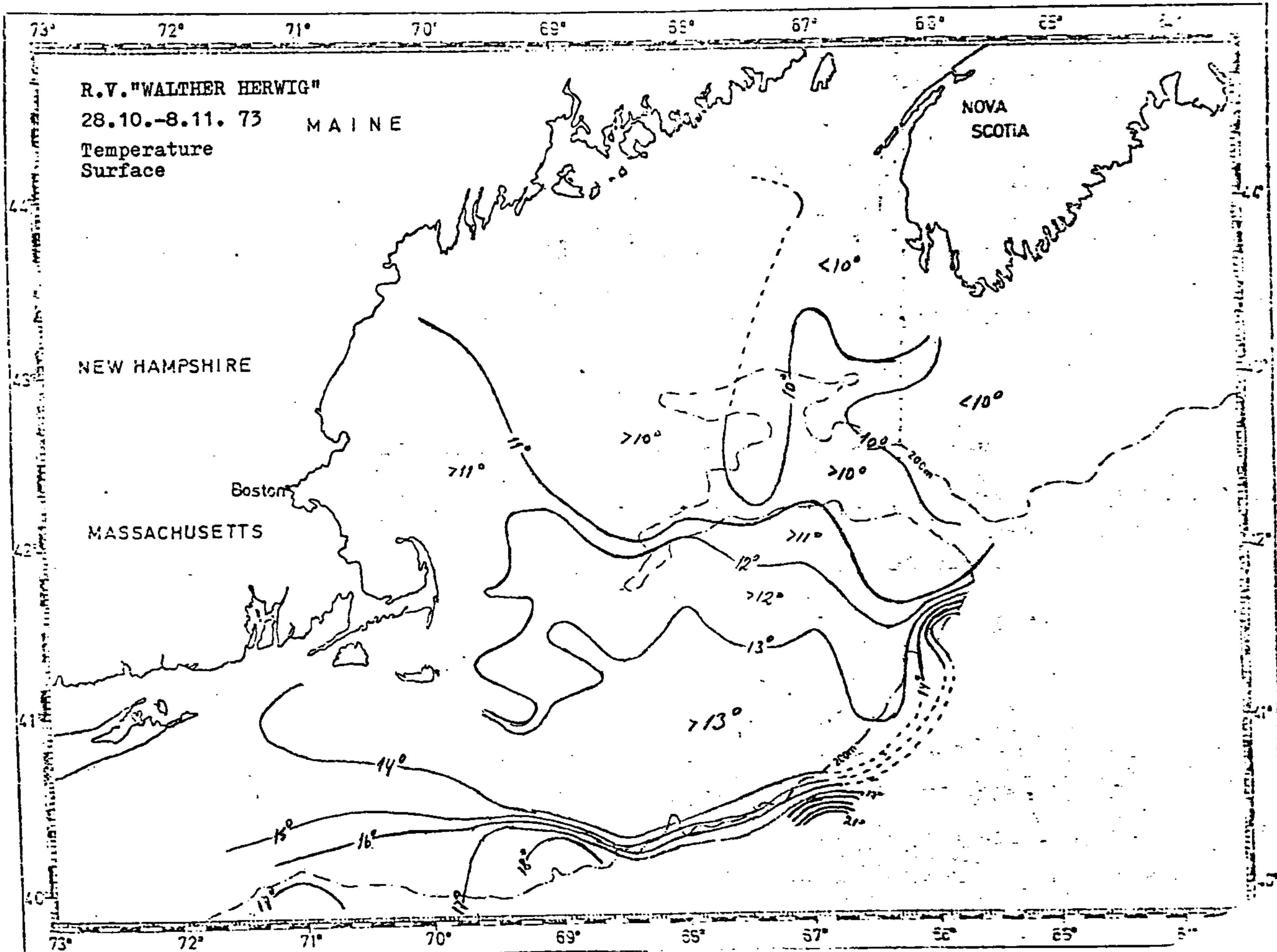
Fig. 6 : Length frequency distribution of larval herring in three areas



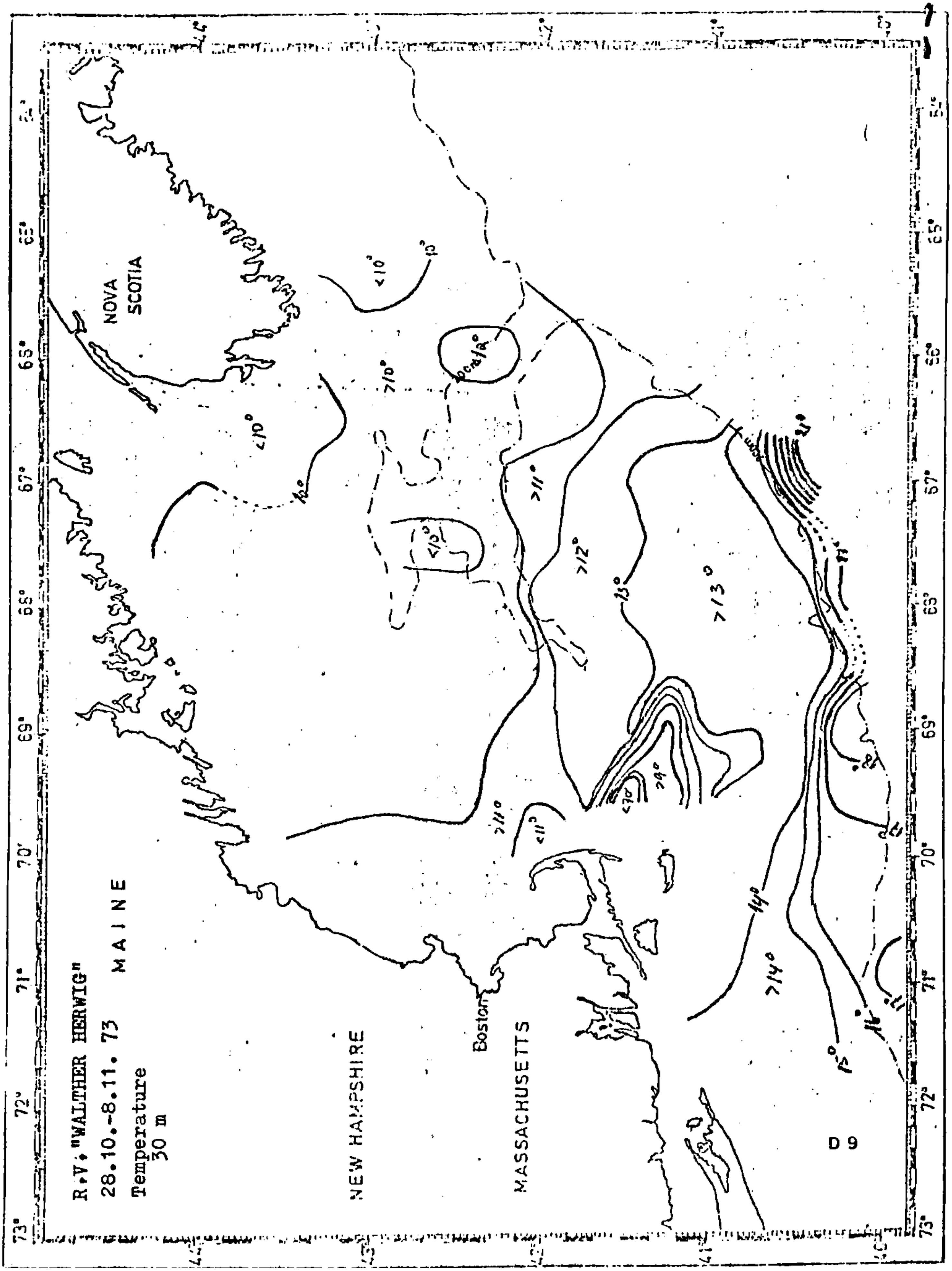

R.V. "WALTHER HERWIG"
28.10.-8.11. 73
Salinity
Surface
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
Boston
NOVA SCOTIA

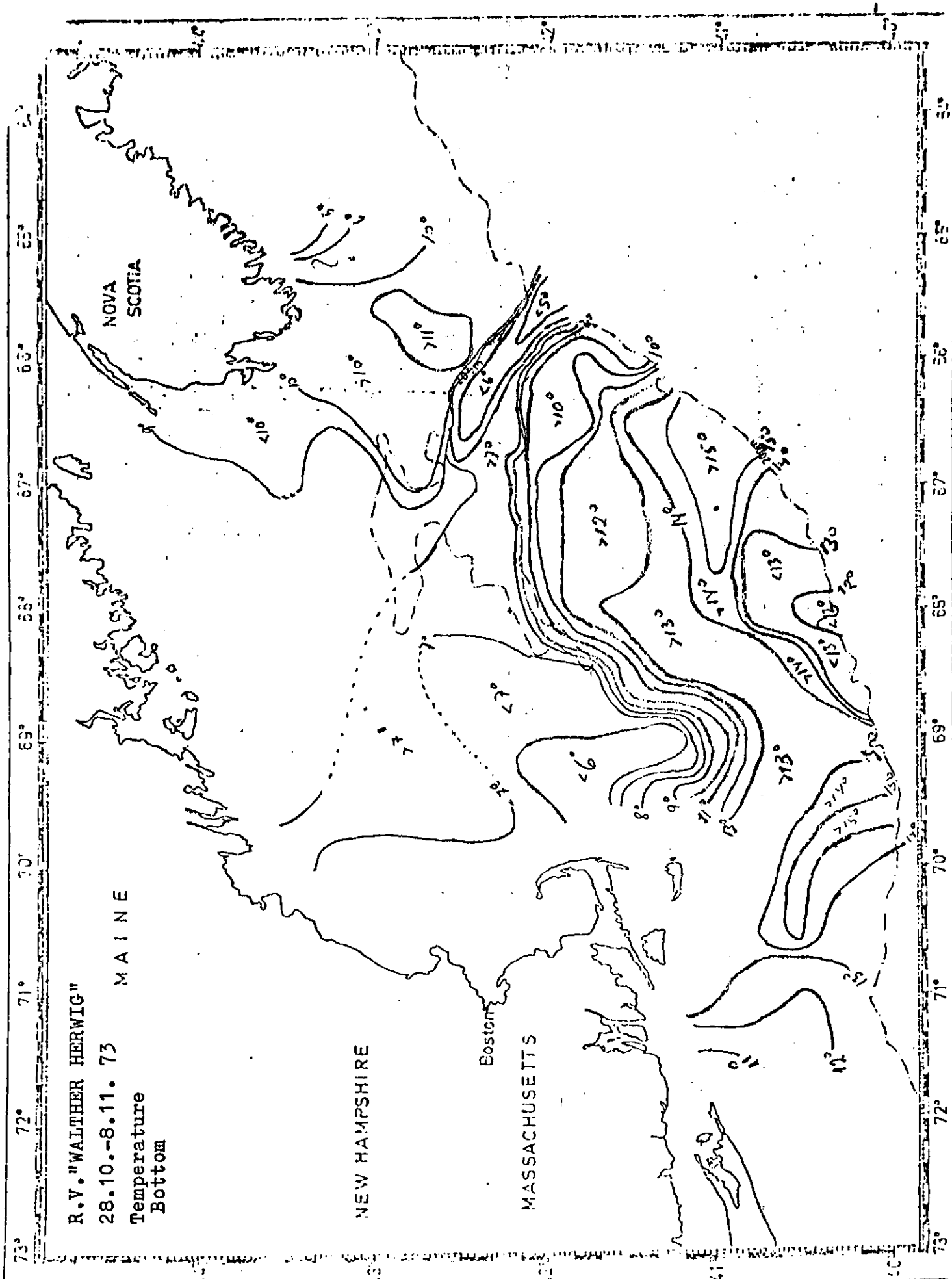
D 6


R.V."WALTHER HERWIG"
28.10.-8.11. 73
Salinity
Bottom
MAINE
NOVA SCOTIA
NEW HAMPSHIRE
Boston
MASSACHUSETTS
D 7
73°
72°
71°
70°
69°
68°
67°
66°
65°


R.V."WALTHER HERWIG"
28.10.-8.11. 73
Temperature
Surface
MAINE
NOVA SCOTIA
NEW HAMPSHIRE
Boston
MASSACHUSETTS
<10°
<10°
>10°
>10°
10°
10°
11°
>11°
>11°
12°
>12°
13°
>13°
14°
15°
16°
17°
18°
200m
73°
72°
71°
70°
69°
68°
67°
66°
65°
40°
41°
42°
43°
44°

D 8


R.V. "WALTHER HERWIG"
28.10.-8.11. 73
Temperature
30 m
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
Boston
NOVA SCOTIA
D 9


R.V."WALTHER HERWIG"
28.10.-8.11. 73
Temperature
Bottom
NOVA SCOTIA
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
Boston
73°
72°
71°
70°
69°
68°
67°
66°
65°
44°
43°
42°
41°
40°

D 10