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Preliminary report of ICNAF larval herring (*Clupea harengus*) survey in the
Gulf of Maine and on Georges Bank during December 1973¹

by

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Introduction

The December 1973 survey of the distribution of herring larvae in the Gulf of Maine, including Georges Bank was conducted by Albatross IV between December 4 and December 21, 1973. This report presents some preliminary results of that survey.

Methods

Larval herring were sampled with the 61 cm bongo array. Tows were single oblique and to a maximum depth of 100 m. Haulback rate was 10 m/min; ship speed was 3.5 knots. Both .505 and .333 mm nets were used. Stations were the pre-selected standard ICNAF stations plus some additional stations selected to increase the areal coverage. Herring larvae were sorted at sea and preserved in 5% formalin.

Bathythermographs were taken at each station, and hydrographic profiles (using the salinity-temperature-depth instrument) were done at selected stations.

Results

Due to bad weather conditions, Albatross IV could not finish all the assigned stations in the allotted time. One hundred fourteen stations were completed, but stations off the Scotian Shelf and the inner Gulf of Maine were not done. Only the Georges Bank-Nantucket Shoals areas were completely covered by this survey.

Herring larvae were found principally within the 100 m isobath on Georges Bank as in previous years. Small catches of less than 10 larvae/haul occurred north and west of Georges Bank possibly representing larvae drifting both southeastward from populations off the coast of Maine and northeastward from the Nantucket Shoals-western Georges Bank areas (Fig. 1). This distribution pattern was also seen in December 1972. Small catches also occurred south of Nantucket Shoals in waters beyond the 100 m isobath, a significantly different pattern than that of December 1972.

Herring larvae were more abundant this December in terms of numbers caught per tow (Fig. 1). In December 1972 only three stations over the Nantucket Shoals-Georges Bank area yielded catches greater than 100 larvae/tow, while this December most stations within the 60 m isobath yielded catches \geq 100 larvae.

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Except for the eastern Nantucket Shoals-western Georges Bank areas, where recently hatched larvae were caught (stations 24 and 53 in Table 1), herring larvae this December averaged larger in size than that of December 1972. The following table summarizes length frequency samples from six stations distributed along an axis running between Nantucket Shoals and eastern Georges Bank and compares the 1973 with the 1972 data.

The hydrographic situation in December 1973 was similar to that of December 1972 with respect to surface temperature over eastern Georges Bank, but was warmer over the southern and western portions of the Bank (Fig. 2,3). The cooler waters that flow round the northeastern edge of Georges Bank and down from the Scotian Shelf along the shelf edge had not penetrated as far to the west as during 1972. Much of the shelf water south of Nantucket Shoals and over the southern portions of western Georges Bank had surface temperatures higher than 11.0°C, whereas in 1972 the 11.0°C isotherm was located for the most part beyond the 100 m isobath in those areas.

Samples for studies of vertical distribution of larvae were taken at selected stations. These will be analyzed at Woods Hole, along with similar samples taken by R/V *Wieczno*. Neuston samples were taken whenever weather permitted. These tows caught juvenile hakes in the Nantucket Shoals-western Georges Bank areas and many herring larvae in all areas where the latter were abundant. Few larvae of any kind were taken in the vicinity of Massachusetts Bay with either Bongo or Neuston nets.

Table 1. Length Frequency Samples (Numbers at each length interval).

Length (mm)	* Sta. 23		Sta. 24		Sta. 53		Sta. 73-74		Sta. 83		Sta. 90	
	1973	1972	1973	1972	1973	1972	Sta.73	Sta.74	1973	1972	1973	1972
5												
6												
7			17									
8			26	1								
9			50									
10			13									
11		1	7	1								1
12			22	8						1		
13		4	18	10	1							1
14	2	4	5	5	1		1					
15	2	4	4	5	3		1			2		1
16	2	1		10	10			1	5		2	2
17	2	13	5	10	14	1	3	2	5		6	1
18	3	5	4	9	19	1	10	5	22	4	4	4
19	18	1	3	1	28	3	16	8	13	6	2	
20	28	2	4	1	12	3	22	4	23	18	5	2
21	35	2		1	12	5	28	1	24	5	6	
22	31	2			7	3	21		20		6	
23	10		1		3	4	5	2	5	2	2	
24	6	1			1	1	3		5	3		
25	5						2		3			
26	3					1			1	2	1	
27							1			1		
28												
29		1							1			
30												
Total caught	396	41	457	62	166	22	156	23	230	42	34	11

* Station locations are indicated in Fig. 1.

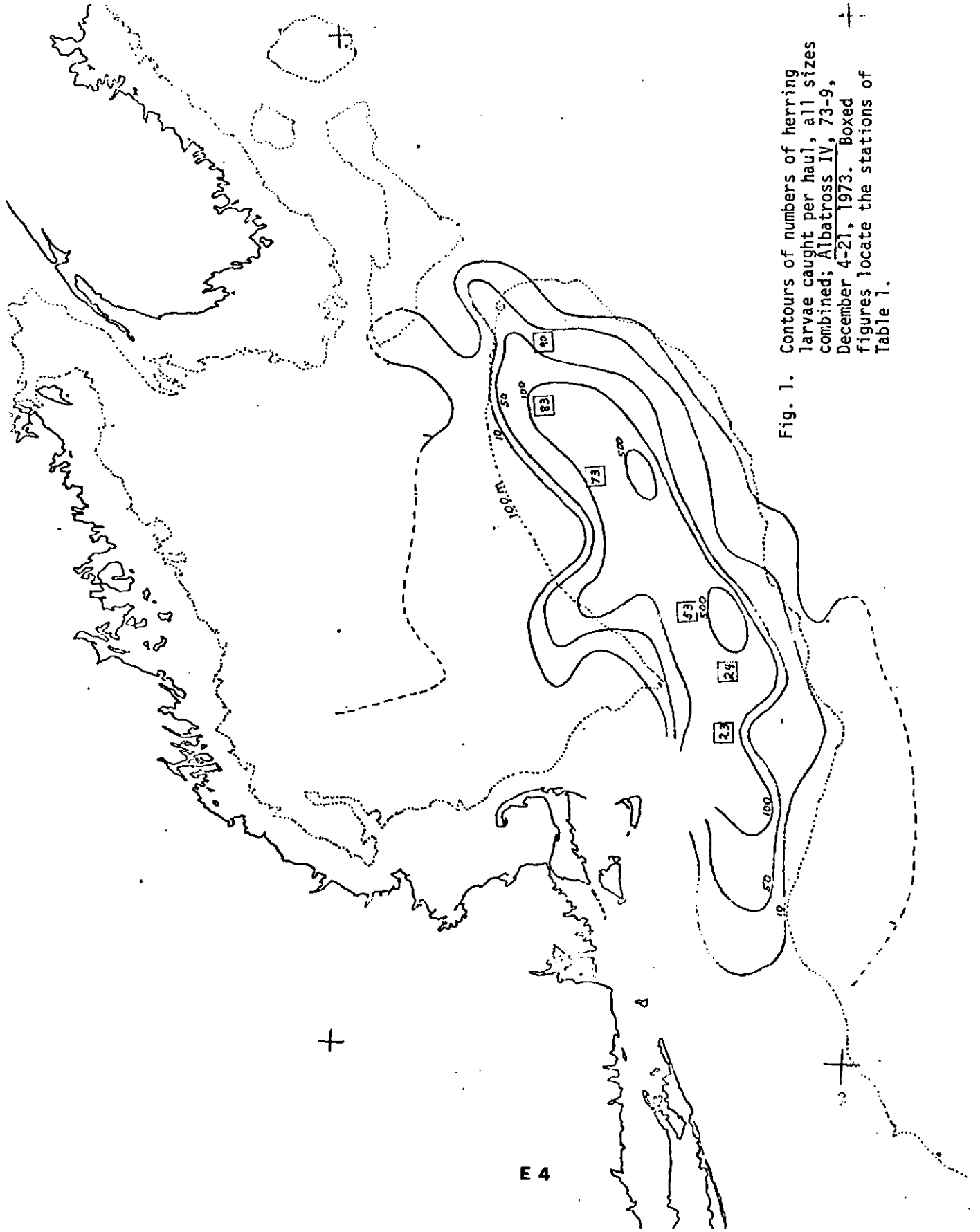


Fig. 1. Contours of numbers of herring larvae caught per haul, all sizes combined; Albatross IV, 73-9, December 4-21, 1973. Boxed figures locate the stations of Table 1.

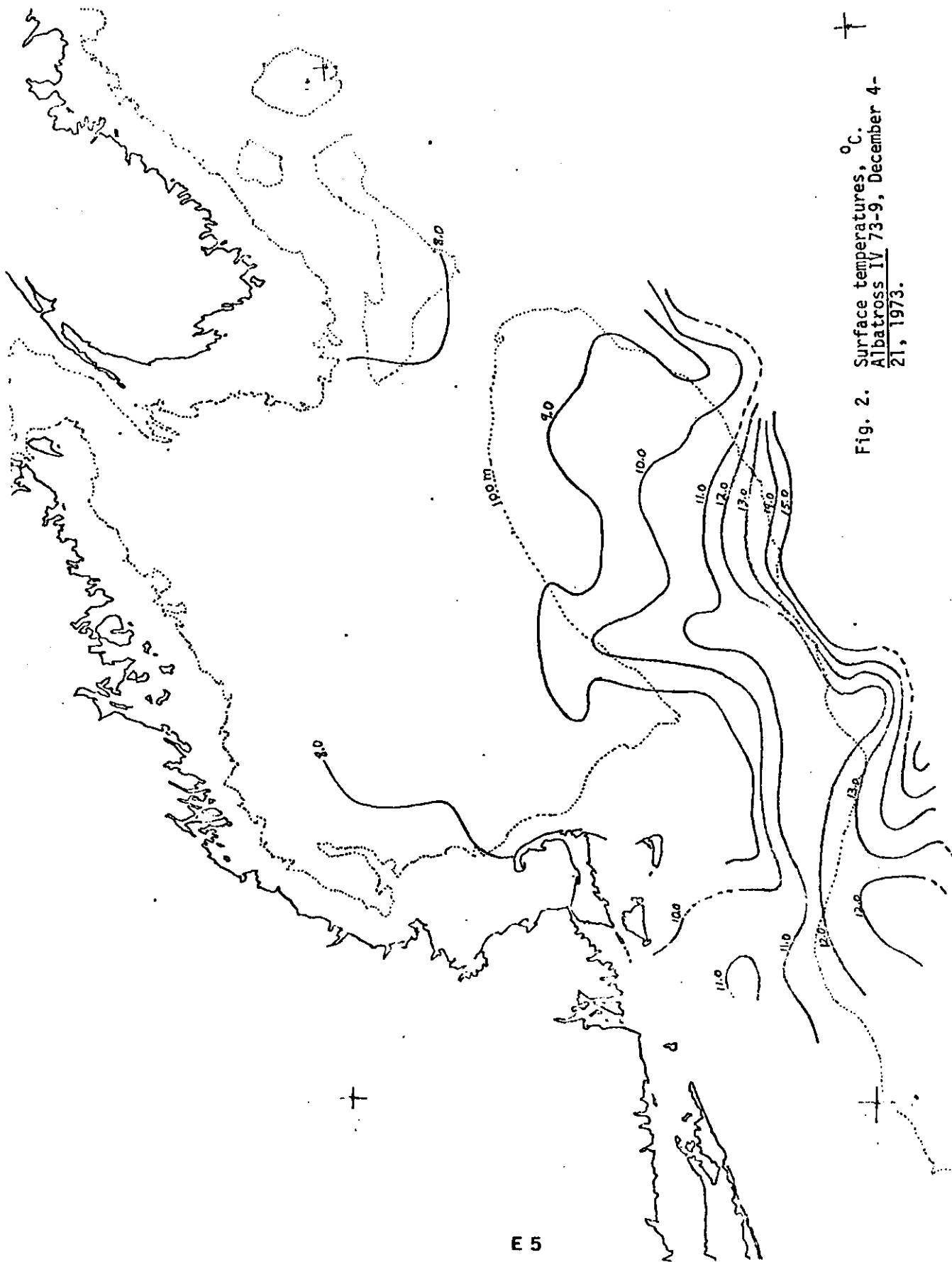


Fig. 2. Surface temperatures, °C.
Albatross IV 73-9, December 4-
21, 1973.

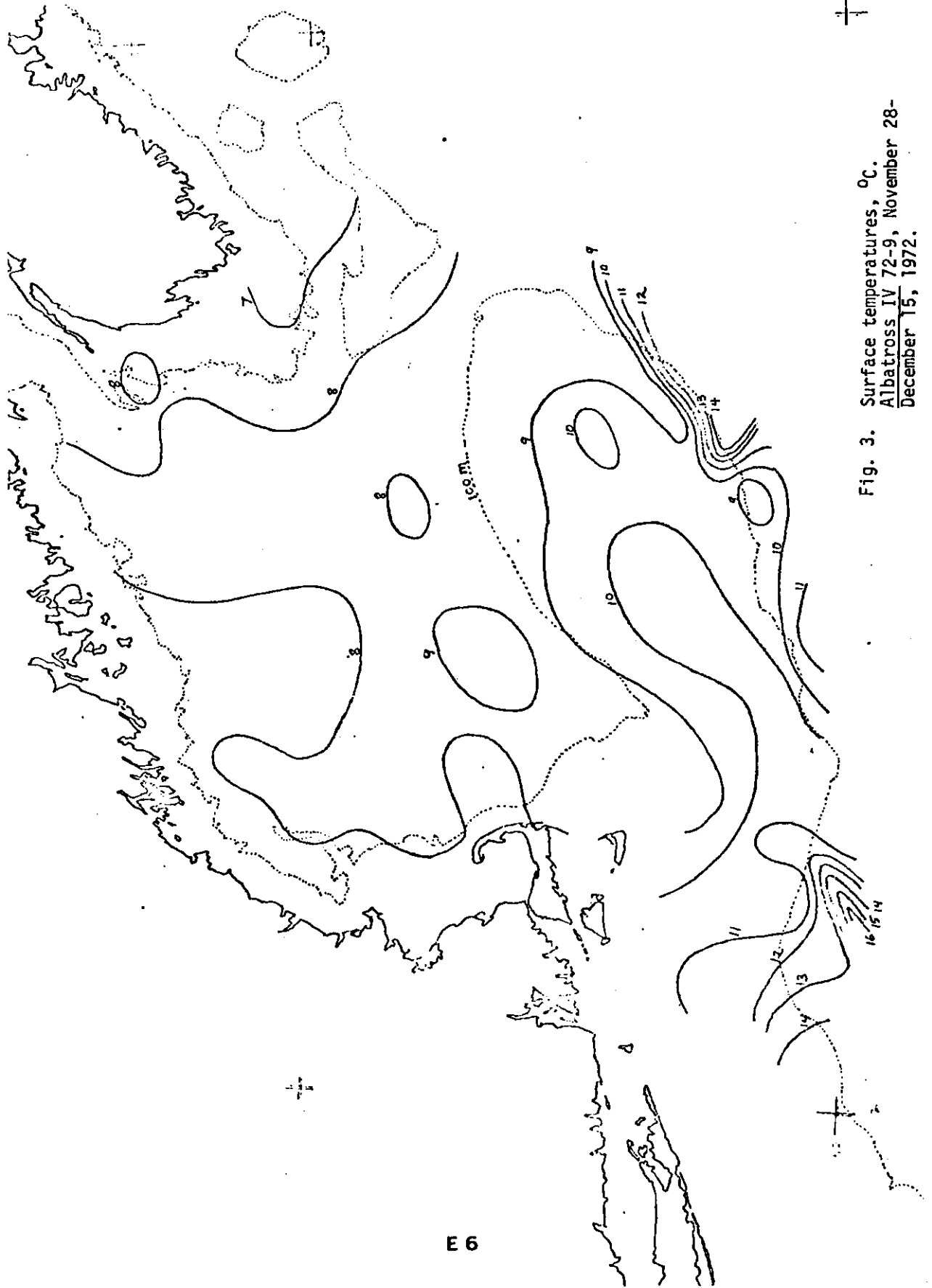


Fig. 3. Surface temperatures, °C.
Albatross IV 72-9, November 28-
December 15, 1972.

