CRUISE RESULTS
Fisheries Research Vessel Albatross IV
Cruise No. AL 00-05
Ecosystems Monitoring Survey

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DATE: 4 October 2000

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CRUISE PERIOD AND AREA

The cruise period was from 22 to 29 August 2000. The research vessel Albatross IV covered the Georges Bank and Gulf of Maine regions (Figure 1) as part of the Late Summer Survey Period.

OBJECTIVES

The objective of the cruise was to assess the impact of changing biological and physical properties of the Georges Bank and Gulf of Maine portions of the Northeast Continental Shelf ecosystem which influence the sustainable productivity of the living marine resources.

METHODS

The survey consisted of 61 randomly distributed stations at which the vessel stopped to lower instruments over the side.

Key parameters which were measured included water column temperature and salinity, ichthyo and zooplankton composition, abundance and distribution; along-track temperature, salinity, chlorophyll-a fluorescence and standard weather observations.

A double oblique tow using the 61-centimeter Bongo sampler and a CTD was made at all stations. The tow was made to approximately 5 meters above the bottom, or to a maximum depth of 200 meters, at a ship speed of 1.5 knots. Plankton sampling gear consisted of a 61-centimeter mouth diameter aluminum bongo frame with 2 333-micron nylon mesh nets. A 45-kilogram lead ball was attached by an 80 centimeter length of 3/8-inch diameter chain below the aluminum Bongo frame to depress the sampler. A digital flowmeter was suspended within the mouth of each sampler to determine the amount of water filtered by each net. The plankton sampling gear was deployed over the port quarter of the vessel by means of a conducting-cable winch and the ship's main boom. Plankton samples

were preserved in a 5 percent solution of formalin in seawater. Tow depth was monitored in real time with a Seabird CTD profiler, which was hard-wired to the conductive towing cable, providing simultaneous depth, temperature and salinity data for each plankton tow.

Continuous monitoring of the seawater temperature, salinity, and chlorophyll-a level, at a depth of 2 meters was done along all of the cruise track by means of a thermosalinograph, and a flow-through fluorometer.

The thermosalinograph and flow-through fluorometer were connected to the Scientific Computing System installed in the laboratory area of the vessel by Atlantic Marine Center personnel. This system recorded output from the thermosalinograph, and the fluorometer every ten seconds, and gave the data records a time-date stamp from the GPS unit.

Samples for Seabird salinity data calibration were obtained on the 12-6 watch by taking a water sample from 30 or more meters depth using a 1.7 liter Niskin bottle at every fifth or sixth station. Calibration of the thermosalinograph and fluorometer from the surface flow-through system was undertaken on the 6-12 watch following the protocol outlined in the Ecosystem Monitoring Program Operations Manual.

At the Narragansett Laboratory, sample jars from stations in the Gulf of Maine area were measured for settled height of zooplankton where Calanus finmarchicus was the dominant organism present. Dominance was defined as Calanus comprising more than 75% of the sample visible to the eye through the glass sides of the jar. These values were multiplied by the cross-sectional area of the sample jars to produce an estimate of settled volume in cm^3 of Calanus finmarchicus for comparision between stations.

RESULTS

A summary of survey activities is presented in Table 1. Figure 1 shows the areal coverage achieved during the cruise. After a two hour delay in waiting for a new crew-member and correcting an engine problem, the Albatross IV sailed at 1600 EDT on Tuesday 22 August 2000. Work commenced north of the Great South Channel with the vessel picking up two stations in the Gulf of Maine area, then proceeding south and east onto the southern flank of Georges Bank.

With excellent weather and calm seas, the Albatross IV worked its way up to the northeast peak of Georges Bank and then southwest along the shoal area and northern flank, completing this area by early on 26 August. One extra station was done on Georges Bank by accident, yielding a total of 31 stations for this area. As good weather persisted for the duration of the cruise, work proceeded rapidly in the Gulf of Maine. Stations were done in a counter-clockwise direction, with the vessel working up offshore stations in the middle of the Gulf of Maine area and proceeding in a northeasterly direction towards Nova Scotia and the Bay of Fundy, then southwest along the Maine coast to pick up the inshore stations. The last station was completed early on Tuesday 29 August. The Albatross IV returned to Woods Hole via the Cape Cod Canal and docked that same day at 1700 EDT.

After examination of the sample jars for Calanus finmarchicus as per the protocol listed in the Methods section, 15 stations were found to have sizable volumes of this organism as listed in Table 1.

DISPOSITION OF SAMPLES AND DATA

All samples and data, except the CTD data, were delivered to the Ecosystems Monitoring Group of the NEFSC, Narragansett, RI, for quality control processing and further analysis. The CTD data was delivered to the Oceanography Branch of the NEFSC, Woods Hole, MA.

SCIENTIFIC PERSONNEL

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Table 1. STATION OPERATION REPORT FOR CRUISE AL 00-05

STA	DATE	OPERATION	#SAMPLES	CTD CAST#	GOM Calanus vol cm ^{3} (est)
1	8/23/2000	BONGO	2	1	
2	8/23/2000	BONGO	2	2	
3	8/23/2000	BONGO	2	3	
4	8/23/2000	WATER	0	4	
4	8/23/2000	WATER	1	5	
4	8/23/2000	BONGO	2	6	
5	8/23/2000	BONGO	2	7	
6	8/23/2000	BONGO	2	8	
7	8/23/2000	BONGO	2	9	
8	8/23/2000	BONGO	2	10	
9	8/23/2000	BONGO	2	11	
10	8/23/2000	BONGO	2	12	
11	8/24/2000	WATER	1	13	
11	8/24/2000	BONGO	2	14	
12	8/24/2000	BONGO	2	15	
13	8/24/2000	BONGO	2	16	
14	8/24/2000	BONGO	2	17	
15	8/24/2000	BONGO	2	18	
16	8/24/2000	BONGO	2	19	
17	8/24/2000	BONGO	2	20	
18	8/24/2000	BONGO	2	21	
19	8/24/2000	BONGO	2	22	
20	8/24/2000	BONGO	2	23	
21	8/24/2000	WATER	1	24	
21	8/24/2000	BONGO	2	25	
22	8/24/2000	BONGO	2	26	
23	8/24/2000	BONGO	2	27	
24	8/25/2000	BONGO	2	28	
25	8/25/2000	BONGO	2	29	
26	8/25/2000	BONGO	2	30	
27	8/25/2000	BONGO	2	31	
28	8/25/2000	BONGO	2	32	
28	8/25/2000	WATER	1	33	
29	8/25/2000	BONGO	2	34	
30	8/25/2000	BONGO	2	35	
31	8/25/2000	BONGO	2	36	
32	8/25/2000	BONGO	2	37	
33	8/25/2000	BONGO	2	38	
34	8/25/2000	WATER	1	39	
34	8/25/2000	BONGO	2	40	

STA	DATE	OPERATION	#SAMPLES	CTD CAST#	GOM Calanus vol cm ³ (est)
35	8/26/2000	BONGO	2	41	
36	8/26/2000	BONGO	2	42	
37	8/26/2000	BONGO	2	43	827
38	8/26/2000	BONGO	2	44	509
39	8/26/2000	BONGO	2	45	572
40	8/26/2000	BONGO	2	46	
40	8/26/2000	WATER	1	47	
41	8/26/2000	BONGO	2	48	
42	8/26/2000	BONGO	2	49	382
43	8/27/2000	BONGO	2	50	636
44	8/27/2000	WATER	1	51	
44	8/27/2000	BONGO	2	52	445
45	8/27/2000	BONGO	2	53	318
46	8/27/2000	BONGO	2	54	
47	8/27/2000	BONGO	2	55	
48	8/27/2000	BONGO	2	56	
49	8/27/2000	BONGO	2	57	445
50	8/27/2000	WATER	1	58	
50	8/27/2000	BONGO	2	59	699
51	8/28/2000	BONGO	2	60	572
52	8/28/2000	BONGO	2	61	
53	8/28/2000	BONGO	2	62	
54	8/28/2000	WATER	1	63	
54	8/28/2000	BONGO	2	64	
55	8/28/2000	BONGO	2	65	
56	8/28/2000	BONGO	2	66	318
57	8/29/2000	BONGO	2	67	
58	8/29/2000	WATER	1	68	
58	8/29/2000	BONGO	2	69	318
59	8/29/2000	BONGO	2	70	636
60	8/29/2000	BONGO	2	71	572
61	8/29/2000	BONGO	2	72	318

TOTALS:

Bongo Casts	=	61
Bongo Samples	=	122
Water Samples	=	10
CTD Casts	=	72

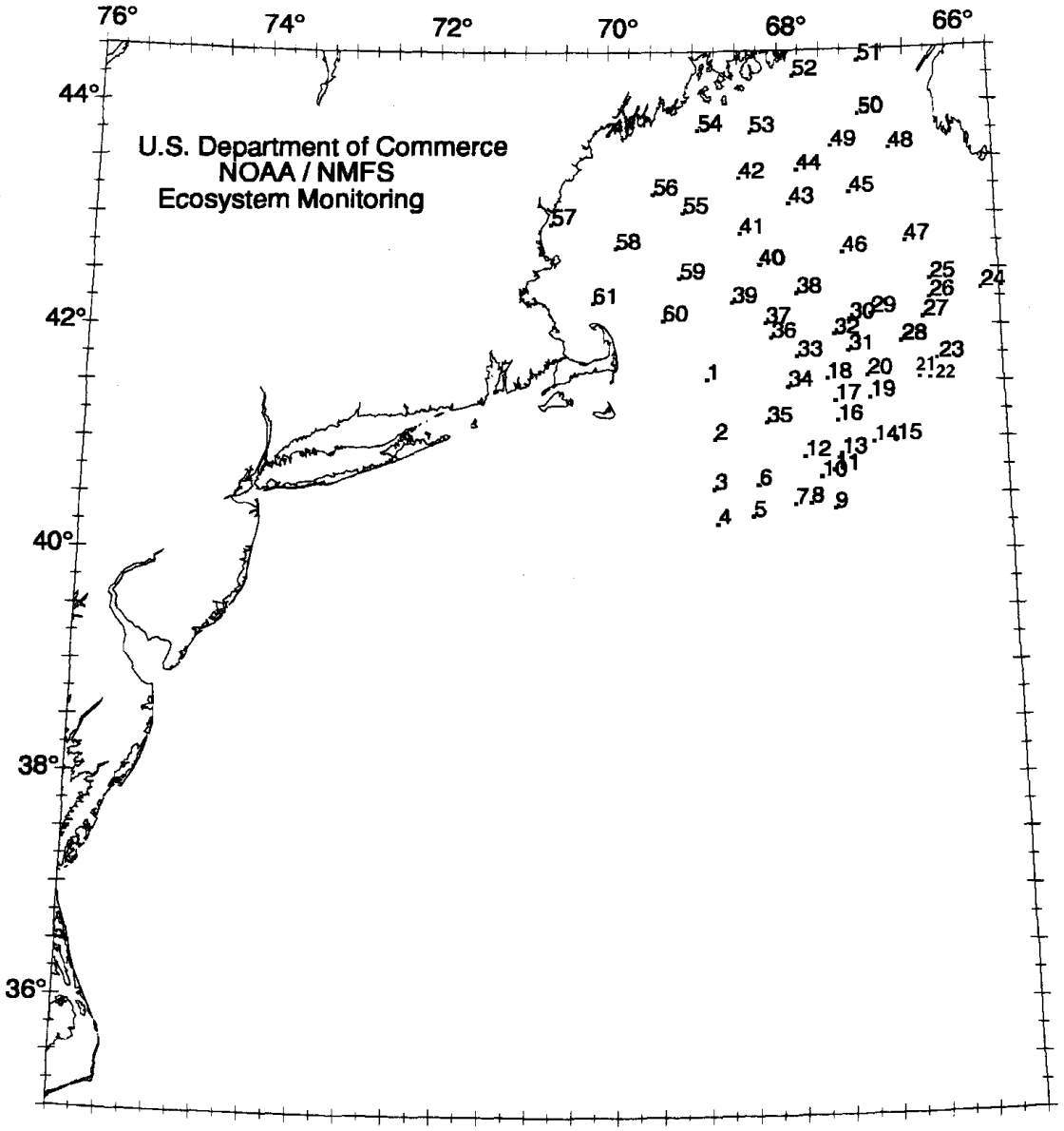

Figure 1. Station locations numbered consecutively for Late Summer Ecosystems Monitoring Cruise AL 00-05, 22 - 29 August 2000.