CRUISE RESULTS
Fisheries Research Vessel Albatross IV
Cruise No. AL 01-11
Ecosystems Monitoring Survey

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CRUISE PERIOD AND AREA

The cruise period was from 29 October to 16 November 2001. The research vessel Albatross IV covered the Mid-Atlantic Bight, Southern New England, Georges Bank and Gulf of Maine regions (Figure 1) for the Late Fall Ecosystems Monitoring Survey.

OBJECTIVES

The primary objective of the cruise was to assess the impact of changing biological and physical properties of the Mid-Atlantic Bight, Southern New England, Georges Bank and Gulf of Maine portions of the Northeast Continental Shelf ecosystem which influence the sustainable productivity of the living marine resources.

Secondary objectives of this cruise were:

- the analysis of phytoplankton samples for nitrogen stable isotope ratios,
- collection of samples for zooplankton genome studies,
- the examination of plankton samples at sea for concentrations of Calanus finmarchicus to correlate with right whale sightings,
- 1 meter MOCNESS discrete depth sampling to study advection of this species into the Gulf of Maine
- a bongo-video plankton recorder sampling comparison for the examination of differences in data collected by these different technologies.

METHODS

The survey consisted of 120 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 two 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 stern quarter of the vessel by means of a conducting-cable winch and a 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.

Phytoplankton samples for nitrogen stable isotope ratio analysis were collected from the discharge water of the near-surface flow-through system. Six hundred to one thousand milliliters of seawater were pre-filtered through 300 micron mesh nitex gauze to remove most zooplankton, then filtered through a Whatman GFF glass-fiber filter and immediately frozen, for analysis ashore.

RESULTS

A summary of routine survey activities is presented in Table 1. Figure 1 shows the areal coverage achieved during the cruise. The Albatross IV sailed punctually at 1400 hours EST on Monday, October 29

and proceeded south to commence sampling operations in the Mid-Atlantic Bight. While en-route to the first station, the Albatross IV diverted from its cruise track to respond to a Coast Guard call for assistance in searching for a sinking lobster boat off the Rhode Island coast. Assisted by the Delaware II, the Albatross searched the Rhode Island waters from 1800 to 2400 without success. The Albatross resumed its southerly course in the early morning hours of October 30 and reached the first station at the northern edge of the Mid-Atlantic Bight by around noon. The Albatross IV proceeded south, taking advantage of excellent weather and picking up stations on the offshore portion of the continental shelf. By October 31 the southernmost station off of Cape Hatteras had been reached and the vessel started working its way back north along the inshore portion of the shelf. The Albatross returned to Woods Hole on November 5 after completing the southern portion of the cruise in one week due to excellent weather and no problems or diversions other than the search for the missing lobsterman. Plans for a quick turn-around to exchange two NMFS staff, embark three URI scientists and sail the next day were foiled with the arrival of a low pressure system having 30-40 knot winds that kept the vessel in port until Thursday, November 8. This development dimmed hopes that the cruise would be completed early enough to allow time for a bongo-VPR comparison at the end. The Albatross IV sailed for Georges Bank at 0900 EST on 8 November, zig-zagging its way across the Bank and covering all stations from the northern to southern flanks as it proceeded eastward. Weather started out well but deteriorated by 10 November as 30 knot plus winds greatly slowed vessel progress from the middle of Georges Bank to the northeast peak and on into the Gulf of Maine. A pattern of diminishing winds during the day, and strengthening winds at night continued until 13 November when a high pressure system brought good weather for the remainder of cruise. Cruise progress increased as the wind diminished, allowing all stations to be completed before the vessel returned to Woods Hole. Although all stations were completed, no time was available for any bongo-VPR comparison tows. This was the only objective of cruise AL 01-11 that was not met. Sampling operations were completed aboard the Albatross IV on Thursday, November 15 and the vessel tied up at the NMFS dock in Woods Hole at 0800 on 16 November.

DISPOSITION OF SAMPLES AND DATA

All samples and data, except for the nitrogen and carbon isotope samples, the zoogen samples and the Calanus and CTD data, were delivered to the Ecosystems Monitoring Group of the NEFSC, Narragansett, RI, for quality control processing and further analysis. The nitrogen and carbon isotope samples were kept frozen and delivered to Rick McKinney at the US EPA Lab in Narragansett, RI. The zoogen samples were picked up from the vessel by Nancy Copley from Woods Hole Oceanographic Institute. The CTD data was delivered to the Oceanography Branch of the NEFSC, Woods Hole, MA, and the Calanus data

as forwarded to Patricia Gerrior at NMFS in Woods Hole, MA.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Narragansett, RI

Jerome Prezioso[1,2], Chief Scientist
Jacquelyn Anderson[1,2]
Joseph Kane[1,2]
Cristina Bascunan[1]
Carolyn Griswold[2]

University of Rhode Island, Graduate School of Oceanography, Narragansett, RI

Maria Casas[2]
Niele DiNitto[2]
Whitely Saumweber[2]

[1]/Personnel on Leg I (29 Oct. – 5 Nov.)

[2]/Personnel on Leg II (8 – 16 Nov.)

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For further information contact:

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Table 1. STATION OPERATION REPORT FOR CRUISE AL0111

CAST	STA	Date(GMT)			TIME(GMT)	LAT	LONG	DEPTH	OPER.[3]
		mm	dd	yy	hr/min			meters	
1	1	10	30	1	17 27	3937.6	7319.6	37	w
2	1	10	30	1	17 35	3937.3	7319.6	37	b
3	2	10	30	1	19 29	3921.4	7306.6	61	b
4	3	10	30	1	20 24	3913.6	7308.8	63	b,z1
5	4	10	30	1	21 58	3903.4	7321.5	60	b
6	5	10	31	1	1 14	3831.9	7336.5	69	b
7	6	10	31	1	2 37	3820.1	7341.6	114	b
8	7	10	31	1	6 31	3754.2	7420.4	65	w
9	7	10	31	1	6 39	3754.1	7420.4	65	b
10	8	10	31	1	7 50	3743.6	7416.6	106	b,N1,C1
11	9	10	31	1	9 35	3733.7	7432	63	b
12	10	10	31	1	10 57	3731.6	7448.2	40	b
13	11	10	31	1	12 34	3715.4	7450.1	49	b

as forwarded to Patricia Gerrior at NMFS in Woods Hole, MA.

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CAST	STA.	Date(GMT)			TIME(GMT)	LAT	LONG	DEPTH	OPER.[3]
		mm	dd	yy	hr/min			meters	
1	1	10	30	1	17 27	3937.6	7319.6	37	w
2	1	10	30	1	17 35	3937.3	7319.6	37	b
3	2	10	30	1	19 29	3921.4	7306.6	61	b
4	3	10	30	1	20 24	3913.6	7308.8	63	b,z1
5	4	10	30	1	21 58	3903.4	7321.5	60	b
6	5	10	31	1	1 14	3831.9	7336.5	69	b
7	6	10	31	1	2 37	3820.1	7341.6	114	b
8	7	10	31	1	6 31	3754.2	7420.4	65	w
9	7	10	31	1	6 39	3754.1	7420.4	65	b
10	8	10	31	1	7 50	3743.6	7416.6	106	b,N1,C1
11	9	10	31	1	9 35	3733.7	7432	63	b

CAST	STA.	Date(GMT)			TIME(GMT)	LAT	LONG	DEPTH	OPER.[3]
12	10	10	31	1	10 57	3731.6	7448.2	40	b
13	11	10	31	1	12 34	3715.4	7450.1	49	b
14	12	10	31	1	13 57	3704.6	7500.6	39	b
15	13	10	31	1	20 40	3549.8	7507.8	31	b,Z2
16	14	10	31	1	23 43	3613.8	7526.4	31	b,N2
17	15	11	1	1	1 10	3625.3	7533.4	24	b
18	16	11	1	1	3 17	3642.3	7519.8	20	b,Z3
19	17	11	1	1	4 29	3652.4	7517.7	29	b,N3
20	18	11	1	1	8 30	3733.3	7512.9	29	b
21	19	11	1	1	10 12	3742.9	7529.8	15	b,N4
22	20	11	1	1	13 24	3803.3	7458.3	21	b
23	21	11	1	1	15 35	3820.7	7444.7	27	b
24	22	11	1	1	16 47	3824.9	7432.3	29	w,Z4
25	22	11	1	1	16 56	3824.8	7432.1	30	b
26	23	11	1	1	19 29	3843.7	7451.7	17	b,N5
27	24	11	1	1	21 16	3845	7429.2	23	b
28	25	11	1	1	22 42	3846.4	7412.3	44	b
29	26	11	2	1	0 24	3903.1	7413.9	29	b
30	27	11	2	1	2 27	3912.2	7350.3	44	b
31	28	11	2	1	4 17	3928.9	7350.3	32	b,Z5
32	29	11	2	1	6 14	3947.2	7351.7	25	w
33	29	11	2	1	6 22	3947.2	7351.7	25	b
34	30	11	2	1	7 34	3952.9	7340.9	30	b
35	31	11	2	1	11	4027.9	7355.6	15	b,Z6,N6
36	32	11	2	1	15 22	4028.5	7301.2	34	b,N7,C2
37	33	11	2	1	17 37	4008.1	7307.6	42	w
38	33	11	2	1	17 46	4008.2	7307.7	42	b
39	34	11	2	1	19 12	3956	7314.1	72	b
40	35	11	2	1	21 12	3946.1	7252.9	70	b
41	36	11	2	1	22 49	3930.6	7256	60	b
42	37	11	3	1	1 49	3948.5	7224.1	77	b,N8
43	38	11	3	1	4 34	4014.5	7233.7	55	b
44	39	11	3	1	7 38	4043.1	7219.3	39	w
45	39	11	3	1	7 46	4043.3	7219.3	39	b
46	40	11	3	1	10 53	4015.8	7201.6	63	b
47	41	11	3	1	12 56	3959.8	7148.8	92	b
48	42	11	3	1	14 48	4004.7	7127.2	90	b,Z7
49	43	11	3	1	16 11	4000	7114.1	259	b,Z8
50	43	11	3	1	16 38	4000.8	7114.6	234	
51	44	11	3	1	18 5	4010.8	7104.6	130	b

CAST	STA.	Date(GMT)			TIME(GMT)	LAT	LONG	DEPTH	OPER.[3]
52	45	11	3	1	19 41	4014.9	7122.5	85	b
53	46	11	3	1	21 22	4029.8	7131.2	73	b
54	47	11	4	1	0 23	4100	7143.6	43	b,N9
55	48	11	4	1	2 57	4048.8	7114.1	59	b
56	49	11	4	1	4 10	4042.7	7101.7	59	b,Z9
57	50	11	4	1	6 23	4027	7041.4	77	w
58	50	11	4	1	6 32	4026.9	7041.3	78	b
59	51	11	4	1	9 52	4011.6	7005.4	100	b,Z10
60	52	11	4	1	13 3	4019.7	6926.6	74	b
61	53	11	4	1	14 18	4024.2	6913	80	b
62	54	11	4	1	16 30	4042.4	6930.7	46	b
63	55	11	4	1	17 54	4045.1	6947	40	b
64	55	11	4	1	18 0	4045.1	6946.9	40	b
65	56	11	4	1	20 5	4033.6	7009.8	57	b
66	57	11	4	1	22 10	4053.9	7005.3	26	b
67	58	11	4	1	23 25	4054.5	7023.5	45	b,N10
68	59	11	5	1	1 3	4111.9	7022.7	30	b,N11
69	60	11	5	1	3 14	4058.5	7044	49	b
70	61	11	8	1	23 45	4043.6	6852.3	59	b
71	62	11	9	1	2 37	4057.2	6829.8	41	b
72	63	11	9	1	3 53	4052.6	6816.9	50	b
73	64	11	9	1	7 19	4019.6	6817.1	144	w
74	64	11	9	1	7 25	4019.7	6817.4	143	b,Z11
75	65	11	9	1	10 8	4023.2	6747.3	148	b,N11
76	66	11	9	1	12 18	4041.4	6755.5	80	b
77	67	11	9	1	14 3	4054.8	6747.4	60	b
78	68	11	9	1	15 57	4042.6	6728.9	89	b
79	69	11	9	1	18 8	4038.9	6703.7	214	w
80	69	11	9	1	18 15	4038.9	6703.6	307	b
81	70	11	9	1	20 24	4053.9	6652.7	90	b
82	71	11	9	1	23 14	4104.3	6709.2	64	b
83	72	11	10	1	2 13	4109.9	6724.8	54	b
84	73	11	10	1	6 42	4115.3	6748.9	40	b,N12,C3
85	74	11	10	1	11 58	4117.4	6830.9	58	b
86	75	11	10	1	15 11	4145	6842.8	170	b,CO
87	76	11	10	1	17 25	4148.2	6818.2	156	w
88	76	11	10	1	17 33	4148.3	6818.2	165	b,N13
89	77	11	10	1	19 30	4133.5	6812.9	39	b
90	78	11	10	1	20 28	4135.4	6803.2	37	b,Z13
91	79	11	10	1	22 0	4147.5	6748.8	36	b

CAST	STA.	Date(GMT)			TIME(GMT)	LAT	LONG	DEPTH	OPER.[3]
92	80	11	10	1	23 49	4151.9	6724.4	57	b,Z14
93	81	11	11	1	1 35	4207.8	6724.4	151	b
94	82	11	11	1	3 31	4222.7	6714.8	336	
95	82	11	11	1	3 54	4222.8	6714.8	333	b
96	83	11	11	1	8 16	4201.3	6706.2	43	w
97	83	11	11	1	8 25	4201.6	6706.5	44	b
98	84	11	11	1	10 26	4147.1	6709.7	54	b
99	85	11	11	1	12 33	4129.7	6709.5	54	b
100	86	11	11	1	13 38	4126.2	6656.6	64	b
101	87	11	11	1	15 15	4115.7	6640.8	77	b,N14
102	88	11	11	1	16 39	4121.7	6626.1	92	b,Z15
103	89	11	11	1	17 52	4129.6	6628.7	92	w
104	89	11	11	1	18 3	4129.5	6628.6	92	b
105	90	11	11	1	20 18	4143.8	6623.3	77	b
106	91	11	12	1	2 2	4200.4	6631.6	79	b,N15
107	92	11	12	1	3 32	4204.2	6630.5	82	b
108	93	11	12	1	9 13	4232	6624.7	220	w
109	93	11	12	1	9 26	4232.3	6624.7	215	b
110	94	11	12	1	11 58	4251	6625.8	139	b
111	95	11	12	1	14 56	4258.1	6702	206	b,CO
112	96	11	12	1	19 23	4303.3	6603.2	108	w
113	96	11	12	1	19 31	4303.5	6603.1	97	b
114	96	11	12	1	19 51	4304.3	6603.2	93	b
115	97	11	13	1	4 2	4330.7	6701	209	b,N16
116	98	11	13	1	11 5	4403	6705.4	145	b,CO
117	99	11	13	1	13 35	4403.5	6736.2	200	b,Z16,CO
118	100	11	13	1	15 41	4346.1	6742.4	232	
119	100	11	13	1	15 57	4346	6742.2	231	b,CO
120	101	11	13	1	19 39	4356.6	6815.9	100	w
121	101	11	13	1	19 46	4356.7	6816	103	b,CO
122	102	11	13	1	20 56	4349.7	6826.1	130	b,CO
123	103	11	13	1	23 21	4328.8	6818	171	b,CO
124	104	11	14	1	1 34	4321.4	6844.7	81	b,CO
125	105	11	14	1	3 48	4332.3	6911.8	134	b,Z17,CO
126	106	11	14	1	6 55	4336.7	6952.3	79	w
127	106	11	14	1	7 2	4336.8	6952.3	79	b
128	107	11	14	1	8 59	4321.9	7007.6	82	b,N17
129	108	11	14	1	10 40	4313.5	6949.3	170	b,Z18
130	109	11	14	1	14 51	4253.4	6901	137	b
131	110	11	14	1	18 41	4259.2	6809.3	193	w

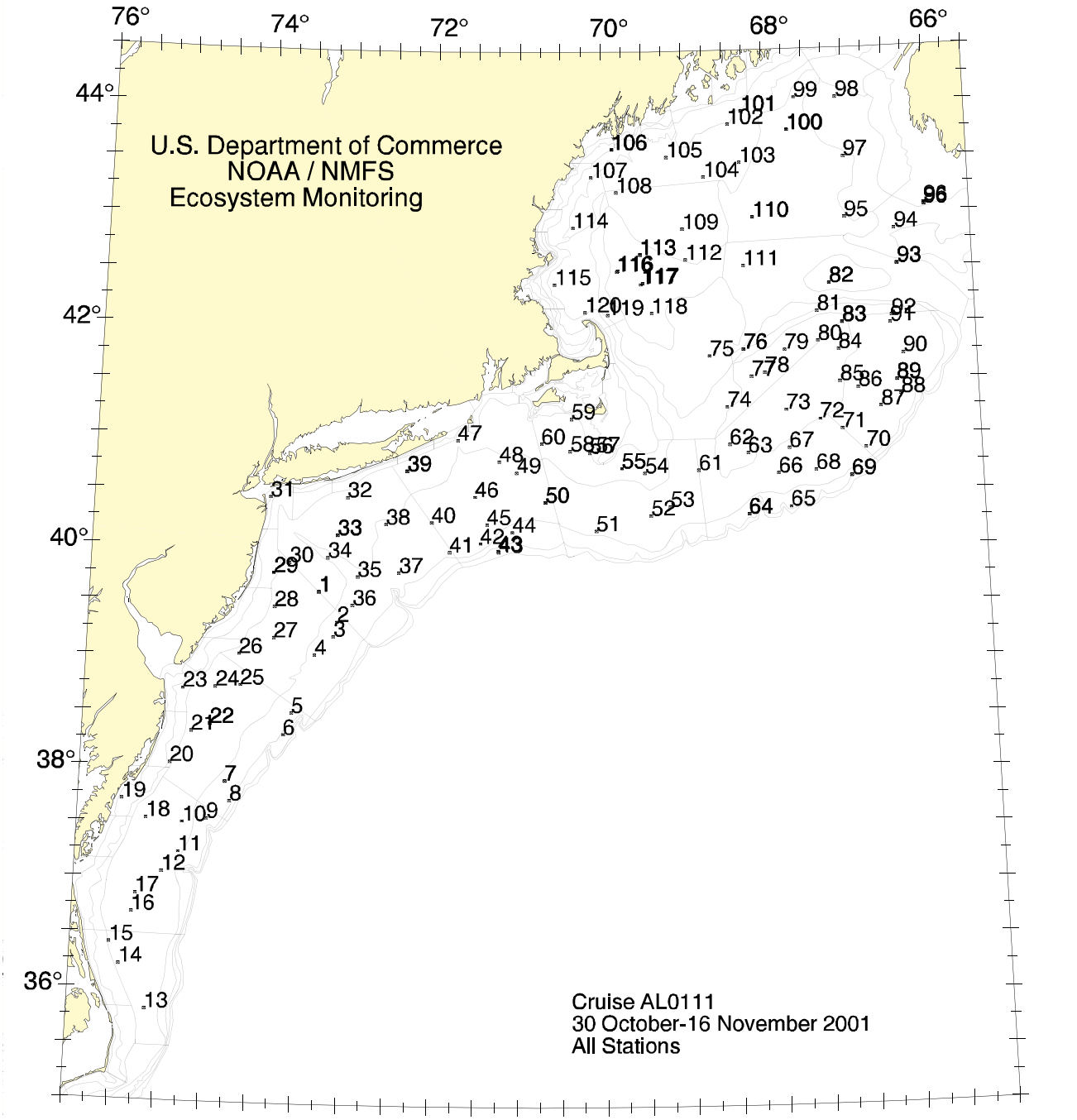

Figure 1. Station locations numbered consecutively for Late Fall Ecosystems Monitoring Cruise AL 01-11, 30 October - 16 November 2001.