

CRUISE RESULTS
Chartered Fisheries Research Vessel NOBSKA
Cruise No. NS 02-01
Ecosystems Monitoring Survey

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CRUISE PERIOD AND AREA

The cruise period was 13-29 August 2002. The chartered fisheries research vessel NOBSKA covered the Mid-Atlantic Bight, Southern New England, Georges Bank and Gulf of Maine regions (Figure 1) for the Late Summer Ecosystems Monitoring Survey.

OBJECTIVES

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

A secondary objective of this cruise was the examination of plankton samples at sea for concentrations of Calanus finmarchicus to correlate with right whale sightings.

METHODS

The survey consisted of 120 randomly distributed stations at which the vessel stopped to lower instruments over the side. Two additional non-random stations were added to improve coverage in the Gulf of Maine near the end of the cruise, giving a total of 122 stations sampled.

Key parameters measured included water column temperature and salinity, ichthyo and zooplankton composition, abundance and distribution, and along-track chlorophyll-a fluorescence.

Double oblique tows using the Bongo sampler and a CTD were made at all stations. Tows were 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 chlorophyll-a level at a depth of 3 meters was done along the cruise track by means of a flow-through fluorometer. Along-track temperature and salinity were not measured due to a failure of the thermosalinograph early in the cruise. Since there was no hull-mounted thermistor to determine surface temperature at each station, as there is on NOAA vessels, a bucket thermometer was lowered over the side at the beginning of every bongo tow, to provide this data.

The thermosalinograph and flow-through fluorometer were connected to the Scientific Computing (PC-based) System installed on the bridge of the vessel by Atlantic Marine Center personnel. This system recorded output from the fluorometer every 10 seconds, and gave the data records a time-date stamp from the GPS unit.

Samples for Seabird CTD salinity data calibration were obtained on the 6-12 watch by taking a water sample from 30 or more meters depth using a 1.7 liter Niskin bottle. Calibration of the 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.

RESULTS

A summary of routine survey activities is presented in Table 1. Areal coverage for the cruise are shown in Figure 1. The NOBSKA sailed at 1200 hours EDT on Wednesday August 13 and proceeded south to commence sampling operations in the Mid-Atlantic Bight and reached the first station at the northern offshore edge of the Mid-Atlantic Bight by 0530 the next day. A problem with the flow-through CTD unit from the first day of the cruise prevented any along-track temperature and salinity data from being collected. Problems were also encountered with CTD unit 2879 not providing temperature and salinity data during the first bongo cast. Use of backup unit 0851 solved these problems, and the remainder of the cruise was done using this instrument. Another problem was encountered with the wire-out readout, which was not properly calibrated, and which forced personnel to calculate the rate and amount of wire payed out by the number of drum revolutions made. This problem was eventually resolved during coverage of the

Mid-Atlantic Bight area, and reliable wire out readings were obtained for the remainder of the cruise.

The NOSKA moved to inshore waters of the Mid-Atlantic Bight on 14 August to avoid inclement weather and proceeded south doing inshore stations. The vessel turned back north and headed offshore from Cape Hatteras, North Carolina, the southernmost point of the trip, then completed almost the entire southern New England area before returning to Woods Hole on the morning of 20 August. The NOBSKA returned to sea at 1300 hours on 21 August, after taking on a new scientific complement. One member, John White, a volunteer from Maine, was unable to get to Woods Hole due to vehicle problems and was replaced by Walter Day, the contracted electronics technician. After completing the 5 remaining stations on the eastern edge of the southern New England region the vessel proceeded to Georges Bank. The Georges Bank stations were worked from west to east and completed on 25 August, after which the vessel sailed into the Gulf of Maine. The NOBSKA proceeded from west to east, finally completing the last station in the Gulf of Maine on 28 August, after which it returned to Woods Hole via the Cape Cod Canal, docking at 0200 hours EDT on 29 August 2002. Due to a combination of excellent weather, good ship speed (10.5 - 11 knots) and the ability of the vessel to get gear in and out very quickly using a power boom, the cruise was completed ahead of schedule. Extra work usually undertaken on dedicated ecosystem monitoring cruises, such as nitrogen and carbon isotope collection and zoogen sampling with small bongos was not done on this cruise due to the absence of any interior lab space. The addition of a van on the aft deck would probably make such work feasible, and also permit sample preservation and flow-through sampling operations during colder and more inclement weather.

DISPOSITION OF SAMPLES AND DATA

All samples and data, except for 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 NS0201

CAST	STA.	Date(GMT)		TIME(GMT)		LAT	LONG	DEPTH	OPER.
	mm	dd		hr	min			(m)	b=bongo w=water CO=Calanus observed CV=vertical CTD Cast
1	1	8	14	2	09 20	3905	7251.30	94	b
2	1	8	14	2	09 52	3903.5	7252.60	94	v
3	2	8	14	2	11 15	3854.6	7307.00	77	v
4	2	8	14	2	11 27	3854.6	7307.10	77	b
5	3	8	14	2	15 30	3807.4	7350.60	772	b
6	4	8	14	2	21 4	3755.6	7429.90	52	b
7	4	8	14	2	21 11	3755.5	7430.10	52	w
8	5	8	14	2	23 42	3747.2	7458.70	31	b
9	6	8	15	2	1 47	3732.5	7515.80	26	b
10	7	8	15	2	4 18	3710.1	7511.10	31	b
11	8	8	15	2	7 21	3701.3	7544.70	14	b
12	9	8	15	2	13 11	3604.3	7531.70	26	b

CAST	STA.	Date (GMT)			TIME (GMT)	LAT	LONG	DEPTH	OPER.
13	9	8	15	2	13 22	3604.2	7531.70	26	w
14	10	8	15	2	14 41	3553.9	7524.50	21	b
15	11	8	15	2	16 31	3541	7508.20	36	b
16	12	8	15	2	19 01	3604.6	7459.20	42	b
17	13	8	15	2	21 0	3623.5	7449.20	85	b
18	14	8	15	2	23 27	3636.6	7513.20	26	b
19	14	8	15	2	23 35	3636.5	7513.20	26	w
20	15	8	16	2	02 11	3659.6	7437.70	128	b
21	16	8	16	2	06 10	3727.9	7432.80	85	b
22	17	8	16	2	08 18	3740.6	7424.70	153	b
23	18	8	16	2	12 21	3817.4	7424.70	40	b
24	19	8	16	2	15 27	3815	7504.10	15	b
25	19	8	16	2	15 39	3815	7504.50	15	w
26	20	8	16	2	17 31	3834.2	7453.60	22	b
27	21	8	16	2	19 9	3846.1	7501.40	14	b
28	22	8	16	2	22 32	3852.6	7418.40	33	b
29	23	8	17	2	01 39	3825.9	7403.20	56	b
30	23	8	17	2	01 45	3825.8	7402.80	56	w
31	24	8	17	2	04 08	3847.1	7350.50	47	b
32	25	8	17	2	06 12	3907.1	7346.40	34	b
33	26	8	17	2	08 14	3915.2	7319.20	55	b
34	27	8	17	2	10 23	3928.8	7332.40	38	b
35	28	8	17	2	12 15	3930.5	7354.50	25	b
36	28	8	17	2	12 23	3930.4	7354.80	24	w
37	29	8	17	2	13 59	3941	7339.60	31	b
38	30	8	17	2	15 33	3951.6	7353.90	23	b
39	31	8	17	2	18 02	4017	7344.60	30	b
40	32	8	17	2	20 37	4028.3	7314.90	29	b
41	33	8	18	2	00 07	3956.8	7331.90	37	b
42	33	8	18	2	00 20	3956.6	7331.90	38	w
43	34	8	18	2	02 30	3943.8	7307.60	47	b
44	35	8	18	2	05 18	3926.7	7238.10	95	b
45	36	8	18	2	07 20	3931.7	7212.70	152	b
46	37	8	18	2	10 18	3953.3	7235.50	64	b
47	38	8	18	2	12 48	4012.6	7253.10	49	b
48	38	8	18	2	12 57	4012.7	7253.40	49	w
49	39	8	18	2	15 32	4012.5	7219.80	64	b
50	40	8	18	2	17 50	3958.2	7157.60	89	b
51	41	8	18	2	19 52	4009	7134.50	86	b
52	42	8	18	2	22 42	4009.5	7057.30	139	b
53	43	8	19	2	00 14	4002.2	7042.70	173	b
54	43	8	19	2	00 32	4002.1	7041.90	174	w
55	44	8	19	2	02 48	4020.9	7026.10	87	b
56	45	8	19	2	05 22	4015.8	6955.80	89	b

CAST	STA.	Date (GMT)			TIME (GMT)	LAT	LONG	DEPTH	OPER.
57	46	8	19	2	08 16	4046	7006.50	38	b
58	47	8	19	2	10 01	4100.1	6953.10	33	b
59	48	8	19	2	12 56	4058.9	7027.30	43	b
60	48	8	19	2	13 01	4058.9	7027.60	43	w
61	49	8	19	2	15 24	4045.5	7053.60	59	b
62	50	8	19	2	18 03	4031.6	7126.40	69	b
63	51	8	19	2	21 21	4050.3	7203.20	40	b
64	52	8	19	2	23 41	4053.4	7132.10	57	b
65	52	8	19	2	23 51	4053.5	7131.60	58	w
66	53	8	20	2	01 22	4108.3	7128.50	28	b
67	53	8	20	2	01 32	4108.4	7128.60	28	b
68	54	8	20	2	02 50	4114.5	7114.40	36	b
69	55	8	20	2	05 17	4114.4	7042.20	29	b
70	56	8	21	2	22 54	4121.1	6934.00	27	b
71	57	8	22	2	03 00	4047.6	6913.00	66	b
72	58	8	22	2	04 53	4042.8	6933.60	46	b
73	59	8	22	2	07 26	4034.7	6902.00	69	b
74	60	8	22	2	10 17	4005.1	6903.90	246	v
75	60	8	22	2	10 31	4005	6904.00	253	b
76	61	8	22	2	13 25	4020.3	6835.90	99	b
77	61	8	22	2	13 40	4020.6	6835.90	99	w
78	62	8	22	2	15 20	4035.3	6823.40	83	b
79	63	8	22	2	18 1	4100.7	6831.50	47	b
80	64	8	22	2	20 27	4120.2	6818.50	53	b
81	65	8	22	2	22 46	4143.1	6816.10	44	b
82	65	8	22	2	22 55	4143.3	6816.40	48	w
83	66	8	23	2	01 33	4125.1	6757.80	44	b
84	67	8	23	2	03 40	4110.5	6741.30	50	b
85	68	8	23	2	05 11	4058.3	6750.70	54	b
86	69	8	23	2	07 31	4033.5	6756.30	94	b
87	70	8	23	2	08 51	4022.9	6747.20	152	b
88	71	8	23	2	12 34	4035.2	6703.80	250	b
89	71	8	23	2	12 50	4035.3	6703.70	261	w
90	72	8	23	2	15 31	4054.8	6720.60	80	b
91	73	8	23	2	17 39	4115	6709.40	60	b
92	74	8	23	2	19 49	4129.5	6724.30	34	b
93	75	8	23	2	21 37	4141.8	6739.60	46	b
94	76	8	23	2	23 39	4201.1	6744.60	99	b
95	77	8	24	2	01 04	4208.1	6735.30	177	b,CO/211cc
96	77	8	24	2	01 24	4207.9	6735.70	176	
97	78	8	24	2	03 34	4207.6	6708.20	62	b
98	79	8	24	2	05 14	4155	6716.50	51	b
99	80	8	24	2	06 45	4142.5	6704.50	60	b
100	81	8	24	2	07 51	4131.3	6659.80	65	b

CAST	STA.	Date (GMT)			TIME (GMT)	LAT	LONG	DEPTH	OPER.
101	82	8	24	2	11 32	4055.6	6642.40	96	b
102	83	8	24	2	13 20	4110.2	6632.40	93	b
103	84	8	24	2	15 25	4121.2	6611.80	142	b
104	84	8	24	2	15 40	4121.4	6611.80	142	w
105	85	8	24	2	17 58	4140.3	6629.80	74	b
106	86	8	24	2	19 47	4150.1	6646.50	63	b
107	87	8	24	2	21 17	4201.9	6648.00	68	b
108	88	8	24	2	23 52	4223.6	6635.80	328	b
109	88	8	25	2	00 23	4223.8	6635.90	322	w
110	89	8	25	2	02 41	4206.1	6619.40	89	b
111	90	8	25	2	04 24	4155.2	6610.10	92	b
112	91	8	25	2	06 05	4141.6	6601.60	97	b
113	92	8	25	2	08 57	4205.7	6553.60	252	b
114	92	8	25	2	09 19	4205.8	6553.00	258	v
115	93	8	25	2	10 15	4207.3	6543.60	266	b
116	93	8	25	2	10 36	4207.3	6543.30	275	w
117	94	8	25	2	14 25	4245.3	6539.30	107	b,CO/317cc
118	95	8	25	2	16 22	4301.6	6554.30	98	b,CO/158cc
119	96	8	25	2	19 35	4255	6634.50	190	b,CO/264cc
120	97	8	25	2	22 48	4313.6	6705.40	211	b,CO/158cc
121	97	8	25	2	23 09	4313.4	6705.70	208	w
122	98	8	26	2	01 59	4328.4	6630.40	103	b
123	99	8	26	2	05 09	4343.4	6708.60	172	b,CO/132cc
124	100	8	26	2	08 05	4357.1	6635.20	88	b
125	101	8	26	2	10 20	4411.3	6655.20	173	b,CO/264cc
126	102	8	26	2	13 30	4411.3	6739.90	98	b,CO/79cc
127	103	8	26	2	17 33	4340.1	6810.70	182	b,CO/184cc
128	104	8	26	2	21 08	4311.4	6742.60	200	b,CO/132cc
129	104	8	26	2	21 28	4311.3	6742.00	204	w
130	105	8	27	2	00 15	4303.6	6817.40	192	b,CO/238cc
131	106	8	27	2	04 37	4226.8	6744.50	224	b,CO/317cc
132	106	8	27	2	04 55	4226.6	6744.30	222	v
133	107	8	27	2	07 51	4223.8	6821.60	210	b,CO/238cc
134	108	8	27	2	10 22	4200.8	6835.30	170	b,CO/211cc
135	109	8	27	2	13 01	4137.6	6851.90	126	b
136	109	8	27	2	13 21	4137.2	6852.30	122	w
137	109	8	27	2	13 27	4137.3	6852.30	122	b
138	110	8	27	2	16 39	4152.3	6932.40	192	b
139	110	8	27	2	16 59	4152	6932.80	189	w
140	111	8	27	2	19 02	4207.8	6914.50	190	b,CO/264cc
141	112	8	27	2	22 03	4229.7	6935.90	250	b,CO/343cc
142	112	8	27	2	22 36	4229.8	6936.60	255	w
143	113	8	28	2	01 00	4247.8	6913.80	140	b,CO/211cc
144	114	8	28	2	03 15	4308.6	6906.40	172	b,CO/185cc

CAST	STA.	Date (GMT)			TIME (GMT)	LAT	LONG	DEPTH	OPER.
145	115	8	28	2	05 45	4331.7	6903.70	120	b
146	116	8	28	2	09 25	4352.5	6910.60	26	b
147	117	8	28	2	11 29	4340.9	6935.70	83	b
148	118	8	28	2	14 02	4322.6	7001.50	157	b,CO/211cc
149	118	8	28	2	14 20	4322.4	7001.20	173	w
150	118	8	28	2	14 24	4322.3	7001.30	170	b,CO/238cc
151	119	8	28	2	18 24	4250.5	7028.40	122	b
152	120	8	28	2	20 27	4243.5	7004.50	141	b
153	121	8	28	2	22 56	4221.7	7016.50	39	b,CO/106cc
154	122	8	29	2	00 57	4203.2	7024.40	54	b,CO/121cc

TOTALS	Bongo Casts	=	125
	Bongo Samples	=	244
	Water Samples	=	24
	CTD Casts	=	154
	Calanus observations	=	22

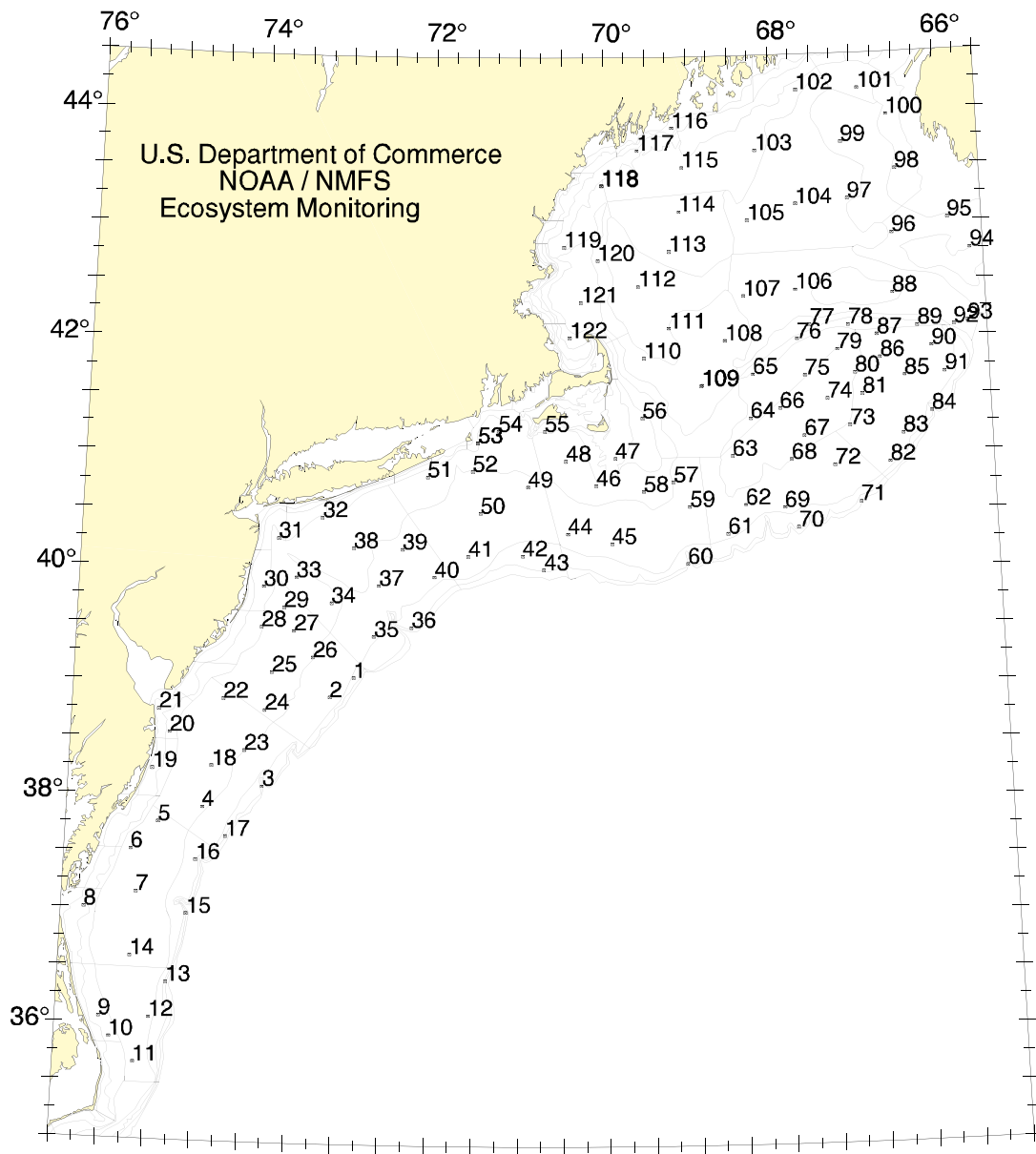


Figure 1. Station locations numbered consecutively for Late Summer Monitoring Cruise NS 02-01, 13 - 29 August 2002.

Ecosystems

Station
Locations