CRUISE RESULTS

NOAA FRV ALBATROSS IV

Cruise No. AL 04-03 Parts (I-IV) Spring Bottom Trawl Survey

Submitted to: NOAA, NEFSC

For further information contact Russell Brown, National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, Massachusetts 02543-1097. Phone (508) 495-2380; FAX (508) 495-2115; Russell.Brown@noaa.gov.

Date: 25 April 2005

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CRUISE PERIOD AND AREA

The cruise period was from 2 March to 22 April 2004. The cruise was conducted in four parts: Part I was from 2-10 March; Part II, 15-25 March; Part III, 29 March-9 April; and Part IV, 13-22 April. The area of operations was from Cape Hatteras to the western Scotian Shelf, including the Gulf of Maine. Station locations are shown in Figures 1 and 2.

OBJECTIVES

The objectives of the cruise were to: (1) determine the seasonal distribution, relative abundance, and biodiversity of fish and invertebrate species found on the continental shelf; (2) collect biological samples for age determinations and growth studies, fecundity, maturity and feeding ecology; (3) collect hydrographic and meteorological data; (4) collect samples of ichthyoplankton and zooplankton for relative abundance and distribution studies; (5) collect data and samples for cooperative researchers and programs; and (6) conduct a hydroacoustic survey between stations.

METHODS

Operations and gear used during Parts I-IV conformed with the Cruise Instructions for the Spring Bottom Trawl Survey dated 30 January 2004 and Addendum 1 dated 24 February, 2004; Addendum 2 dated 8 March; Addendum 3 dated 24 March; Addendum 4 dated 12 April with the following exceptions: Part I returned 2 days earlier on 10 March due to mechanical problems and inclement weather; Part II returned one day earlier on 25 March due to mechanical problems; Part IV left one day later than originally scheduled and returned one day earlier on 22 April due to the completion of the survey.

A 30-minute tow was made at each station with a Northeast Fisheries Science Center (NEFSC) standardized number 36 Yankee otter trawl rigged with 41 centimeter (cm) diameter rubber rollers, 36 floats, and 9 meter (m) bridles. NEFSC standardized 450 kilogram (kg) polyvalent trawl doors rigged with chain backstraps were used. The trawl was fished at a scope of 4:1 in depths between 18 and 27 m, 3:1 in depths between 28 and 183 m deep, and 2.5:1 in depths of 184 m and greater. Towing speed was maintained at approximately 3.8 knots using DGPS instrumentation. Direction of the tow was generally toward the next station. Throughout the cruise, a hydroacoustic survey was conducted during transit between bottom trawl stations using the Simrad EK-500 system.

After each tow, the catch was sorted by species and weighed to the nearest 0.001 kg using motion-compensated digital scales. Representative length frequencies were collected for all species caught. All catch and biological data were recorded using shipboard automated data entry systems. The Fisheries Scientific Computing System (FSCS) was used to record all biological data. This system uses digital scales, electronic measuring boards, touch screen displays and barcode scanners to record data on deck and archives the data on the ship's computer network.

Sampled fish were assigned individual identification numbers, measured, weighed to the nearest 0.001 kilogram, and further sampled for age and growth and feeding ecology studies. Bony fish were measured to the nearest centimeter to the end of the central caudal ray; biological samples were collected concurrently with measuring operations. Sharks and skates were measured to the end of the caudal fin (total length). Rays were measured for disk width. Lobsters were measured in millimeters from the posterior edge of the eye socket to the end of the carapace; the presence or absence of a V-notch was also noted. Crabs were measured across the carapace width in centimeters. Shell height was measured in centimeters for selected bivalves. Additional collections were obtained for various scientists (Table 2). The remainder of the catch (miscellaneous invertebrates, shells, substrate, etc) was described by volume.

Surface temperatures were measured using the hull-mounted temperature sensor at a depth of 3 meters. Temperature and conductivity profiles were recorded using a conductivity, temperature, and depth (CTD) instrument at every station. A bottom salinity sample was obtained twice each day to calibrate the CTD. Water samples were also taken for fluorometer calibrations.

Samples of fish eggs and larvae were collected at selected stations. Plankton sampling gear consisted of a 61 cm bongo frame fitted with 0.333 mm mesh nets. Digital flow meters were suspended within the mouths of the bongo frame to estimate water volume filtered. The net was towed at 2.8-3.8 kilometers/hour (1.5-2.0 knots). A CTD was deployed at each plankton station.

RESULTS

The survey sampled at 332 stations with 66, 101, 101 and 64 stations completed on parts I-IV, respectively.

Standard plankton tows were made at 114 stations. Bottom temperatures were collected at all stations using the CTD system. Bottom water samples for CTD calibration were taken at 49 stations.

Tables 1 and 2 list the major samples collected for various studies.

DISPOSITION OF SAMPLES AND DATA

Age and growth samples, feeding ecology data and samples, maturity data, trawl catch data, and hydrographic data will be analyzed at the NEFSC Woods Hole, Massachusetts Laboratory. The various collections were forwarded to the individuals listed in Table 2. Resulting data will be audited, edited, and entered into the NEFSC trawl survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Woods Hole, MA

John Galbraith, Chief Scientist[1,2]
Peter Chase, Chief Scientist[4], Participant[2]
Linda Despres, Chief Scientist[3]
Robert Alexander[4]
Lawrence Brady[2,4]
Jon Brodziak[3]
Elisabeth Broughton[3]
Steven Cadrin[2]
David Chevrier[2]
Laurel Col[2]
Jonathan Duquette[3]
Nathan Keith[1]
Kevin McIntosh[1,3]
David Mountain[3]
William Overholtz[3]
Nancy Peltier[1]
Stacy Rowe[1,3]
Nina Shepherd[2,4]
Brian Smith[2,4]
Terrence Smith[3]
Katherine Sosebee[1]
Mark Terceiro[1]
Kris Tholke[4]
Matthew Weeks[4]

National Marine Fisheries Service, NEFSC, Highlands, NJ

John Sibunka[1,4]

National Marine Fisheries Service, NEFSC, Milford, CT

John Ziskowski[4]

National Marine Fisheries Service, NEFSC, Washington, DC
Ruth Gibbons[4]
Alicia Long[2]
La'Shaun Willis[3]

National Marine Fisheries Service, NEFSC, Narragansett, RI
Jerome Prezioso[3]

NOAA, NMAO, Woods Hole, MA
Apryl Corey[1]

University of Massachusetts, Amherst, MA
Joseph Kunkel[4]

South Carolina Division of Natural Resources, Charleston, SC
Erin Levesque[1]

Eastern Nazarene College, Quincy, MA
Kristel Pendelton[2]
Jessica Travers[2]

Contractors

Lisa Bonacci[1,4]	Woods Hole, MA
John Cookingham[1,2]	Falmouth, MA
Jakub Kircun[3]	Ashford, CT
Sean Lucey[1]	South Yarmouth, MA

Volunteers

Tanya Anderson[4]	Cambridge, MA
Jakub Kircun[2]	Ashford, CT
Megan Malloy[4]	Philadelphia, PA
Geoffrey Shook[1]	Wakefield, RI
Kate Taylor[3]	Ipswich, MA
Theresa Vavrina[2]	Strongsville, OH

[1]2-10 March
[2]15-25 March
[3]29 March-9 April
[4]13-22 April

For further information, contact: Russell Brown, National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, Massachusetts 02543-1097. Phone (508) 495-2380; FAX (508) 495-2258; Russell.Brown@noaa.gov. The Resource Survey Report for this survey can be viewed at http://www.nefsc.noaa.gov/esb/Resource_Survey_Reports.htm and the cruise results can be viewed at http://www.nefsc.noaa.gov/esb/survey.htm.

Table 1. Field observations and samples collected for feeding ecology, and age and growth studies on the FRV ALBATROSS IV, Cruise 04-03 (I-IV), Spring Bottom Trawl Survey, during 2 March - 22 April 2004.

Species	Feeding Ecology Observations	Age and Growth Samples
Acadian redfish	148	437
American plaice	345	513
American shad	30	2
Atlantic cod	176	422
Atlantic croaker	-	23
Atlantic halibut	4	4
Atlantic herring	367	1042
Atlantic mackerel	108	252
Atlantic wolffish	7	6
Barndoor skate	2	22
Blackbelly rosefish	42	-
Black sea bass	65	152
Blueback herring	156	-
Bluefish	4	13
Butterfish	66	150
Clearnose skate	-	25
Cusk	11	11
Fawn cusk-eel	13	-
Fourspot flounder	140	140
Goosefish	77	90
Greenland halibut	2	1
Haddock	258	591
Little skate	332	345
Longhorn sculpin	207	-
Ocean pout	98	90
Offshore hake	22	22
Pollock	46	71
Red hake	264	307
Rosette skate	6	7
Scup	33	78
Sea raven	129	-
Silver hake	403	1092
Smooth dogfish	57	-
Smooth skate	64	102
Spiny dogfish	431	-
Spot	5	-
Spotted hake	130	183
Striped bass	41	42
Summer flounder	160	237
Tautog	1	-
Thorny skate	36	51
Weakfish	5	22
White hake	110	280
Windowpane	194	284
Winter flounder	357	521
Winter skate	193	193
Witch flounder	218	259
Yellowtail flounder	170	224
TOTALS	5,733	8,306

Table 2. Miscellaneous scientific collections made on FRV ALBATROSS IV, Cruise 04-03 (I-IV), Spring Bottom Trawl Survey, during 2 March - 22 April 2004.

Investigator and Affiliation	Samples Saved	Approximate Number
Aquarium, NMFS, NEFSC, Woods Hole, MA	Atlantic Herring	44 bags
	Shrimp	17 bags
	Longfin squid	8 bags
Jon Brodziak, NMFS, NEFSC, Woods Hole, MA	Haddock	217 indiv.
Elisabeth Broughton, NMFS, NEFSC, Woods Hole, MA	Atlantic cod	4 indiv.
Steven Cadrin, NMFS, NEFSC, Woods Hole, MA	Armored sea robin	1 indiv
Peter Chase, NMFS, NEFSC, Woods Hole, MA	Various species, gonad photos	7 indiv.
	Various species, maturity workshop	65 indiv.
LTJG John Crofts, NMAO, NEFSC, Woods Hole, MA	Skates	9 indiv.
	Chain dogfish	1 indiv.
Isaure de Buron, College of Charleston, Charleston, SC	Atlantic croaker	10 indiv.
Michael Fine, Virginia Commonwealth University, Richmond, VA	Fawn cusk-eels	12 indiv.
	Striped cusk-eels	36 indiv.
John Galbraith, NMFS, NEFSC, Woods Hole, MA	Misc. species	157 indiv.
Vincent Gallucci, Univ. of Washington, Seattle, WA	Spiny dogfish, fin clips	329 samples
Rick Goetz, MBL Woods Hole, MA	Atl. cod, fin clips	46 samples
Devorah Hart, NMFS, NEFSC, Woods Hole, MA	Sea scallops	6 indiv.
Josef Idoine, NMFS, NEFSC, Woods Hole, MA	Shrimp	74 bags
Francis Juanes, UMASS, Amherst, MA	Atlantic cod	5 indiv.
Charles Keith, NMFS, NEFSC, Woods Hole, MA	Atlantic hagfish	14 indiv.
Nancy Kohler, NMFS, NEFSC, Narragansett, RI	Sandbar shark	1 indiv.
	Sand tiger shark	2 indiv.
Joseph Kunkel, Univ. of MASS, Amherst, MA	American shad	3 indiv.
Alicia Long, NMFS, Nat'l Systematics Lab, Washington, DC	Various species	74 indiv.
Christopher Martin, NMFS, NEFSC, Mildord, CT	Sea scallops	19 indiv.
KB McArdle, NMFS, NEFSC, Woods Hole, MA	Various species	116 indiv.
Nancy McHugh, NMFS, NEFSC, Woods Hole, MA	Various species	435 indiv.
Karina Mrakovich U.S. Coast Guard Academy, New London, CT	Various species	47 indiv.
Paul Nitschke, NMFS, NEFSC, Woods Hole, MA	Cunner	11 indiv.
	Winter flounder	9 indiv.
Loretta O'Brien, NMFS, NEFSC, Woods Hole, MA	Atlantic cod	204 indiv.
Kimberly Damon-Randall, NMFS, Gloucester, MA	Atlantic wolffish, fin clips	7 indiv.
Robert Reid, NMFS, NEFSC, Highlands, NJ	Atlantic cod	1 indiv.
Katherine Sosebee, NMFS, NEFSC, Woods Hole, MA	Various skates	730 exam
	Various rays	115 exam
	Spiny dogfish	246 exam
	Spiny dogfish spines	441 samples
Susan Wigley, NMFS, NEFSC, Woods Hole, MA	Witch flounder	1 indiv.
John Ziskowski, NMFS, NEFSC, Milford, CT	Various ulcerated sp.	7 indiv.

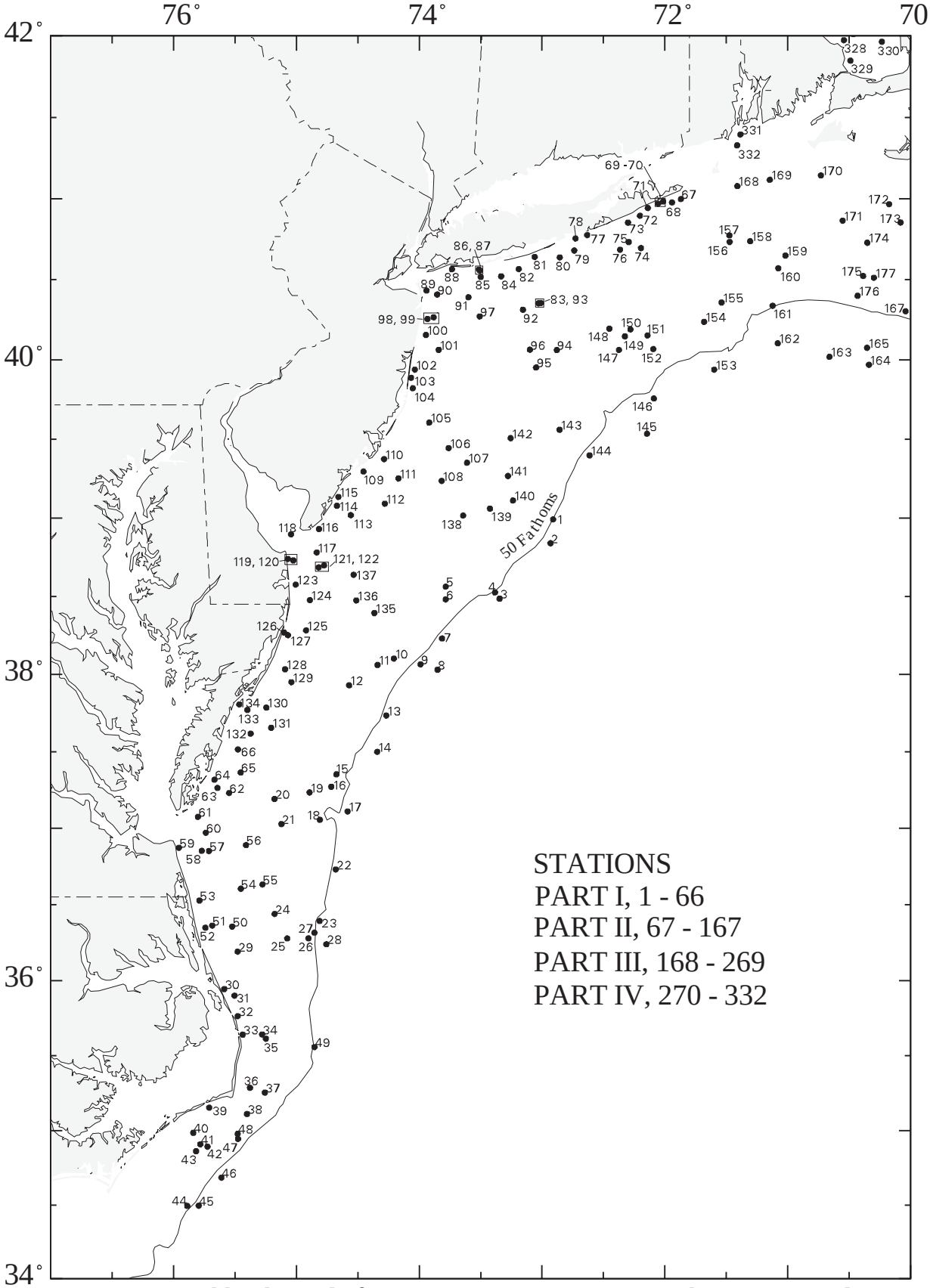

Figure 1. Trawl hauls made from FRV ALBATROSS IV, during National Marine Fisheries Service, Northeast Fisheries Science Center spring bottom trawl survey (04 - 03), March 2 - April 22, 2004. Map 1 of 2

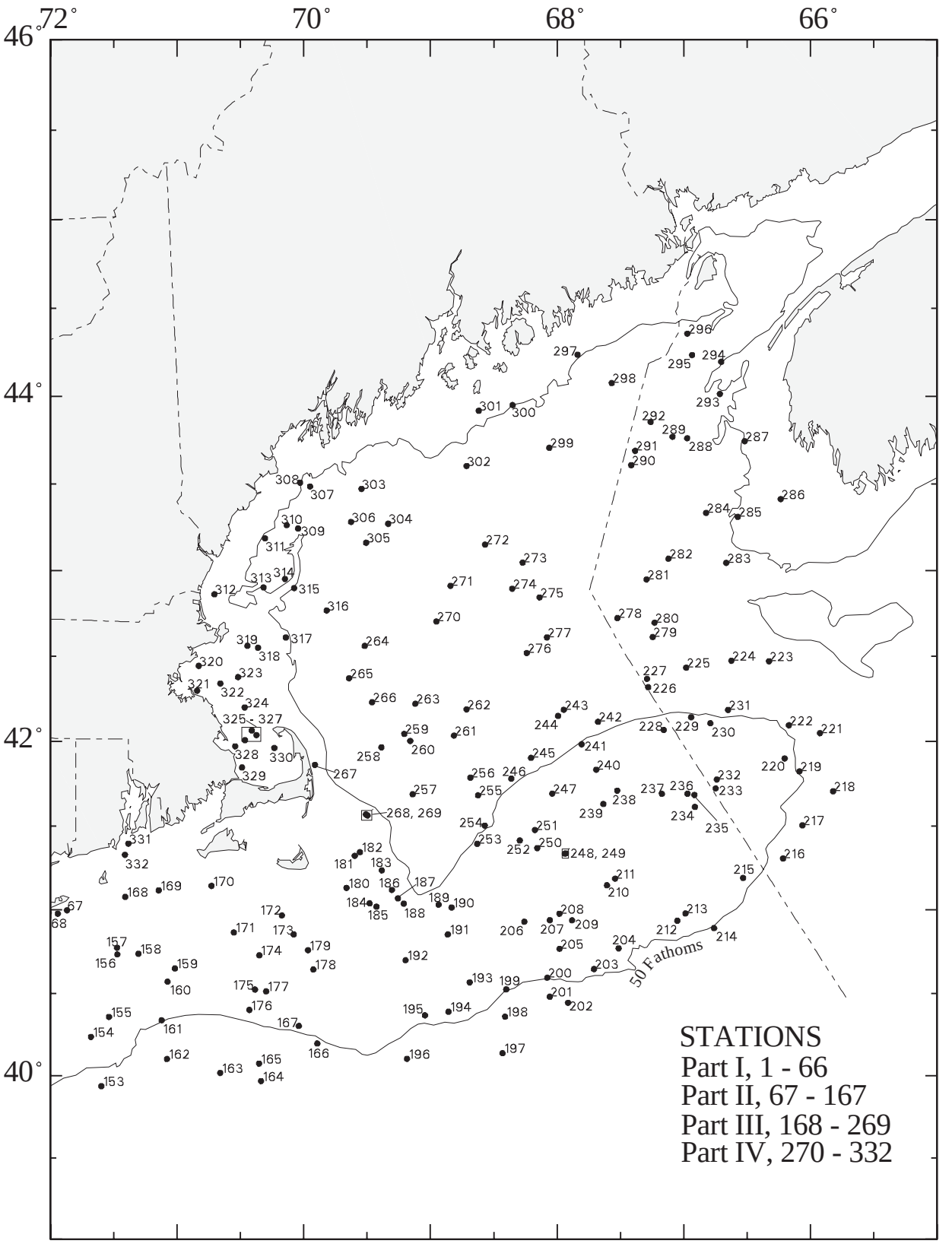

Figure 2. Trawl hauls made from FRV ALBATROSS IV, during National Marine Fisheries Service, Northeast Fisheries Science Center spring bottom trawl survey (04 - 03), March 2 - April 22, 2004. Map 2 of 2