CRUISE RESULTS

NOAA RV ALBATROSS IV
Cruise No. AL 05-03 Parts (I-IV)
Spring Bottom Trawl Survey

Submitted to: NOAA, NEFSC

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Date: 8 November 2005

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CRUISE PERIOD AND AREA

The cruise period was from 2 March to 21 April 2005. The cruise was conducted in four parts: Part I was from 2 - 11 March; Part II, 15 - 25 March; Part III, 29 March - 8 April; and Part IV, 11 - 21 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 3 January 2005 and Addendum 1 dated 23 February 2005; Addendum 2 dated 8 March 2005; Addendum 3 dated 24 March 2005; Addendum 4 dated 4 April 2005 with the following exceptions: Legs 1, 2, and 3 each left one date later than originally scheduled due to mechanical or weather related problems. Leg 4 returned one day early due to the completion of the cruise.

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 334 stations with 64, 107, 73 and 90 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 32 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

Peter Chase, Chief Scientist[4]
Linda Despres, Chief Scientist[3]
Wendy Gabriel, Chief Scientist[2]
John Galbraith, Chief Scientist[1]
Larry Brady[2,4]
John Brodziak[3]
Betsy Broughton[4]
William Duffy[3]
Jonathan Duquette[2]
Robert Johnston[1]
Charles Keith[3]
Kevin McIntosh[1,3]
Joe Mello[4]
David Mountain[3]
Stacy Rowe[1]
Brian Smith[4]
Katherine Sosebee[1]
Mark Terceiro[1]

National Marine Fisheries Service, NEFSC, Sandy Hook, NJ

John Rosendale[3]
John Sibunka[1,4]

National Marine Fisheries Service, FSO/FIS, Hampton, VA

Steven Ellis[2]

National Marine Fisheries Service, NEFSC, Washington, DC

La'Shaun Willis[2]

National Marine Fisheries Service, EASC, Gloucester, MA
Sara Thompson[4]

University of Massachusetts, Amherst, MA
Joseph Kunkel[3]

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

Contractors

Jakub Kircun[2,3]	Woods Hole, MA
Sean Lucey[2,3]	Woods Hole, MA
Kris Ohleth[2,3]	Woods Hole, MA
Geoffrey Shook[2,4]	Wakefield, RI
Nikolai Klibansky[3]	Northampton, MA
Laurel Col[4]	Woods Hole, MA
Kris Tholke[1]	Woods Hole, MA
Matthew Weeks[1]	Woods Hole, MA
Alicia Long[4]	Woods Hole, MA

Volunteers

Katie Anderson[4]	Amherset, MA
Victoria Burls[2]	Urbanna, VA
Alison Candelmo[2]	Colonia, NJ
Shannon Devaney[2]	Lawrence, KS
Janna Greenhalgh[4]	Westerly, RI
Kate Jones[2]	Orono, ME
Mark Lovewell[3]	Vineyard Haven, MA
Michael Marsik[1]	Corunna, MI
Kathy Mills[3]	Ithaca, NY
Anthony Neves[4]	Albion, ME
Danny Neves[4]	Lakeville, MA
Leslie Osborne[1]	Ennis, MT
Kathleen Reardon[2]	Orono, ME
Hailey Swanson[1]	Brattleboro, VT

[1]2-11 March
[2]15-25 March
[3]29 March-8 April
[4]11-21 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 RV ALBATROSS IV, Cruise 05-03 (I-IV), Spring Bottom Trawl Survey, during 2 March - 21 April 2005.

Species	Feeding Ecology Observations	Age and Growth Samples
Acadian Redfish	135	378
American Plaice	273	366
American Shad	47	-
Armored Searobin	2	-
Atlantic Cod	164	364
Atlantic Croaker	-	53
Atlantic Halibut	17	18
Atlantic Herring	210	621
Atlantic Mackerel	93	245
Atlantic Wolffish	2	2
Barndoor Skate	17	-
Black Sea Bass	51	108
Blackbelly Rosefish	40	-
Blueback Herring	125	-
Bluefish	6	7
Buckler Dory	5	-
Butterfish	56	217
Cunner	-	4
Cusk	15	14
Fawn Cusk-ell	18	-
Fourspot Flounder	146	147
Goosefish	78	91
Gulf Stream Flounder	41	-
Haddock	276	644
Lanternfish Uncl	3	-
Little Skate	209	-
Longhorn Sculpin	239	-
Northern Searobin	44	-
Ocean Pout	103	102
Offshore Hake	9	9
Pollock	81	163
Red Hake	243	260
Rosette Skate	7	-
Scup	34	83
Sea Raven	133	-
Silver Hake	312	743
Smooth Dogfish	77	-
Smooth Skate	60	-
Spiny Dogfish	367	-
Spot	9	-
Spotted Hake	113	157
Striped Bass	27	27
Striped Searobin	31	-

Species	Feeding Ecology Observations	Age and Growth Samples
Summer Flounder	153	210
Thorny Skate	34	-
Weakfish	22	67
White Hake	127	269
Windowpane	133	159
Winter Flounder	366	482
Witch Flounder	148	171
Winter Skate	119	-
Yellowtail Flounder	198	277
Total	5218	6458

Table 2. Miscellaneous scientific collections made on RV ALBATROSS IV, Cruise 05-03 (I-IV), Spring Bottom Trawl Survey, during 2 March - 21 April 2005.

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	72 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	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	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.

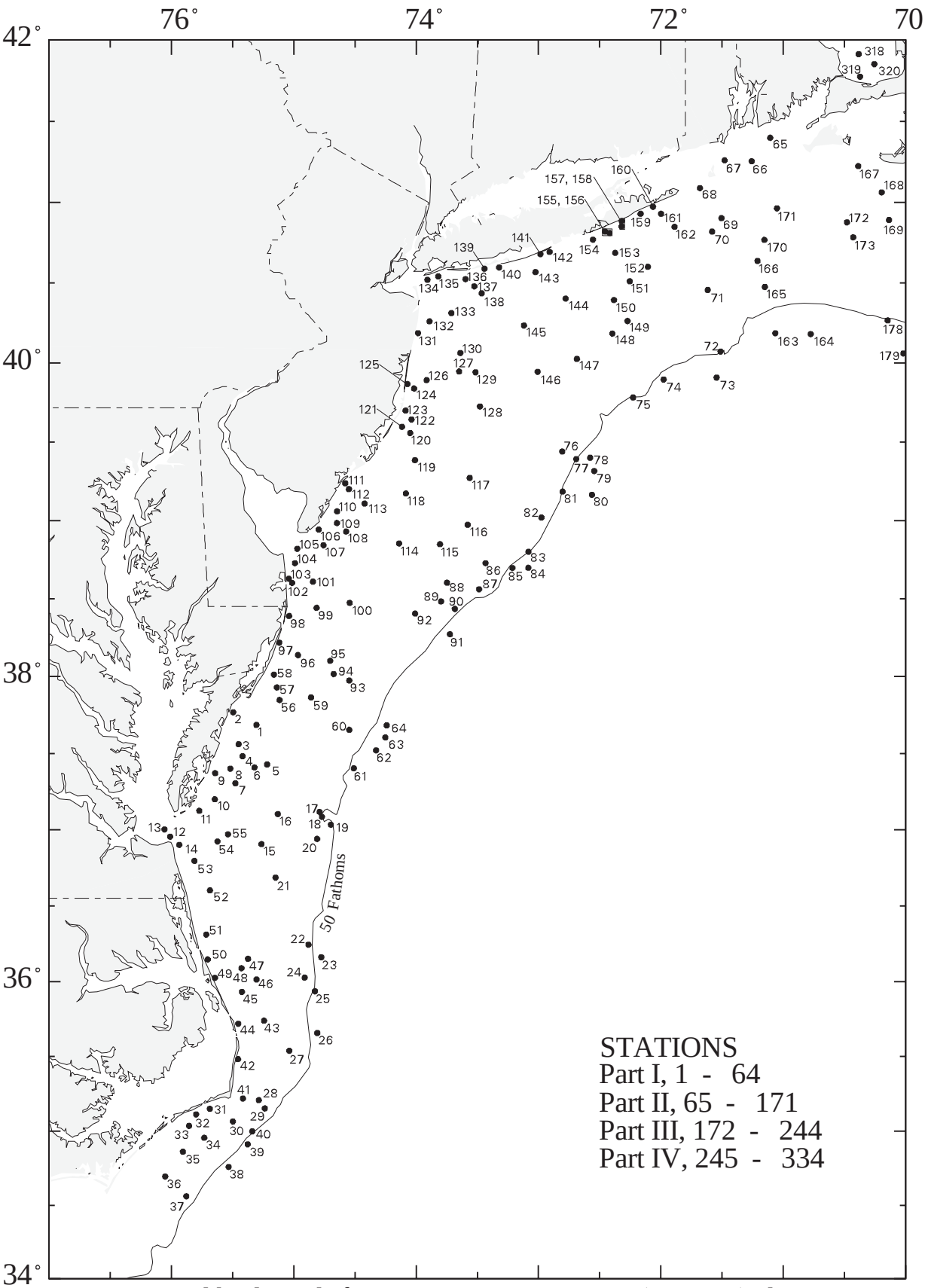

Figure 1. Trawl hauls made from R/V ALBATROSS IV (05 - 03), during NOAA Fisheries Service, Northeast Fisheries Science Center spring bottom trawl survey, March 2 - April 21, 2005.

Map 1 of 2

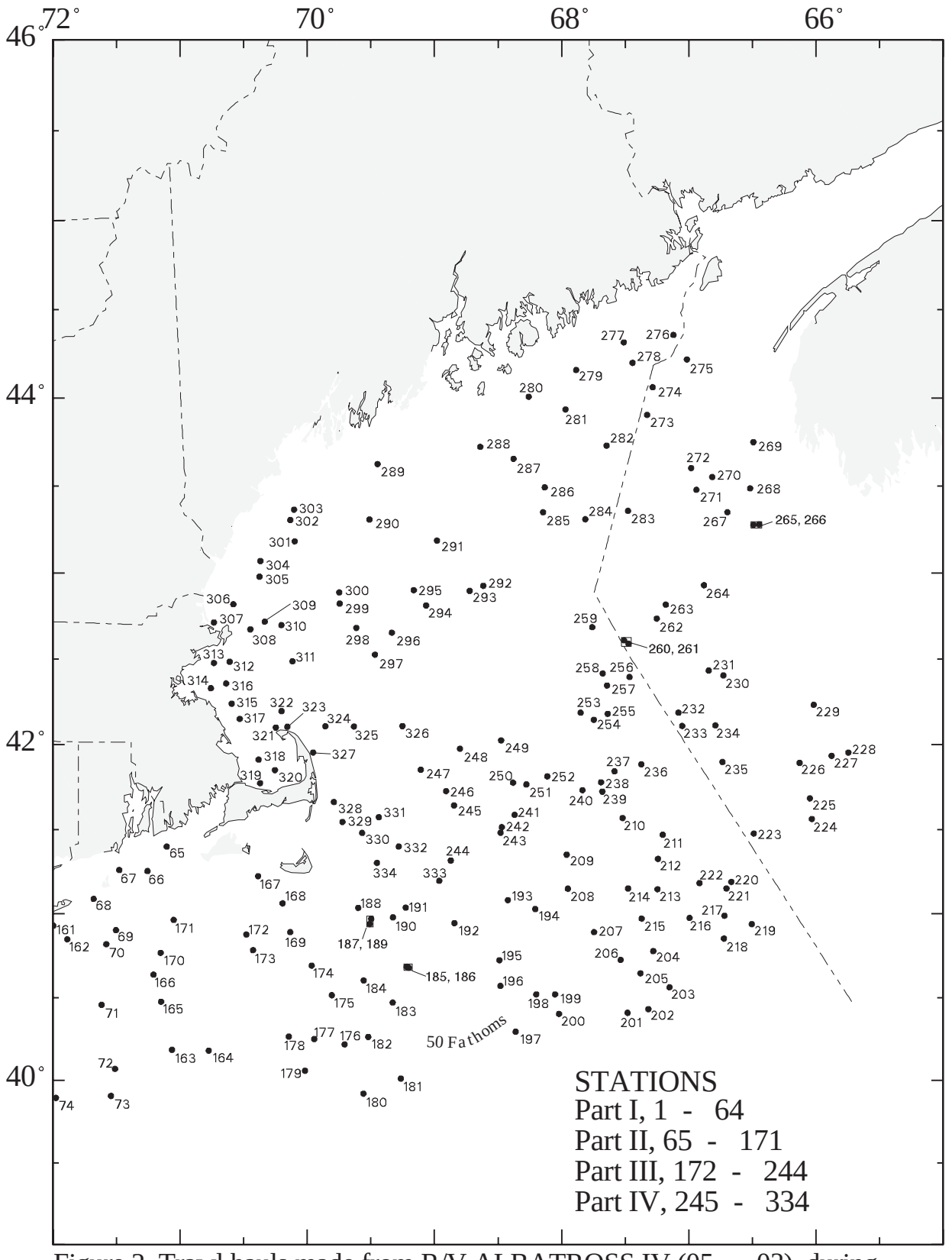

Figure 2. Trawl hauls made from R/V ALBATROSS IV (05 - 03), during NOAA Fisheries Service, Northeast Fisheries Science Center spring bottom trawl survey, March 2 - April 21, 2005.
Map 2 of 2