25 April 2005

CRUISE RESULTS

NOAA FRV ALBATROSS IV
Cruise No. AL 04-09 (Parts I-IV)
Autumn Bottom Trawl Survey

CRUISE PERIOD AND AREA

The cruise period was from 9 September to 27 October 2004. The survey was conducted in four parts: Part I was from 9-17 September; Part II, 20 September-1 October; Part III, 4-15 October; and Part IV, 18-27 October. The area of operation 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 survey 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; and (7) conduct paired tows with Delaware II using prototype 4-seam high opening net and various doors.

METHODS

Operations and gear used during Parts I-IV conformed with the Cruise Instructions for the Autumn Bottom Trawl Survey dated 3 June 2004 and Addendum1 dated 31 August; Addendum 2 dated 20 September; Addendum 3 dated 27 September; Addendum 4 dated 18 October with the following exceptions: Part I left two days later than scheduled due to mechanical problems; Part IV returned to Woods Hole on 27 October due to completion of the survey.

A 30-minute tow was made at each survey station using a Northeast Fisheries Science Center (NEFSC) standard number 36 Yankee otter trawl rigged with 41 centimeter (cm) diameter rubber rollers, 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; 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 each 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 (kg) and further sampled for age and growth and feeding ecology studies. Bony fish were measured to the nearest cm to the end of the central caudal ray (fork length); biological samples were collected concurrently with measuring operations (Table 1). Sharks and skates were measured to the end of the caudal fin (total length). Disk width was measured for rays. Lobsters were measured in millimeters (mm) 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 (cm). Shell height was measured in(cm) for selected bivalves. Additional collections were obtained for various scientists (Table 2). The remainder of the catch (miscellaneous invertebrates, shells, substrate, et cetera) 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 made using a conductivity, temperature, and depth (CTD) system 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 flowmeters 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 319 stations with 67, 95, 95, and 62 stations completed on parts I-IV, respectively.

Standard plankton tows were made at 80 stations. Bottom temperatures were collected at all stations using the CTD system. Bottom water samples for CTD calibration were taken at 52 stations. There were a total of 11 paired tows with the Delaware II during Part IV of the survey.

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 loaded into the NEFSC trawl survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Woods Hole, MA
Linda Despres, Chief Scientist[1]
Victor Nordahl, Chief Scientist[2]
Stacy Rowe, Chief Scientist[3], participant[1]
John Galbraith, Chief Scientist[4]
Robert Alexander[2]
Larry Brady[1,2,4]
Elisabeth Broughton[3]
John Burnett[3]
Jonathan Duquette[1]
Christopher Legault[3]
Kevin McIntosh[4]
Nina Shepherd[2,3]
Brian Smith[1,4]
Susan Wigley[3]

National Marine Fisheries Service, NEFSC, Highlands, NJ
John Subunka[1]

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

National Marine Fisheries Service, NEFSC, Milford, CT
John Ziskowski[4]

National Marine Fisheries Service, NERO, Gloucester, MA
Ellen Keane[1]

National Marine Fisheries Service, NSL, Washington, DC
La'Shaun Willis[3]

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

University of Massachusetts, Boston, MA
Tanya Anderson[1]

University of Massachusetts, Amherst, MA
Nikolai Klibansky[4]

University of Kansas, Lawrence, KS
Shannon DeVaney[3]

New York University, New York, NY
Katherine Guerena[3]

Contractors

Laurel Col[1]	ETI, Woods Hole, MA
Alicia Long[4]	ETE, Washington, DC
Maryann Morin[2]	ITS, Woods Hole, MA
Mendy Phillips[2]	REMSA, Gloucester, MA
Sarah Pregracke[1]	ITS, Woods Hole, MA
Geoffrey Shook[4]	Wakefield, RI
Tracey Sutton[1]	North Fort Pierce, FL

Volunteers

Keith Chapman[1]	Falmouth, MA
Erin Collings[2]	Wakefield, MA
Deborah Daniel[1]	Laurel, MD
Holly Frank[3]	Surprise, AZ
Emma Gunnarsson[4]	Long Beach, NY
Lance Hayes[2]	Atkinson, NH
Bobby Johnson[2]	Centerville, VA
Linda Daline Limbaugh Kent[4]	Eagle, CO
Daniel Newquist[4]	Peacedale, RI
Mellissia Richards[3]	Bangor, ME
Melanie-Jane Underwood[3]	Yokine WA, Australia
Robert Vallette[4]	Farmington, ME

[1]9-17 September
[2]10 September - 10 October
[3]4-15 October
[4]18-27 October

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 FRV ALBATROSS IV, Cruise 04-09 (I-IV), Autumn Bottom Trawl Survey, during 9 September-27 October 2004.

Species	Feeding Ecology Observations	Age and Growth Samples
Acadian redfish	251	876
American plaice	235	358
American shad	17	-
Atlantic cod	147	394
Atlantic halibut	13	13
Atlantic herring	194	733
Atlantic mackerel	21	47
Atlantic wolffish	2	2
Barndoor skate	-	57
Black sea bass	50	120
Blackbelly rosefish	50	2
Blueback herring	8	-
Bluefish	128	266
Butterfish	61	763
Cusk	14	14
Fawn cusk-eel	17	-
Fourspot flounder	143	150
Goosefish	84	104
Haddock	321	836
Little skate	135	7
Longhorn sculpin	124	2
Ocean Pout	34	33
Offshore hake	17	17
Pollock	99	202
Red hake	244	306
Rosette skate	10	-
Scup	151	468
Sea raven	104	-
Silver hake	417	1175
Smooth dogfish	180	-
Smooth skate	42	57
Spiny dogfish	298	-
Spot	58	4
Spotted hake	154	155
Striped bass	25	25
Summer flounder	262	443
Tautog	1	-
Thorny skate	43	1
Weakfish	123	657
White hake	146	264
Windowpane	162	260
Winter flounder	308	449
Winter skate	116	-
Witch flounder	113	157
Yellowtail flounder	150	219
TOTALS	5,272	9,636

Table 2. Miscellaneous scientific collections made on FRV ALBATROSS IV, Cruise 04-09 (I-IV), Autumn Bottom Trawl Survey, during 9 September-27 October 2004.

Investigator and Affiliation	Samples Saved	Approximate Number
Aquarium, NMFS, NEFSC, Woods Hole, MA	Loligo squid	20 bags
	Shrimp	21 bags
	Atlantic herring	2 bags
	Misc. live species	26 indiv.
Peter Chase, NMFS, NEFSC, Woods Hole, MA	Smooth dogfish	1 indiv.
	Witch flounder	5 indiv.
	Various species, maturity workshop	60 indiv.
Isaure deBuron, College of Charleston, Charleston, SC	Atlantic croaker	80 indiv.
Michael Fine, Virginia Commonwealth University, Richmond, VA	Fawn cusk-eels	57 indiv.
	Striped cusk-eels	2 indiv.
John Galbraith, NMFS, NEFSC, Woods Hole, MA	Unidentified species	406 indiv.
Heather Haas, NMFS, NMFSC, Woods Hole, MA	Turtles	1 tagged
Josef Idoine, NMFS, NEFSC, Woods Hole, MA	Shrimp	80 bags
Francis Juanes, UMASS, Amherst, MA	Offshore hake	13 preserved
	Silver hake	145 preserved
Charles Keith, NMFS, NEFSC, Woods Hole, MA	Atlantic hagfish	20 indiv.
	Butterfish	7 indiv.
	Shrimp	5 indiv.
Nikolai Klibansky, UMASS, Amherst, MA	Threespine stickleback	8 preserved
	Atlantic cod	10 preserved
Nancy Kohler, NMFS, NEFSC, Narragansett, RI	Sharks	12 tagged
William Macy, URI, Narragansett, RI	Loligo squid	3 indiv.
Maryland US Fish & Wildlife, Annapolis, MD	Atlantic sturgeon	7 exam.
KB McArdle, NMFS, NEFSC, Woods Hole, MA	Various species	335 indiv.
Nancy McHugh, NMFS, NEFSC, Woods Hole, MA	Various species	90 exam.
Paul Nitschke, NMFS, NEFSC, Woods Hole, MA	Cunner	9 indiv.
	Winter flounder	10 indiv.
Loretta O'Brien, NMFS, NEFSC, Woods Hole, MA	Atlantic cod	156 exam.
Brian Smith, NMFS, NEFSC, Woods Hole, MA	Various species	115 preserved
Katherine Sosebee, NMFS, NEFSC, Woods Hole, MA	Various skate species examined	468 indiv.
	vertebrae	24 samples
	whole skates frozen	6 indiv.
	rays	441 exam.
	female dogfish	113 exam.
	dogfish spines	114 samples
Tiffany Vidal, NMFS, NEFSC, Woods Hole, MA	Various species	18 indiv.
Susan Wigley, NMFS, NMFSC, Woods Hole, MA	Witch flounder	5 indiv.
Ike Wirgin, NYU, New York, NY	Atlantic sturgeon, fin clip	1 preserved
John Ziskowski, NMFS, NEFSC, Milford, MA	Ulcerated flounders	8 indiv.
	Ulcerated haddock	2 indiv.
	Atlantic hagfish	1 indiv.

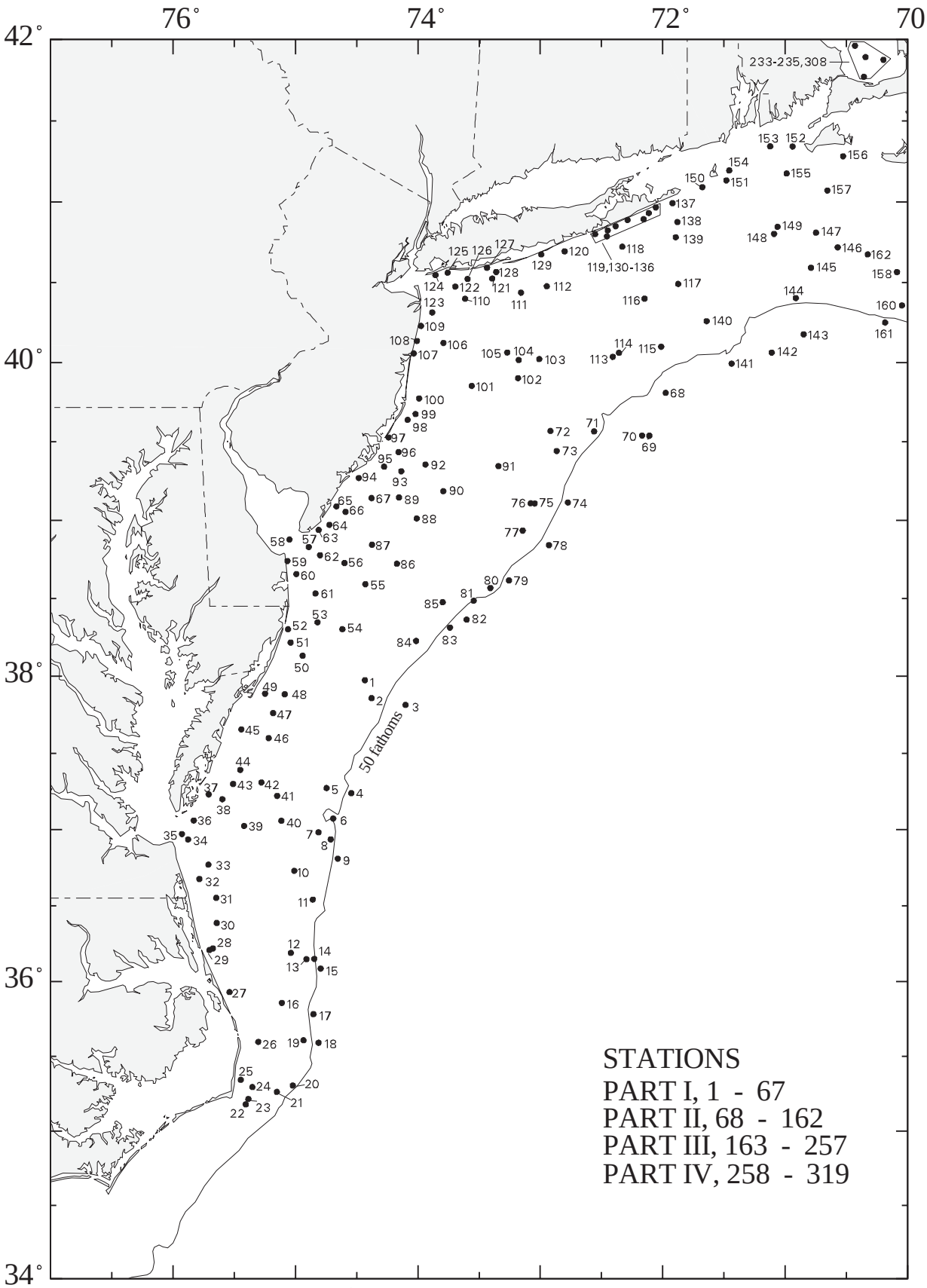

Figure 1. Trawl hauls made from R/V ALBATROSS IV (04 - 09), during NOAA Fisheries, Northeast Fisheries Science Center fall bottom trawl survey, Sept. 9 - Oct. 27, 2004.

Map 1 of 2

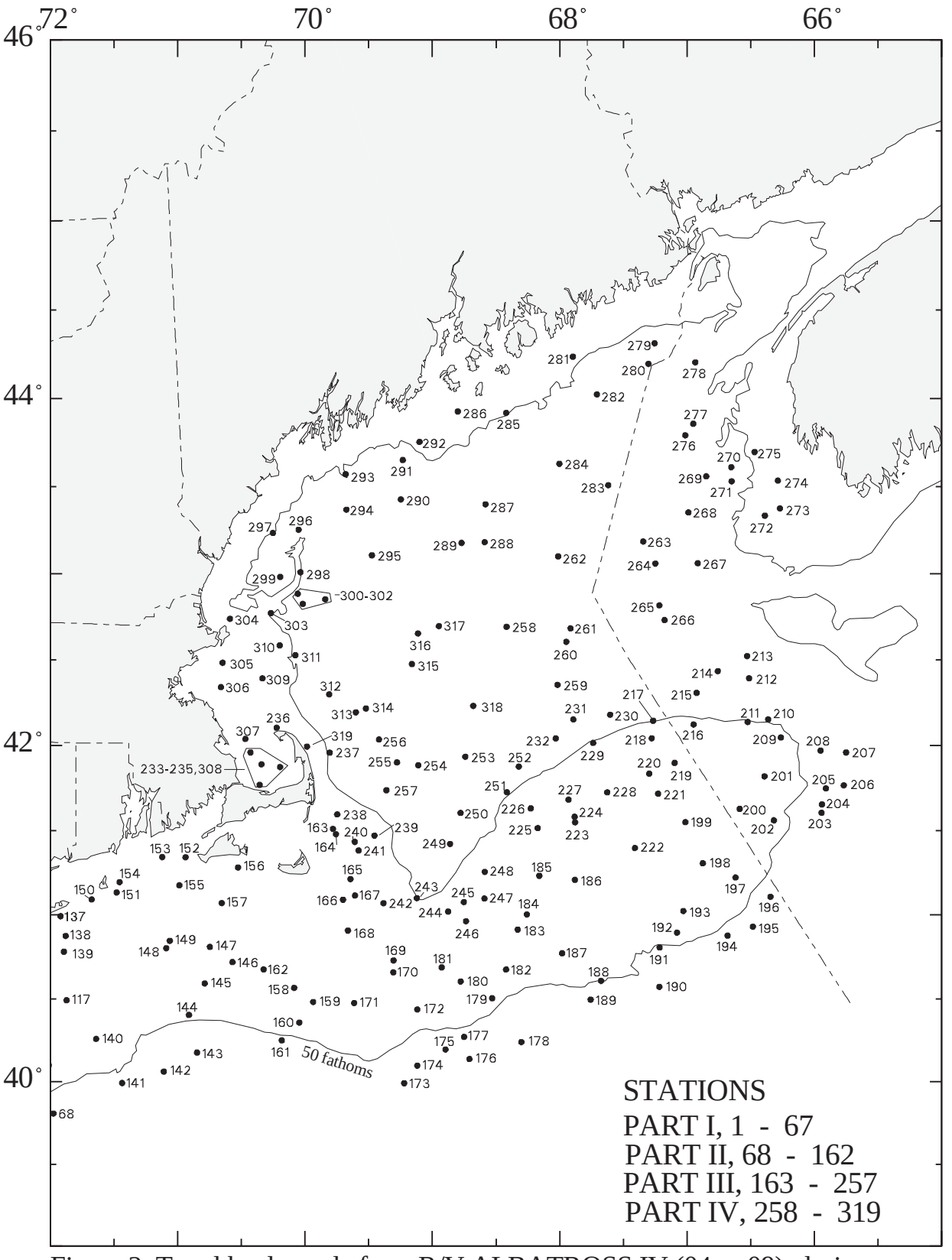

Figure 2. Trawl hauls made from R/V ALBATROSS IV (04 - 09), during NOAA Fisheries, Northeast Fisheries Science Center fall bottom trawl survey, Sept. 9 - Oct. 27, 2004

Map 2 of 2