CRUISE RESULTS

NOAA FRV ALBATROSS IV
Cruise No. AL 03-05 (Parts I-V)
Autumn Bottom Trawl Survey

Submitted to: NOAA, NEFSC

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CRUISE PERIOD AND AREA

The cruise period was from 7 September to 1 November 2003. The survey was conducted in five parts: Part I was from, 7-12 September; Part II, 15-26 September; Part III, 29 September-9 October; Part IV, 15-25 October; and Part V, 27 October-1 November. 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 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; and (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-V conformed with the Cruise Instructions for the Autumn Bottom Trawl Survey dated 8 August 2003 and Addendum1 dated 29 August; Addendum1b dated 2 September; Addendum 2 dated 15 September; Addendum 3 dated 24 September; Addendum 4 dated 10 October; Addendum 5 dated 27 October with the following exceptions: During Part II, the ship returned to Woods Hole on 18 September due to a hurricane warning and commenced operations on 20 September. During Part IV, on 22 October, the ship dropped off a ship-board crew member in Provincetown due to a personal emergency. Part V, originally scheduled to come in on 3 November, came in on 1 November due to 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 (CTD) 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 336 stations with 46, 82, 94, 83, and 31 stations completed on parts I-V, respectively.

Standard plankton tows were made at 113 stations. Bottom temperatures were collected at all stations using the CTD system. Bottom water samples for CTD calibration were taken at 51 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 loaded into the NEFSC trawl survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Woods Hole, MA
John Galbraith, Chief Scientist[1,2,3]
Linda Despres, Chief Scientist[4]
Victor Nordahl[5]
Larry Brady[1,3,5]
Elisabeth Broughton[3]
Peter Chase[1,4]
Nancy McHugh
Joseph Mello[1]
Stacy Rowe[1, 3]
Katherine Sosebee[5]
Sandra Sutherland[2]

National Marine Fisheries Service, NEFSC, Highlands, NJ
John Sibunka[2]

National Marine Fisheries Service, NEFSC, Narragansett, RI
Jacquelyn Anderson[3]
Jerry Prezioso[4]

National Marine Fisheries Service, NEFSC, Milford, CT
Steven Pitchford[4] (10/15-22)
Patricia Turner[5]
John Ziskowski[4]

National Marine Fisheries Service, NERO, Gloucester, MA
Allison Ferreira[5]
Gregory Zwicker[5]

National Marine Fisheries Service, HQ, Silver Spring, MD
Nicole Bartlett[3]
Brad Gentner[1]

National Marine Fisheries Service, NSL, Washington, DC
Ruth Gibbons[4]

National Marine Fisheries Service, NERO, Hampton, VA
Stephen Ellis[1]

NOAA, NESDIS, NODS, Silver Spring, MD
Michael Ford[3]

NOAA, NMAO,NEMSF, Woods Hole, MA
Apryl Corey[2]

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

University of Massachusetts, Amherst, MA
Nikolai Klibansky[5]
Joseph Kunkel[4]

Stony Brook University, Stony Brook, NY
Michelle Staudinger[5]

Woods Hole Oceanographic Institute, Woods Hole, MA
Jennifer FitzGerald[2]
Benjamin Walther[3]

Contractors

Robert Alexander[3,5]	REMSA, Woods Hole, MA
Laurel Col[2]	ETI, Woods Hole, MA
Ellen Johnson[1]	Robbinston, ME
Christopher Kenaley[5]	Cambridge, MA
Alicia Long[2]	ETE, Washington, DC
Sean Lucey[2, 3]	South Yarmouth, MA
Kevin McIntosh[2, 4, 5]	REMSA, Woods Hole, MA
Katie Lovett[1]	REMSA, New Bedford, MA
Sarah Pregracke[1,4]	ITS, Woods Hole, MA
Brian Smith[2]	ETI, Woods Hole, MA
Kris Tholke[5]	ITS, Woods Hole, MA

Volunteers

Brent Courchene[1]	Rockland, MA
Jason Dean[2]	Hingham, MA
Christopher Foster[1]	Germantown, MD
John Ward Kehoe[2]	Berkeley, CA
Paul Lewis[3]	South Salem, NY
Bryan McGowan[4]	Riverhead, NY
Amy Poe[4]	Portland, OR
Matthew Parsons[5]	Southold, NY
Sean Smith[4]	Schenectady, NY
Margaret Toner[2,3]	Bourne, MA
Bert Zuckerman[3]	Amherst, MA

Teacher-at-Sea Program

Jason Carter[4]	Icard, NC

[1]7-12 September
[2]15-26 September
[3]29 September - 9 October
[4]15-25 October
[5]27 October - 1 November

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 03-05 (I-V), Autumn Bottom Trawl Survey, during 7 September-1 November 2003.

Species	Feeding Ecology Observations	Age and Growth Samples
Acadian redfish	199	597
American plaice	311	440
American shad	9	-
Atlantic angel shark	2	-
Atlantic cod	152	397
Atlantic croaker	-	774
Atlantic halibut	10	11
Atlantic herring	165	630
Atlantic mackerel	50	112
Atlantic sharpnose shark	1	-
Atlantic wolffish	1	1
Barndoor skate	18	-
Black sea bass	98	197
Blackbelly rosefish	54	-
Blueback herring	12	-
Bluefish	136	382
Blueline tilefish	6	-
Butterfish	317	878
Clearnose skate	2	-
Cunner	-	1
Cusk	8	8
Fawn cusk-eel	54	-
Fourspot flounder	239	258
Goosefish	143	193
Haddock	343	880
Little skate	251	-
Longhorn sculpin	113	-
Ocean pout	49	50
Offshore hake	54	54
Pollock	86	168
Red hake	343	411
Rosette skate	9	-
Scup	189	524
Sea raven	100	3
Silver hake	545	1706
Smooth dogfish	265	-
Smooth skate	54	-
Spiny dogfish	294	-
Spot	69	2
Spotted hake	359	361
Striped bass	50	52
Summer flounder	203	323
Tautog	8	-
Thorny skate	63	-
Weakfish	213	1261
White hake	141	328
Windowpane	308	431
Winter flounder	316	466
Winter skate	118	-
Witch flounder	176	232
Yellowtail flounder	173	310
TOTALS	6,879	12,441

Table 2. Miscellaneous scientific collections made on FRV ALBATROSS IV, Cruise 03-05 (I-V), Autumn Bottom Trawl Survey, during 7 September-1 November 2003.

Investigator and Affiliation	Samples Saved	Approximate Number
Aquarium, NMFS, NEFSC, Woods Hole, MA	Loligo, Shrimp, Atlantic herring	62 bags
	Various live species	17 indiv.
William Bemis, UMASS, Amherst, MA	Blueline tilefish	1 indiv.
Jon Brodziak, NMFS, NEFSC, Woods Hole, MA	Haddock	3 indiv.
Steve Cadrin, NMFS, NEFSC, Woods Hole, MA	Yellowtail flounder	1 indiv.
Peter Chase, NMFS, NEFSC, Woods Hole, MA	Various species, maturity workshop	262 indiv.
Bruce Collette, NMFS, Nat'l Systematics Lab, Washington, DC	Various species	37 indiv.
Isaure Deburon, College of Charleston, SC	Atlantic croaker	70 indiv.
Kevin Friedland, UMASS, Amherst, MA	Atlantic sturgeon, fin clip	1 indiv.
John Galbraith, NMFS, NEFSC, Woods Hole, MA	Various species	2119 indiv.
Devorah Hart, NMFS, NEFSC, Woods Hole, MA	*Astropecten* sp.	2 bags
Josef Idoine, NMFS, NEFSC, Woods Hole, MA	Shrimp	60 bags
Francis Juanes, UMASS, Amherst, MA	Atlantic cod ovaries	25 samples
Charles Keith, NMFS, NEFSC, Woods Hole, MA	Atlantic hagfish	48 indiv.
Nancy Kohler, NMFS, NEFSC, Narragansett, RI	Sharks, tagged	1 indiv.
Joseph Kunkel, UMASS, Amherst, MA	Atlantic cod	24 indiv.
	Haddock	31 indiv.
	Lobster	1 indiv.
Nancy McHugh, NMFS, NEFSC, Woods Hole, MA	Various species	77 indiv.
Karina Mrakovcich, US Coast Guard Academy, New London, CT	Various species	285 indiv.
Paul Nitschke, NMFS, NEFSC, Woods Hole, MA	Cunner	102 indiv.
Loretta O'Brien, NMFS, NEFSC, Woods Hole, MA	Atlantic cod	171 indiv.
Kenneth Oliveira, UMASS, Dartmouth, MA	Various species	215 indiv.
Roy Pemberton, VIMS, Gloucester Point, VA	Black sea bass	184 exam.
		180 samples
Avis Sosa, Jakarta Int'l School, Cilandak Jakarta, Indonesia	Atlantic calico scallop	2 indiv.
	examined	1496 indiv.
	vertebrae	995 samples
Susan Wigley, NMFS, NMFSC, Woods Hole, MA	Witch flounder	26 indiv.
John Ziskowski, NMFS, NEFSC, Milford, MA	American plaice	436 indiv.

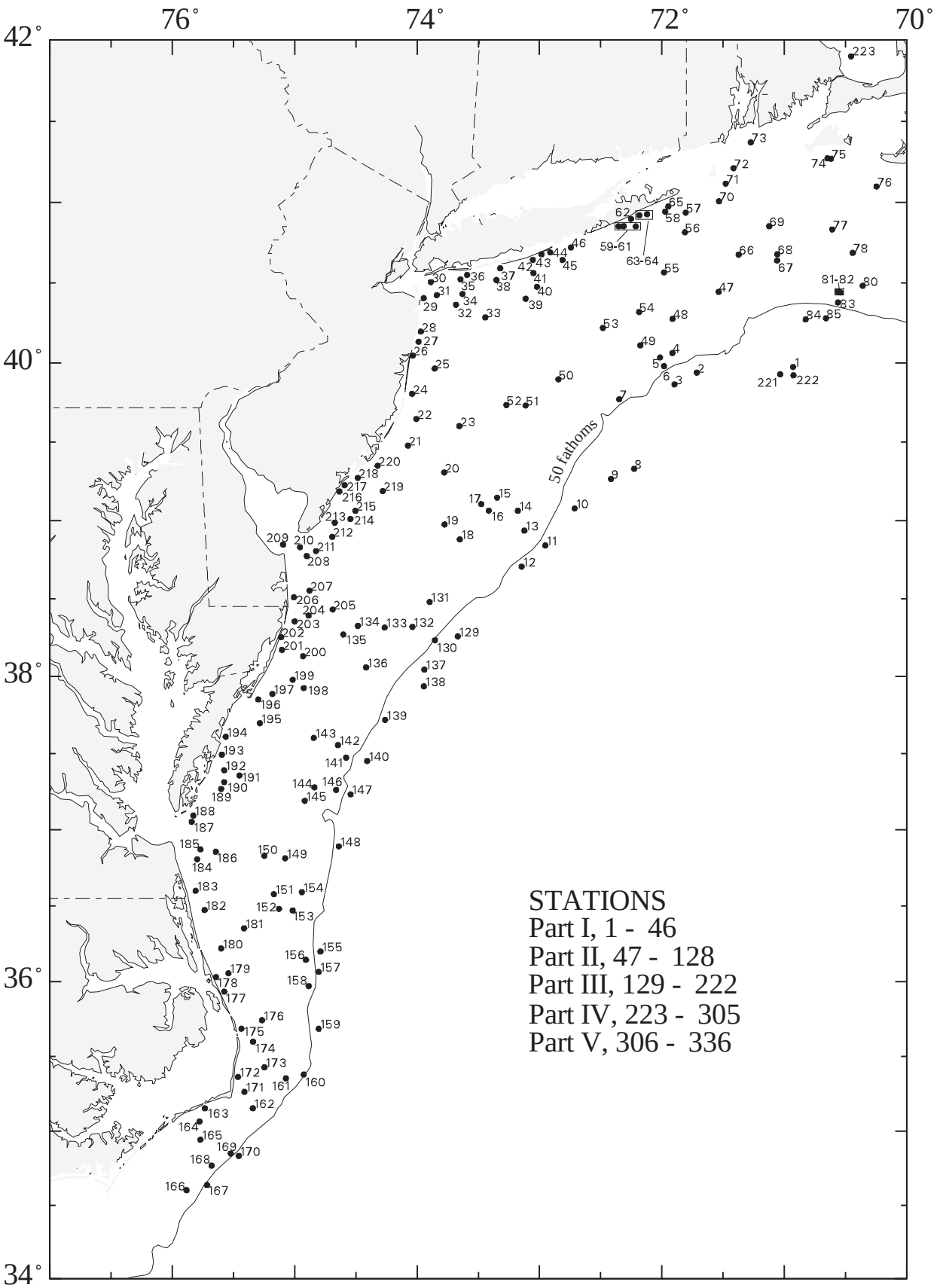

Figure 1. Trawl hauls made from R/V ALBATROSS IV (03 - 05), during National Marine Fisheries Service, Northeast Fisheries Science Center fall bottom trawl survey, September 7 - November 1, 2003.

Map 1 of 2

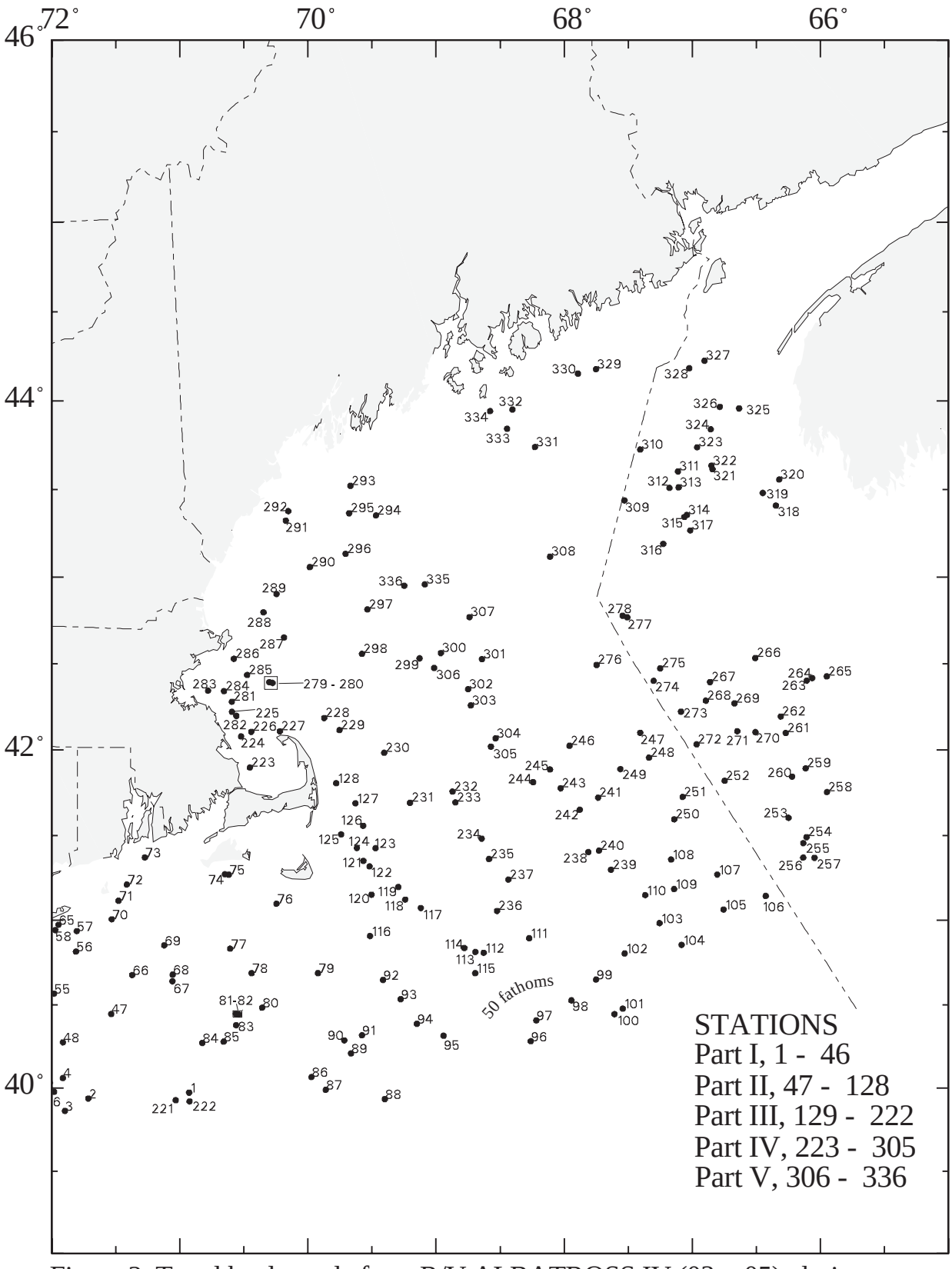

Figure 2. Trawl hauls made from R/V ALBATROSS IV (03 - 05), during National Marine Fisheries Service, Northeast Fisheries Science Center fall bottom trawl survey, September 7 - November 1, 2003
Map 2 of 2