

CRUISE RESULTS

NOAA FSV Henry B. Bigelow
Cruise No. HB 08-07 (Parts I-V)
Autumn Bottom Trawl Survey and
Calibration Study

Submitted to: NOAA, NEFSC

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
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CRUISE PERIOD AND AREA

The cruise period was from 2 September to 14 November 2008. The HB 08-07 bottom trawl survey and calibration study was conducted in 5 parts: Part I was from 2-16 September; Part II, 20-25 September and 29 September-3 October; Part III, 7-17 October; Part IV, 21-31 October; and Part V, 3-14 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 survey were to: (1) examine survey catchability difference between surveys conducted on the FSV *Henry B. Bigelow* and FRV *Albatross IV*; (2) determine the autumn distribution and relative abundance of fish and invertebrate species found on the continental shelf; (3) collect acoustic data between stations; and (4) continue to test vessel and survey related equipment on the FSV *Henry B. Bigelow*.

METHODS

Operations and gear used during HB 08-07 Parts I-V conformed with the Cruise Instructions for the Autumn Bottom Trawl Survey dated 10 July 2008 and Addendum 1 dated 2 September; Addendum 2 dated 16 September; Addendum 3 dated 3 October; Addendum 4 dated 8 October; and Addendum 5 dated 27 October. The exception to the Cruise Instructions is Part II docked in Newport from 25-29 September due to bad weather.

A 20-minute survey trawl haul was made at each pre-selected station indicated on cruise charts. Additional stations during the actual operation of the cruise were added for gear testing and alternative paired sites with NOAA FRV *Albatross IV*. The standard towing speed was 3.0 knots, speed over ground. The scope ratio used varied with depth and was determined by the new NEFSC Bottom Trawl Survey Protocol for the *Bigelow*. Sampling was conducted using a NEFSC standardized 4 seam, 3 Bridle survey trawl rigged with a rockhopper sweep. The trawl was fished using 2.2 m², 550kg, Poly Ice Oval trawl doors and 36.6 meter (20 fathom) bridles. In addition, net monitoring equipment was used to monitor trawl performance on all stations.

Direction of each tow matched that of the *Albatross IV*. Throughout the cruise, a hydroacoustic survey was conducted during transit between bottom trawl stations using the Simrad EK-60 system.

After each tow, the catch was sorted by species and weighed 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 studies. Bony fish were measured to the nearest centimeter (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. 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. Bottom salinity samples were obtained 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 386 stations with 94, 69, 83, 31, 109 stations completed on HB 08-07 Parts I-V, respectively.

Standard plankton tows were made at 105 stations. Bottom temperatures were collected at 285 stations using the CTD system. Bottom water samples for CTD calibration were taken at 38 stations.

A total of 5,480 age and growth samples were collected from 13 species (Table 1). A total of 4,691 requested samples were collected to support 20 internal and external investigations (Table 2).

DISPOSITION OF SAMPLES AND DATA

Age and growth 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

Russell Brown, Chief Scientist ⁵	Larry Brady ¹ (2-7 September)	Shad Mahlum ^{3, 4, 5}
John Galbraith, Chief Scientist ⁴	Elizabeth Broughton ²	Richard McBride ³
Nathan Keith, Chief Scientist ^{2, 4}	Jonathan Duquette ¹	Richard Raynes ³
Victor Nordahl, Chief Scientist ¹	Stephanie Floyd ⁵	Grace Thornton ²
Phil Politis, Chief Scientist ^{3, participant 4}	Michael Fogarty ³	
Robert Alexander ⁴	Alicia Long ⁴	
Cristina Bascunan ^{3, 5}	Sean Lucey ⁴	

National Marine Fisheries Service, NEFSC, Gloucester, MA

James McKeon⁵
Lisa Roberts⁴

National Marine Fisheries Service, NEFSC, Milford, CT

Jose Pereira¹

National Marine Fisheries Service, NEFSC, Narragansett, RI

Jerome Prezioso²

National Marine Fisheries Service, OST, Silver Spring, MD

Edward Gorecki III³

University of Massachusetts, Amherst, MA

Joseph Kunkel³

Contractors

Tim Anderson ¹	AIS, Inc, New Bedford, MA
Tim Bertrand ²	ITS, Woods Hole, MA
Robert Bland ¹	AIS, Inc, New Bedford, MA
Jenna Christensen ¹	AIS, Inc, New Bedford, MA
Sarah Cierciph ²	AIS, Inc, New Bedford, MA
Heath Cook ^{2, 5}	ITS, Woods Hole, MA
Denise Craft ¹	AIS, Inc, New Bedford, MA
Joshua Cutler ^{4, 5}	ITS, Woods Hole, MA
Jakub Kircun ^{2, 5}	ITS, Woods Hole, MA
Lauren Marcinkiewicz ⁴	ITS, Woods Hole, MA

Christopher Parkins^{2, 3, 4, 5}
Adam Poquette^{3, 5}
Geoff Shook³
John Sibunka⁴
Francine Stroman⁵
Melanie Underwood^{1, 3, 5}
Brian Westell⁵

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Volunteers

Alain Brussey, Jr.²
Janet Clark⁴
Brian Gauvin²
Marisa Guarinello²
Amy Koske²
Kate McClure²
Glynn Rountree⁴
Courtney Strait⁵
Brian Shacter⁵
Jacob Tanenbaum³

Deer Park, NY
Rockport, MA
New Orleans, LA
Wakefield, RI
Granby, MA
Princeton, NJ
Arlington, VA
Clifton Park, NY
East Falmouth, MA
Tappan, NY

¹ 2-16 September

² 20-25 September, 29 September-3 October

³ 7-17 October

⁴ 21-31 October

⁵ 3-14 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) 495-2380; Russell.Brown@noaa.gov. The Resource Survey Report for this survey and the cruise results can be viewed at: <http://www.nefsc.noaa.gov/esb/>.

Table 1. Field observations and samples collected for age and growth studies on NOAA FSV *Henry B. Bigelow*, Autumn Bottom Trawl Survey and Calibration Study, during 2 September to 14 November 2008.

Species	Age and Growth Samples
Acadian redfish	884
American plaice	622
Atlantic cod	389
Atlantic hagfish	1
Atlantic halibut	4
Butterfish	651
Cunner	1
Haddock	449
Summer flounder	521
White hake	1
Winter flounder	511
Witch flounder	300
Yellowtail flounder	1,146
TOTALS	5,480

Table 2. Miscellaneous scientific collections made on NOAA FSV *Henry B. Bigelow*, Autumn Bottom Trawl Survey and Calibration Study, during 2 September to 14 November 2008.

Investigator and Affiliation	Species Sampled	Approximate Number
Matt Brandley, Yale U., New Haven, CT	Atlantic hagfish	2 indiv.
Michael Burton, NMFS, Beaufort, NC	Black sea bass	59 indiv.
Kerin Cleason, U. of Texas, Austin, TX	Various elasmobranchs	8 indiv.
Bruce Collette, NMFS, NSL, Washington, DC	Various species	36 indiv.
Michael Fine, Virginia Commonwealth U., Richmond, VA	Striped Cuskeel	50 indiv.
John Galbraith, NMFS, NEFSC, Woods Hole, MA	Unidentified/various species	2953 indiv.
Guest	Various species	6 indiv.
Nancy Kohler, NMFS, NEFSC, Narragansett, RI	Various sharks	3 tagged
Jason Link/Brian Smith, NMFS, NEFSC, Woods Hole, MA	Cunner	4 preserved
Nancy McHugh, NMFS, NEFSC, Woods Hole, MA	Various species	3 exam.
Joe Mello, NMFS, NEFSC, Woods Hole, MA	Angel shark	22 indiv.
Jon Moore, Florida Atlantic U., Jupiter, FL	Various species	68 indiv.
David Mountain, U. of Arizona, Tucson, AZ	Atlantic hagfish	3 live indiv.
Tom Munroe, NMFS, NSL, Washington, DC	Various species	31 indiv.
Martha Nizinski, NMFS, NSL, Washington, DC	Various galatheids	283 indiv.
Anne Richards, NMFS, NEFSC, Woods Hole, MA	Goosefish	3 indiv.
Kathy Sosebee, NMFS, NEFSC, Woods Hole, MA	Various skates species	74 exam.
	Various ray species	439 exam.
	Various shrimp	1 exam.
Michelle Staudinger, U. of Massachusetts, Amherst, MA	Various species	396 indiv.
David Stormer, U. of Massachusetts, Amherst, MA	Bluefish	168 indiv.
Susan Wigley, NMFS, NEFSC, Woods Hole, MA	Witch flounder	31 indiv.
Workshop, NMFS, NEFSC, Woods Hole, MA	Various species	48 indiv.

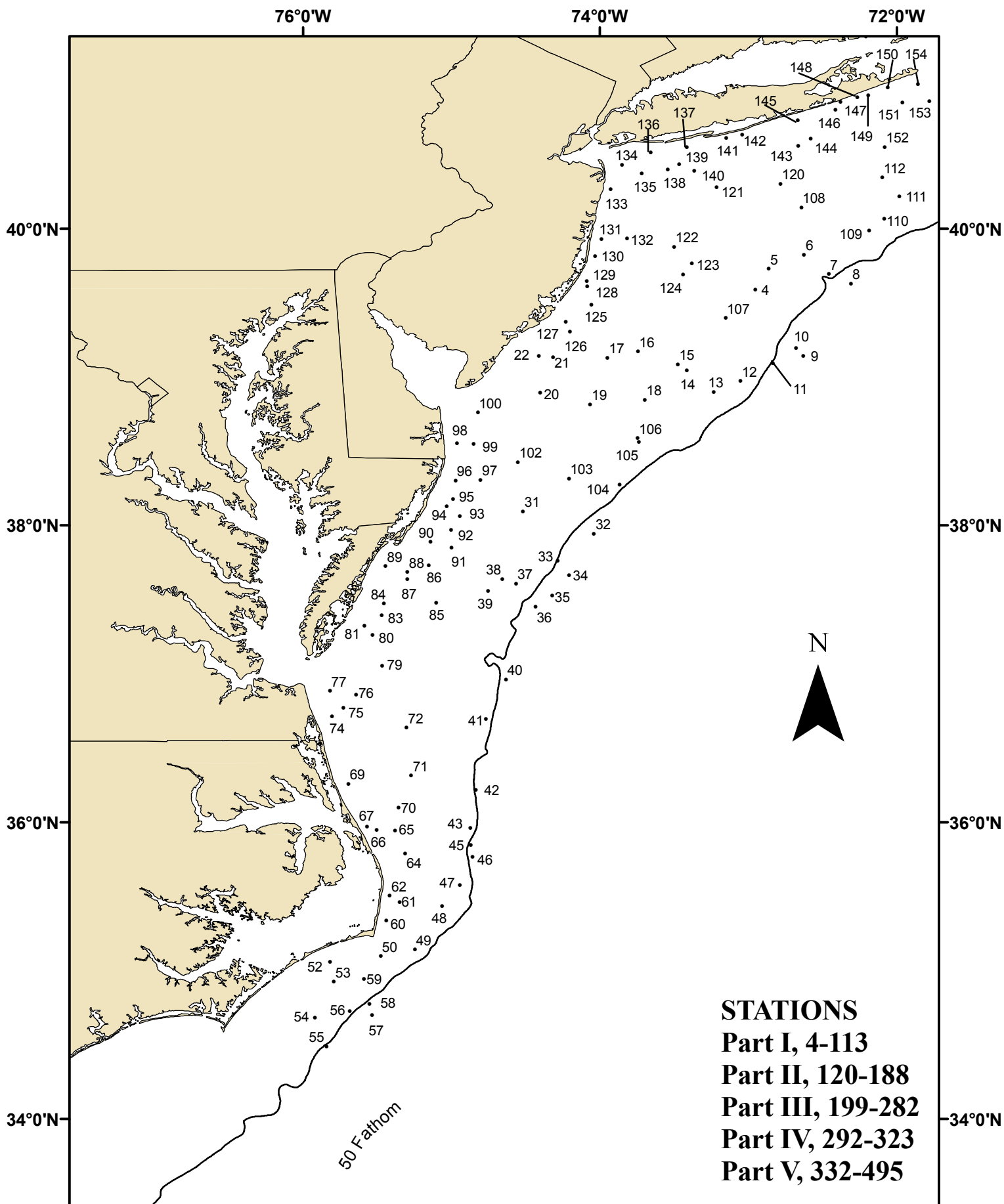


Figure 1. Trawl hauls made from NOAA FRV *Hugh B. Bigelow* (08-07), during NOAA Fisheries Service, Northeast Fisheries Science Center fall bottom trawl survey and calibration study, 2 September - 14 November 2008.

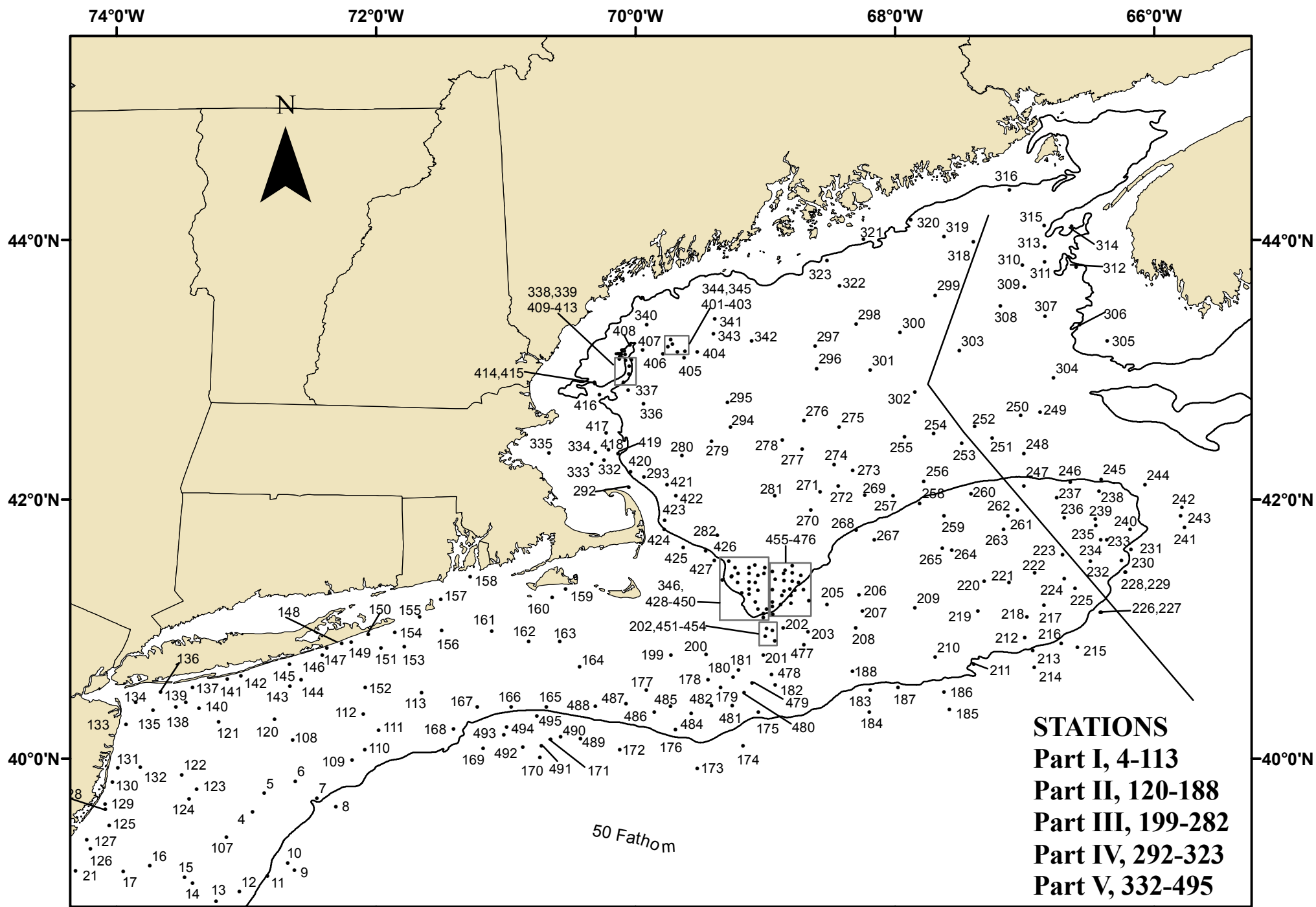


Figure 2. Trawl hauls made from NOAA FSV *Henry B. Bigelow* (08-07), during NOAA Fisheries Service, Northeast Fisheries Science Center fall bottom trawl survey and calibration study, 2 September - 14 November 2008.