



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

08 January 2009

CRUISE RESULTS

N O A A F R V *Delaware II*
Cruise No. D E 08-07 (Parts I-III)
Surfclam and Ocean Quahog Survey

CRUISE PERIOD AND AREA

The cruise period was from 30 June to 7 August 2008. The D E 08-07 surfclam and ocean quahog survey was conducted in three parts: Part I was from 30 June-10 July; Part II, 15-25 July; and Part III, 28 July-7 August. The area of operation was on the continental shelf from Southern Virginia (Delmarva) to Georges Bank. Station locations are shown in Figures 1, 2 and 3.

OBJECTIVES

The objectives of the survey were to: (1) determine the distribution, relative abundance and biological data for surfclams (*Spisula solidissima*) and ocean quahogs (*Arctica islandica*); (2) collect dredge performance readings on each dredge haul utilizing an archiving deployed multi-sensor sampling device attached to the clam dredge; (3) conduct approximately ten setup sites for a commercial survey; (4) reoccupy selected sites from the 2005 clam survey; (5) collect sediment grab samples at commercial set up sites; (6) collect meat weights, gonad weights and shells from surfclam and ocean quahogs on a subset of station locations; and (7) collect additional biological samples for other programs including red tide sampling by the Food and Drug Administration.

METHODS

Operations and gear used during D E 08-07 Parts I-III conformed with the Cruise Instructions for the Surfclam and Ocean Quahog Survey dated 18 April 2007 and Addendum 1 dated 25 June 2008; Addendum 2 dated 9 July; and Addendum 3 dated 21 July. Exceptions to the Cruise Instructions are as follows: Part I arrived one day early due to mechanical problems, and Part II left one day late due to mechanical problems.

A 5 minute clam dredge tow was made at each pre-selected station indicated on cruise charts. The towing speed was at 1.5 knots, speed over ground. The scope ratio was 2:1. Sampling was conducted using a N E F S C standardized hydraulic jet dredge. The dredge was equipped with a

60 inch blade and powered with an electric submersible pump positioned on the dredge frame. A Survey Sensor Package (SSP) was used to monitor the performance of the hydraulic clam dredge, recording incline, ambient and manifold pressures, surface and bottom temperatures, GPS location, and pump voltage.

A commercial survey set up site was conducted at sites where two bushels of surfclams or quahogs were collected from the dredge tow. Five tows were made parallel to the original station tow, and a sediment grab sample was taken after the fourth and fifth tows. These set up sites will be used later for a commercial depletion study.

After each tow, the catch was sorted by species and weighed using motion compensated digital scales. Representative length frequencies were collected for surfclams, ocean quahogs, sea scallops and southern quahogs. 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 species were assigned individual identification numbers, measured, weighed to the nearest 0.001 kilogram (kg) and further sampled for age and growth studies. Shell lengths were measured to the nearest millimeter (mm) for surfclams, ocean quahogs, sea scallops and southern quahogs. Biological samples were collected concurrently with measuring operations (Table 1). Weights and total numbers were recorded for all fish species and select invertebrate species. 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.

RESULTS

The survey sampled at 453 stations with 169, 150 and 134 stations completed on DE 08-07 Parts I-III, respectively. There were 14 depletion study set up sites, with an associated total of 70 dredge hauls and 28 grab samples.

A total of 895 age and growth samples were collected from two species (Table 1). A total of 5,340 requested samples were collected to support 4 internal and external investigations (Table 2).

DISPOSITION OF SAMPLES AND DATA

Age and growth samples, and trawl catch data will be analyzed at the Northeast Fisheries Science Center (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 survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Woods Hole, M A

Sean Lucey, Chief Scientist^{2, participant 3} Robert Johnston³
Victor Nordahl, Chief Scientist^{1,3} Chad Keith²
Lizamonet Abney² Alicia Long¹
TK Arbusto^{1, 2, 3} Shad Mahlum^{2, 3}
Stephanie Floyd¹ Yasha McDonald³

Chris Pickett^{1, 2}
Richard Raynes¹

FDA, Silver Spring, M D

Stacey Etheridge²

Contractors, Integrated Statistics, Woods Hole, M A

Heath Cook²
Joshua Cutler²
Jakub Kircun^{1, 2, 3}
Francine Stroman¹
Melanie Underwood³

Teacher at Sea Program

Laurie Degenhart² Kirkwood, M O
Lisha Hylton¹ Leesville, S C
Tiffany Risch³ R I
Lisbeth Uribe³ New York, N Y

Volunteers

Sharon Benjamin¹ Old Bethpage, N Y
Benjamin Broder-Oldach³ Cincinnati, O H
Christi Cartwright¹ Litchfield, N H
Mark Harris¹ Kaysville, U T
Kira Lopez¹ Virginia Beach, V A
Kathleen McCole³ Newark, D E
Caitlin McGarigal² Shutesbury, M A
Amy Nau³ Chapel Hill, N C
Anna Priester³ Cape May, N J
Christina Senft² Groton, C T
Russell Soulard¹ Malden, M A
Joseph Trynosky² Manasquan, N J

¹ 30 June-10 July

² 15-25 July

³ 28 July-7 August

For further information contact Robert Johnston, National Marine Fisheries Service, Northeast Fisheries Science Center, Woods Hole, Massachusetts 02543-1097. Phone (508) 495-2061; FAX (508) 495-2380; Robert.Johnston@noaa.gov. The Resource Survey Report for this survey and the cruise results can be viewed at the [NEFSC ESB Webpage](#).

Table 1. Field observations and samples collected for age and growth studies on N O A A F R V *Delaware II*, Surfclam and Ocean Quahog Survey, during 30 June to 7 August 2008.

Species	Age and Growth Samples
Atlantic surfclam	881
Ocean quahog	14

Table 2. Miscellaneous scientific collections made on N O A A F R V *Delaware II*, Surfclam and Ocean Quahog Survey, during 30 June to 7 August 2008.

Investigator and Affiliation	Species Sampled	Approximate Number
Stacey Etheridge, F D A, Silver Spring, M D	Atlantic surfclam	403 preserved
	Ocean quahog	1,245 preserved
	Sea scallop	120 preserved
John Galbraith, N E F S C, Woods Hole, M A	Unidentified/various species	30 indiv.
Larry Jacobson, N E F S C, Woods Hole, M A	Atlantic surfclam	954 exam./33 indiv.
	Atlantic surfclam, A&G sample	852 bags
	Ocean quahog	1,680 exam.
	Ocean quahog, A&G samples	4 bags
	Southern quahog	4 exam.
Sean Lucey, N E F S C, Woods Hole, M A	Sea scallop, A&G samples	2 bags
	Atlantic surfclam	3 stations exam.
	Ocean quahog	10 stations exam.

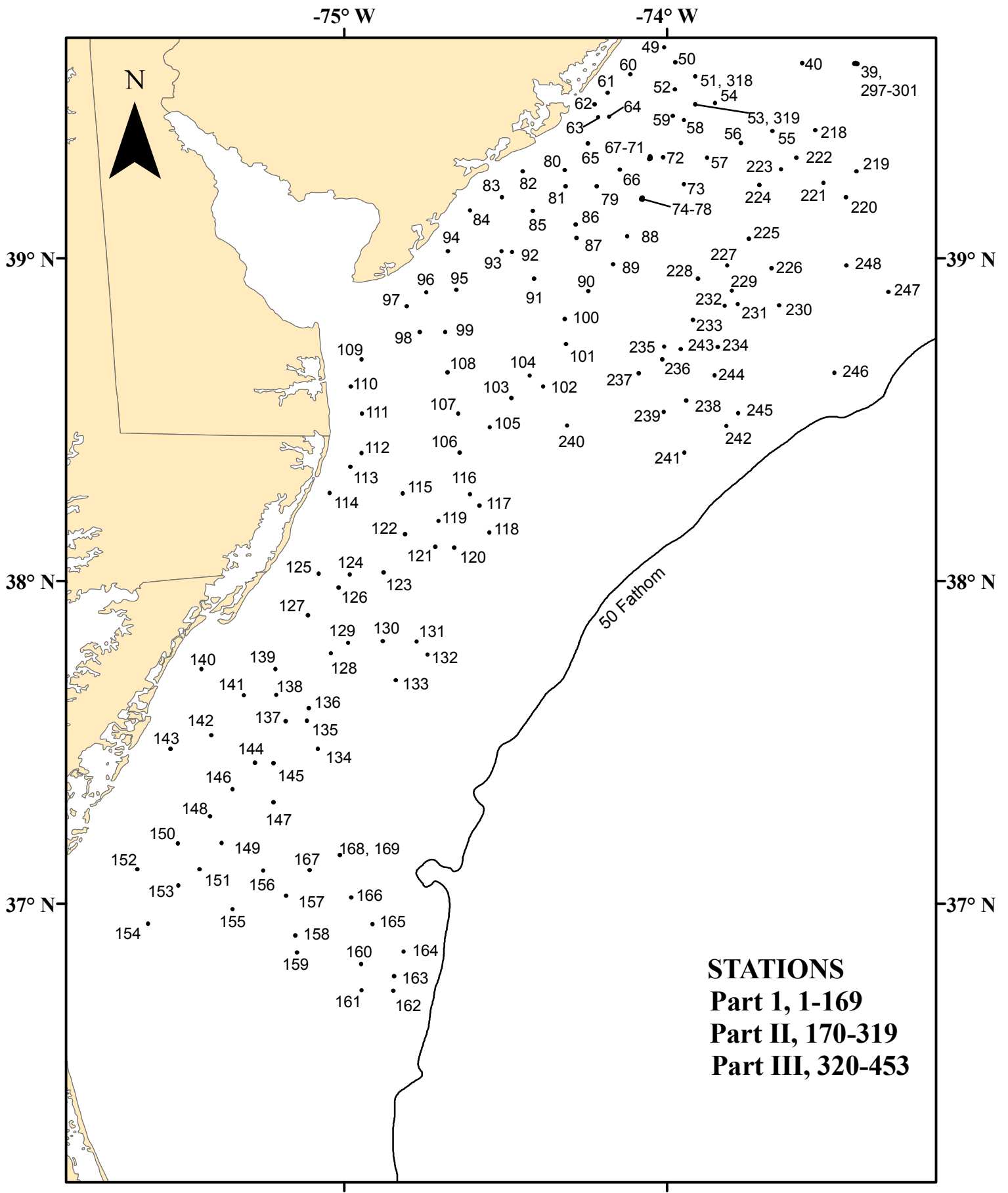


Figure 1. Dredge hauls made from N O A A R/V Delaware II (08-07), during N O A A Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey July 1 - August 6, 2008.

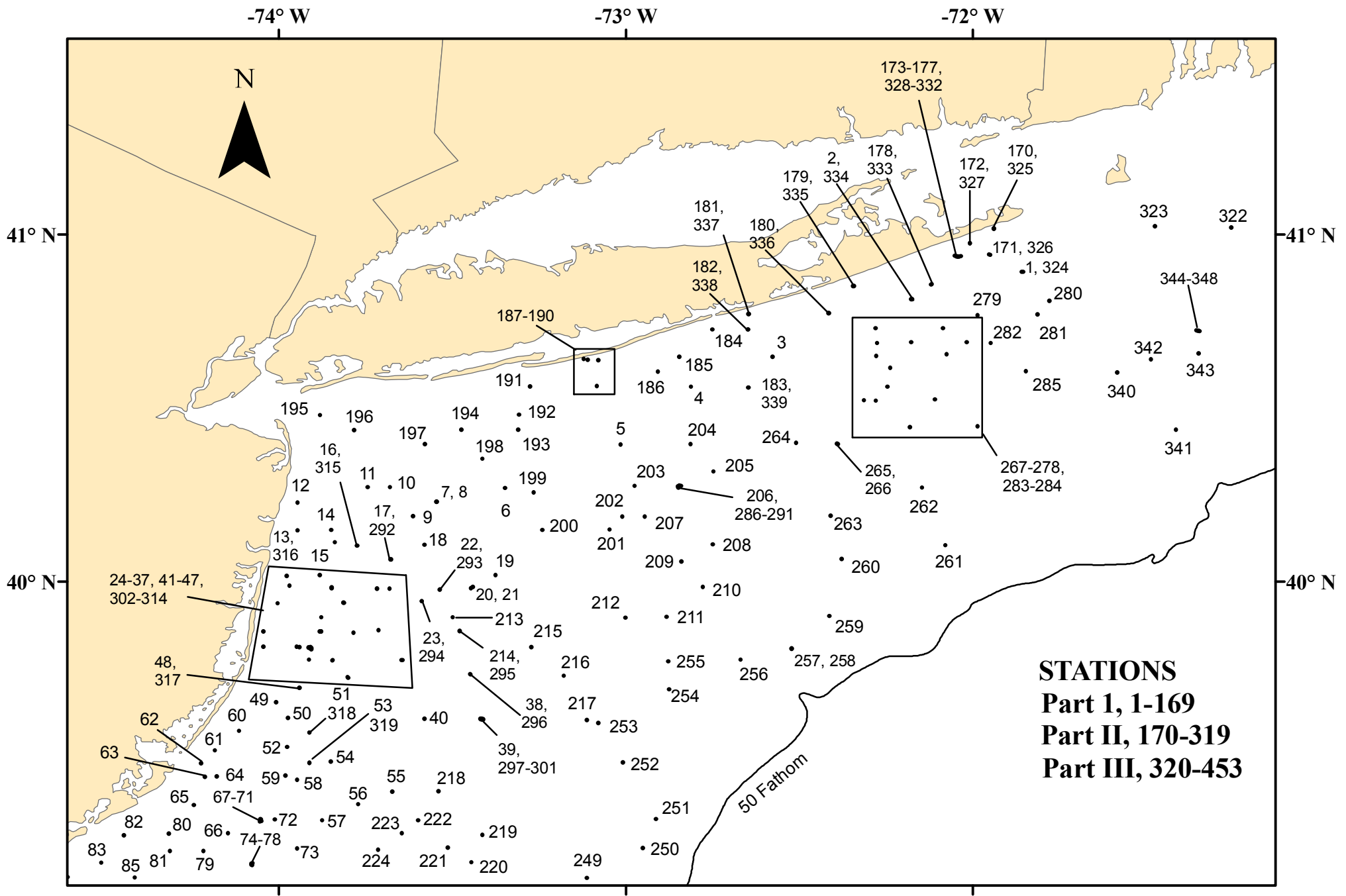


Figure 2. Dredge hauls made from N O A A R/V Delaware II (08-07), during N O A A Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey July 1 - August 6, 2008.

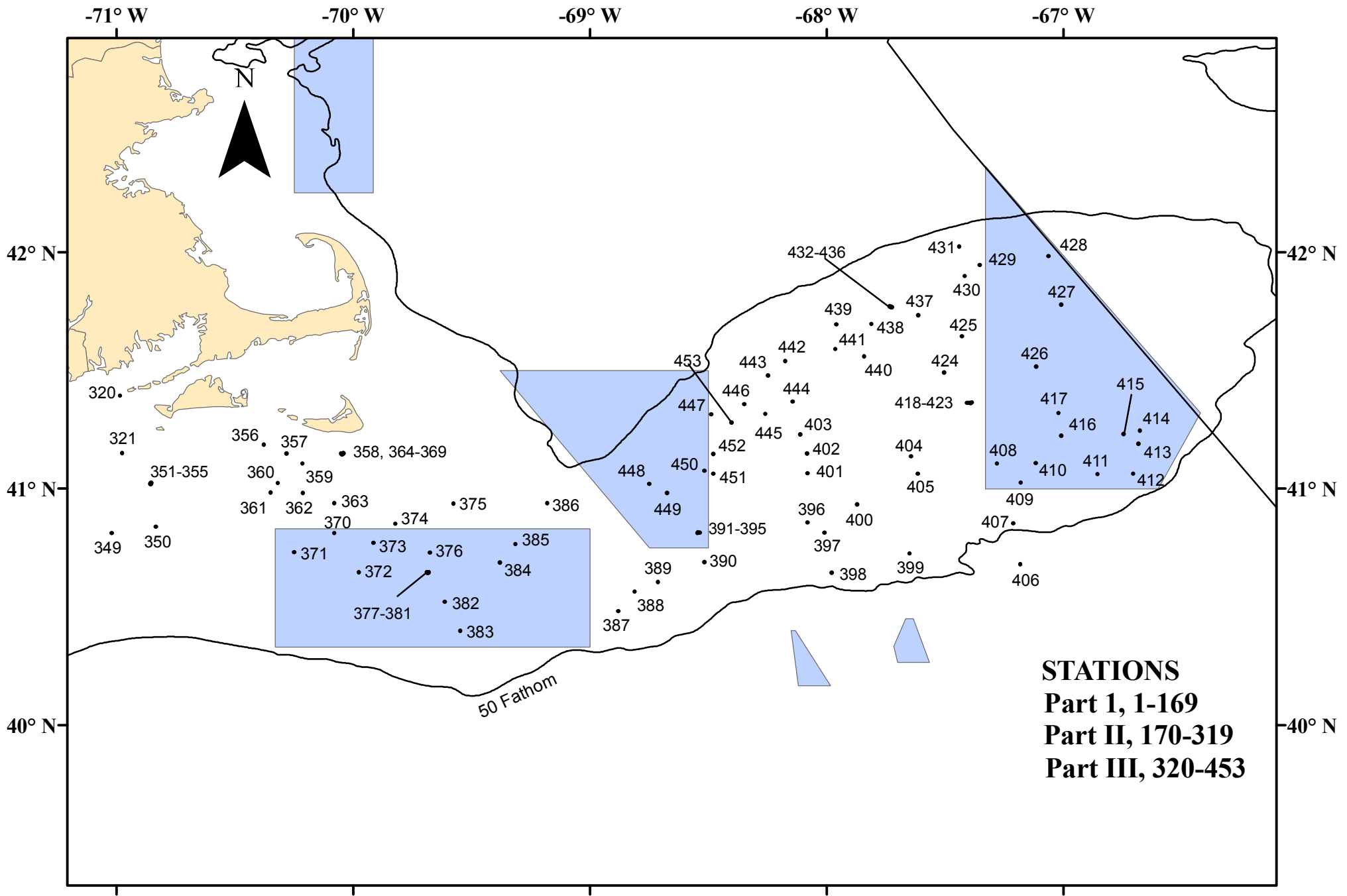


Figure 3. Dredge hauls made from NO A A R/V Delaware II (08-07), during N O A A Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey July 1 - August 6, 2008.