

CRUISE RESULTS

NOAA FRV Delaware II
Cruise No. D E 11-06 (Parts I-III)
Surfclam and Ocean Quahog Survey

Submitted to: NOAA, NEFSC

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CRUISE PERIOD AND AREA

The D E 11-06 Surfclam and Ocean Quahog Survey cruise period was from 11 July to 17 August 2011, and was conducted in three parts: Part I was from 11 July - 22 July; Part II, 25 July - 5 August; and Part III, 8 August - 17 August. The area of operation was on the continental shelf from Delmarva Peninsula 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 deplored multi-sensor sampling device attached to the clam dredge; (3) conduct approximately ten setup sites for a commercial survey; (4) collect sediment grab samples at commercial set-up sites; and (5) collect meat weights, gonad weights and shells from surf clam and ocean quahogs on a subset of station locations.

METHODS

Operations and gear used during D E 11-06 Parts I-III conformed with the Cruise Instructions for the Surfclam and Ocean Quahog Survey, dated 21 June 2011; Addendum I, dated 8 July; Addendum II, dated 20 July; and Addendum III, dated 25 July.

A five minute clam dredge tow was made at each pre-selected station indicated on cruise charts. The towing speed was 1.5 knots, speed over ground, and the scope ratio was 2:1. Sampling was conducted using a Northeast Fisheries Science Center (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 (S S P) was used to monitor the performance of the hydraulic clam dredge, recording incline, ambient and manifold pressures, surface and bottom temperatures, G P S location, and pump voltage. Minilogs, as well as

Star-Oddi inclinometers, were also utilized on the dredge as back-up sensors, and surface temperatures were additionally measured using the F S V *Delaware II*'s hull-mounted temperature sensor at a depth of three meters.

A commercial survey set-up site was conducted at stations where approximately two bushels of surfclams or ocean 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 both the fourth and fifth tows. These set-up sites were later used for a commercial depletion study aboard the F/V *E. S. S. Pursuit*.

All catch and biological data were recorded using the shipboard automated data entry system, Fisheries Scientific Computing System (F S C S). This system uses digital scales, electronic measuring boards, touch screen displays and barcode scanners to record data on deck, in addition to archiving the data on the ship's computer network. 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, southern quahogs, and sea scallops. Sampled species were assigned individual identification numbers, measured, weighed to the nearest 0.001 kilogram (k g) 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 bushel volume, converted to liters (where 1 bushel = 32 liters), recorded into F S C S, and then finally discarded.

RESULTS

The survey sampled at 485 stations with 191, 180 and 114 stations completed on Parts I-III, respectively. There were 10 depletion study set up sites, with an associated total of 49 dredge hauls and 19 grab samples.

A total of 509 age and growth samples were collected from Atlantic surfclams (Table 1), while a total of 991 requested samples were collected to support two internal investigations (Table 2).

DISPOSITION OF SAMPLES AND DATA

Age and growth samples, as well as trawl catch data, will be analyzed at the N E F S C 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 N E F S C survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, N E F S C, Woods Hole, M A

Victor Nordahl, Chief Scientist^{1,3}

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Jonathan Duquette²

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Kevin McIntosh³

National Marine Fisheries Service, O S F, D F D, Silver Spring, M D

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Alexander Glover³

Rebecca Taubert³

Westbrook, M E

Fort Myers, F L

Eliot, M E

Sperryville, V A

Broadbrook, C T

West Nyack, N Y

New York, N Y

¹ 11 July - 22 July 2011

² 25 July - 5 August 2011

³ 8 August - 17 August 2011

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 11 July to 17 August 2011.

Species	Age and Growth Samples
Atlantic surfclam	509

Table 2: Miscellaneous scientific collections made on N O A A F R V *Delaware II*, Surfclam and Ocean Quahog Survey, during 11 July to 17 August 2011.

Investigator and Affiliation	Species Sampled	Approximate Number
Guest	unidentified species	2 frozen
Jacobson, Larry N E F S C, Woods Hole, M A	ocean quahog	458 examined 1 frozen whole 10 grab samples
	Atlantic surfclam	506 examined 5 frozen whole 9 grab samples

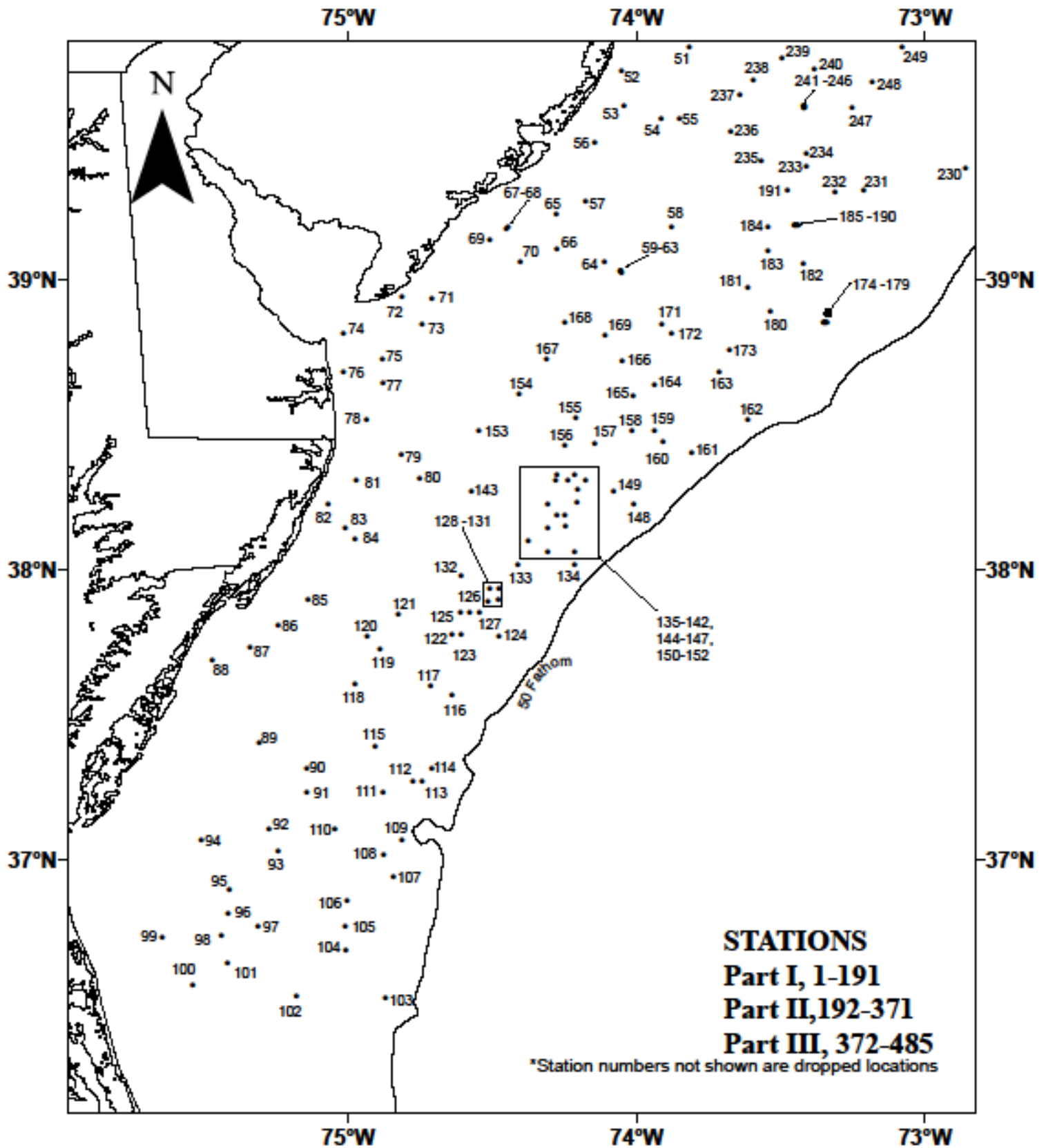


Figure 1. Dredge hauls made from NOAA FSV *Delaware II* (11-06), during NOAA Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey, July 11 - August 17, 2011.

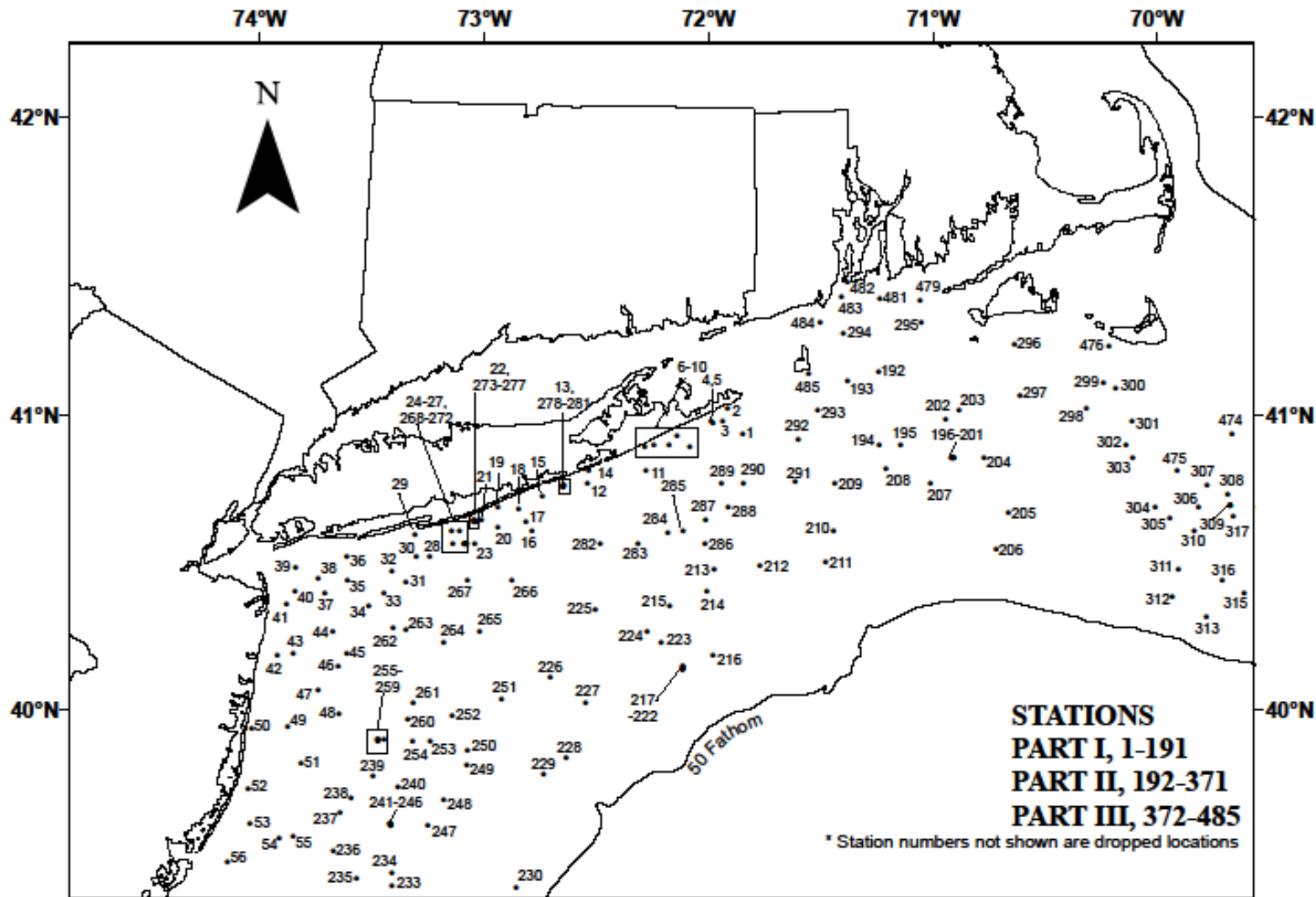


Figure 2. Dredge hauls made from NOAA FSV *Delaware II* (11-06), during NOAA Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey, July 11- August 17, 2011.

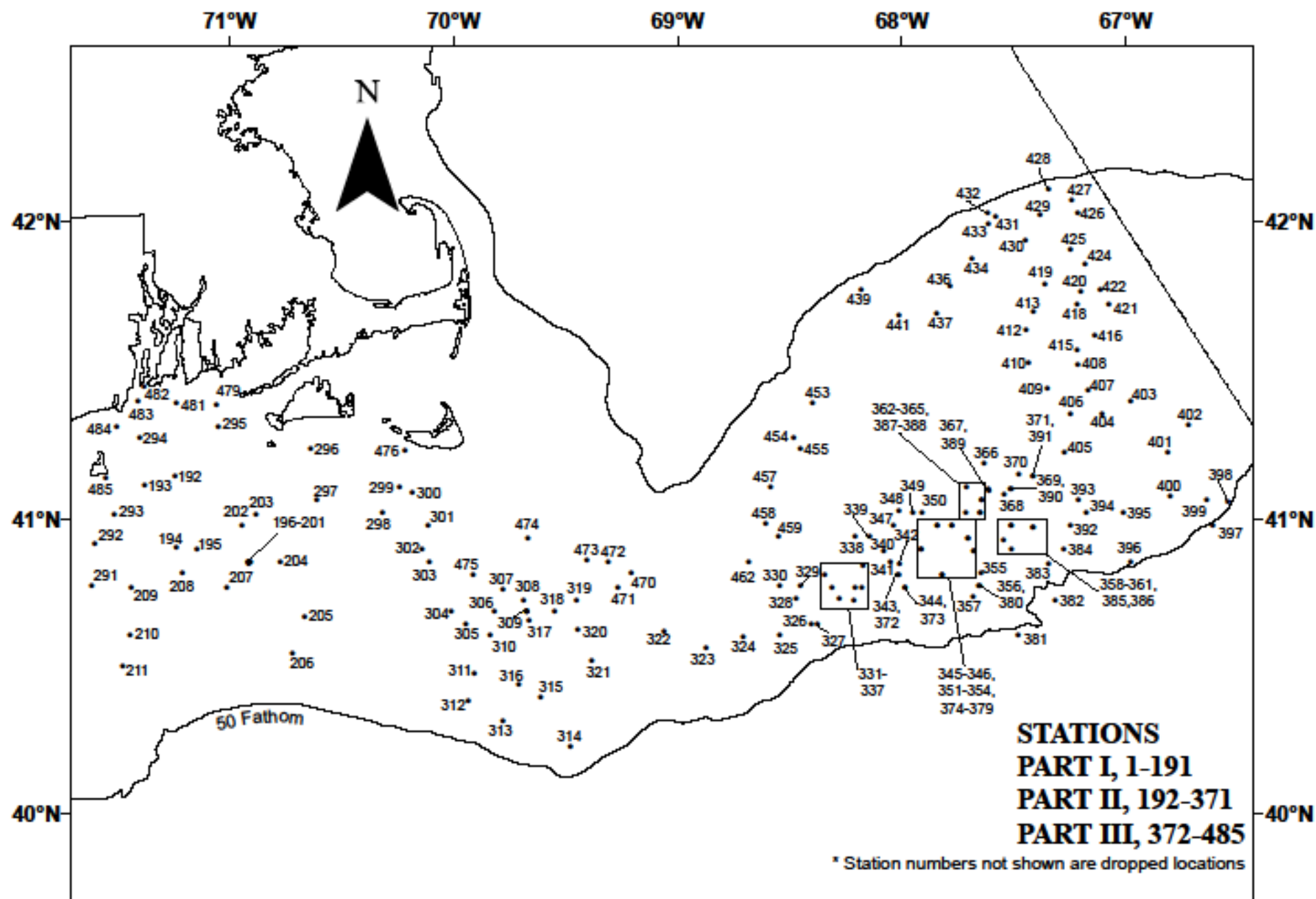


Figure 3. Dredge hauls made from FSV *Delaware II* (11-06), during NOAA Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey, July 11- August 17, 2011.