



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

April 29, 2014

CRUISE RESULTS

F/V *E.S.S. Pursuit* (Contracted Survey Vessel)
Cruise No. E P 13-01 (Parts I-II)
Surfclam and Ocean Quahog Survey

CRUISE PERIOD AND AREA

The E P 13-01 Surfclam and Ocean Quahog Survey cruise period was from 11 – 21 August 2013 and was conducted in two parts: Part I was from 11 – 15 August 2013 and Part II was from 16 – 21 August 2013. The area of operation was from southern New England to Georges Bank. Approximate station locations are shown in Figures 1 and 2. This area is considered the northern portion of the sampling area. The hope was to occupy all stations in 2013 to complete the standard survey and then conduct gear work in 2014.

OBJECTIVES

The objectives of the survey were to: (1) determine the distribution, relative abundance and obtain biological data for surfclams (*Spisula solidissima*) and ocean quahogs (*Arctica islandica*); (2) collect dredge performance readings on each dredge haul by deploying a set of archiving, multi-sensor sampling devices attached to the commercial clam dredge; (3) collect adductor muscle meat weights and shells from surfclams and ocean quahogs on a subset of station locations; (4) conduct a series of selectivity dredge hauls with a second lined dredge to characterize the smaller surfclams and ocean quahogs not retained in the commercial-sized gear.

METHODS

A five minute dredge tow was made at each randomly pre-selected station indicated on electronic cruise charts. The standardized towing speed was set between a range of 3.0 to 3.5 knots (speed over ground), and the scope ratio was approximately 2:1. Sampling was conducted using a standardized, commercial-sized hydraulic jet dredge, equipped with a 156 inch (13 foot) wide cutting blade with 1 3/8 inch round bar spacing inside the dredge. The adjustable dredge cutting blade depth setting was alternated by depth between 3.5 and 4.5 inches at 90 feet of depth. This was determined prior to arrival on station. The clam industry operationally reduces the blade depth to 3.5 inches for depths greater than 90 feet to increase capture rates and avoid breakage of quahogs. The cutting blade depth is increased to 4.5 inches for dredge hauls shallower than 90 feet for the larger sized surfclams. The dredge was supplied with water from a ship mounted

surface supplied pump. The vessel surface pump was set to 145 p s i and 1800 R P M for most dredge hauls and monitored by the vessel operator. Catch was deposited into hoppers that delivered it up and over a shaker table with 0.73 inch bar spacing. After the shaker table, catch was deposited onto a second conveyor that brought the catch to the scientists for sorting into component species (surfclams, ocean quahogs, southern quahogs, and sea scallops). Because of the design, placement, and sequence of conveyors and shaker table on the back deck of the commercial platform, the residual catch (miscellaneous invertebrates, shells, substrate, et cetera) was discarded and not enumerated.

All catch and biological data were recorded using the shipboard automated data entry system, Fisheries Scientific Computing System (F S C S 1.6). This system uses digital scales, electronic measuring boards (Ichthysticks), and touch screen displays to record data, in addition to archiving the data on a shipboard database. On the commercial platform, N E F S C installed its own Scientific Computer System (S C S) utilizing the data from the ship's G P S and sounder. After each tow, the catch was sorted by species and weighed using motion compensated digital scales. Representative length frequencies, measured to the nearest millimeter (m m), 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. Further subdivision was made into broken and live categories as well as clappers for surfclams and quahogs. Biological samples were collected concurrently with measuring operations (Table 1). Weights and total numbers were not recorded for bycatch fish and invertebrate species other than those mentioned above. The remainder of the catch (miscellaneous invertebrates, shells, substrate, et cetera) was discarded and not enumerated.

Additionally, four comparison selectivity dredge hauls were conducted utilizing a standard dredge (duplicate to the primary standard dredge) lined with a 1 inch hexagonal liner (chicken wire) for the purpose of capturing and categorizing small surfclams and quahogs (selectivity experiments). The four dredge hauls were conducted in waters deeper than 90 feet, so the dredge cutting blade was set to 3.5 inches. Selectivity dredge hauls were conducted in the same manner as the standard dredge hauls, but the duration was 45 seconds. The catch was sorted off the lifting conveyor and not run over the shaker table. The catch of the four component species was treated the same way as the standard dredge hauls in terms of weighing and measuring. Because of the volume of the catch, accurate sub-sampling was not possible because all the catch was not enumerated.

RESULTS

The survey successfully sampled at 142 stations, with 78 and 64 stations completed on Parts I and II, respectively. There were four selectivity sites.

A total of 103 age and growth samples were collected from Atlantic surfclams (Table 1). A total of 697 samples were collected to support one internal investigation (Table 2).

DISPOSITION OF SAMPLES AND DATA

Age and growth samples, as well as trawl catch data, will be analyzed at the NEFSC Woods Hole, Massachusetts Laboratory. Resulting data will be audited, edited, and loaded into the NEFSC survey database.

SCIENTIFIC PERSONNEL

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¹ 11 – 15 August 2013

² 16 – 21 August 2013

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Table 1: Field observations and samples collected for age and growth studies on contracted F/V *E.S.S. Pursuit*, Surfclam and Ocean Quahog Survey, during 11 – 21 August 2013.

Species	Age and Growth Samples
Atlantic surfclam	103

Table 2: Miscellaneous scientific collections made on F/V *E.S.S. Pursuit*, Surfclam and Ocean Quahog Survey, during 11 – 21 August 2013.

Investigator and Affiliation	Species Sampled	Approximate Number
Hennen, Daniel NMFS, NEFSC, Woods Hole, MA	ocean quahog	414 meats examined 153 frozen whole
	Atlantic surfclam	114 meats examined 16 frozen whole

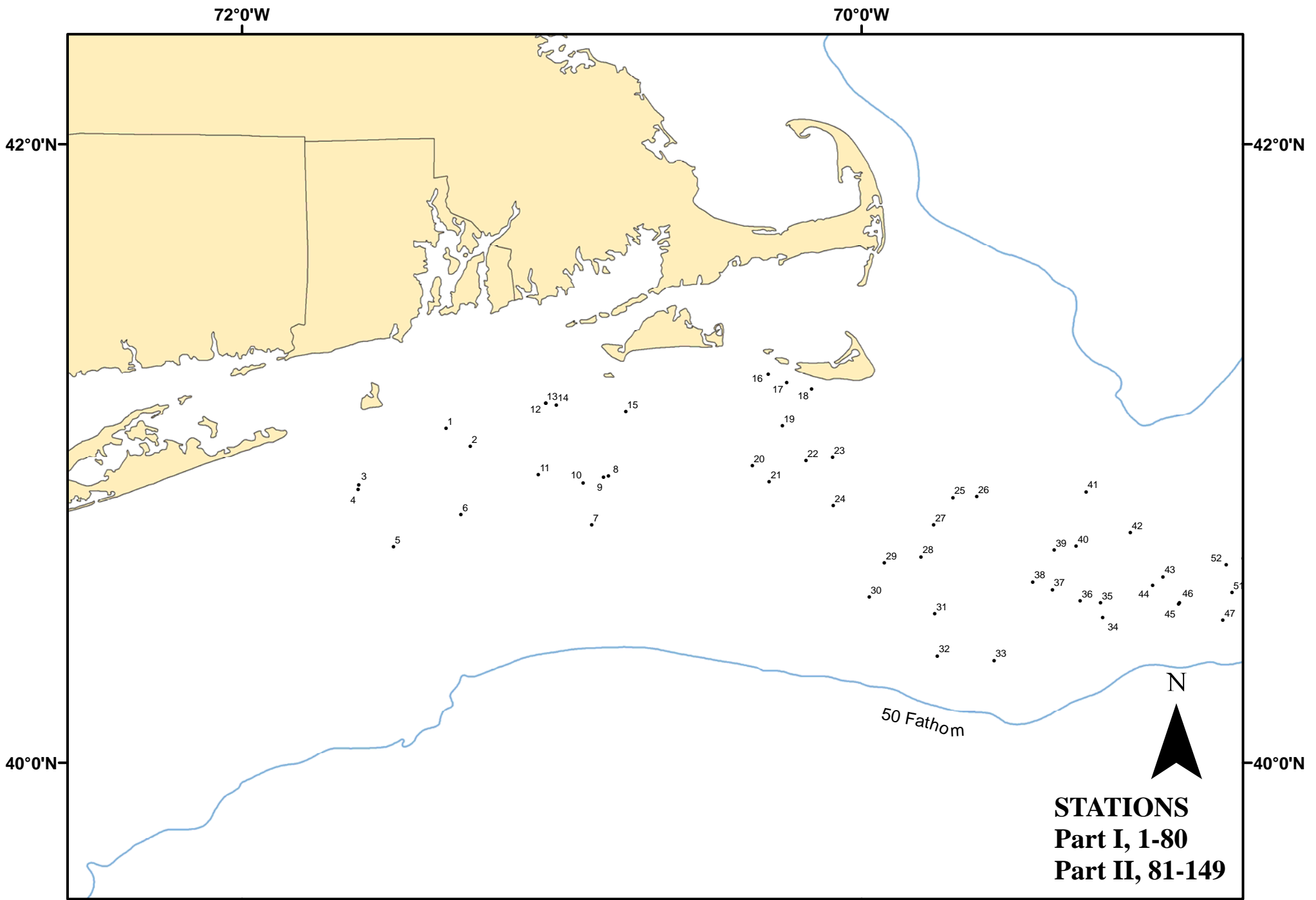


Figure 1. Dredge hauls made from F/V *E.S.S. Pursuit* during NOAA Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey, 11 August - 20 August 2013

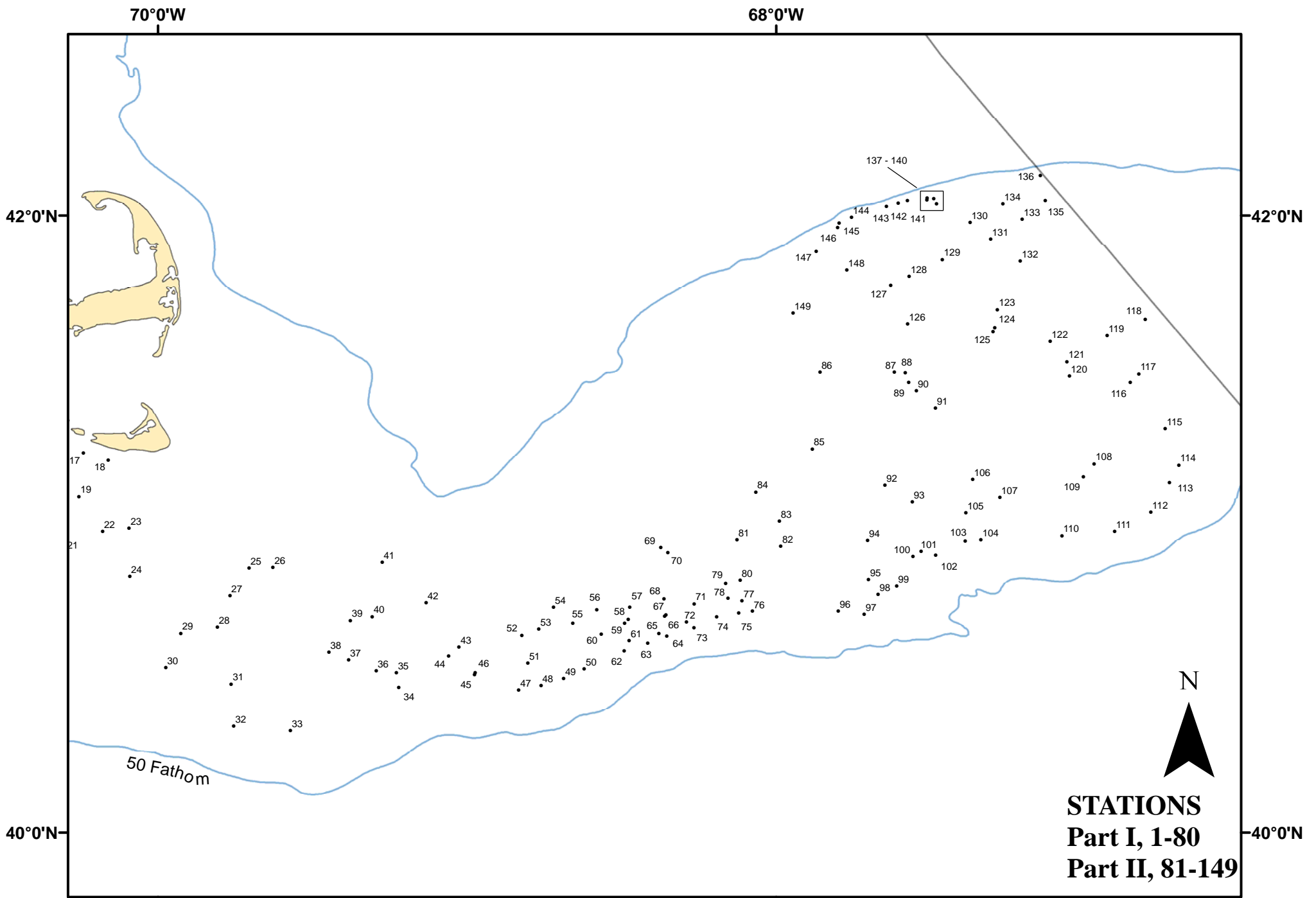


Figure 2. Dredge hauls made from F/V *E.S.S. Pursuit* during NOAA Fisheries Service, Northeast Fisheries Science Center Surfclam/Ocean Quahog survey, 11 August - 20 August 2013