

CRUISE RESULTS

F/V E.S.S. Pursuit
(Contracted Survey Vessel)
Cruise No. EP 15-01 (Parts I-III)
Surfclam and Ocean Quahog Survey

Submitted to: NOAA, NEFSC

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CRUISE PERIOD AND AREA

The EP 15-01 Surfclam and Ocean Quahog Survey cruise period was from 29 July - 14 August 2015 and was conducted in three parts: Part I was from 29 July – 2 August 2015, Part II was from 4 - 8 August 2015 and Part III was from 10 – 14 August 2015. The area of operation was from the Delmarva Peninsula to Georges Bank. NOAA Fisheries planned to complete all dredge hauls in the southern portion of the sampling strata in year one of three. Approximate station locations are shown in Figure 1.

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 tows with a second commercial sized dredge built with ¾ inch bar spacing designed to characterize the smaller surfclams and ocean quahogs not retained in the standard commercial-sized survey dredge.

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 varied 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 psi and 1800 RPM for most tows and monitored by the vessel operator. Catch was deposited into hoppers that delivered it up and over a shaker table with $\frac{3}{4}$ 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, sea scallops, and southern quahogs). 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 (FSCS 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, NEFSC installed its own Scientific Computer System (SCS) utilizing the data from the ship's GPS 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 (mm), 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 (kg) 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, two comparison selectivity dredge hauls were conducted utilizing the new selectivity dredge built with $\frac{3}{4}$ inch bar spacing for the purpose of capturing and categorizing small surfclams and quahogs (selectivity experiments). Two dredge hauls were conducted in waters deeper than 90 feet, so the dredge cutting blade was reduced to 3.5 inches. Selectivity dredge hauls were conducted in the same manner as the standard dredge hauls except the duration was 45 seconds to limit the size of the catch. The catch was run over the covered shaker table and delivered forward to be sorted. The catch of the four component species was treated the same way as the standard tows in terms of weighing and measuring. Because of the volume of the catch, accurate subsampling was not possible because all the catch was not enumerated.

RESULTS

The survey successfully sampled at 189 stations, with 78, 60 and 51 stations completed on Parts I, II and III, respectively. There were two selectivity sites.

A total of 722 age and growth samples were collected from Atlantic surfclams (Table 1). A total of 1,530 samples were collected to support two investigators (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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Matthew Chase Long^{2, 3}
Roger Mann¹

¹ 29 July – 2 August, 2015

² 4 – 8 August, 2015

³ 10 – 14 August, 2015

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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 29 July – 14 August 2015.

Species	Age and Growth Samples
Atlantic surfclam	722

Table 2: Miscellaneous scientific collections made on F/V *E.S.S. Pursuit*, Surfclam and Ocean Quahog Survey, during 29 July – 14 August 2015.

Investigator and Affiliation	Species Sampled	Approximate Number
Hennen, Daniel NMFS, NEFSC, Woods Hole, MA	ocean quahog	774 meats examined
	Atlantic surfclam	727 meats examined
Long, Chase VIMS, Gloucester Point, VA	ocean quahog	2 frozen whole
Munroe, Daphne Rutgers University, Williamstown, NJ	Atlantic surfclam	17 frozen whole
Guest	Atlantic scallop	10 frozen whole

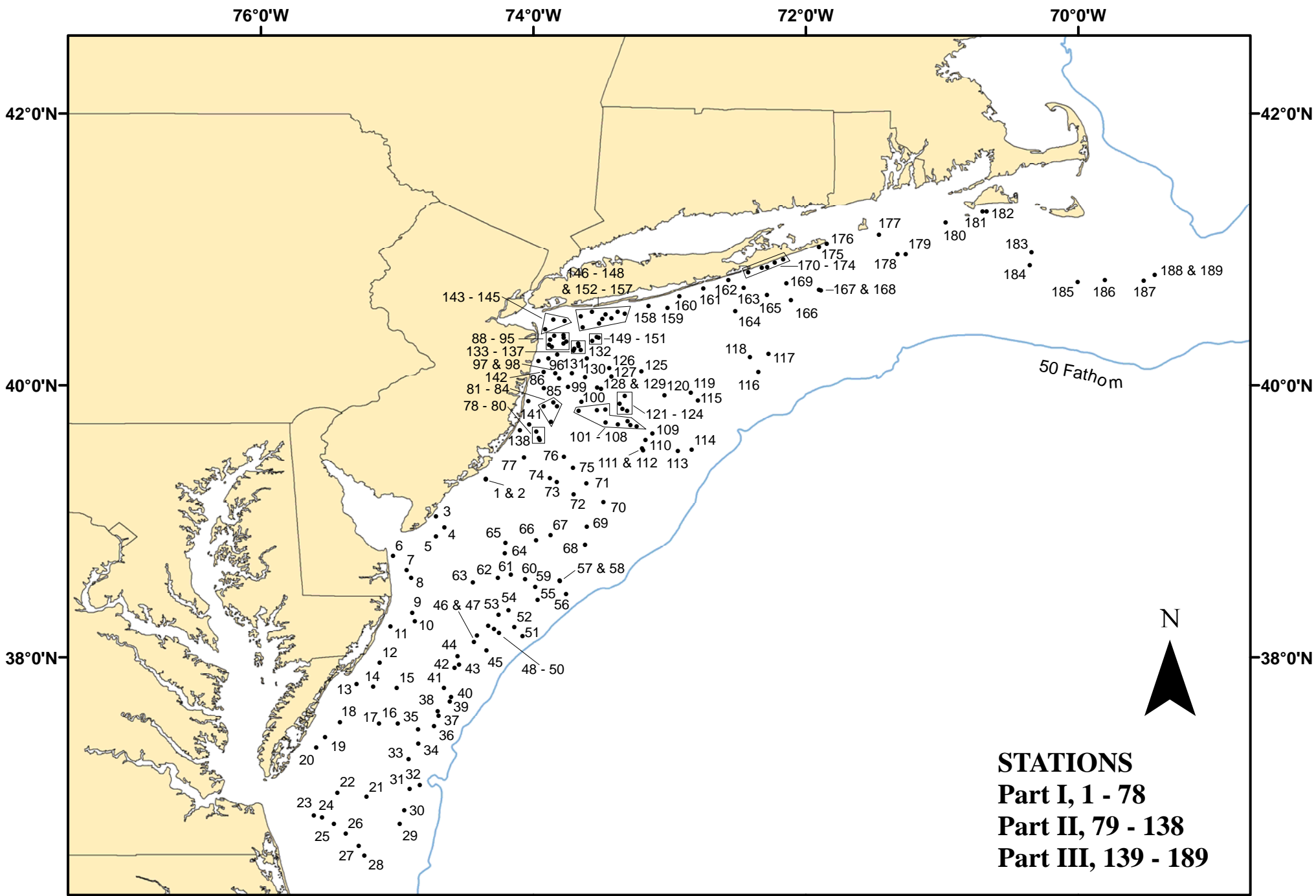


Figure 1. Dredge hauls made from F/V *E.S.S. Pursuit* during NOAA Fisheries Service, Northeast Fisheries Science Center's Surfclam / Ocean Quahog Survey, 29 July - 14 August 2015