

CRUISE RESULTS

F/V E.S.S. Pursuit
(Contracted Survey Vessel)
Cruise No. E P 12-01 (Parts I-III)
Surfclam and Ocean Quahog Survey

Submitted to: NOAA, NEFSC

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CRUISE PERIOD AND AREA

The E P 12-01 Surfclam and Ocean Quahog Survey cruise period was from 3 – 19, August 2012, and was conducted in three parts: Part I was from 3 – 6 August 2012; Part II, 9 – 13 August 2012; and Part III, 15 – 19 August 2012. The area of operation was conducted on the continental shelf from Delmarva Peninsula to waters off Long Island. The intention of the Northeast Fisheries Science Center (N E F S C) was to occupy the area considered the southern portion of the resource, with year two and three conducted on Mid-Atlantic and Georges Bank, respectfully. The cruise was more efficient than planned and was able to complete both the Southern and Mid-Atlantic regions during year 1. Station locations are shown in Figure 1.

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 archiving, multi-sensor sampling devices (Star-Oddi and Madgetech) attached to the commercial clam dredge; (3) collect adductor muscle meat weights and shells from surfclams and meat weights from ocean quahogs on a subset of station locations; (4) establish new standardized protocols and operations by transitioning the shellfish survey from a N O A A Fisheries vessel (N O A A Ship *Delaware II*) to a commercial platform; (5) conduct a series of selectivity dredge hauls with a second lined dredge to characterize the capture of 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 2:1 for the towing hauser. 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 cutting 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 a cover grate configured with 0.73 inch bar spacers. After the shaker table, catch was deposited onto a second conveyor that brought the catch to the scientists further forward for sorting into four component species (surfclams, ocean quahogs, sea scallops, and southern quahogs). Because of the design, placement, 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 electronic 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 the commercial platform, NEFSC installed its own Scientific Computer System (S C S) which receives the ship's G P S and sounder data. After each tow, the catch was sorted by species and weighed using motion compensated digital scales. Further subdivision was made into broken, live, and clapper categories for surfclams and ocean quahogs. 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 (k g) and further sampled for age and growth studies. Biological samples were collected concurrently with measuring operations (Table 1). Weights and total numbers were not recorded for by-catch fish and invertebrate species other than those mentioned above.

Additionally, twelve comparison selectivity dredge hauls were conducted in two depth zones utilizing a standard dredge (duplicate to the primary standard dredge) lined with a 1 inch hexagonal liner for the purpose of capturing and categorizing small surfclams and quahogs (selectivity experiments). Two dredge hauls were conducted in waters shallower than 90 feet with a blade depth of 4.5 inches. Ten dredge hauls were conducted in waters deeper than 90 feet, so the blade was reduced 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. Due of the large volume of the catch, accurate subsampling was not possible because all the catch was not enumerated.

RESULTS

The survey sampled at 185 stations with 61, 76 and 48 stations completed on Parts I-III, respectively. There were 12 selectivity sites.

A total of 328 age and growth samples were collected from Atlantic surfclams (Table 1).

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. 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

Larry Brady¹
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¹ 3 – 6 August

² 9 – 13 August

³ 15 – 19 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 thw [NEFSC Ecosystems Survey webpage](#).

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 3 – 19 August 2012.

Species	Age and Growth Samples
Atlantic surfclam	328

Table 2: Miscellaneous scientific collections made on F/V *E.S.S. Pursuit*, Surfclam and Ocean Quahog Survey, during 3 – 19 August 2012.

Investigator and Affiliation	Species Sampled	Approximate Number
Hennen, Daniel NMFS, NEFSC, Woods Hole, MA	ocean quahog	123 meats examined
	Atlantic surfclam	310 meats examined 1 frozen whole

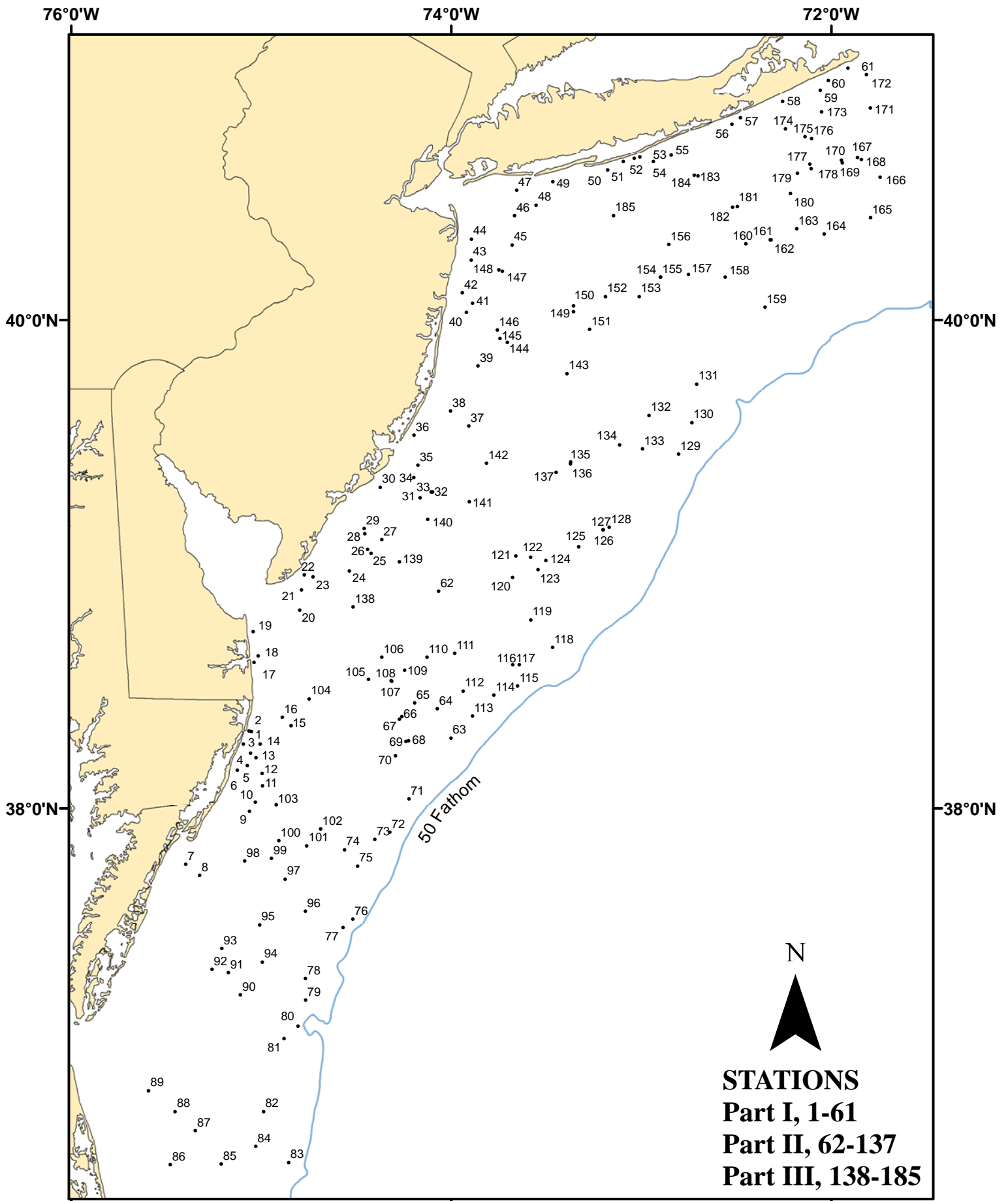


Figure 1. Dredge hauls made from F/V *E.S.S. Pursuit* during NOAA Fisheries Service, Northeast Fisheries Science Center Surclam/Ocean Quahog Survey, 03 August - 19, August 2012