



Empowering fishermen to collect essential data;
Piloting the Research Fleet approach in the Atlantic
sea scallop fishery:

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2.0 EXECUTIVE SUMMARY

Project Title: Empowering fishermen to collect essential data; Piloting the Research Fleet approach in the Atlantic sea scallop fishery

Year Awarded: 2021

RSA Priorities Addressed By This Research: Priority #3 “Scallop Biology: Research on scallop biology, including studies aimed at understanding recruitment processes...”

Industry Partners:

Vessel	Captain	Owner	Fleet Category
F/V Georges Banks	Rui Branco	Scott Rapoza	LA
F/V Yankee Pride	Joe Aluernes	Chris Roebuck	LA
F/V Roen Keil	Ben Crocker	Damian Parkington	NGOM
F/V Northern Light	Vincent Balzano	Vincent Balzano	NGOM
F/V Midnight Our	Jesse Rose	Jesse Rose	LAGC
F/V Glutton	Beau Gribbon	Beau Gribbon	LAGC

Narrative: The CFRF has trained six members in the federal scallop fishery to test the research fleet approach by collecting location data, shell height, gonad condition, meat quality, tissue weight and meat weight of individual scallops during their normal fishing operations. The goal of this project is to evaluate if this research fleet approach is a viable tool for this fishery to collect these data parameters on individual scallops to improve our understanding of the spatial-temporal variations in the biological condition.

Our research fleets use a custom-built android-based application, On Deck Data, to standardize the sampling protocol established by the fleet members and our scientific steering committee to collect the biological data in an efficient and reliable manner. The data can then be uploaded to the CFRF once the vessel returns to port in near real time for quality control and data storage.

Due to delays along the way establishing our steering committee, developing the sampling protocol, designing the On Deck Data app and most notably the significant delay with acquiring the motion compensated scales we are behind our original timeline for this project. However, starting this month (May 2022) we will have each member of the research fleet testing the collection of these parameters at sea for the proposed six-month period. With our one-year extension this allows us to have ample time for the fleet members to test the data collection procedure, allow time for adaptation of the protocols and provide feedback on the success of the project.



3.0 PRELIMINARY RESULTS AND DISCUSSION

Research Fleet Participants

The announcement search for project fleet participants was sent to our email list serve, posted on the CFRF website, and posted on the CFRF Facebook page (813 views) at the end of April. We received applications for 13 vessels and using criteria posted in the announcement we selected 6 vessels to pilot this research fleet (see industry partners above). Each project participant has shown their support for this project and has helped develop the sampling plan to be tested at sea.

Sampling Protocols

With the help of the fleet participants and the project steering committee we have developed the following sampling protocols which we have started to test with the research fleet in May 2022. We are asking each limited access vessel to complete a minimum of three sampling sessions during each trip occurring in the sampling period, and the limited access general category vessels to complete a minimum of one sampling session a month during the sampling period. We will encourage all vessels to collect additional sampling sessions if they're able.

Each sampling session will consist of collecting data of 30 scallops from a single tow. The data will be collected directly on android tablets using a modified version of the CFRF On Deck Data App. For the sample selected for data collection at the start of towing the captain will press a button on the tablet to start the tow, which will collect the date, time, and position from the built in GPS, the captain will then enter the depth and once the tow is on deck the captain will enter the approximate volume of scallop catch, the dominant bycatch species, and characterize the substrate using the list of approved values. Then 30 scallops larger than 89 mm will be randomly selected for further measurements. Each scallop will be processed within one hour of being caught. For each scallop processed the scallop will be measured for shell height to the nearest mm using digital calipers then the bottom shell will be removed. The first five scallops will be imaged using the built-in camera on the tablet on selected trips. These images will be taken from a standardize distance with a calibrated measurement grid background on a custom-built mount. The meat quality will be graded into three different established levels of meat quality; white, brown, or gray (Huntsberger et al 2015; Inglis et al. 2016; Siemann et al. 2019; Figure 1). White scallops are firm and have the typically creamy scallop coloration; brown scallops are slightly discolored and the meat has started to degrade, noticeable by a change in texture; and gray scallop have muscle that is degraded, soft and flaccid, often shrunken with a gray coloration. The sex and spawning condition will also be recorded using the following categories; resting, developing, ripe, or spawning/partially spent. Then the scallop will be rinsed in sea water and the abductor muscle will be separated and weighed to the nearest 0.1 g and finally all remaining tissues will be weighed to the nearest 0.1 g. All weights will be collected with WPL R10 300 g motion compensated scales. The data collection platform will have an



option to then record any unusual observations or note any parasites present. We will ask the samplers to collect all the tissues in labeled zip lock bags for confirmation of the weights, sex and reproductive status for a subsample of scallops.

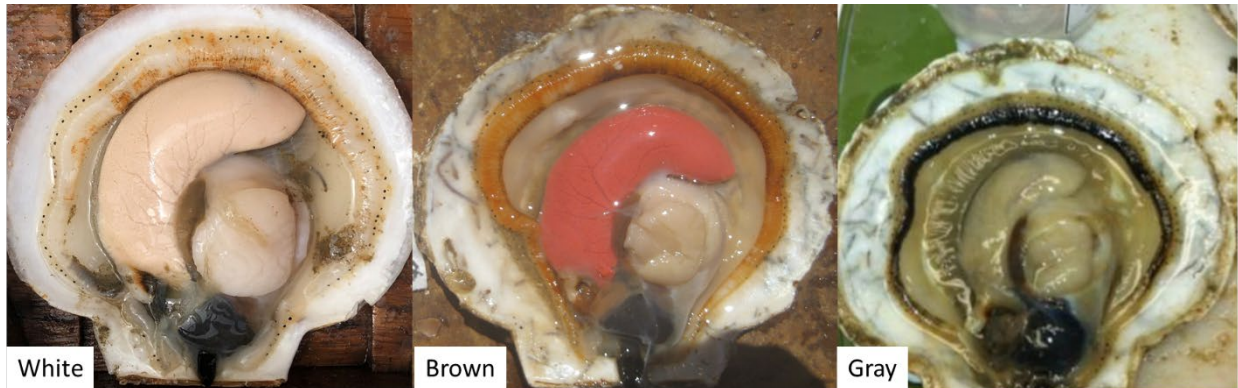


Figure 1. Established scale of scallop meat quality that will be used in this study.

On Deck Data App Modifications

The CFRF has built a custom android-based data entry application (app), called On Deck Data, to be used as for the data collection process in our various research fleets. We have modified this app to be tested in the scallop pilot research fleet to follow our sampling protocols. The app collects data on the sampling location, date, depth, total scallop catch, substrate type, as well as the biological data collected for each scallop (Figure 2 & 3). Testing of the data collection app and protocols has occurred at sea during the South Fork Wind Farm beam trawl survey and is currently underway with all members of the research fleet.

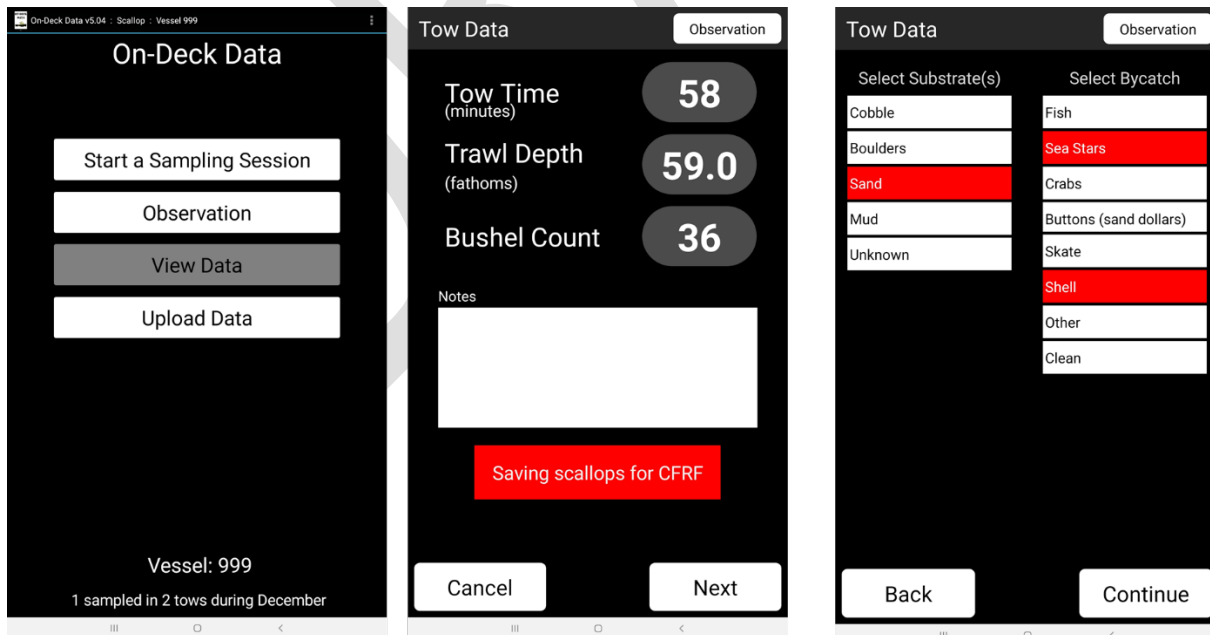


Figure 2. Screen shot of the haul level data being recorded on the On Deck Data app during testing.

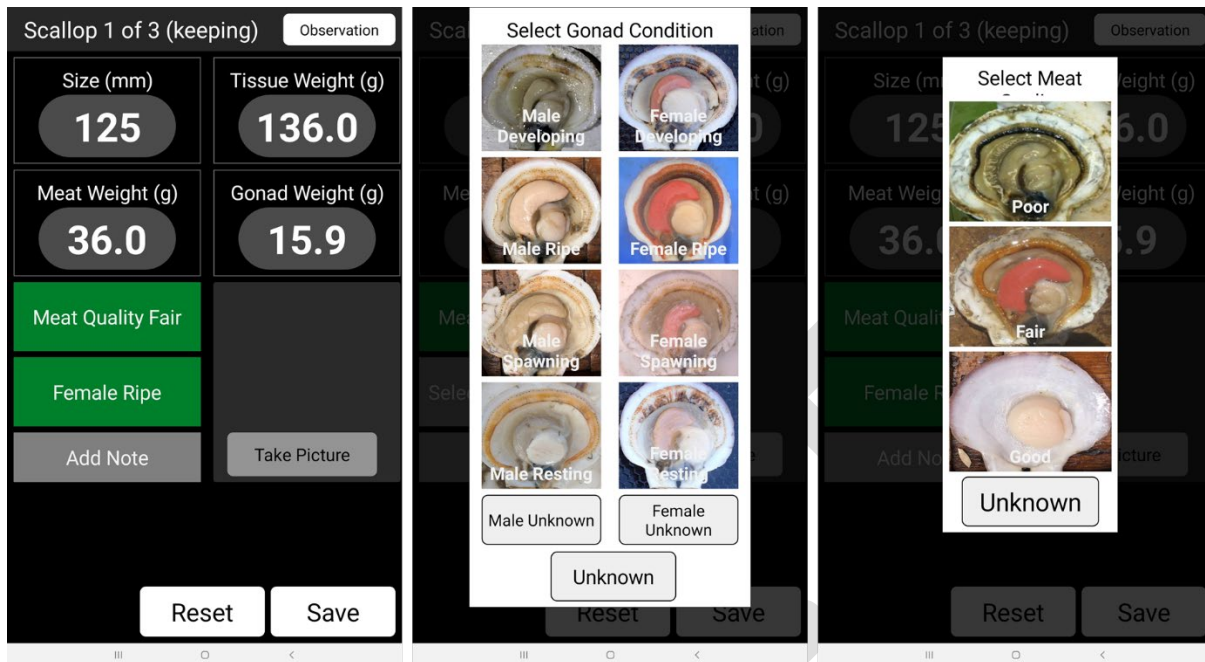


Figure 3. Screen shot of the individual scallop data being recorded on the On Deck Data app during testing.

Research Fleet Data Collection

Due to delays developing the sampling procedures and receiving the scales the training of the research fleet only began in April. To date we have trained each member of the research fleet and they are in the process of the first month of data collection.

4.0 SPECIAL COMMENTS

Acquisition and Preliminary testing of WPL Scales

Due to the major delays and challenges acquiring and learning how to use the motion compensated scales from WPL we feel it is warranted to provide a brief overview of our experience. The acquisition of the marine scales delayed the start of this research project, first the sales representative for WPL said approximately 3 weeks when asked in August what the timeline for delivery would be. The order was placed Sep 30th 2021, following some confusion and the sales person not receiving the update that we had paid, on Oct 29th they said the scales would be shipped on the 27th or 28th of Nov. After multiple requests for updates on the status of the scales we were notified on Dec 24th that the scales had been waiting at their shipping dock in the Netherlands for 10 days for us to arrange pickup. After multiple calls and emails the shipping was finally arranged and the scales finally arrived on March 11th, 23 weeks after the order was placed with improper documentation of how to adjust the settings for use at sea under varying conditions. Also, they were shipped with the UK style plugs for the charging cables. The first



day of testing the scales was disappointing and took an unreasonable amount of time for the weights to stabilize. We were told that the company sent us a video to adjust these settings on March 25th, however we still have not received this and have attempted to follow up on adjusting these settings which we finally had a video call with the company on 4/29/22. The second day of testing at sea was slightly calmer and the scale did perform better, though not as well as hoped. The time until stabilized weight was similar to our experience weighing scallops on Marel motion compensated scales. From our experience using these scales at sea and our conversations with WPL the scales need approximately 6 hours turned on to adjust to their surroundings before they function as designed at sea.

References:

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- Inglis, S., A. Kristmundsson, M. Freeman, M. Levesque, and K. Stokesbury. 2016. Gray meat in the Atlantic sea scallop, *Placopecten magellanicus*, and the identification of a known pathogenic scallop apicomplexan. *Journal of Invertebrate Pathology* 141:66-75.
- Siemann, L., L. Garcia, C. Huntsberger, and R. Smolowitz. 2019. Investigating the impact of Multiple Factors on Gray Meats in Atlantic Sea Scallops (*Placopecten magellanicus*). *Journal of Shellfish Research* 38:233-243.