PACIFIC REGION SCIENCE -POST CRUISE REPORT

**NAME OF SHIP/PLATFORM:**  F/V Seacrest

**DATE:** **FROM:** 19-July-2017 **TO:** 02-August-2017

**SCIENCE CRUISE NUMBER:** 2017-42 **SHIP’S PATROL NUMBER:**

**CHIEF SCIENTIST[S]:** Jennifer Boldt (for Linnea Flostrand)

**AREAS OF OPERATION:** Vancouver Island Continental Shelf: West Coast Vancouver Island (Nootka Sound to the southern Canadian border)

**INTRODUCTION/PROGRAM BACKGROUND:**

Fisheries and Oceans, Canada (DFO) has initiated a pilot survey designed to study the structure and function of the pelagic ecosystem on the Vancouver Island Continental Shelf (< 200 m). The survey is intended to sample the major fish components of the pelagic ecosystem, providing relative catch compositionand catch rates, biological information, and predator/prey information. In addition, zooplankton sampling and oceanographic monitoring will be included. This year the survey will serve as a transition year from historic surveys (daytime juvenile salmon and night time pelagics) to an integrated pelagic survey. Comparisons between fish catches during daylight hours and during nighttime hours are required to ensure that historic data can be interpreted in the context of future surveys.

**CRUISE OBJECTIVE/OBJECTIVES:**

The primary task of the survey is to complete midwater trawl hauls at randomly selected locations (blocks) following a standardized fishing protocol. Each block will be randomly assigned to either a surface or 15 m depth trawl haul. For 2017, the target number of blocks to complete is 70– with each block fished during daylight hours and again during night time hours for a total target of 140 fishing tows. In addition, water properties and zooplankton will be sampled at each block. The science staff will record all details of fishing locations and times, determine species composition of the catch, and select the appropriate species for biological sampling. All species are likely to be sampled.

**DAYS OF OPERATION:** 14

**DAYS LOST DUE TO WEATHER:**

July 21/22: 24 hours; weather prevented sampling

July 23: 24 hours (00:00 to 24:00); weather combined with mechanical. Large generator was fixed and small generator was tuned up on July 23; however, due to weather, this was counted as a weather day. A gale warning was issued for the South Coast WCVI. For July 23, winds were estimated at 20 knots increasing to 20-30 knots in the morning, waves 1-2 m increasing to 2-3 m in the afternoon (Environment Canada marine weather forecast).

July 24: 24 hours during 00:00-24:00; weather prevented sampling

July 25: 16:00-22:00, we were able to conduct trawls, but not CTD or Bongo casts due to high swells

July 25, 22:00 – July 26, 04:00: 6 hours, weather prevented sampling

**DAYS LOST DUE TO MECHANICAL ISSUES:**

July 22: 8 hours; 16:00- 24:00; large generator stopped working; small generator not functioning well.

July 23: 0 hours; mechanical combined with weather. Generators were fixed during this day. This day was counted as a weather day because Environment Canada issued a gale warning (noted above), so we wouldn’t have been able to sample anyways.

**DELAYS [OTHER THAN WEATHER]:**

July 26-27: 2 hours lost due to science crew change and adjustment to night sampling for new science crew (16:00-17:30 and 03:30-04:00).

**Radioisotope Use:**  N/A

**PROBLEMS [SCIENTIFIC GEAR** **AND OPERATIONS]:**

Vessel power reliability issues might have caused problems with the electronic data acquisition system and the acoustic data archiving. The scientific gear issues were resolved with network reboot, and the acoustic data archiving was re-established after system reboot.

The electronic data acquisition system (EDAS) printer could not be used (had the driver, but could still not connect; this is likely user-caused). Also automatic basket weight data entry was not functional; all weights had to be manually typed into the database.

The RBR used excessive battery power and required almost daily battery changes. During one sampling period, no data was collected even though fresh batteries had been installed an hour prior to fishing operations. As recommended by the RBR tech help, we tried using the “twist-on” function, rather than the thresholding function to power the unit; however, this did not resolve excessive battery power usage.

The Bongo TSK flowmeter readings have been off; sometimes there does not appear to have been enough flow through the net. The net flipped once (cause unknown; likely currents).

**SUCCESSES [SCIENTIFIC]:**

Due to lost sampling days, only a subset of blocks could be sampled. Given the number of sampling days remaining after weather days (July 25), we randomly selected a reduced set of blocks (21), maintaining similar proportions among strata and depths (similar to the original selection). Of the blocks that could be sampled, they were successfully completed and the necessary data were collected to meet scientific objectives of the survey.

The EDAS equipment functioned well for the most part.

The midwater trawl was used successfully, however the kite appeared to get twisted around the net.

The bongo net was used successfully; the net flipped once (cause unknown). Improved lighting over the bongo station would be helpful (see below).

The CTD was used successfully.

**PROBLEMS [SHIP’S EQUIPMENT/**

There were some power surge issues or brown outs that impacted some of the scientific electronic equipment (router, and EDAS system).

The large generator stopped working on July 21 after sampling was finished. Initially it was thought that the small generator would be sufficient for sampling, however, there were several power issues, so we went to Tofino on July 22. There was limited or no power to appliances (e.g., galley stove) during this day.

**OPERATIONS/PLATFORM SUITABILITY]:**

This vessel worked for this type of survey, although some large swells off the west coast made sampling difficult due to the small area available and the sample storage location. There was a suitable tie down for oceanographic equipment. Space is limited for storage of scientific gear, but still adequate and a closet in one of the cabins was used for dry, accessible storage. The accessibility to the science freezer is a consideration; the hatch to the freezer is heavy and difficult to lift and is also used throughout the day for gear storage. The crew was accommodating, allowing science to temporarily store samples in a small kitchen freezer until a single, daily visit to the science freezer was made. The starboard aft biosample station (with plexiglass) is too small to process large fish; if there was a way to increase the space for the person working at this station, that would be helpful. Also having an option for a step to stand on while sampling might help the ergonomics of the work stations (i.e., particularly the starboard aft station is too high for some people).

It would be helpful to have lighting over the area where the Bongo net is deployed, as it is difficult to read the flowmeter and process samples in the dark. If possible, it would also be helpful to have a table in the covered area (separate from the biosample stations) to work on the CTD and RBR (download data to a computer, etc).

The vessel does not have net mensuration gear, which is a preference for the estimation of species’ biomass from this survey but not a condition of the contract. The vessel could provide head rope depth and door spread, but not wingspread. It had been requested that pockets be installed on the net’s wings to allow use of sensors to estimate wingspread, but it could not be completed prior to departure.

The Simrad successfully recorded acoustic data throughout the survey. Intermittent power interruptions caused it to stop recording; however, restarting it seemed to resolve the issue.

The vessel had enough cabin and bunk space for 6 science staff and all accommodation and washroom facilities were clean. Delicious meals were made available for staff throughout the day. Science crew were able to do laundry midway through the survey.

A large work area was available to the Chief Scientist on the bridge. A network cable was available from the bridge to the sampling area so that we could connect our server computer to a wireless router near the lab.

**SUCCESSES [SHIP]:**

The vessel Captain and Crew were accommodating, efficient, and helpful. The Captain provided flexible logistics planning for each day of fishing with helpful recommendations on fishing locations based on weather, running time between stations, tide or other considerations. Periodically the gear proved to be difficult to fish at required depths (due to currents or tides), but the Captain worked hard to provide the best results possible. The Captain ensured that fishing time was maximized when the weather allowed. The Crew were approachable and assisted in sorting catch, lifting baskets of fish, deploying scientific sensors on the trawl net, and the deployment and processing of CTD, water and zooplankton samples. The Cook was flexible in meal hours, and provided outstanding meals that helped all staff shift to nighttime fishing. Even during periods of limited power, the cook was able to provide balanced meals. Overall, the fishing operations spanned day and nighttime hours and the Captain and Crew all ensured that this difficult work shift went as smoothly as it possibly could. In addition, the Captain allowed the Science crew to stay on board on July 19.

**SAFETY CONCERNS:**

The Captain ensured that all vessel and science crew wore PFD and hard hats while on deck at all times. Also science staff were provided with a ship’s familiarization prior to departure. Science staff were also provide with a safety briefing by the Chief Scientist for lab sampling activities and general hazards on vessels.

Lifting the hatch cover to access the freezer and extra storage space was difficult and offers some hazards, especially in swells. Stepping from the deck to the sampling area was also a concern in swells. The engine room escape hatch cover is slippery. The upper deck (exit from bridge) is also very slippery when it is wet.

The engine room door can be hazardous to people standing in the entrance to the galley. One person was hit in the head with the door while waiting for the washroom.

**HAZARDOUS OCCURRENCES:**

None

**EVENT LOG:**

July 19, 14:00 - Science crew load in Ucluelet; debrief with science crew that left.

July 20, 14:00 – Sea Crest departed Ucluelet

July 20, 16:00 – July 21, 03:00 – Sampled 3 blocks near Ucluelet and headed north to Estevan Point; 6 sets were completed (3 day, 3 night)

July 21, 16:00 – July 22, 04:00 – weather prevented sampling; anchored in Mooyah Bay in Nootka Sound at 18:00; main generator not working.

July 22, 11:00 – Travelled to Tofino to get generator fixed

July 23, 16:00 – July 24, 04:00 – Weather prevented sampling and the generator was fixed.

July 24, 13:00 – Departed Tofino for sampling area

July 24, 16:00 – July 25, 04:00 – weather prevented sampling; we tried at 16:00, but it was too rough; anchored in Hotsprings Cove for ~4 hours; at 22:30 pulled anchor and headed to sampling blocks; however, weather prevented sampling; headed to southern sampling area

July 25, 16:00-22:00 – Sampled, but weather deteriorated; 3 sets were completed during daylight hours only off of Barkley Sound.

July 25, 22:00 - July 26, 01:00 – jogged near stations to see if weather would improve; it didn’t, so we travelled to Ucluelet for the Science crew change.

July 26, 12:30 – Science crew change

July 26, 14: 45 – Departed Ucluelet

July 26, 17:30 – July 27, 03:30 – Sampled 2 blocks near Ucluelet; 4 sets were completed (2 day, 2 night) off of Barkley Sound

July 27, 15:00 – July 28, 04:30 – Sampled 3 blocks; 6 sets were completed (3 day, 3 night), offshore of Barkley Sound

July 28, 16:00 – July 29, 04:00 – Sampled 3 blocks; 6 sets were completed (3 day, 3 night), offshore of Barkley Sound, and headed north to Estevan Point

July 29, 16:00 – July 30, 03:30 – Sampled 3 blocks; 6 sets were completed (3 day, 3 night), offshore of Estevan Point

July 30, 16:00 – July 31, 04:00 – Sampled 3 blocks; 6 sets were completed (3 day, 3 night), northwest La Perouse Bank.

July 31, 16:00 – August 1, 04:00 – Sampled 3 blocks; 6 sets were completed (3 day, 3 night), offshore of Barkley Sound.

August 1, 04:00 – Travelled to Nanaimo

August 2, 00:00 – Arrive in Nanaimo and offloaded equipment

**SUMMARY/FINAL COMMENTS:**

We would like to thank and commend the Captain and Crew for their professionalism and commitment to the science program objectives and the science crew well-being. Thank-you to the captain for ensuring we could collect samples when the weather allowed. Thank-you to the deck crew for their help in sampling and thank-you to the cook for the excellent meals.