



Regional Operations Centre, Canadian Coast Guard Western



Science Cruise Report: PAC 2018-034

Report last updated: 2018-09-14 19:24:46

Link to Original Plan: <https://www.waterproperties.ca/requests/cruiseplanview.php?cruiseid=2018-034>

Department/Group: Fisheries and Oceans Canada, OSD

Other Participating Groups: University of Victoria, Trent University

Science Cruise Number: PAC 2018-034

Alternative Cruise Number:

Ship's Patrol Number:

Name of Vessel/Platform: J.P. Tully

Dates: **From:** Saturday 01-Sep-2018 **To:** Tuesday 11-Sep-2018

Chief Scientist: Ian Perry, 250-756-7137, Ian.Perry@dfo-mpo.gc.ca

Master: Captain Kent Reid

Fishing Master:

Appropriateness of Vessel: Excellent

Time Allocations

Originally Allocated Days **11.00**

Accounting below is given in days and should match the originally allocated days above.

Weather	+ 0.00	
SAR	+ 0.00	
CCG Refueling	+ 0.00	
CCG Ship Repair & Maintenance	+ 0.50	Start of cruise delayed due to two engine issues, relating to a need to change jacket water coolant on one of the main engines, plus repairs to one generator
CCG Crew Changes	+ 0.75	Early arrival at IOS due to ship maintenance and crew change preparations
CCG Other	+ 0.00	
Science Operations	+ 9.50	
Science Equipment Loading/Unloading	+ 0.25	
Science Other	+ 0.00	
Days Gained	+ 0.00	

Days Grand Total **= 11.00**

Time Allocation Comments:

Time lost a start and end due to CG ship repair and crew change issues.

11 days is a little short to sample all of our core stations for this repeat survey, in particular when time is needed for the ship to prepare for crew change. Fortunately, once underway on this survey we experienced no loss of time due to SAR deployments or weather.

Cruise Events

Areas of Operations

Juan de Fuca, Strait of Georgia, Johnstone Strait, West Coast Vancouver Island, Northwest Coast Vancouver Island

Scientific Personnel

Male - Name	Notes (Affiliation, Watches, Duties, etc)
Ian Perry	CS

Hugh Maclean	Night Watch Leader
John Dower	Nets

Female - Name	Notes (Affiliation, Watches, Duties, etc)
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Marie Robert	Day Watch Leader
Moirra Galbraith	Request Crew Deck cabin if available; Nets + O2;
Nina Nemcek	O2 + filtering
Hayleigh Rados	Rosette + filtering
Amanda Timmerman	Nets + filtering
Robyn Sahota	Rosette + filtering (+nets)
Victoria Durrett	Rosette + filtering
Theresa Venello	Rosette + nets

Event Log

Sept 1: Started loading around 1300. Departed at 0900 Sunday 2 September due to sip's engineering issues. Haro59, then start LB line.

Sept 2-3: LB line (La Perouse Bank area), including offline zooplankton sampling

Sept 4: LC line (La Perouse Bank area), plus LD02 and LD04 stations; rest of LD line cancelled to ensure adequate time for core Queen Charlotte Sound and Strait of Georgia stations.

Sept 5: LG line (Estevan Point), and transit to LBP Line at Brooks Peninsula

Sept 6: LBP line.

Sept 7: COPRA stations south of Triangle Island, outer CS line stations (00 – 04)

Sept 8: Outer SS line stations (SS2, SS3), continuation of CS line and offline zooplankton stations, SS5 and SS6, and Pine Island station. Proceed to Johnstone Strait station.

Sept 9: Begin Strait of Georgia stations.

Sept 10: Complete Strait of Georgia stations and return to Pat Bay by 1700

Scientific Equipment Report

Equipment generally performed well, with the following exceptions:

- sporadic problems with spiking of the dissolved oxygen sensor on the upcast only, and only when the rosette was initial deployed to depths below 1000 m. Connectors were cleaned and connections regreased several times, and connecting cable was cable-tied to the frame to prevent movement - however problem persisted. The connecting cable likely needs to be replaced (not done on this survey).
- 12 KHz depth sounder displayed a regular dashed line when bottom depths were greater than 1000 m. High frequency sounders also showed regular vertical stripes. Tried turning off ship's sounders but made no difference. Electrical technician onboard Tully tried to adjust settings which helped somewhat to reduce the vertical lines in the high frequency sounder displays, but the dashed line on the 12 KHz sound remained.
- MPS worked well, with the exception of one deployment in which the safety was not completely disengaged and cause some nets to fail. Two MPS deployments were cancelled due to large swell and replaced with 1200 - 0 m bongo tows.
- the Closet was having intermittent trouble with the radio, specifically hearing the Laurs crane. However, all other stations were coming through loud and clear in the Lab.

Radioisotope Report

No radioisotopes were used

Scientific Successes and Concerns

Once underway (late departure resulting from ship engineering issues), the cruise was not delayed by weather or SAR deployments. The effectiveness and excellent collaboration with the ship's crew, and the knowledge and professionalism of the science staff, made all operations smooth, and quick. All core stations were completed, with the exception of several stations along the LD line. Some stations in Queen Charlotte Sound were dropped due to lack of time (outer stations along the SS line, plus all of the NL line). 13 stations in the Strait of Georgia were sampled for inclusion in the monthly sampling of the Strait being conducted by another DFO plankton program. The extra ship's speed through the Strait of Georgia was appreciated to permit us to complete those core stations.

NOTE that double (200 microlitres) the specified amount of HgCl was added to all DIC samples.

Platform Successes and Concerns

The John P Tully is a reliable and effective platform for our work and this program. I thank the bridge officers for their efficient approach to stations and quick set up to conduct our scientific operations. Similarly, the winch operators and deck crew were always ready to deploy the moment the bridge gave the go-ahead. Over the course of over 170 operations during this cruise, these minutes spared amounted to hours of extra work time. In addition, it was a pleasure to review each day's science activities with Captain Kent Reid, and to obtain his input and knowledge as to the most efficient routes and organisation. It was a pleasure to work with him.

Some issues were noted:

- Science staff working on the aft deck complained of a low frequency thumping noise from ship's engines, that was unpleasant to the ears (and could be felt in the chest) particularly when working on the aft deck tending to long bongo casts. An Email was sent to the Captain.
- the aft A-frame was moving outboard very jerkily (not due to winch operator control), and at one point lost power completely until Engineers fixed it (after 30 minutes).
- water pressure on deck for washing nets was weak. With the help of the Engineering Dept we switched to the water supply used to cool the winches but, although stronger, it was still weak for washing the nets. Note that water pressure on the usual tap could not be increased because that pump also provided the water to the flow through (TSG) system (which cannot handle higher pressure).

Safety Concerns

No safety concerns were noted

Hazardous Occurrences

There were no hazardous occurrences

Other Comments

Additional reports:

University of Victoria: Theresa Venello, John Dower

Objectives: Quantifying secondary (crustacean zooplankton) production at both shelf and off shelf stations off the west coast of Vancouver Island using the chitobiase-method.

Sampling:

500mL of seawater was taken from 6 depths (5, 10, 20, 50, 150, 250 m) at where water depth allowed at LB08, LC04, LC09, LG02, LG09, LBP3, LBP8, CS02 and CS09.

In addition, Strait of Georgia samples were also collected at 11, 22 and GE01.

Water was taken from the rosette, filtered through 54µm mesh and into 500 mL Nalgene bottles. Water samples were then 'spiked' with a homogenate made from ground amphipods, krill or copepods (depending on what was in the bongo sample); filtered every three hours over a 12 hr period to create a decay of the moulting enzyme chitobiase. Samples were assayed and read using a fluorometer while on board.

Ring net samples to 250m (where bottom allowed) were also conducted at the nine stations off the west coast. These net samples were collected for Lian Kwong and Evgeny Pakhomov at UBC.

Comments:

All of our sampling goals for this cruise were met.

We'd like to thank the Captain and crew of the Tully for all their assistance and hard work throughout the cruise. Thanks to Ian Perry and the IOS science crew for having us on board to do this work and accommodating sampling needs.

University of Victoria: Robyn Sahota, Catherine Stevens (latter not participating onboard)

The goal of my project is to observe spatial differences in the zooplankton consumer fatty acid profiles that are associated with a lipid-rich classic food web vs. a lipid-poor microbial food web. Using fatty acid extraction and visualizing with gas-chromatography I will quantify the dietary differences between lipid-rich crustaceans and lipid-poor gelatinous zooplankton to determine the trophic energy affects to higher-order consumers.

Trent University: Victoria Durrett, Celine Guegen (latter not participating on board)

Sampling of seawater was conducted at six stations along LC line from 5 m depth, moving from lower phytoplankton concentrations at the shelf edge to higher phytoplankton concentrations near shore, to study the copper-chelating compounds in seawater. These results will be compared to similar tests run on samples in the Canada Basin.

Zooplankton Sampling Report – Ian Perry, PBS/IOS

Zooplankton sampling found no major surprises. At initial glance, conditions appeared about normal, with few southern gelatinous plankton taxa but also no high abundances of the larger boreal crustacean zooplankton, even into Queen Charlotte Strait. It wasn't until the Strait of Georgia that higher abundances of crustacean plankton were captured, along with several larger and small Beroe (species of gelatinous zooplankton that prey upon other gelatinous zooplankton). Abundant phytoplankton occurred over the shallow areas of La Perouse Bank, and very abundance phytoplankton, along with very abundant ctenophores (Pleuobranchia) occurred at the inshore stations along the LBP Line off Brooks Peninsula. Relatively few Doliolids were encountered on this survey, and those that did occur were generally near the edge of the continental shelf. In contrast to last year, no pyrosomes were sighted at all.

All plankton winches operated well, including that for the MPS. At one bongo deployment early in the survey, the A-frame lost all power as the net was being sent over the side. It was repaired after about 30 minutes. Throughout the survey the A-frame was often rather jerky in its outboard and inboard movements (and not related to the winch operator).

Chief Scientist – Ian Perry

Once the engineering issues that occurred at the start of the cruise were fixed, the rest of the survey was very successful. The cruise duration was a day or so shorter than usual, and with the delayed start and the need to return to IOS early to facilitate crew change, there was a risk that several stations would not be able to be sampled. However, with good weather, no SAR calls, and the skill and efficiency of the ship's crew, we were able to complete the majority of the core stations. Good communications between the ship's operations and science staff allowed very efficient use of the time. There was seldom any delay getting on station, beginning operations, or advancing to the next station. Many thanks to all involved; Captain Reid, his officers and crew, the science crew, and personnel shore-side that assisted in preparation of winches, etc., and loading/unloading. My special and personal thanks to Marie Robert, Hugh Mclean, and Moira Galbraith for helping me through the steps of being a Chief Scientist!

Images



