

Form Rev. 10.3.14

1. Program Number: *See*, Reporting Policy at III (C) (1).

13120114-J

2. Project Title: *See*, Reporting Policy at III (C) (2).

Long term monitoring: Environmental drivers component - The Seward Line: Marine Ecosystem monitoring in the Northern Gulf of Alaska.

3. Principal Investigator(s) Names: *See*, Reporting Policy at III (C) (3).

Russell R Hopcroft

4. Time Period Covered by the Report: *See*, Reporting Policy at III (C) (4).

February 1, 2014-January 31, 2015

5. Date of Report: *See*, Reporting Policy at III (C) (5).

Feb 4, 2015

6. Project Website (if applicable): *See*, Reporting Policy at III (C) (6).

www.gulfwatchalaska.org and <http://www.ims.uaf.edu/gak1>/<https://www.sfos.uaf.edu/sewardline/>

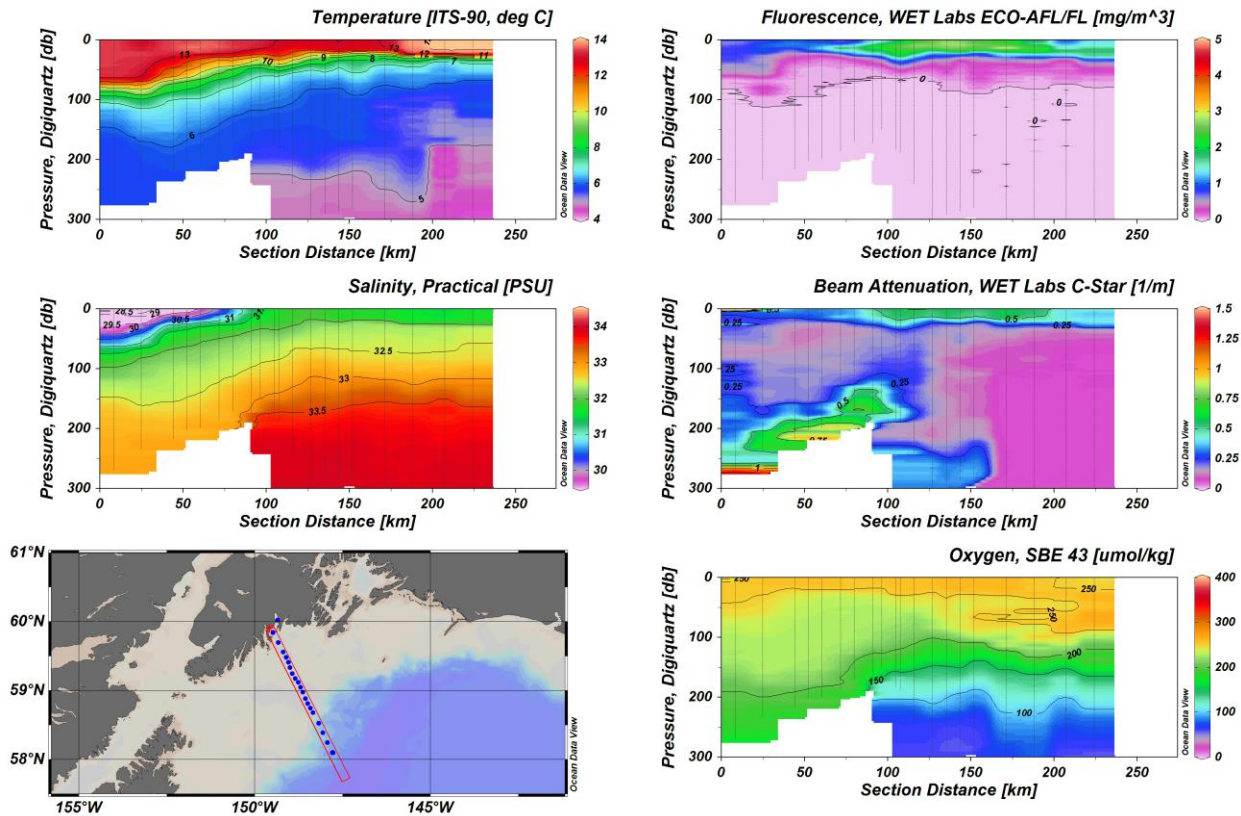
7. Summary of Work Performed: *See*, Reporting Policy at III (C) (7).

This project revolves around executing multidisciplinary oceanographic cruises along the Seward Line and in PWS each May and September. The objectives that are met each cruise are:

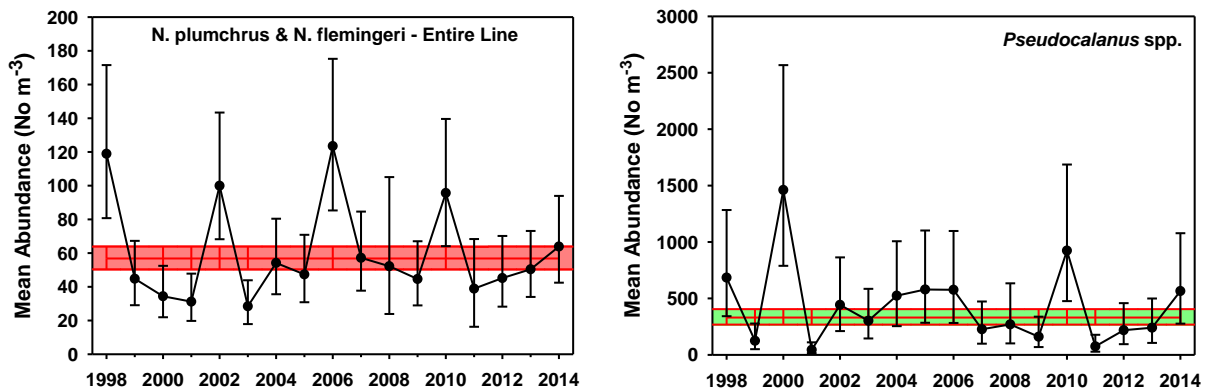
- Determine thermohaline, velocity, and nutrient structure of the Seward Line across the Gulf of Alaska shelf, and at stations throughout PWS
- Determine phytoplankton biomass and size distribution (chlorophyll)
- Determine the distribution and abundance of micro-zooplankton (starting in 2014)
- Determine the distribution and abundance of meta-zooplankton
- Opportunistically, determine rates of growth and egg production of selected key zooplankton species .
- Support determination of carbonate chemistry (i.e. ocean acidification)
- Determine distribution and composition of seabirds (& marine mammals) along the Seward Line, PWS and Kenai coastline
- Provide at-sea experience for graduate students within the University of Alaska

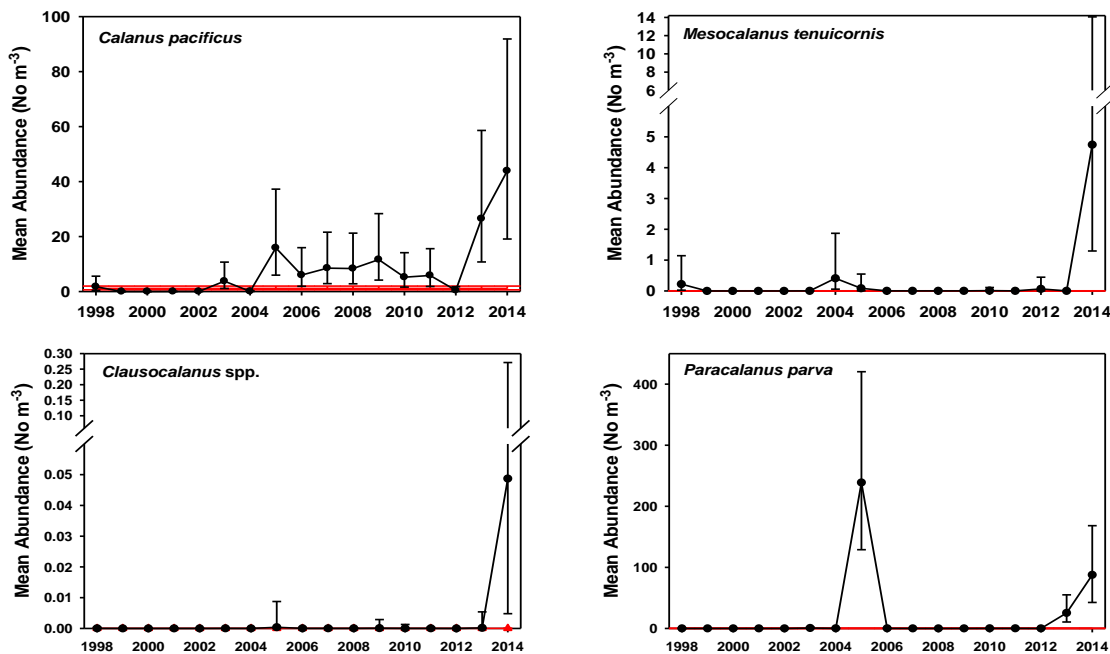
Deliverable/Milestone	Status
Execute May 2014 cruise	Completed
Execute September 2015 cruise	Completed
Attend PI meeting and AMSS to present results	Completed

The fall 2014 cruise was conducted during one of the largest warm-water anomalies observed in the North Pacific during the past 50 years. Unusually warm surface waters were observed at GAK 12 & 13 (14.3°C), as well as >13°C within most of the Alaska Coastal Current waters extending as deep as 40m! (below) Our average upper-100m temperatures for the inner GAK stations were 2.1-2.6°C above the mean for those stations, and 0.6-1.06°C at the offshore end. This made the entire line the warmest on record: 0.5°C above the next-warmest and 1.06°C above the long-term September mean. Usual weather patterns the prior winter, a weak El Nino, and a shift in the sign of the PDO all contributed to this unique situation that will likely impact 2015 as temperatures in the GoA remain nearly 2°C above normal.



Although zooplankton composition appeared typical during the May cruise (see below), by September significant numbers of southern (i.e. California Current) copepods were detected along the Seward Line. In most cases, although their abundances were low compared to the entire copepod community, they were the highest observed over the 18 years of observations along the Seward Line.





In 2014, the Seward Line provided the logistical foundation for NOAA deploying gliders and Wave-riders during May in the projects operational area, and recovering them in September, that are providing a wealth of information on physical and chemical oceanography (OA) at no cost to the project

8. Coordination/Collaboration: See, Reporting Policy at III (C) (8).

8.A.:

- Dr. Hopcroft interacts with other PIs within Environmental drivers on a regular basis
- Dr. Hopcroft serves on the Gulf Watch Alaska Science Coordination committee

8.C.:

- Dr. Hopcroft is involved in other major activities in the Gulf funded by NRPB and NOAA

9. Information and Data Transfer: See, Reporting Policy at III (C) (9).

- 2013 datasets delivered to workspace, 2014 draft CTD data placed on workspace immediately after each cruise
- Presentations related to Seward Line were made at AMSS, and Ocean Science meeting in Hawaii
- Four publications arising from Seward Line sampling are in review for a special issue on the Gulf of Alaska

10. Response to EVOSTC Review, Recommendations and Comments: See, Reporting Policy at III (C) (10).

There were no recommendations for this project.

11. Budget: See, Reporting Policy at III (C) (11).

Attached – no deviations from proposed.