Report of 2019 Research Activities

State of Alaska Fish Resource Permit (SRP) CF-16-010

NOAA Fisheries Alaska Fisheries Science Center – RACE Division

Activity Title: FOCI Fall Moorings and Plankton Sampling

Introduction:

The primary objective of cruise DY19-08 was the recovery of the surface moorings at M2 followed by the turnaround of moorings at sites M4, M5, M8 and recovery of moorings off of Saint Mathew Island. The CTD/Bongo boxes around each of these sites were next in line followed by the marine mammal mooring turnarounds and the 72 m isobath stations. The lowest priority was the DBO1 line.

Methods:

All operations occurred in the SE Bering Sea from 29 September 2018 to 12 October 2018. Operations consisted of 4 main categories: moorings, CTD (conductivity, temperature, depth), zooplankton sampling, and marine mammal operations. Mooring operations consisted of recovering, cleaning, servicing, and deploying instruments and mooring hardware. CTD casts were conducted using a Sea-Bird 911+ CTD mounted on a rosette equipped with various instruments (fluorometer, oxygen sensor, light sensor), and Niskin bottles to collect water for chemical and chlorophyll measurements. Zooplankton samples were collected using bongo and CalVET (California vertical egg tow) nets. Bongo tows were conducted following standard Marine Monitoring, Assessment, and Prediction procedures at selected stations using a paired, 60 cm, 20 cm diameter array. Tows were oblique from the sea surface to 10-m off bottom or 300 m depth, whichever was shallowest. The SBE 49 FastCAT, the 20-cm bongo net with 0.150-mm mesh netting and the 60-cm bongo net mounted with 0.505-mm mesh (Nets 1 and 2) will all be mounted together for the tow. The Net-1 samples were preserved in 1.8% buffered Formaldehyde (5% formalin). The Net-2 samples were sorted at sea for Rapid Zooplankton Assessment. The CalVET net was used to sample microzooplankton retained by 0.053-mm mesh netting. It was used to obtain triplicate samples at each of the “M” mooring sites to a depth of 60 m. Marine mammal operations deployment of sonobuoys, and turnaround and/or recovery of passive acoustic moorings. Passive Short-term passive acoustic monitoring was conducted opportunistically through the deployment of sonobuoys approximately every three hours as water depth and other ship operations permitted. Sonobuoys are short-term, expendable, listening devices which transmit the acoustic signals via VHF to an antenna on the ship. The distance from the ship to the sonobuoys was around 10 nm (with tuned Morad VHF antenna).

Results:

Mooring operations resulted in 7 moorings recovered with another attempted recovery and 9 moorings deployed on and around the M2, M4, M5, and M8 mooring sites. All mooring operations were performed without incident or damage to any instrumentation.

Overall, 24 CTD casts were conducted. Water samples collected during these casts were for nutrients (n=145), chlorophyll (n=134), salinity (n=9), and 20 water samples to detect coccolithophore blooms.

Zooplankton samples and water profiler data were collected simultaneously at 19 sites. These sites were around the M2, M4, M5, M8 moorings, and two sites near Unimak Pass (32 sites). The RZA was conducted at 9 bongo stations. Overall, 38 samples were collected with the bongo nets, and 12 samples were collected with the CalVET net. Both Net 2 samples were collected and frozen for both lipid and stable isotope analysis.

A total of 46 sonobuoys were tossed along our trackline in order to monitor for marine mammals. Of the buoys tossed 42 had successful transmissions for a 91.3% success rate. A total of 42 hours and 32 minutes were acoustically monitored and preliminary results include detections from fin, killer, humpback, and right whales.

Four passive acoustic units on the M2, M4, M5, and M8 moorings were turned around. All the recorders recovered recorded for the duration of their deployments. Additionally four stand-alone marine mammal moorings were deployed at the BS9, BS10, BS4, and BT1 locations. Lastly, the mooring deployed at SH1 is co-located with oceanographic instruments. Unfortunately due to poor weather the recovery of moorings at BS9 and BS4 was pushed to the spring 2020 cruise.

Appendix – Catch/Collection Summaries

Catch Summary Table – Within 3-mile Territorial Waters

|  |  |  |  |
| --- | --- | --- | --- |
| **Species – Common name** | **Species – Scientific name** | **Weight (kg)** | **Number** |
|  |  |  |  |

Catch Summary Table – Totals for Survey (if not conducted entirely within territorial waters)

|  |  |  |  |
| --- | --- | --- | --- |
| **Species – Common name** | **Species – Scientific name** | **Weight (kg)** | **Number** |
| Larval Walleye Pollock | *Theragra chalcogramma* | < 1 kg | 0 |

Voucher or Collection Specimens

|  |  |  |  |
| --- | --- | --- | --- |
| **SPECIES NAME** | **COMMON NAME** | **Count** | **Comments** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |