**CRUISE REPORT**

FOCI Cruise DY19-04

# Ship:

NOAA Oscar Dyson

# Area of Operations:

Bering Sea

# Itinerary:

Depart date/port: Apr 19, 2019 / Kodiak, AK

Arrive date/port: May 01, 2019 / Dutch Harbor, AK

# Participating Organizations:

NOAA - Alaska Fisheries Science Center (AFSC) NOAA - National Marine Mammal Laboratory (NMML)

NOAA - Pacific Marine Environmental laboratory (PMEL) University of Alaska Fairbanks (UAF)

# Chief Scientst:

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# Personnel:

Lauren Rogers F / AFSC

Shaun Bell M / PMEL

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Stephanie Grassia F / MML

Sarah Donohoe F / PMEL

Natalie Monacci F / UAF

Lisa Eisner F / AFSC

Brynn Kimber F / MML

# Cruise Objectives:

The primary objective of cruise DY19-04 was the recovery of subsurface moorings at M2 followed by the deployment of the surface moorings PEGGY and ITAE. The CTD/Bongo boxes around each of sites M-2, M-4, M-5 and M-8 followed by the marine mammal mooring turnarounds and the 70 m isobath were next in line. In addition, of some priority was the Oculus Coastal Glider deployment, and retrieval of the Chiniak Canyon subsurface mooring.

# Summary of Cruise:

**Narrative:**

The ship departed Kodiak, AK, at 14:00 local time on 19 April 2019 and headed to the first mooring station near Kodiak – Chiniak Canyon. At Unimak Pass, zooplankton and ichthyoplankton were sampled using a paired 20 and 60-cm Bongo array with 153 *µ*m and 505 *µ*m mesh nets, respectively, along with a Sea-Bird Electronics (SBE) FASTCAT collecting temperature, conductivity and depth information. SBE 911+ CTD casts with bottles were performed at all stations except for CTD casts for calibration purposes at mooring sites where no bottles were tripped. Chlorophyll, nutrient, salinity and oxygen samples were collected as well as electronic data including photosynthetically active radiation (PAR), chlorophyll *a* fluorescence, light attenuation (beam c), oxygen, temperature, conductivity and depth information. After completing ~25% of the Unimak Pass stations, the ship transited to Dutch Harbor to drop off a departing crew member who had a family emergency; as a result, some of the Unimak Pass stations were dropped. Sampling resumed at M-2 approximately 36 hours later, and sampling was completed around M-2, M-4 and M-5 and along the 70 m isobath as far north as 60.53°N (decimal degrees). In addition to bongo tows and CTD casts, triplicate CalVET tows fitted with 53 *µ*m mesh nets were used to sample microzooplankton at M-2, M-4 and M-5 center moorings. There was one significant storm to the northwest that resulted in the ship abandoning the course north to M-8, changing course south after reaching the north end of St. Matthews Island (60.53°N), and conducting all sampling and mooring operations from north to south along the 70 m isobath. M-2 was sampled a second time and instrumentation on the ITAE mooring replaced after which the ship completed the transit to Dutch Harbor, AK, arriving on 1 May 17:00 local time.

Throughout the survey water temperatures were typical of a warm year, with ~3.5°C surface and ~1.0°C bottom temperatures in the northern part of the 70 m isobath line. The water was well mixed with essentially no pycnocline as is usual at the start of spring conditions after a winter season of wind mixing. Small copepods were abundant at all stations and phytoplankton fouling was evident for ~50 % of the stations particularly in the southern 70 m isobath line. Northern fur seals were spotted at M-2. The middle of the Bering Sea is considered typical habitat for fur seals.

# Days Lost to Weather:

0.5 days lost due to a storm in the northwest that caused the ship to change course south after completing station sampling at the north end of St. Matthews Island.

# Days Lost to Equipment Failure:

0.5 days lost due to failure and replacement of the A-Frame block used for bongo and CalVET operations.

0.5 days lost due to FASTCAT termination multiple times.

# Recommendations:

None

# Acknowledgements:

The scientific party would like to acknowledge the hard work and support of the officers and crew of the Oscar Dyson.

**Cruise Statistics Report:** Gear Used and Samples Collected

|  |  |  |
| --- | --- | --- |
| **Gear Deployed** | **Tows** |  |
| 20BON - 20cm bongo (153 *u*m) | 34 |  |
| 60BON - 60cm bongo (505 *u*m) | 36 |  |
| CALVET - CalCOFI vertical egg tow net (53 *u*M) | 12 |  |
| CAT - Seabird FASTCAT CTD | 46 |  |
| CTDB - CTD with bottle samples | 49 |  |
| **Samples Collected** | **Tows** | **Number** |
| At-sea genetics/otolith samples preserved in non-denatured 100% alcohol (genetics grade), and set aside in scintillation vials to take back to Seattle. | 8 | 86 |
| SeaBird FASTCAT CTD | 44 | 44 |
| SeaBird CTD | 53 | 53 |
| Extracted chlorophyll | 49 | 295 |
| All or part of sample discarded | 69 | 69 |
| Stimulated fluorescence collected during CTD casts | 49 | 49 |
| Nutrient samples collected from CTD casts | 47 | 308 |
| Photosynthetically Active Radiation (PAR) data collected during CTD casts | 53 | 53 |
| Quantitative tow preserved in formalin | 92 | 93 |
| Rough Count Zooplankton for Rapid Zooplankton Assessment (RZA) | 31 | 31 |
| Thermosalinograph data collection | 1 | 1 |
|  |  |  |

**Cruise Summary**:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | Depth (m) | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-22 | 08:22 | 3 | 1 | CTD03 | 157 | 54 20.25 N | 165 25.6 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | 40 m bottle did not sample. 1st two CTDs not part of sampling but assoc. w/ Chiniak mooring, Kodiak AK and marine mammal mooring. |
| 2019-04-22 | 09:05 | 3 | 2 | BON001 | 159 | 54 20.37 N | 165 26.06 W | 60BON | QTowF |  |
| 2019-04-22 | 09:05 | 3 | 2 | BON001 | 159 | 54 20.37 N | 165 26.06 W | 60BON | Discard |  |
| 2019-04-22 | 09:05 | 3 | 2 | BON001 | 159 | 54 20.37 N | 165 26.06 W | 20BON | Discard |  |
| 2019-04-22 | 09:05 | 3 | 2 | BON001 | 159 | 54 20.37 N | 165 26.06 W | 20BON | QTowF |  |
| 2019-04-22 | 09:05 | 3 | 2 | BON001 | 159 | 54 20.37 N | 165 26.06 W | CAT | CAT |  |
| 2019-04-22 | 10:37 | 4 | 1 | CTD004 | 165 | 54 22.58 N | 165 16.0 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | See CTD002; changed to match PMEL convention (sta. # = Alt. Sta. #). |
| 2019-04-22 | 11:57 | 5 | 1 | CTD005 | 141 | 54 25.44 N | 165 9.22 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | 50 m chlor spilled ~5 mL sample. |
| 2019-04-22 | 00:00 | 5 | 2 | BON002 | 0 | 0 0.0 S | 0 0.0 W | 60BON | Discard |  |
| 2019-04-22 | 12:59 | 5 | 3 | BON003 | 156 | 54 25.34 N | 165 9.68 W | 60BON | QTowF | No complete fastcat data; FASTCAT failed. |
| 2019-04-22 | 12:59 | 5 | 3 | BON003 | 156 | 54 25.34 N | 165 9.68 W | 60BON | Discard, RCOUNTZ | No complete fastcat data; FASTCAT failed. |
| 2019-04-22 | 12:59 | 5 | 3 | BON003 | 156 | 54 25.34 N | 165 9.68 W | 20BON | QTowF | No complete fastcat data; FASTCAT failed. |
| 2019-04-22 | 12:59 | 5 | 3 | BON003 | 156 | 54 25.34 N | 165 9.68 W | 20BON | Discard, RCOUNTZ | No complete fastcat data; FASTCAT failed. |
| 2019-04-22 | 12:59 | 5 | 3 | BON003 | 156 | 54 25.34 N | 165 9.68 W | CAT | CAT | No complete fastcat data; FASTCAT failed. |
| 2019-04-22 | 14:53 | 6 | 1 | CTD006 | 51 | 54 26.7 N | 164 59.43 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-22 | 17:54 | 7 | 1 | CTD007 | 77 | 54 49.55 N | 164 54.04 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | Block to winch is shot for BONGOs. |
| 2019-04-24 | 00:19 | 8 | 1 | CTD008 | 74 | 56 45.99 N | 164 20.37 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-24 | 00:49 | 8 | 2 | BON004 | 74 | 56 45.6 N | 164 20.69 W | 60BON | QTowF | Phytoplankton fouling in 20BON. SW corner of M2 box. |
| 2019-04-24 | 00:49 | 8 | 2 | BON004 | 74 | 56 45.6 N | 164 20.69 W | 60BON | Discard | Phytoplankton fouling in 20BON. SW corner of M2 box. |
| 2019-04-24 | 00:49 | 8 | 2 | BON004 | 74 | 56 45.6 N | 164 20.69 W | 20BON | QTowF | Phytoplankton fouling in 20BON. SW corner of M2 box. |
| 2019-04-24 | 00:49 | 8 | 2 | BON004 | 74 | 56 45.6 N | 164 20.69 W | 20BON | Discard | Phytoplankton fouling in 20BON. SW corner of M2 box. |
| 2019-04-24 | 00:49 | 8 | 2 | BON004 | 74 | 56 45.6 N | 164 20.69 W | CAT | CAT | Phytoplankton fouling in 20BON. SW corner of M2 box. |
| 2019-04-24 | 03:05 | 9 | 1 | CTD009 | 75 | 56 39.86 N | 163 52.26 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-24 | 03:30 | 9 | 2 | BON005 | 75 | 56 39.55 N | 163 52.71 W | 60BON | Discard |  |
| 2019-04-24 | 03:30 | 9 | 2 | BON005 | 75 | 56 39.55 N | 163 52.71 W | 20BON | QTowF |  |
| 2019-04-24 | 03:30 | 9 | 2 | BON005 | 75 | 56 39.55 N | 163 52.71 W | 20BON | Discard |  |
| 2019-04-24 | 03:30 | 9 | 2 | BON005 | 75 | 56 39.55 N | 163 52.71 W | 60BON | QTowF |  |
| 2019-04-24 | 03:30 | 9 | 2 | BON005 | 75 | 56 39.55 N | 163 52.71 W | CAT | CAT |  |
| 2019-04-24 | 05:32 | 10 | 1 | CTD010 | 70 | 56 56.73 N | 163 50.24 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | 20m bottle did not trip. No sample. |
| 2019-04-24 | 05:58 | 10 | 2 | BON006 | 70 | 56 56.61 N | 163 50.29 W | 60BON | QTowF | 2 lg jellies in 60Bon Net 1. 20Bon Net 1 spilled. Use Net 2 for QtowF for 60 and 20 Bon. Phyto fouling, all nets. |
| 2019-04-24 | 05:58 | 10 | 2 | BON006 | 70 | 56 56.61 N | 163 50.29 W | 20BON | QTowF | 2 lg jellies in 60Bon Net 1. 20Bon Net 1 spilled. Use Net 2 for QtowF for 60 and 20 Bon. Phyto fouling, all nets. |
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|  |  |  |  |  |  |  |  |  |  |  |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-24 | 05:58 | 10 | 2 | BON006 | 70 | 56 56.61 N | 163 50.29 W | CAT | CAT | 2 lg jellies in 60Bon Net 1. 20Bon Net 1 spilled. Use Net 2 for QtowF for 60 and 20 Bon. Phyto fouling, all nets. |
| 2019-04-24 | 05:58 | 10 | 2 | BON006 | 70 | 56 56.61 N | 163 50.29 W | 20BON | Discard | 2 lg jellies in 60Bon Net 1. 20Bon Net 1 spilled. Use Net 2 for QtowF for 60 and 20 Bon. Phyto fouling, all nets. |
| 2019-04-24 | 05:58 | 10 | 2 | BON006 | 70 | 56 56.61 N | 163 50.29 W | 60BON | Discard | 2 lg jellies in 60Bon Net 1. 20Bon Net 1 spilled. Use Net 2 for QtowF for 60 and 20 Bon. Phyto fouling, all nets. |
| 2019-04-24 | 07:36 | 11 | 1 | CTD011 | 70 | 57 1.3 N | 164 12.46 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-24 | 08:03 | 11 | 2 | BON007 | 68 | 57 1.42 N | 164 12.69 W | 60BON | QTowF | Brown phyto thick in 20Bon |
| 2019-04-24 | 08:03 | 11 | 2 | BON007 | 68 | 57 1.42 N | 164 12.69 W | 60BON | Discard | Brown phyto thick in 20Bon |
| 2019-04-24 | 08:03 | 11 | 2 | BON007 | 68 | 57 1.42 N | 164 12.69 W | 20BON | QTowF | Brown phyto thick in 20Bon |
| 2019-04-24 | 08:03 | 11 | 2 | BON007 | 68 | 57 1.42 N | 164 12.69 W | 20BON | Discard | Brown phyto thick in 20Bon |
| 2019-04-24 | 08:03 | 11 | 2 | BON007 | 68 | 57 1.42 N | 164 12.69 W | CAT | CAT | Brown phyto thick in 20Bon |
| 2019-04-24 | 09:26 | 12 | 1 | CTD012 | 74 | 56 51.09 N | 164 4.54 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | Triplicate chlorophylls at 54m, 44m, 23m, 11m, 0m. Calibration CTD at M2. Chlorophyll vials labeled by Niskin# and volume. |
| 2019-04-24 | 10:33 | 12 | 2 | CAL001 | 74 | 56 50.75 N | 164 3.55 W | CALVET | QTowF | Nets 1 and 2 combined. Brown, gooey algae in nets. |
| 2019-04-24 | 10:33 | 12 | 2 | CAL001 | 74 | 56 50.75 N | 164 3.55 W | CALVET | QTowF | Nets 1 and 2 combined. Brown, gooey algae in nets. |
| 2019-04-24 | 10:33 | 12 | 2 | CAL001 | 74 | 56 50.75 N | 164 3.55 W | CAT | CAT | Nets 1 and 2 combined. Brown, gooey algae in nets. |
| 2019-04-24 | 11:00 | 12 | 3 | CAL002 | 74 | 56 50.4 N | 164 3.02 W | CALVET | QTowF | Nets 1 and 2 combined. Brown algae fouling. |
| 2019-04-24 | 11:00 | 12 | 3 | CAL002 | 74 | 56 50.4 N | 164 3.02 W | CALVET | QTowF | Nets 1 and 2 combined. Brown algae fouling. |
| 2019-04-24 | 11:00 | 12 | 3 | CAL002 | 74 | 56 50.4 N | 164 3.02 W | CAT | CAT | Nets 1 and 2 combined. Brown algae fouling. |
| 2019-04-24 | 11:25 | 12 | 4 | CAL003 | 74 | 56 50.06 N | 164 2.53 W | CALVET | QTowF |  |
| 2019-04-24 | 11:25 | 12 | 4 | CAL003 | 74 | 56 50.06 N | 164 2.53 W | CALVET | QTowF |  |
| 2019-04-24 | 11:25 | 12 | 4 | CAL003 | 74 | 56 50.06 N | 164 2.53 W | CAT | CTD |  |
| 2019-04-24 | 18:48 | 13 | 1 | CTD013 | 72 | 56 52.05 N | 164 3.11 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | M2 center.Second CTD at loc. |
| 2019-04-24 | 19:13 | 13 | 2 | BON008 | 72 | 56 52.43 N | 164 3.87 W | 20BON | Discard | Removed 1 5 cm diam. jelly from 60BON NET1. |
| 2019-04-24 | 19:13 | 13 | 2 | BON008 | 72 | 56 52.43 N | 164 3.87 W | 20BON | QTowF | Removed 1 5 cm diam. jelly from 60BON NET1. |
| 2019-04-24 | 19:13 | 13 | 2 | BON008 | 72 | 56 52.43 N | 164 3.87 W | 60BON | QTowF | Removed 1 5 cm diam. jelly from 60BON NET1. |
| 2019-04-24 | 19:13 | 13 | 2 | BON008 | 72 | 56 52.43 N | 164 3.87 W | 60BON | Discard, RCOUNTZ, ADGEN | Removed 1 5 cm diam. jelly from 60BON NET1. |
| 2019-04-24 | 19:13 | 13 | 2 | BON008 | 72 | 56 52.43 N | 164 3.87 W | CAT | CAT | Removed 1 5 cm diam. jelly from 60BON NET1. |
| 2019-04-25 | 00:27 | 14 | 1 | CTD014 | 72 | 56 52.02 N | 164 3.81 W | CTDB | PAR, CTD, Chlor, Fluor |  |
| 2019-04-26 | 13:14 | 15 | 1 | CTD15 | 69 | 60 34.44 N | 173 37.87 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-26 | 13:36 | 15 | 2 | BON009 | 69 | 60 34.4 N | 173 37.61 W | 60BON | QTowF |  |
| 2019-04-26 | 13:36 | 15 | 2 | BON009 | 69 | 60 34.4 N | 173 37.61 W | 20BON | QTowF |  |
| 2019-04-26 | 13:36 | 15 | 2 | BON009 | 69 | 60 34.4 N | 173 37.61 W | 60BON | Discard, RCOUNTZ |  |
| 2019-04-26 | 13:36 | 15 | 2 | BON009 | 69 | 60 34.4 N | 173 37.61 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-26 | 13:36 | 15 | 2 | BON009 | 69 | 60 34.4 N | 173 37.61 W | CAT | CTD |  |
| 2019-04-26 | 18:31 | 16 | 1 | CTD16 | 65 | 60 25.76 N | 173 35.25 W | CTDB | PAR, CTD, Chlor, Nut, Fluor | Coccolithophores sampled 0 m (at surface) Niskin #7, 20 m Niskin #4 (32 oz. jar, 1% formalin preserved). |
| 2019-04-26 | 21:33 | 17 | 1 | CTD17 | 68 | 60 2.16 N | 173 0.16 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-26 | 21:52 | 17 | 2 | BON010 | 68 | 60 2.23 N | 172 59.97 W | 60BON | QTowF |  |
| 2019-04-26 | 21:52 | 17 | 2 | BON010 | 68 | 60 2.23 N | 172 59.97 W | 20BON | QTowF |  |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-26 | 21:52 | 17 | 2 | BON010 | 68 | 60 2.23 N | 172 59.97 W | 60BON | Discard, RCOUNTZ, ADGEN |  |
| 2019-04-26 | 21:52 | 17 | 2 | BON010 | 68 | 60 2.23 N | 172 59.97 W | CAT | CAT |  |
| 2019-04-26 | 21:52 | 17 | 2 | BON010 | 68 | 60 2.23 N | 172 59.97 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-27 | 00:51 | 18 | 1 | CTD18 | 64 | 60 4.47 N | 171 59.48 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 01:06 | 18 | 2 | BON011 | 64 | 60 4.52 N | 171 58.96 W | 60BON | QTowF |  |
| 2019-04-27 | 01:06 | 18 | 2 | BON011 | 64 | 60 4.52 N | 171 58.96 W | 20BON | QTowF |  |
| 2019-04-27 | 01:06 | 18 | 2 | BON011 | 64 | 60 4.52 N | 171 58.96 W | 60BON | Discard, RCOUNTZ |  |
| 2019-04-27 | 01:06 | 18 | 2 | BON011 | 64 | 60 4.52 N | 171 58.96 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-27 | 01:06 | 18 | 2 | BON011 | 64 | 60 4.52 N | 171 58.96 W | CAT | CAT |  |
| 2019-04-27 | 02:37 | 19 | 1 | CTD19 | 74 | 59 53.85 N | 172 10.25 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 02:56 | 19 | 2 | BON012 | 73 | 59 53.82 N | 172 9.61 W | 60BON | QTowF |  |
| 2019-04-27 | 02:56 | 19 | 2 | BON012 | 73 | 59 53.82 N | 172 9.61 W | 60BON | Discard |  |
| 2019-04-27 | 02:56 | 19 | 2 | BON012 | 73 | 59 53.82 N | 172 9.61 W | 20BON | QTowF |  |
| 2019-04-27 | 02:56 | 19 | 2 | BON012 | 73 | 59 53.82 N | 172 9.61 W | 20BON | Discard |  |
| 2019-04-27 | 02:56 | 19 | 2 | BON012 | 73 | 59 53.82 N | 172 9.61 W | CAT | CAT |  |
| 2019-04-27 | 04:21 | 20 | 1 | CAL004 | 70 | 59 54.45 N | 171 44.45 W | CALVET | QTowF | Net 1 & 2 combined. |
| 2019-04-27 | 04:21 | 20 | 1 | CAL004 | 70 | 59 54.45 N | 171 44.45 W | CALVET | QTowF | Net 1 & 2 combined. |
| 2019-04-27 | 04:21 | 20 | 1 | CAL004 | 70 | 59 54.45 N | 171 44.45 W | CAT | CAT | Net 1 & 2 combined. |
| 2019-04-27 | 04:39 | 20 | 2 | CAL005 | 70 | 59 54.56 N | 171 44.16 W | CALVET | QTowF | Net 1& 2 combined. Net out of water called late. |
| 2019-04-27 | 04:39 | 20 | 2 | CAL005 | 70 | 59 54.56 N | 171 44.16 W | CALVET | QTowF | Net 1& 2 combined. Net out of water called late. |
| 2019-04-27 | 04:39 | 20 | 2 | CAL005 | 70 | 59 54.56 N | 171 44.16 W | CAT | CAT | Net 1& 2 combined. Net out of water called late. |
| 2019-04-27 | 04:55 | 20 | 3 | CAL006 | 70 | 59 54.66 N | 171 43.9 W | CALVET | QTowF | Net 1 & 2 combined. |
| 2019-04-27 | 04:55 | 20 | 3 | CAL006 | 70 | 59 54.66 N | 171 43.9 W | CALVET | QTowF | Net 1 & 2 combined. |
| 2019-04-27 | 04:55 | 20 | 3 | CAL006 | 70 | 59 54.66 N | 171 43.9 W | CAT | CAT | Net 1 & 2 combined. |
| 2019-04-27 | 05:12 | 20 | 4 | CTD20 | 70 | 59 54.8 N | 171 43.65 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 05:32 | 20 | 5 | BON013 | 69 | 59 54.87 N | 171 42.98 W | 20BON | QTowF | Haul depth 5 m short. 60BON Net 2 removed 4 in jelly. |
| 2019-04-27 | 05:32 | 20 | 5 | BON013 | 69 | 59 54.87 N | 171 42.98 W | 60BON | QTowF | Haul depth 5 m short. 60BON Net 2 removed 4 in jelly. |
| 2019-04-27 | 05:32 | 20 | 5 | BON013 | 69 | 59 54.87 N | 171 42.98 W | 60BON | Discard, RCOUNTZ | Haul depth 5 m short. 60BON Net 2 removed 4 in jelly. |
| 2019-04-27 | 05:32 | 20 | 5 | BON013 | 69 | 59 54.87 N | 171 42.98 W | 20BON | Discard, RCOUNTZ | Haul depth 5 m short. 60BON Net 2 removed 4 in jelly. |
| 2019-04-27 | 05:32 | 20 | 5 | BON013 | 69 | 59 54.87 N | 171 42.98 W | CAT | CAT | Haul depth 5 m short. 60BON Net 2 removed 4 in jelly. |
| 2019-04-27 | 06:45 | 21 | 1 | CTD021 | 72 | 59 53.92 N | 171 15.46 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 07:22 | 21 | 2 | BON014 | 72 | 59 54.04 N | 171 14.8 W | 60BON | QTowF | Jelly tentacles in 60Bon net 1. Net1 used for QtowF. |
| 2019-04-27 | 07:22 | 21 | 2 | BON014 | 72 | 59 54.04 N | 171 14.8 W | 20BON | Discard | Jelly tentacles in 60Bon net 1. Net1 used for QtowF. |
| 2019-04-27 | 07:22 | 21 | 2 | BON014 | 72 | 59 54.04 N | 171 14.8 W | CAT | CAT | Jelly tentacles in 60Bon net 1. Net1 used for QtowF. |
| 2019-04-27 | 07:22 | 21 | 2 | BON014 | 72 | 59 54.04 N | 171 14.8 W | 20BON | QTowF | Jelly tentacles in 60Bon net 1. Net1 used for QtowF. |
| 2019-04-27 | 07:22 | 21 | 2 | BON014 | 72 | 59 54.04 N | 171 14.8 W | 60BON | Discard | Jelly tentacles in 60Bon net 1. Net1 used for QtowF. |
| 2019-04-27 | 09:09 | 22 | 1 | CTD022 | 75 | 59 42.05 N | 171 29.96 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 09:26 | 22 | 2 | BON015 | 74 | 59 42.05 N | 171 29.22 W | 60BON | QTowF | Jelly tentacles in 60Bon Net1. Use Net 2 for QtowF. |
| 2019-04-27 | 09:26 | 22 | 2 | BON015 | 74 | 59 42.05 N | 171 29.22 W | 20BON | QTowF | Jelly tentacles in 60Bon Net1. Use Net 2 for QtowF. |
| 2019-04-27 | 09:26 | 22 | 2 | BON015 | 74 | 59 42.05 N | 171 29.22 W | 20BON | Discard | Jelly tentacles in 60Bon Net1. Use Net 2 for QtowF. |
|  |  |  |  |  |  |  |  |  |  |  |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-27 | 09:26 | 22 | 2 | BON015 | 74 | 59 42.05 N | 171 29.22 W | CAT | CAT | Jelly tentacles in 60Bon Net1. Use Net 2 for QtowF. |
| 2019-04-27 | 09:26 | 22 | 2 | BON015 | 74 | 59 42.05 N | 171 29.22 W | 60BON | Discard | Jelly tentacles in 60Bon Net1. Use Net 2 for QtowF. |
| 2019-04-27 | 10:40 | 23 | 1 | CTD023 | 73 | 59 42.86 N | 171 8.32 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 10:57 | 23 | 2 | BON016 | 73 | 59 42.9 N | 171 7.41 W | 20BON | QTowF | FastCat stopped transmitting at 13m on way up. 2 5-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-27 | 10:57 | 23 | 2 | BON016 | 73 | 59 42.9 N | 171 7.41 W | 60BON | Discard, RCOUNTZ | FastCat stopped transmitting at 13m on way up. 2 5-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-27 | 10:57 | 23 | 2 | BON016 | 73 | 59 42.9 N | 171 7.41 W | 20BON | Discard, RCOUNTZ | FastCat stopped transmitting at 13m on way up. 2 5-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-27 | 10:57 | 23 | 2 | BON016 | 73 | 59 42.9 N | 171 7.41 W | CAT | CAT | FastCat stopped transmitting at 13m on way up. 2 5-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-27 | 10:57 | 23 | 2 | BON016 | 73 | 59 42.9 N | 171 7.41 W | 60BON | QTowF | FastCat stopped transmitting at 13m on way up. 2 5-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-27 | 18:34 | 24 | 1 | CTD024 | 69 | 59 14.86 N | 170 25.35 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 19:01 | 24 | 2 | BON017 | 68 | 59 14.92 N | 170 24.74 W | 20BON | QTowF | A-frame still continues to move at half speed at deployment. Does not affect tow time or rate. |
| 2019-04-27 | 19:01 | 24 | 2 | BON017 | 68 | 59 14.92 N | 170 24.74 W | 60BON | QTowF | A-frame still continues to move at half speed at deployment. Does not affect tow time or rate. |
| 2019-04-27 | 19:01 | 24 | 2 | BON017 | 68 | 59 14.92 N | 170 24.74 W | 60BON | Discard, RCOUNTZ, ADGEN | A-frame still continues to move at half speed at deployment. Does not affect tow time or rate. |
| 2019-04-27 | 19:01 | 24 | 2 | BON017 | 68 | 59 14.92 N | 170 24.74 W | 20BON | Discard, RCOUNTZ | A-frame still continues to move at half speed at deployment. Does not affect tow time or rate. |
| 2019-04-27 | 19:01 | 24 | 2 | BON017 | 68 | 59 14.92 N | 170 24.74 W | CAT | CAT | A-frame still continues to move at half speed at deployment. Does not affect tow time or rate. |
| 2019-04-27 | 20:58 | 25 | 1 | CTD025 | 71 | 58 56.9 N | 170 19.72 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 21:17 | 25 | 2 | BON018 | 71 | 58 56.91 N | 170 19.32 W | 60BON | QTowF |  |
| 2019-04-27 | 21:17 | 25 | 2 | BON018 | 71 | 58 56.91 N | 170 19.32 W | 60BON | Discard |  |
| 2019-04-27 | 21:17 | 25 | 2 | BON018 | 71 | 58 56.91 N | 170 19.32 W | 20BON | Discard |  |
| 2019-04-27 | 21:17 | 25 | 2 | BON018 | 71 | 58 56.91 N | 170 19.32 W | CAT | CAT |  |
| 2019-04-27 | 21:17 | 25 | 2 | BON018 | 71 | 58 56.91 N | 170 19.32 W | 20BON | QTowF |  |
| 2019-04-27 | 23:23 | 26 | 1 | CTD026 | 73 | 58 37.15 N | 170 16.72 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-27 | 23:44 | 26 | 2 | BON019 | 72 | 58 37.03 N | 170 16.29 W | 60BON | QTowF |  |
| 2019-04-27 | 23:44 | 26 | 2 | BON019 | 72 | 58 37.03 N | 170 16.29 W | 60BON | Discard, RCOUNTZ, ADGEN |  |
| 2019-04-27 | 23:44 | 26 | 2 | BON019 | 72 | 58 37.03 N | 170 16.29 W | 20BON | QTowF |  |
| 2019-04-27 | 23:44 | 26 | 2 | BON019 | 72 | 58 37.03 N | 170 16.29 W | CAT | CAT |  |
| 2019-04-27 | 23:44 | 26 | 2 | BON019 | 72 | 58 37.03 N | 170 16.29 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-28 | 01:53 | 27 | 1 | CTD027 | 72 | 58 16.92 N | 175 5.78 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 02:09 | 27 | 2 | BON020 | 72 | 58 16.9 N | 170 5.27 W | 60BON | Discard |  |
| 2019-04-28 | 02:09 | 27 | 2 | BON020 | 72 | 58 16.9 N | 170 5.27 W | 20BON | QTowF |  |
| 2019-04-28 | 02:09 | 27 | 2 | BON020 | 72 | 58 16.9 N | 170 5.27 W | 20BON | Discard |  |
| 2019-04-28 | 02:09 | 27 | 2 | BON020 | 72 | 58 16.9 N | 170 5.27 W | CAT | CAT |  |
| 2019-04-28 | 02:09 | 27 | 2 | BON020 | 72 | 58 16.9 N | 170 5.27 W | 60BON | QTowF |  |
| 2019-04-28 | 04:10 | 28 | 1 | CTD028 | 71 | 58 2.63 N | 169 40.73 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 04:25 | 28 | 2 | BON021 | 70 | 58 2.71 N | 169 40.23 W | 60BON | QTowF |  |
| 2019-04-28 | 04:25 | 28 | 2 | BON021 | 70 | 58 2.71 N | 169 40.23 W | 60BON | Discard, RCOUNTZ |  |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-28 | 04:25 | 28 | 2 | BON021 | 70 | 58 2.71 N | 169 40.23 W | 20BON | QTowF |  |
| 2019-04-28 | 04:25 | 28 | 2 | BON021 | 70 | 58 2.71 N | 169 40.23 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-28 | 04:25 | 28 | 2 | BON021 | 70 | 58 2.71 N | 169 40.23 W | CAT | CAT |  |
| 2019-04-28 | 06:42 | 29 | 1 | CTD029 | 63 | 57 46.08 N | 169 12.38 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 06:59 | 29 | 2 | BON022 | 63 | 57 46.35 N | 169 12.13 W | 60BON | Discard |  |
| 2019-04-28 | 06:59 | 29 | 2 | BON022 | 63 | 57 46.35 N | 169 12.13 W | 20BON | QTowF |  |
| 2019-04-28 | 06:59 | 29 | 2 | BON022 | 63 | 57 46.35 N | 169 12.13 W | 60BON | QTowF |  |
| 2019-04-28 | 06:59 | 29 | 2 | BON022 | 63 | 57 46.35 N | 169 12.13 W | 20BON | Discard |  |
| 2019-04-28 | 06:59 | 29 | 2 | BON022 | 63 | 57 46.35 N | 169 12.13 W | CAT | CAT |  |
| 2019-04-28 | 08:24 | 30 | 1 | CTD030 | 71 | 57 55.04 N | 168 59.95 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 08:42 | 30 | 2 | BON023 | 71 | 57 55.36 N | 168 59.57 W | 60BON | QTowF |  |
| 2019-04-28 | 08:42 | 30 | 2 | BON023 | 71 | 57 55.36 N | 168 59.57 W | 60BON | Discard |  |
| 2019-04-28 | 08:42 | 30 | 2 | BON023 | 71 | 57 55.36 N | 168 59.57 W | 20BON | QTowF |  |
| 2019-04-28 | 08:42 | 30 | 2 | BON023 | 71 | 57 55.36 N | 168 59.57 W | 20BON | Discard |  |
| 2019-04-28 | 08:42 | 30 | 2 | BON023 | 71 | 57 55.36 N | 168 59.57 W | CAT | CAT |  |
| 2019-04-28 | 09:40 | 31 | 1 | CAL007 | 72 | 57 52.66 N | 168 52.64 W | CALVET | QTowF | Net 2 in 2 jars. Brown phyto. |
| 2019-04-28 | 09:40 | 31 | 1 | CAL007 | 72 | 57 52.66 N | 168 52.64 W | CAT | CAT | Net 2 in 2 jars. Brown phyto. |
| 2019-04-28 | 09:40 | 31 | 1 | CAL007 | 72 | 57 52.66 N | 168 52.64 W | CALVET | QTowF | Net 2 in 2 jars. Brown phyto. |
| 2019-04-28 | 10:08 | 31 | 2 | CAL008 | 72 | 57 53.06 N | 168 52.09 W | CALVET | QTowF | Net 1 and 2 combined. |
| 2019-04-28 | 10:08 | 31 | 2 | CAL008 | 72 | 57 53.06 N | 168 52.09 W | CALVET | QTowF | Net 1 and 2 combined. |
| 2019-04-28 | 10:08 | 31 | 2 | CAL008 | 72 | 57 53.06 N | 168 52.09 W | CAT | CAT | Net 1 and 2 combined. |
| 2019-04-28 | 10:31 | 31 | 3 | CAL009 | 72 | 57 53.1 N | 168 51.85 W | CALVET | QTowF |  |
| 2019-04-28 | 10:31 | 31 | 3 | CAL009 | 72 | 57 53.1 N | 168 51.85 W | CALVET | QTowF |  |
| 2019-04-28 | 10:31 | 31 | 3 | CAL009 | 72 | 57 53.1 N | 168 51.85 W | CAT | CAT |  |
| 2019-04-28 | 10:43 | 31 | 4 | CTD031 | 72 | 57 53.26 N | 168 51.54 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 11:01 | 31 | 5 | BON024 | 72 | 57 53.43 N | 168 50.63 W | 60BON | Discard, RCOUNTZ | 1 6--in jelly and tentacles rinsed and removed from 60Bon Net 1 (RZA net) |
| 2019-04-28 | 11:01 | 31 | 5 | BON024 | 72 | 57 53.43 N | 168 50.63 W | 60BON | QTowF | 1 6--in jelly and tentacles rinsed and removed from 60Bon Net 1 (RZA net) |
| 2019-04-28 | 11:01 | 31 | 5 | BON024 | 72 | 57 53.43 N | 168 50.63 W | 20BON | QTowF | 1 6--in jelly and tentacles rinsed and removed from 60Bon Net 1 (RZA net) |
| 2019-04-28 | 11:01 | 31 | 5 | BON024 | 72 | 57 53.43 N | 168 50.63 W | 20BON | Discard, RCOUNTZ | 1 6--in jelly and tentacles rinsed and removed from 60Bon Net 1 (RZA net) |
| 2019-04-28 | 11:01 | 31 | 5 | BON024 | 72 | 57 53.43 N | 168 50.63 W | CAT | CAT | 1 6--in jelly and tentacles rinsed and removed from 60Bon Net 1 (RZA net) |
| 2019-04-28 | 12:10 | 32 | 1 | CTD032 | 71 | 57 46.08 N | 168 39.52 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 12:26 | 32 | 2 | BON025 | 72 | 57 46.36 N | 168 38.7 W | 60BON | Discard | Lg jelly in 60Bon net 1. Net 2 used for QtowF. 20Bon Net 2 = QtowF. |
| 2019-04-28 | 12:26 | 32 | 2 | BON025 | 72 | 57 46.36 N | 168 38.7 W | 60BON | QTowF | Lg jelly in 60Bon net 1. Net 2 used for QtowF. 20Bon Net 2 = QtowF. |
| 2019-04-28 | 12:26 | 32 | 2 | BON025 | 72 | 57 46.36 N | 168 38.7 W | 20BON | QTowF | Lg jelly in 60Bon net 1. Net 2 used for QtowF. 20Bon Net 2 = QtowF. |
| 2019-04-28 | 12:26 | 32 | 2 | BON025 | 72 | 57 46.36 N | 168 38.7 W | CAT | CAT | Lg jelly in 60Bon net 1. Net 2 used for QtowF. 20Bon Net 2 = QtowF. |
| 2019-04-28 | 12:26 | 32 | 2 | BON025 | 72 | 57 46.36 N | 168 38.7 W | 20BON | Discard | Lg jelly in 60Bon net 1. Net 2 used for QtowF. 20Bon Net 2 = QtowF. |
| 2019-04-28 | 13:44 | 33 | 1 | CTD033 | 72 | 57 36.11 N | 168 41.81 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-28 | 00:00 | 33 | 2 | BON026 | 0 | 0 0.0 S | 0 0.0 W | 60BON |  | FASTCAT BROKEN. |
| 2019-04-28 | 22:37 | 34 | 1 | CTD34 | 72 | 57 36.04 N | 168 42.17 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-28 | 23:02 | 34 | 2 | BON027 | 72 | 57 36.05 N | 168 41.62 W | 60BON | QTowF | Re-do of last cast; advanced the station # due to lapse of time while Fastcat re-terminated. |
| 2019-04-28 | 23:02 | 34 | 2 | BON027 | 72 | 57 36.05 N | 168 41.62 W | 60BON | Discard | Re-do of last cast; advanced the station # due to lapse of time while Fastcat re-terminated. |
| 2019-04-28 | 23:02 | 34 | 2 | BON027 | 72 | 57 36.05 N | 168 41.62 W | 20BON | QTowF | Re-do of last cast; advanced the station # due to lapse of time while Fastcat re-terminated. |
| 2019-04-28 | 23:02 | 34 | 2 | BON027 | 72 | 57 36.05 N | 168 41.62 W | 20BON | Discard | Re-do of last cast; advanced the station # due to lapse of time while Fastcat re-terminated. |
| 2019-04-28 | 23:02 | 34 | 2 | BON027 | 72 | 57 36.05 N | 168 41.62 W | CAT | CAT | Re-do of last cast; advanced the station # due to lapse of time while Fastcat re-terminated. |
| 2019-04-29 | 01:55 | 35 | 1 | CTD35 | 72 | 57 31.53 N | 168 36.55 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 00:21 | 35 | 2 | BON028 | 72 | 57 31.56 N | 168 35.72 W | 20BON | QTowF | Large jellies 60BON Net 2 and 20BON Net 1. RZA skipped due to fouling (jellies & heavy phytoplk.). |
| 2019-04-29 | 00:21 | 35 | 2 | BON028 | 72 | 57 31.56 N | 168 35.72 W | 60BON | QTowF | Large jellies 60BON Net 2 and 20BON Net 1. RZA skipped due to fouling (jellies & heavy phytoplk.). |
| 2019-04-29 | 00:21 | 35 | 2 | BON028 | 72 | 57 31.56 N | 168 35.72 W | 60BON | Discard | Large jellies 60BON Net 2 and 20BON Net 1. RZA skipped due to fouling (jellies & heavy phytoplk.). |
| 2019-04-29 | 00:21 | 35 | 2 | BON028 | 72 | 57 31.56 N | 168 35.72 W | CAT | CAT | Large jellies 60BON Net 2 and 20BON Net 1. RZA skipped due to fouling (jellies & heavy phytoplk.). |
| 2019-04-29 | 00:21 | 35 | 2 | BON028 | 72 | 57 31.56 N | 168 35.72 W | 20BON | Discard | Large jellies 60BON Net 2 and 20BON Net 1. RZA skipped due to fouling (jellies & heavy phytoplk.). |
| 2019-04-29 | 02:14 | 36 | 1 | CTD036 | 72 | 57 29.94 N | 167 59.35 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 02:31 | 36 | 2 | BON029 | 72 | 57 29.85 N | 167 58.69 W | 60BON | QTowF |  |
| 2019-04-29 | 02:31 | 36 | 2 | BON029 | 72 | 57 29.85 N | 167 58.69 W | 60BON | Discard, RCOUNTZ |  |
| 2019-04-29 | 02:31 | 36 | 2 | BON029 | 72 | 57 29.85 N | 167 58.69 W | 20BON | QTowF |  |
| 2019-04-29 | 02:31 | 36 | 2 | BON029 | 72 | 57 29.85 N | 167 58.69 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-29 | 02:31 | 36 | 2 | BON029 | 72 | 57 29.85 N | 167 58.69 W | CAT | CAT |  |
| 2019-04-29 | 03:45 | 37 | 1 | CTD037 | 72 | 57 29.93 N | 167 39.86 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 05:01 | 38 | 1 | CTD038 | 71 | 57 29.89 N | 167 20.69 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 05:18 | 38 | 2 | BON030 | 72 | 57 29.86 N | 167 20.2 W | 20BON | QTowF |  |
| 2019-04-29 | 05:18 | 38 | 2 | BON030 | 72 | 57 29.86 N | 167 20.2 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-29 | 05:18 | 38 | 2 | BON030 | 72 | 57 29.86 N | 167 20.2 W | 60BON | QTowF |  |
| 2019-04-29 | 05:18 | 38 | 2 | BON030 | 72 | 57 29.86 N | 167 20.2 W | 60BON | Discard, RCOUNTZ, ADGEN |  |
| 2019-04-29 | 05:18 | 38 | 2 | BON030 | 72 | 57 29.86 N | 167 20.2 W | CAT | CAT |  |
| 2019-04-29 | 06:30 | 39 | 1 | CTD39 | 70 | 57 31.35 N | 167 2.39 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 07:49 | 40 | 1 | CTD040 | 70 | 57 25.57 N | 166 48.79 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 08:06 | 40 | 2 | BON031 | 70 | 57 25.56 N | 166 48.33 W | 60BON | QTowF | 2 small 3-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-29 | 08:06 | 40 | 2 | BON031 | 70 | 57 25.56 N | 166 48.33 W | 60BON | Discard | 2 small 3-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-29 | 08:06 | 40 | 2 | BON031 | 70 | 57 25.56 N | 166 48.33 W | 20BON | QTowF | 2 small 3-in jellies rinsed and removed from 60Bon net 1. |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-29 | 08:06 | 40 | 2 | BON031 | 70 | 57 25.56 N | 166 48.33 W | CAT | CAT | 2 small 3-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-29 | 08:06 | 40 | 2 | BON031 | 70 | 57 25.56 N | 166 48.33 W | 20BON | Discard | 2 small 3-in jellies rinsed and removed from 60Bon net 1. |
| 2019-04-29 | 09:33 | 41 | 1 | CTD041 | 69 | 57 26.37 N | 166 30.6 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 10:49 | 42 | 1 | CTD042 | 70 | 57 19.27 N | 166 19.13 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 11:05 | 42 | 2 | BON032 | 70 | 57 19.38 N | 166 18.46 W | 60BON | QTowF |  |
| 2019-04-29 | 11:05 | 42 | 2 | BON032 | 70 | 57 19.38 N | 166 18.46 W | 60BON | Discard, RCOUNTZ |  |
| 2019-04-29 | 11:05 | 42 | 2 | BON032 | 70 | 57 19.38 N | 166 18.46 W | 20BON | QTowF |  |
| 2019-04-29 | 11:05 | 42 | 2 | BON032 | 70 | 57 19.38 N | 166 18.46 W | 20BON | Discard, RCOUNTZ |  |
| 2019-04-29 | 11:05 | 42 | 2 | BON032 | 70 | 57 19.38 N | 166 18.46 W | CAT | CAT |  |
| 2019-04-29 | 12:17 | 43 | 1 | CTD43 | 69 | 57 19.44 N | 166 0.42 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 13:28 | 44 | 1 | CTD044 | 70 | 57 15.85 N | 165 44.77 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 13:43 | 44 | 2 | BON033 | 70 | 57 16.03 N | 165 44.13 W | 60BON | QTowF |  |
| 2019-04-29 | 13:43 | 44 | 2 | BON033 | 70 | 57 16.03 N | 165 44.13 W | 20BON | QTowF |  |
| 2019-04-29 | 13:43 | 44 | 2 | BON033 | 70 | 57 16.03 N | 165 44.13 W | 20BON | Discard |  |
| 2019-04-29 | 13:43 | 44 | 2 | BON033 | 70 | 57 16.03 N | 165 44.13 W | 60BON | Discard, ADGEN |  |
| 2019-04-29 | 13:43 | 44 | 2 | BON033 | 70 | 57 16.03 N | 165 44.13 W | CAT | CAT |  |
| 2019-04-29 | 14:54 | 45 | 1 | CTD45 | 71 | 57 6.38 N | 165 36.87 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 16:06 | 46 | 1 | CTD46 | 72 | 56 59.71 N | 165 22.9 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 16:24 | 46 | 2 | BON034 | 73 | 56 59.8 N | 165 22.27 W | 20BON | QTowF | 14 CM DIAM JELLY IN 60BON NET 1 & 2. SEE FLOWMETERS AFFECTED BY TENTACLES. |
| 2019-04-29 | 16:24 | 46 | 2 | BON034 | 73 | 56 59.8 N | 165 22.27 W | 20BON | Discard, RCOUNTZ | 14 CM DIAM JELLY IN 60BON NET 1 & 2. SEE FLOWMETERS AFFECTED BY TENTACLES. |
| 2019-04-29 | 16:24 | 46 | 2 | BON034 | 73 | 56 59.8 N | 165 22.27 W | 60BON | QTowF | 14 CM DIAM JELLY IN 60BON NET 1 & 2. SEE FLOWMETERS AFFECTED BY TENTACLES. |
| 2019-04-29 | 16:24 | 46 | 2 | BON034 | 73 | 56 59.8 N | 165 22.27 W | 60BON | Discard, RCOUNTZ, ADGEN | 14 CM DIAM JELLY IN 60BON NET 1 & 2. SEE FLOWMETERS AFFECTED BY TENTACLES. |
| 2019-04-29 | 16:24 | 46 | 2 | BON034 | 73 | 56 59.8 N | 165 22.27 W | CAT | CAT | 14 CM DIAM JELLY IN 60BON NET 1 & 2. SEE FLOWMETERS AFFECTED BY TENTACLES. |
| 2019-04-29 | 17:52 | 47 | 1 | CTD47 | 74 | 56 51.49 N | 165 7.16 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 19:10 | 48 | 1 | CTD48 | 72 | 56 54.5 N | 164 50.29 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-29 | 19:26 | 48 | 2 | BON035 | 72 | 56 54.66 N | 164 49.84 W | 60BON | QTowF | Two large jellies 60BON Net 2. Heavy phytoplk. fouling in 20BON Net 1 and 2. |
| 2019-04-29 | 19:26 | 48 | 2 | BON035 | 72 | 56 54.66 N | 164 49.84 W | 20BON | QTowF | Two large jellies 60BON Net 2. Heavy phytoplk. fouling in 20BON Net 1 and 2. |
| 2019-04-29 | 19:26 | 48 | 2 | BON035 | 72 | 56 54.66 N | 164 49.84 W | 20BON | Discard | Two large jellies 60BON Net 2. Heavy phytoplk. fouling in 20BON Net 1 and 2. |
| 2019-04-29 | 19:26 | 48 | 2 | BON035 | 72 | 56 54.66 N | 164 49.84 W | 60BON | Discard, ADGEN | Two large jellies 60BON Net 2. Heavy phytoplk. fouling in 20BON Net 1 and 2. |
| **Date (GMT)** | **Time (GMT)** | **Station** | **Haul** | **Alt. Station** | **Depth (m)** | **Latitude** | **Longitude** | **Gear** | **Samples Collected** | **Haul Comments** |
| 2019-04-29 | 19:26 | 48 | 2 | BON035 | 72 | 56 54.66 N | 164 49.84 W | CAT | CAT | Two large jellies 60BON Net 2. Heavy phytoplk. fouling in 20BON Net 1 and 2. |
| 2019-04-29 | 20:39 | 49 | 1 | CTD49 | 74 | 56 48.64 N | 164 35.51 W | CTDB | PAR, CTD, TSG, Chlor, Nut, Fluor |  |
| 2019-04-30 | 19:02 | 51 | 1 | CTD51 | 72 | 56 52.15 N | 164 3.45 W | CTDB | PAR, CTD, Chlor, Nut, Fluor |  |
| 2019-04-30 | 19:18 | 51 | 2 | BON036 | 72 | 56 51.96 N | 164 3.03 W | 60BON | Discard, RCOUNTZ | Re-do of M2 ops to have calvet sampling just before bongo samplling. 12 cm diam jelly in 60BON Net 1. |
| 2019-04-30 | 19:18 | 51 | 2 | BON036 | 72 | 56 51.96 N | 164 3.03 W | 60BON | QTowF | Re-do of M2 ops to have calvet sampling just before bongo samplling. 12 cm diam jelly in 60BON Net 1. |
| 2019-04-30 | 19:18 | 51 | 2 | BON036 | 72 | 56 51.96 N | 164 3.03 W | 20BON | Discard, RCOUNTZ | Re-do of M2 ops to have calvet sampling just before bongo samplling. 12 cm diam jelly in 60BON Net 1. |
| 2019-04-30 | 19:18 | 51 | 2 | BON036 | 72 | 56 51.96 N | 164 3.03 W | 20BON | QTowF | Re-do of M2 ops to have calvet sampling just before bongo samplling. 12 cm diam jelly in 60BON Net 1. |
| 2019-04-30 | 19:18 | 51 | 2 | BON036 | 72 | 56 51.96 N | 164 3.03 W | CAT | CAT | Re-do of M2 ops to have calvet sampling just before bongo samplling. 12 cm diam jelly in 60BON Net 1. |
| 2019-04-30 | 20:15 | 51 | 3 | CTD52 | 72 | 56 51.65 N | 164 2.68 W | CTDB | PAR, CTD, Chlor, Fluor |  |
| 2019-04-30 | 20:43 | 51 | 4 | CAL010 | 73 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 20:43 | 51 | 4 | CAL010 | 73 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 20:43 | 51 | 4 | CAL010 | 73 | 56 51.64 N | 164 2.67 W | CAT | CAT | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:20 | 51 | 5 | CAL011 | 72 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:20 | 51 | 5 | CAL011 | 72 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:20 | 51 | 5 | CAL011 | 72 | 56 51.64 N | 164 2.67 W | CAT | CAT | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:43 | 51 | 6 | CAL012 | 73 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:43 | 51 | 6 | CAL012 | 73 | 56 51.64 N | 164 2.67 W | CALVET | QTowF | Re-do from previous station #12. Heavy phytoplk. fouling. |
| 2019-04-30 | 21:43 | 51 | 6 | CAL012 | 73 | 56 51.64 N | 164 2.67 W | CAT | CAT | Re-do from previous station #12. Heavy phytoplk. fouling. |