GLOBEC CRUISE REPORT
CRUISE HX262 19-27July 2002

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Scientific Purpose:
The purpose of the NE Pacific GLOBEC program is to develop a mechanistic understanding of the response of this marine ecosystem to climate variability. Toward this end the GLOBEC cruises on the Gulf of Alaska shelf will determine the physical-chemical structure, primary production and the distribution and abundance of zooplankton, yoy salmon and other planktivorous fish. These interdisciplinary cruises will occur over a seven-year period and throughout the year so that seasonal and interannual depictions of the oceanography of this shelf will be available. Some of the data will be compared with historical data sets whereas other data sets will be a product of the first systematic sampling effort from this shelf.

The large eddy that was off the end of the Seward Line during the spring of this year appears to have moved south-west and is now almost off the north-east edge of Kodiak Island. Lew Haldorson and Jennifer Boldt fished off of the R/V Pandalus from 19 July to 27 July.

Cruise Objectives:

1. Determine thermohaline, velocity, and nutrient structure of the Gulf of Alaska shelf, emphasizing Seward Line, C. Fairfield Line, Prince William Sound stations, and offshore PWS stations (Table 1). Other lines as time permits.
2. Determine primary production and phytoplankton biomass distribution.
3. Determine the distribution and abundance of zooplankton.
4. Determine the distribution and abundance of seabirds and marine mammals.
5. Determine copepod and euphausiid rates of growth and egg production.
6. Characterize the carbon and nitrogen stable isotope concentrations in zooplankton.
7. Determine the distribution and abundance of microzooplankton.

SAMPLING

DAYTIME ACTIVITIES

1. Occupied the standard hydrographic transects (Table 1) and collected vertical CTD-chlorophyll-PAR profiles.
2. Collected ADCP, sea surface salinity (SSS), temperature (SST) and fluorescence (SSF) using seachest sensors,
3. Collected discrete bottle samples at these stations for nutrients and chlorophyll pigments. Chlorophyll Size Fractionation was done at the whole numbered Seward Line stations and at every other C. Fairfield Line station.
4. Measured Primary Productivity at Stations GAK1, GAK4, GAK9, GAK13, and KIP2.
5. Observed and documented marine mammal and seabird distributions from the bridge.
6. Two CalVet Net cast were done (CalVet cage with four nets was lost after the first two tows) on the Seward Line stations and at selected PWS stations. There were two fine mesh nets (.053mm) and two large mesh nets (.150mm) tows done at each CalVet station..
7. At Seward Line stations GAK1, GAK4, GAK9, GAK13) and KIP2 station Hopcroft performed 3-6 casts with the 10-liter Niskins/Rosette to collect water (from 10-20m) for zooplankton incubations. This was accompanied by two to three ring net tows over the upper 50m.
8. We did deep MOCNESS tows (to 600 m) near the end of the Seward Line at station GAK13 and at station PWS2.

NIGHTTIME ACTIVITIES

1. Hydroacoustic samples and MOCNESS discrete samples were taken along the Seward Line, and at select PWS Stations (see Event Log for details).
2. In addition to the normal .5mm mesh nets, fine mesh nets (.100 mm) were swapped into the MOCNESS at intermittent stations for euphausiid collection

Cruise Chronology:

The July 2002 GLOBEC cruise did not have the feel of a summertime cruise this year – high wind speeds created bumpy seas and the cruise “felt” more like a late spring cruise than typical summertime conditions. The cruise started with a number of problems with the HTI acoustic unit, which had just been returned from the factory before the cruise. Thus, we modified our original plan of starting work on the outside of the Seward Line to keep within easy range of Seward should we need to return to port while the HTI system was being debugged. Thus, we started CTD casts on the inner portion of the Seward Line until about 5:30 local time that evening when the problem was traced down to mislabeled connectors on the amplifier board. We thus broke off CTD sampling and steamed out the line until it became dark enough to begin MOCNESS and acoustic sampling. The nighttime work left us at GAK13 in the morning, where we commenced CTD sampling. The weather deteriorated through the day with winds picking up and seas building. The quad CALVET net frame broke at station GAK12 and the net assembly was lost. It was determined that a critical weld had fatigued in the frame and had likely been on its way to failure for some time – it was unfortunate that it had not been noticed before the final failure. We had spares on board so did not need to return to Seward. Three hours later we terminated CTD sampling due to the weather conditions and retreated to sample in Prince William Sound.

We spent the next day and a half completing our sampling in Prince William Sound, then left the Sound to sample on the Hinchinbrook Entrance Line. Sea state and wind conditions were still marginal, but we were able to sample most of this line for the CTD work. Coyle was quite nervous that he would not get all of the Seward Line stations sampled so we terminated sampling midway through this line to get him onto the Seward Line before dark. The amount of daylight at this time of year is so extensive that Coyle can only comfortably work his acoustics between the hours of approximately 11pm and 5am. We realized at this point that this was probably the only opportunity to sample on the HE line, but had to head to the higher priority Seward Line for the sake of the project. Winds continued to blow up to 20kts for the rest of the trip, and though we did not have to run from the weather again, we were only able to just finish the Seward Line and Cape Fairfield Lines before the end of the trip. . When the wind did go away for a short while, a very thick bank of fog descended of the entire Gulf. Between the winds and fog, Kodiak airport was closed for six continuous days during the course of our cruise. As expected when we left the HE line, we did not have enough time when done with our other sampling to transit back to the HE line and occupy it for the HTI-MOCNESS and last few CTD casts, so we returned to Seward without all intended samples taken

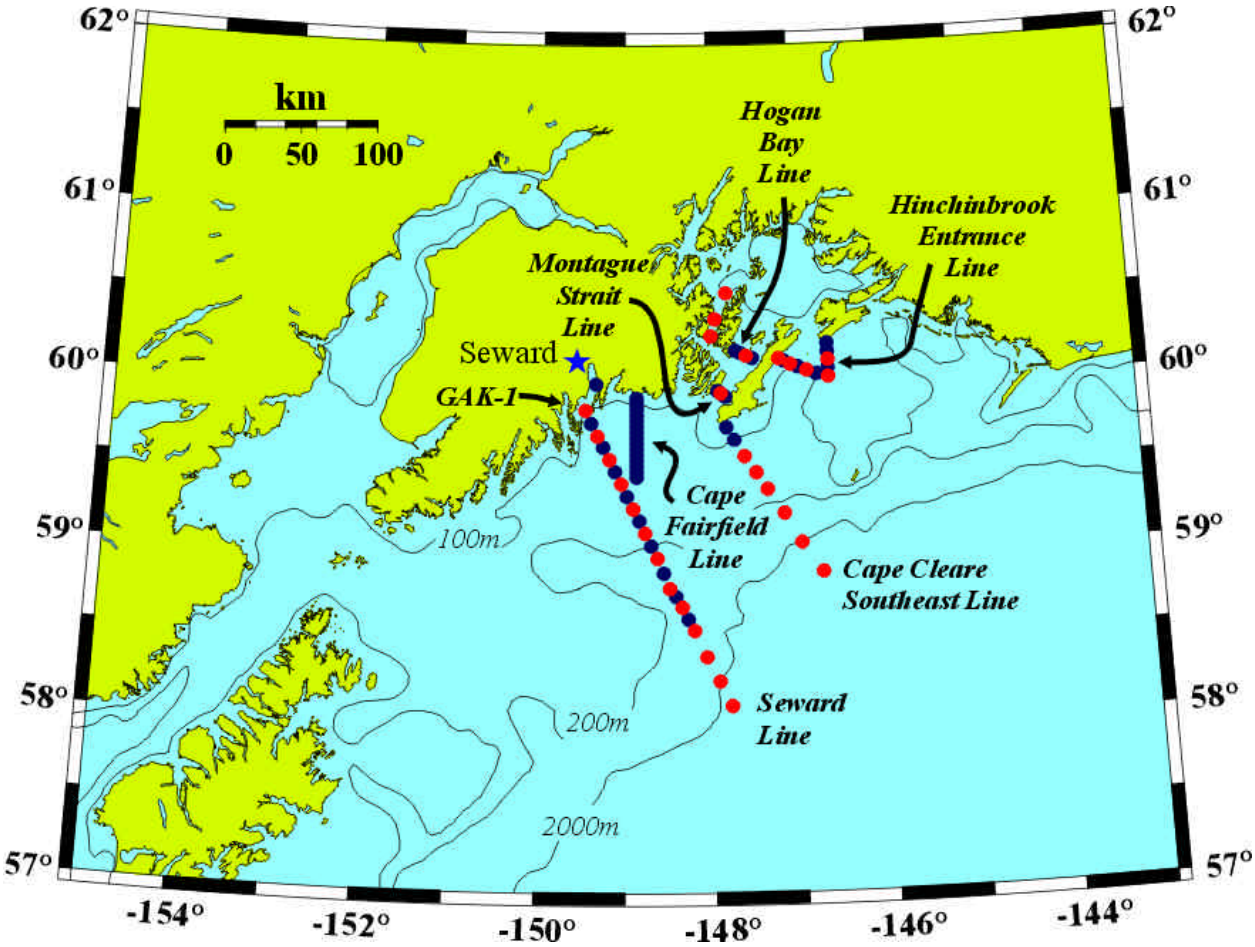
Of interest on this cruise is there were a total of four scientific research vessels occupying the Seward Line during this cruise: the R/V Alpha Helix sampling for the physics and lower trophic levels for the NEP GLOBEC program, the F/V Pandalus fishing for the NEP GLOBEC project, the OCC vessel the R/V Great Pacific, and the Japanese vessel the R/V Oshoro Maru. At one point in time there were actually three research vessels going for the same station – it actually seemed crowded out there. All four vessels were docked in Seward by late on July 27. In addition, we spotted a dead floating (bloated) Stellars sea lion on the Cape Fairfield Line while completing our ADCP transect. We noted the position of the sea lion and took photographs, but we had no permits to sample this animal and had to leave it where it was. We communicated our observation to the sea lion scientists at the Alaska Sea Life Center in Seward when we returned.

Table 1:

NEP GLOBEC LTOP STANDARD STATIONS				
Latitude N (degrees, minutes)		**Longitude W (degrees, minutes)**		**Station Name**
Resurrection Bay Station				
60	1.5	149	21.5	RES2.5
Seward Line				
59	50.7	149	28	GAK1
59	46	149	23.8	GAK1I
59	41.5	149	19.6	GAK2
59	37.6	149	15.5	GAK2I
59	33.2	149	11.3	GAK3
59	28.9	149	7.1	GAK3I
59	24.5	149	2.9	GAK4
59	20.1	148	58.7	GAK4I
59	15.7	148	54.5	GAK5
59	11.4	148	50.3	GAK5I
59	7	148	46.2	GAK6
59	2.7	148	42	GAK6I
58	58.3	148	37.8	GAK7
58	52.9	148	33.6	GAK7I
58	47.5	148	29.4	GAK8
58	44.6	148	25.2	GAK8I
58	40.8	148	21	GAK9
58	36.7	148	16.7	GAK9I
58	32.5	148	12.7	GAK10
58	23.3	148	4.3	GAK11
58	14.6	147	56	GAK12
58	5.9	147	47.6	GAK13
Cape Fairfield Line				
59	54.5	148	52	CF1
59	53	148	52	CF2
59	51	148	52	CF3
59	49	148	52	CF4
59	47	148	52	CF5
59	45	148	52	CF6
59	43	148	52	CF7
59	41	148	52	CF8
59	39	148	52	CF9
59	37	148	52	CF10
59	35	148	52	CF11
59	33	148	52	CF12
59	31	148	52	CF13
59	29	148	52	CF14

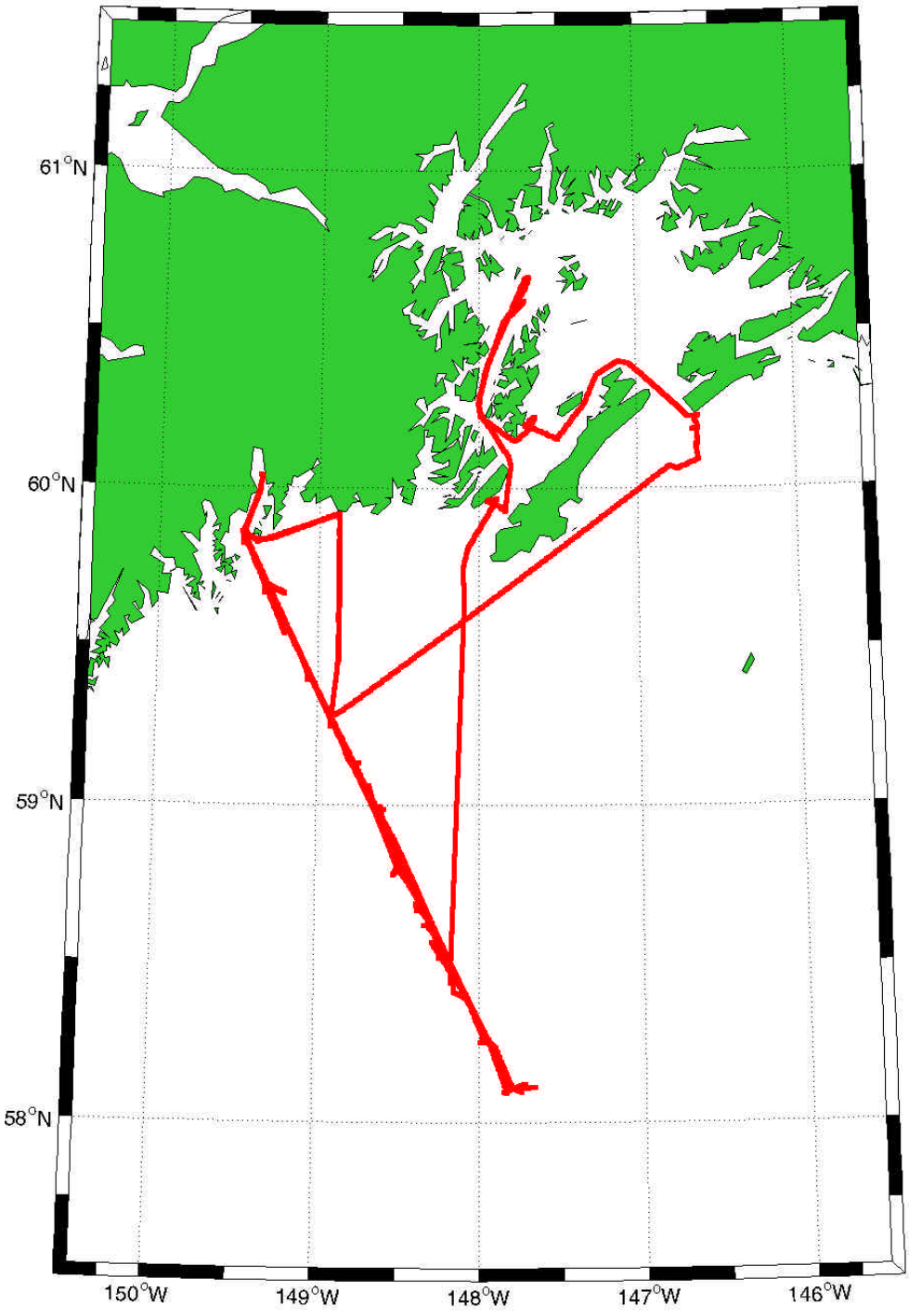
59	27	148	52	CF15
Prince William Sound Stations				
60	22.78	147	56.17	PWS1
60	32.1	147	48.2	PWS2
Knight Island Passage Station				
60	16.7	147	59.2	KIP2
Hogan Bay Line				
60	11.57	147	42	HB1
60	10.754	147	38.5	HB2
60	9.855	147	34.508	HB3
60	8.807	147	30.04	HB4
Montague Strait Line				
59	57.465	147	56.225	MS0i
59	57.257	147	55.602	MS1
59	56.982	147	54.761	MS1i
59	56.6	147	53.7	MS2
59	56.282	147	52.633	MS2i
59	55.9	147	51.4	MS3
59	55.56	147	50.611	MS3i
59	55.2	147	49.7	MS4
Hinchinbrook Entrance Line				
60	13	146	36.5	HE1
60	10.8	146	36.5	HE2
60	7.8	146	36.5	HE3
60	4.8	146	36.5	HE4
60	3.126	146	44.19	HE6.5
60	5.6	146	57.7	HE8
60	6.6	147	3	HE9
60	7.8	147	8	HE10
60	8.6	147	11.5	HE11
Cape Cleare Southeast				
59	44.5	147	49	CCSE1
59	40	147	43.6	CCSE2
59	34.25	147	36.5	CCSE3
59	28.5	147	28.5	CCSE4
59	22.5	147	21	CCSE5
59	14	147	9.5	CCSE6
59	3.5	146	58	CCSE7
58	53	146	44	CCSE8

Table 2. NEP GLOBEC Standard Station Map

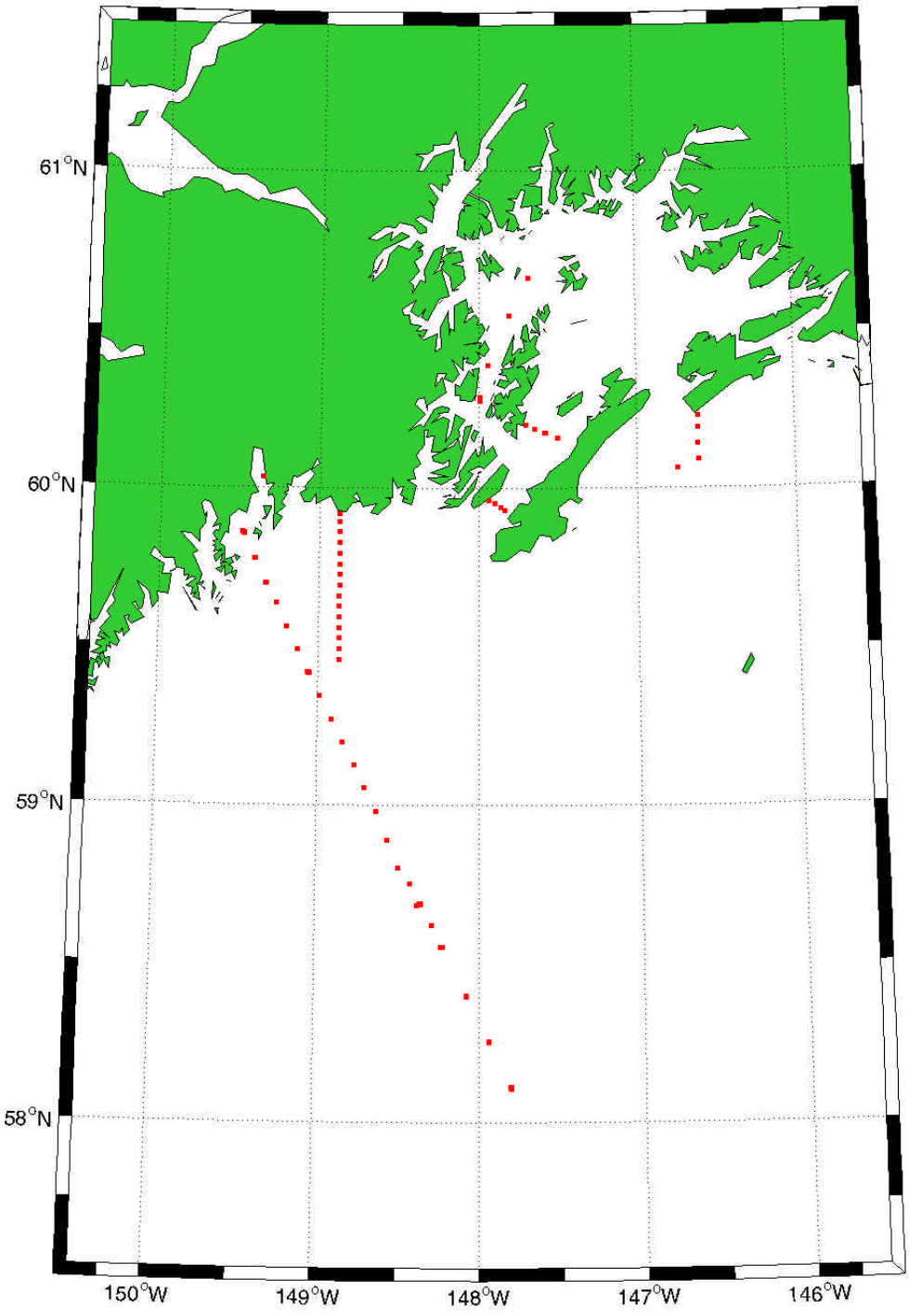


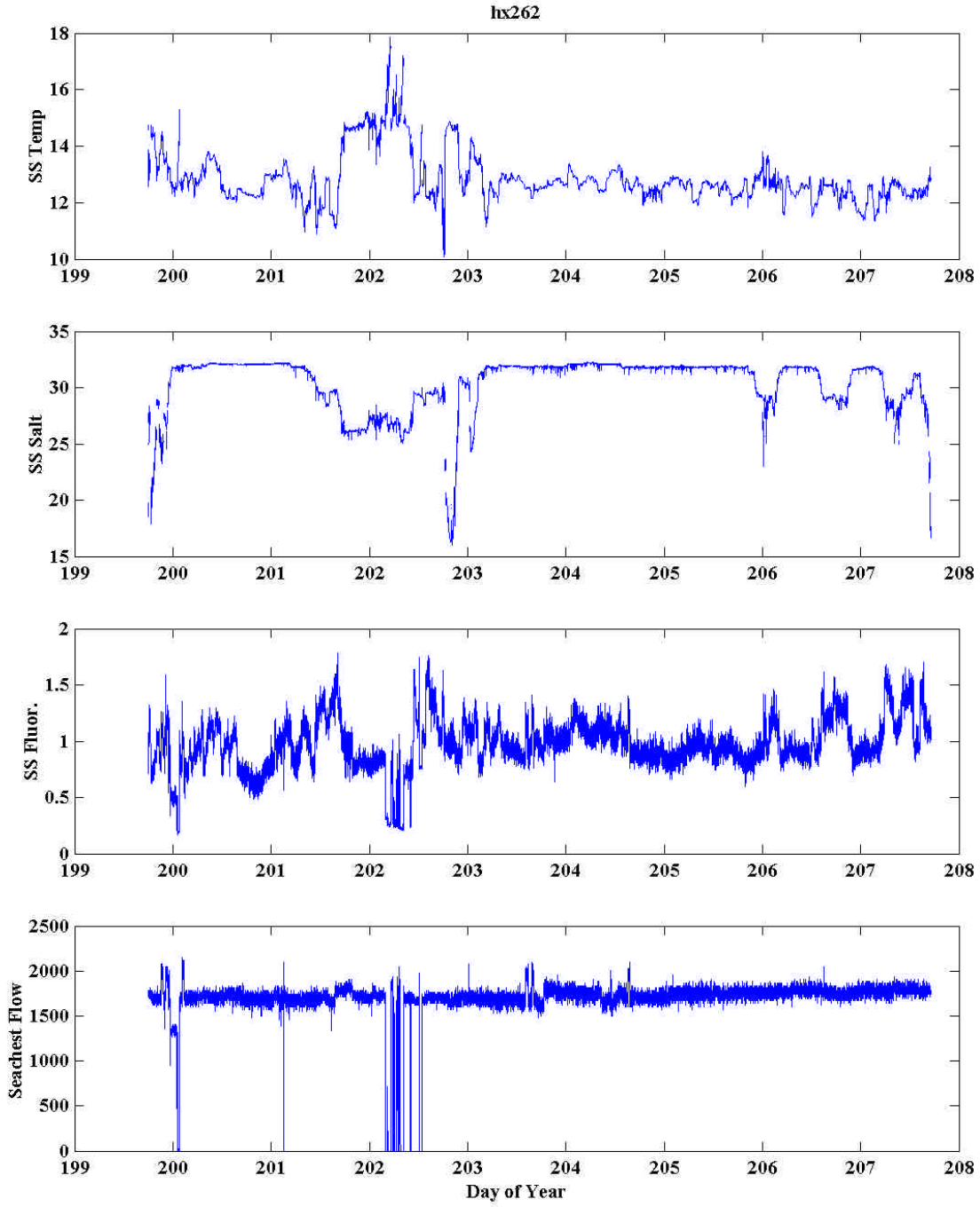
Note: The Cape Cleare Southeast Line is a standard line only in select cruises during the Process Study sampling years.

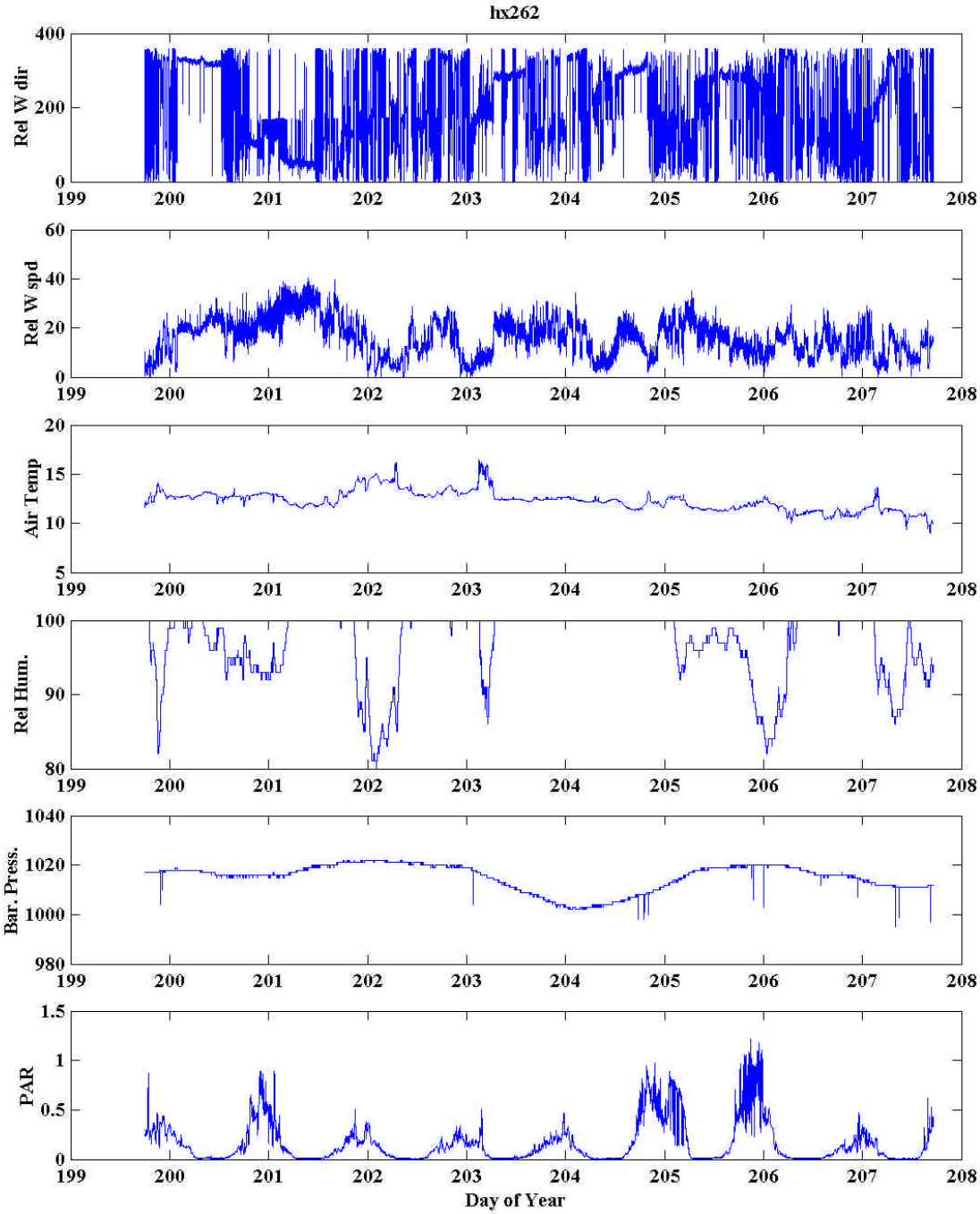
hx262 Cruise Track

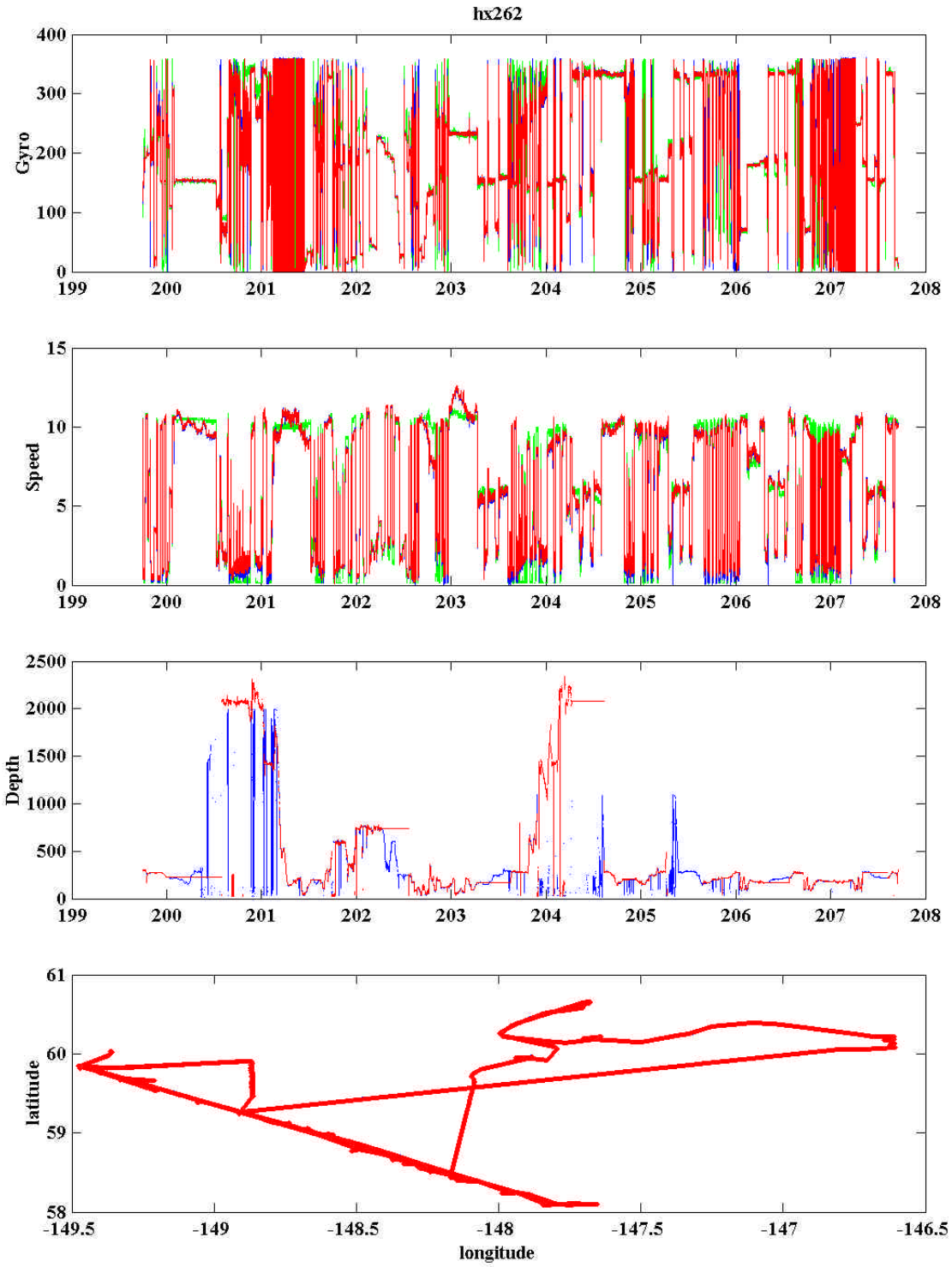


hx262 Station Locations

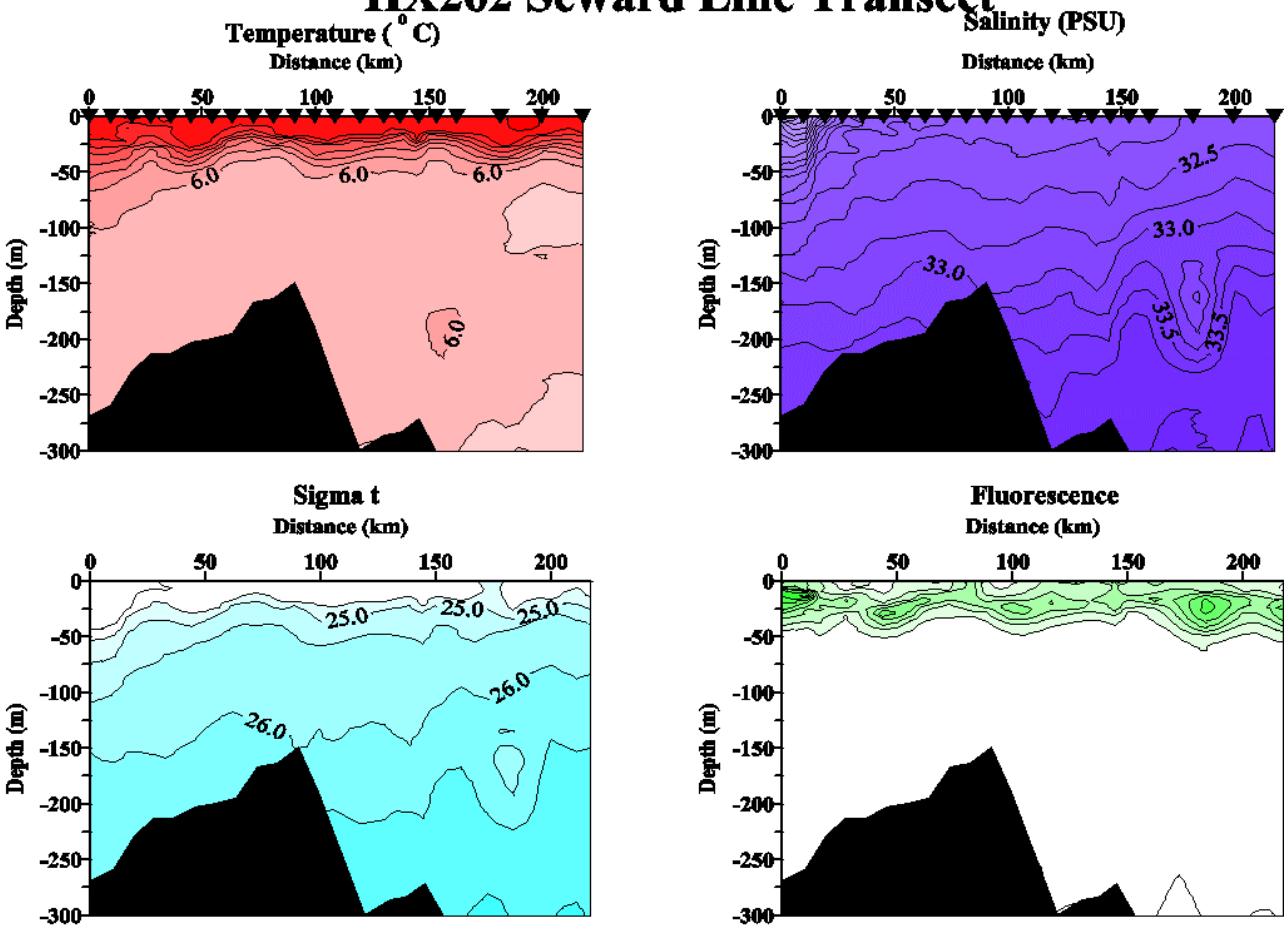



hx262
SS Temp
SS Salt
SS Fluor.
Seachest Flow
Day of Year

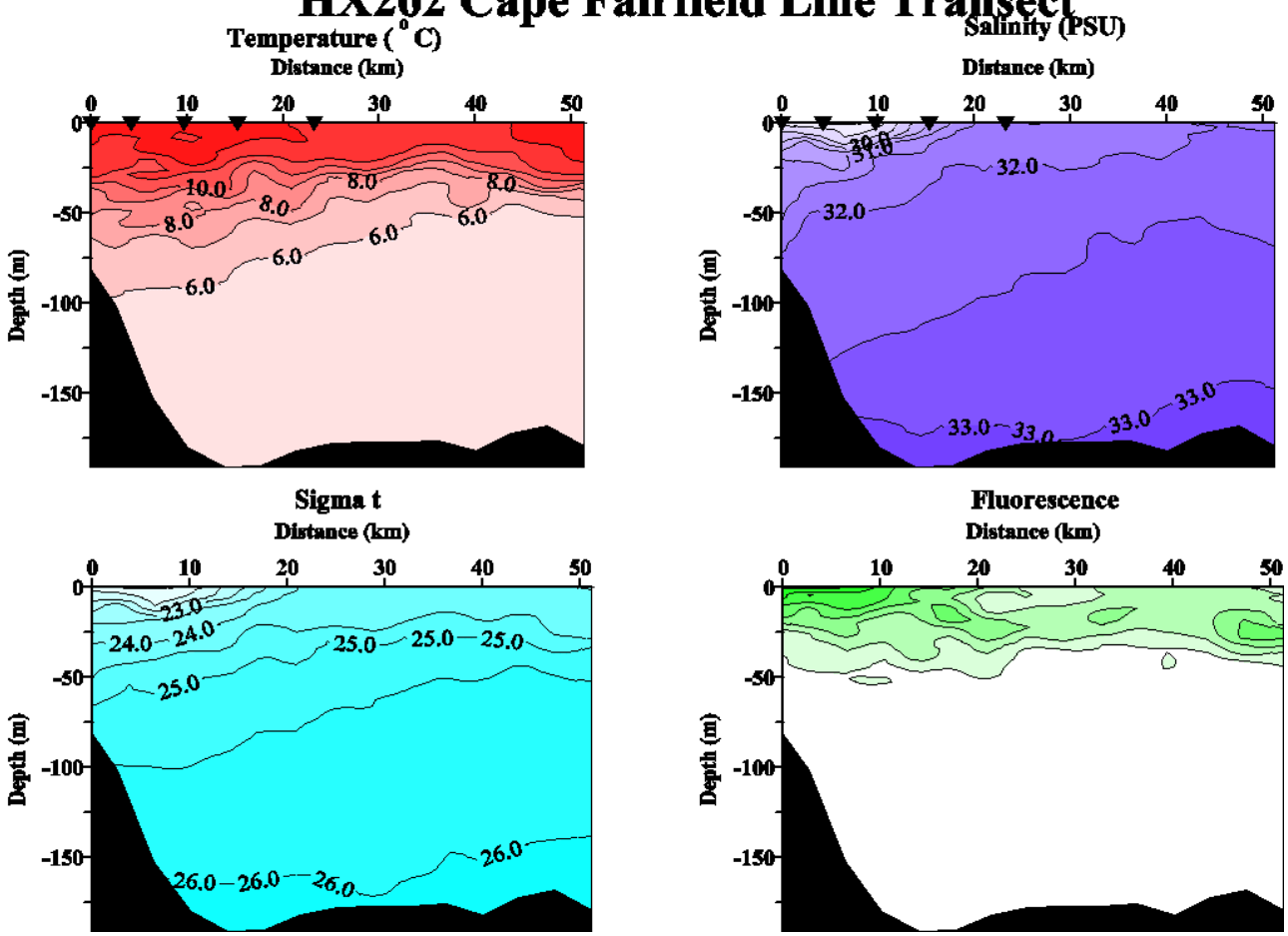

hx262
Rel W dir
Rel W spd
Air Temp
Rel Hum.
Bar. Press.
PAR
Day of Year


hx262
Gyro
Speed
Depth
latitude
longitude

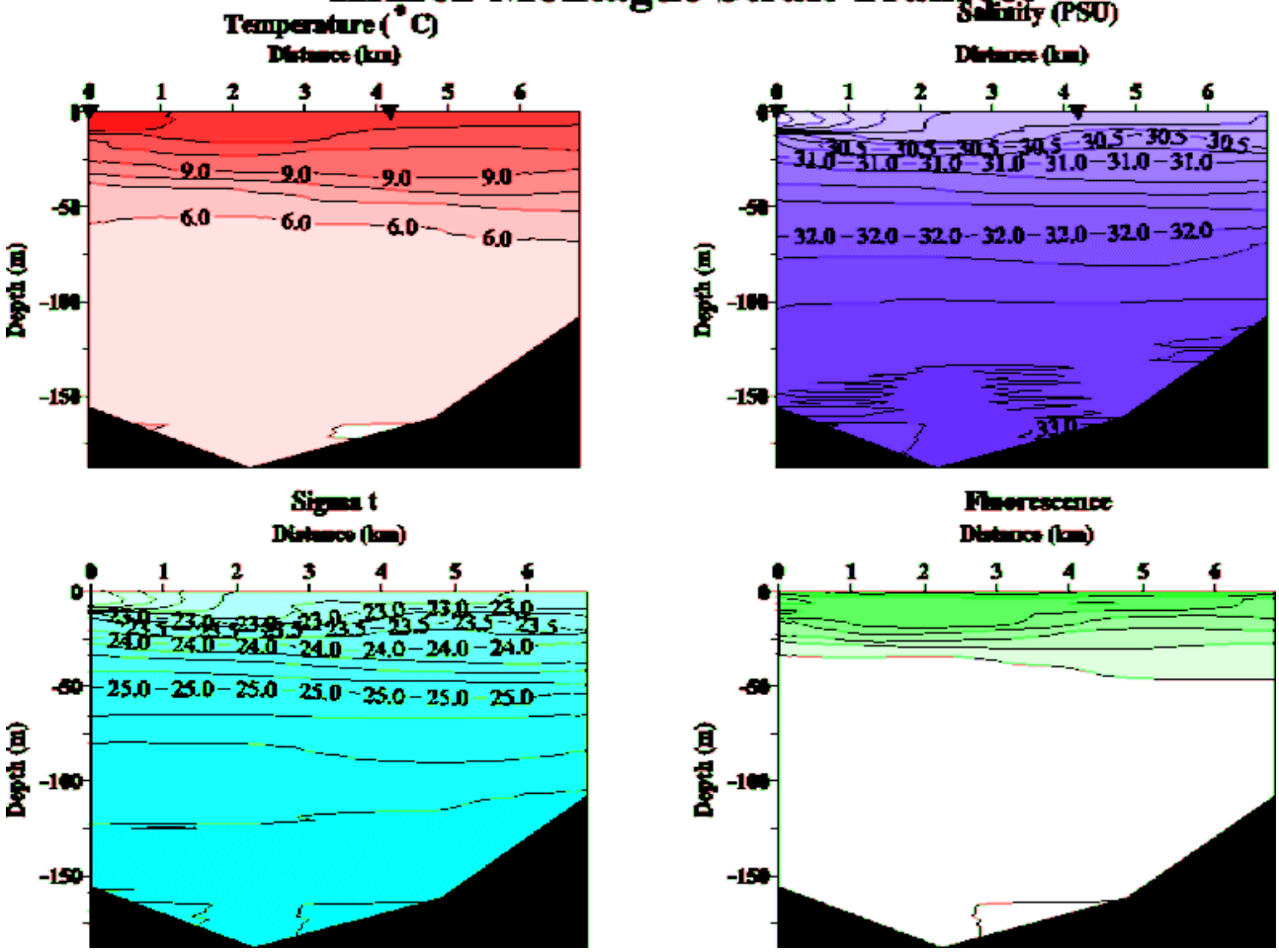
HX262 Seward Line Transect



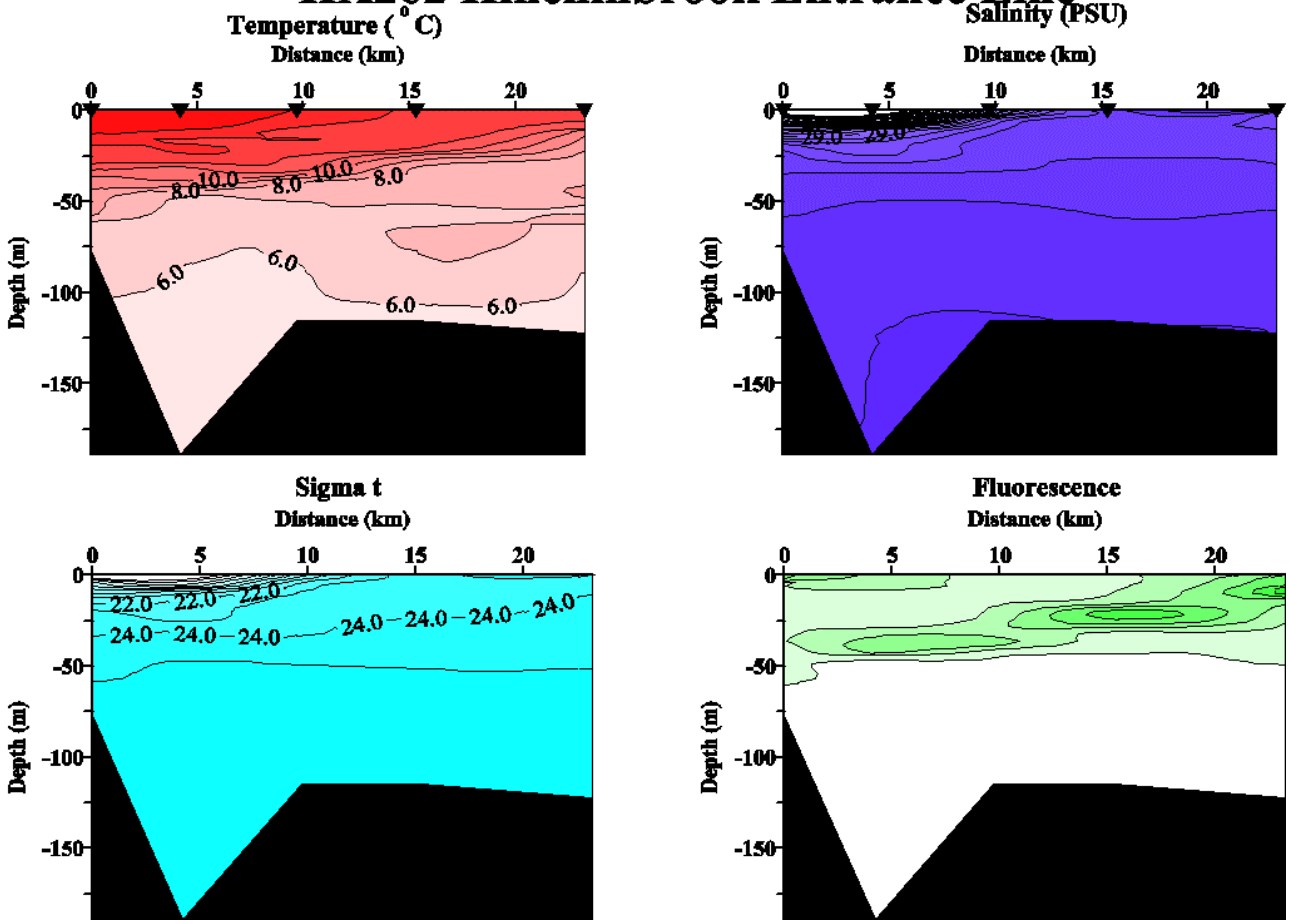
HX262 Cape Fairfield Line Transect



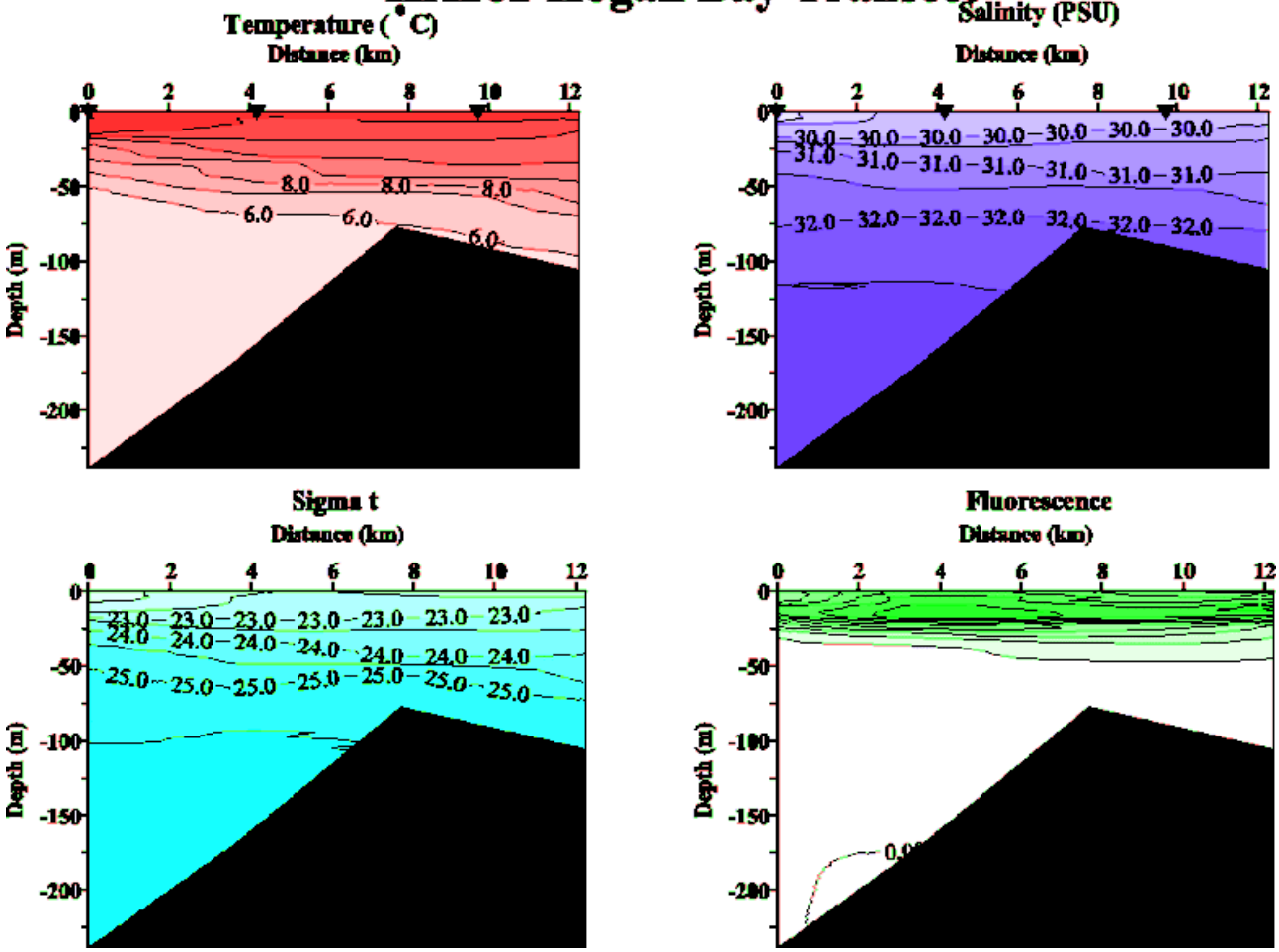
HX262 Montague Strait Transect



HX262 Hinchinbrook Entrance Line



HX262 Hogan Bay Transect



EVENT LOG:

Unless otherwise noted, CTDs were taken for T. Weingartner and T. Royer.
Water samples taken for T. Whitledge and D. Stockwell Nutrient and Chlorophyll analysis.
CalVet samples were taken for K. Coyle and R. Hopcroft.
HTI and MOCNESS samples were taken for K. Coyle.
Ring Net samples were taken for R. Hopcroft and K. Coyle.

Event #	Description	Station	Date	GMT	Latitude	Longitude	Depth	Comments	Scientist
HX26220001.001	CTD1 Start	res2.5	7/19/02	18:47	59.9806	149.3737	295	bottle #4 did not trip	Danielson
HX26220001.002	CTD1 End	res2.5	7/19/02	18:48	59.97963	149.3741	295		Danielson
HX26220001.003	CTD2 Start	gak1	7/19/02	19:58	59.84538	149.4651	295	noise in t2 trace	Danielson
HX26220001.004	CTD2 End	gak1	7/19/02	20:18	59.84372	149.466	295		Danielson
HX26220001.005	CTD3 Start	gak1	7/19/02	20:18	59.84372	149.466	295	recast of ctd2	Danielson
HX26220001.006	CTD3 End	gak1	7/19/02	20:39	59.84215	149.4668	265	noise in t2, Fluorescence traces	Danielson
HX26220001.007	Ring Net Start	gak1	7/19/02	21:41	59.84317	149.4678	265		Hopcroft
HX26220001.008	Ring Net End	gak1	7/19/02	21:47	59.84313	149.4687	265		Hopcroft
HX26220001.009	CTD4 Start	gak1i	7/19/02	22:55	59.76783	149.3964	265		Danielson
HX26220001.010	CTD4 End	gak1i	7/19/02	23:17	59.76633	149.4061	265		Danielson
HX26220001.011	CTD5 Start	gak2	7/19/02	23:52	59.6902	149.3228	226		Danielson
HX26220101.001	CTD5 End	gak2	7/20/02	0:14	59.6886	149.3285	226		Danielson
HX26220101.002	CalVET Net Tow Start	gak2	7/20/02	0:16	59.68825	149.3276	226		Pinchuk
HX26220101.003	CalVET Net Tow End	gak2	7/20/02	0:27	59.68623	149.3307	226		Pinchuk
HX26220101.004	MOCNESS Start	gak13	7/20/02	12:44	58.09675	147.7821	2000		Coyle
HX26220101.005	MOCNESS End	gak13	7/20/02	13:37	58.09357	147.7654	2000		Coyle
HX26220101.006	MOCNESS Start	gak13	7/20/02	14:36	58.10505	147.7549	2000	deep mocness to 600m	Kline
HX26220101.007	MOCNESS End	gak13	7/20/02	15:17	58.11138	147.7184	2000		Kline
HX26220101.008	CalVET Net Tow Start	gak13	7/20/02	15:44	58.09873	147.7949	2066		Hopcroft
HX26220101.009	CalVET Net Tow End	gak13	7/20/02	15:50	58.09977	147.7971	2066		Hopcroft
HX26220101.010	CTD6 Start	gak13	7/20/02	15:54	58.09965	147.7967	2066	aborted - bad PAR reading	Childers
HX26220101.011	CTD6 End	gak13	7/20/02	15:59	na	na	2066		Childers
HX26220101.012	Ring Net Start	gak13	7/20/02	16:06	58.10197	147.7986	2066		Hopcroft
HX26220101.013	Ring Net End	gak13	7/20/02	16:13	58.1031	147.8003	2066		Hopcroft
HX26220101.014	CTD7 Start	gak13	7/20/02	16:42	58.1007	147.7979	2066	prim prod cast	Childers
HX26220101.015	CTD7 End	gak13	7/20/02	16:53	58.1008	147.8008	2066		Childers
HX26220101.016	CTD8 Start	gak13	7/20/02	17:21	58.1015	147.7991	2066	cohorts #1 to 20m	Hopcroft
HX26220101.017	CTD8 End	gak13	7/20/02	17:27	58.10213	147.8013	2066		Hopcroft
HX26220101.018	CTD9 Start	gak13	7/20/02	17:35	58.10287	147.804	2066	cohorts #2 to 20m	Hopcroft
HX26220101.019	CTD9 End	gak13	7/20/02	17:41	58.10263	147.806	2066		Hopcroft
HX26220101.020	CTD10 Start	gak13	7/20/02	17:52	58.09938	147.7959	2066	cohorts #3 to 20m	Hopcroft

HX26220101.021	CTD10 End	gak13	7/20/02	18:00	58.09962	147.7988	2066		Hopcroft
HX26220101.022	CTD11 Start	gak13	7/20/02	18:07	58.09972	147.8016	2066	cohorts #4 to 20m	Hopcroft
HX26220101.023	CTD11 End	gak13	7/20/02	18:13	58.09973	147.8037	2066		Hopcroft
HX26220101.024	CTD12 Start	gak13	7/20/02	18:22	58.09922	147.7978	2066	cohorts #5 to 20m	Hopcroft
HX26220101.025	CTD12 End	gak13	7/20/02	18:28	58.09908	147.8	2066		Hopcroft
HX26220101.026	Ring Net Start	gak13	7/20/02	18:35	58.098	147.7825	2066		Hopcroft
HX26220101.027	Ring Net End	gak13	7/20/02	18:47	58.097	147.792	2066		Hopcroft
HX26220101.028	Ring Net Start	gak13	7/20/02	18:50	58.09647	147.7944	2066		Hopcroft
HX26220101.029	Ring Net End	gak13	7/20/02	18:54	58.09623	147.7958	2066		Hopcroft
HX26220101.030	Ring Net Start	gak13	7/20/02	18:57	58.09607	147.7966	2066		Hopcroft
HX26220101.031	Ring Net End	gak13	7/20/02	19:02	58.0957	147.7984	2066		Hopcroft
HX26220101.032	Ring Net Start	gak13	7/20/02	19:12	58.09488	147.8016	2066		Hopcroft
HX26220101.033	CTD13 Start	gak13	7/20/02	19:18	58.09757	147.7951	2066		Danielson
HX26220101.034	CTD13 End	gak13	7/20/02	21:05	58.0864	147.8405	1923		Danielson
HX26220101.035	CTD14 Start	gak12	7/20/02	22:25	58.24343	147.935	2000		Danielson
HX26220101.036	CTD14 End	gak12	7/20/02	23:50	58.2421	147.9878	2000		Danielson
HX26220201.001	CTD15 Start	gak11	7/21/02	1:18	58.38828	148.0713	1420		Danielson
HX26220201.002	CTD15 End	gak11	7/21/02	2:29	58.3855	148.0848	1420		Danielson
HX26220201.003	MOCNESS Start	ms2	7/21/02	12:33	59.94345	147.8957	192		Coyle
HX26220201.004	MOCNESS End	ms2	7/21/02	13:04	59.95388	147.885	192		Coyle
HX26220201.005	CTD16 Start	ms1	7/21/02	13:30	59.95422	147.9279	164		Danielson
HX26220201.006	CTD16 End	ms1	7/21/02	13:49	59.94835	147.9399	164		Danielson
HX26220201.007	CTD17 Start	ms1	7/21/02	14:01	59.95317	147.9319	164	Recast of CTD16 for 100 m depth sample	Danielson
HX26220201.008	CTD17 End	ms1	7/21/02	14:06	59.95133	147.935	164		Danielson
HX26220201.009	CTD18 Start	ms2	7/21/02	14:22	59.94363	147.8953	191		Danielson
HX26220201.010	CTD18 End	ms2	7/21/02	14:41	59.93873	147.8993	191		Danielson
HX26220201.011	CalVET Net Tow Start	ms2	7/21/02	14:47	59.94304	147.8943	191	.150mm mesh nets	Pinchuk
HX26220201.012	CalVET Net Tow End	ms2	7/21/02	15:03	59.93173	147.8568	191		Pinchuk
HX26220201.013	CTD19 Start	ms3	7/21/02	15:06	59.93225	147.8558	164		Danielson
HX26220201.014	CTD19 End	ms3	7/21/02	15:23	59.92962	147.859	164		Danielson
HX26220201.015	CTD20 Start	ms4	7/21/02	15:35	59.9208	147.8282	110		Danielson
HX26220201.016	CTD20 End	ms4	7/21/02	15:47	59.91863	147.8297	110		Danielson
HX26220201.017	CTD21 Start	kip2	7/21/02	18:10	60.27765	147.9866	588		Danielson
HX26220201.018	CTD21 End	kip2	7/21/02	18:50	60.26952	147.985	588		Danielson
HX26220201.019	CalVET Net Tow Start	kip2	7/21/02	18:58	60.27722	147.9864	588	.150mm mesh nets	Hopcroft
HX26220201.020	CalVET Net Tow Start	kip2	7/21/02	19:04	60.27562	147.9867	588		Hopcroft
HX26220201.021	CTD22 Start	kip2	7/21/02	19:07	60.27547	147.9858	588	prim prod cast	Childers
HX26220201.022	CTD22 End	kip2	7/21/02	19:18	60.27265	147.9849	588		Childers
HX26220201.023	CTD23 Start	kip2	7/21/02	19:50	60.27815	147.9882	588	cohorts #1 to 20m	Hopcroft
HX26220201.024	CTD23 End	kip2	7/21/02	19:55	60.27643	147.9889	588		Hopcroft
HX26220201.025	CTD24 Start	kip2	7/21/02	20:03	60.27415	147.9888	588	cohorts #2 to 20m	Hopcroft
HX26220201.026	CTD24 End	kip2	7/21/02	20:08	60.27265	147.9886	588		Hopcroft
HX26220201.027	CTD25 Start	kip2	7/21/02	20:13	60.27106	147.9883	588	cohorts #3 to 20m	Hopcroft

HX26220201.028	CTD25 End	kip2	7/21/02	20:17	60.26975	147.988	588		Hopcroft
HX26220201.029	CTD26 Start	kip2	7/21/02	20:24	60.26752	147.9877	588	cohorts #4 to 20m	Hopcroft
HX26220201.030	CTD26 End	kip2	7/21/02	20:29	60.26582	147.9873	588		Hopcroft
HX26220201.031	Ring Net start	kip2	7/21/02	20:38	na	na	588		Hopcroft
HX26220201.032	Ring Net End	kip2	7/21/02	20:45	60.27588	147.9869	588		Hopcroft
HX26220201.033	Ring Net Start	kip2	7/21/02	20:50	60.27455	147.9886	588		Hopcroft
HX26220201.034	Ring Net Start	kip2	7/21/02	20:55	na	na	588		Hopcroft
HX26220201.035	Ring Net Start	kip2	7/21/02	20:58	na	na	588		Hopcroft
HX26220201.036	Ring Net End	kip2	7/21/02	21:03	60.27072	147.9929	588		Hopcroft
HX26220201.037	CTD27 Start	PWS1	7/21/02	21:58	60.37998	147.9378	350		Danielson
HX26220201.038	CTD27 End	PWS1	7/21/02	22:25	60.37473	147.9414	350		Danielson
HX26220201.039	CalVET Net Tow Start	PWS1	7/21/02	22:27	60.37377	147.9417	350	.150mm mesh nets	Hopcroft
HX26220201.040	CalVET Net Tow End	PWS1	7/21/02	22:35	60.3718	147.942	350		Hopcroft
HX26220201.041	CTD28 Start	PWS1	7/21/02	22:41	60.37942	147.9383	350	recast of ctd27 for 20,10,0m bottles	Danielson
HX26220201.042	CTD28 End	PWS1	7/21/02	22:48	60.3776	147.9416	350		Danielson
HX26220201.043	CTD29 Start	PWS2	7/21/02	23:56	60.53517	147.8044	735		Danielson
HX26220301.001	CTD29 End	PWS2	7/22/02	0:39	60.52945	147.8091	735		Danielson
HX26220301.002	CalVET Net Tow Start	PWS2	7/22/02	0:41	60.52847	147.8097	735	.150mm mesh nets	Hopcroft
HX26220301.003	CalVET Net Tow End	PWS2	7/22/02	0:47	60.52747	147.8104	735		Hopcroft
HX26220301.004	CTD30 Start	PWS3	7/22/02	1:46	60.6551	147.6806	735		Danielson
HX26220301.005	CTD30 End	PWS3	7/22/02	2:29	60.65172	147.6981	735		Danielson
HX26220301.006	MOCNESS Start	PWS2	7/22/02	3:25	60.53662	147.7961	743	deep mocness to 600m	Hopcroft
HX26220301.007	MOCNESS End	PWS2	7/22/02	4:51	60.57322	147.7207	743		Hopcroft
HX26220301.008	MOCNESS Start	PWS2	7/22/02	6:31	60.52872	147.8131	741		Coyle
HX26220301.009	MOCNESS End	PWS2	7/22/02	7:05	60.51207	147.8383	741		Coyle
HX26220301.010	MOCNESS Start	PWS1	7/22/02	8:01	60.37453	147.9401	347		Coyle
HX26220301.011	MOCNESS End	PWS1	7/22/02	8:31	60.35392	147.955	400		Coyle
HX26220301.012	MOCNESS Start	KIP1	7/22/02	9:02	60.27705	147.9864	590		Coyle
HX26220301.013	MOCNESS End	KIP1	7/22/02	9:33	60.25492	147.9939	597		Coyle
HX26220301.014	MOCNESS Start	HB2	7/22/02	11:01	60.18083	147.6744	260		Coyle
HX26220301.015	MOCNESS End	HB2	7/22/02	11:34	60.19467	147.6609	242		Coyle
HX26220301.016	CTD31 Start	HB1	7/22/02	13:21	60.19233	147.7001	246		Danielson
HX26220301.017	CTD31 End	HB1	7/22/02	13:40	60.18715	147.7038	246		Danielson
HX26220301.018	CTD32 Start	HB2	7/22/02	14:06	60.17875	147.642	171		Danielson
HX26220301.019	CTD32 End	HB2	7/22/02	14:23	60.1774	147.6434	171		Danielson
HX26220301.020	CalVET Net Tow Start	HB2	7/22/02	14:24	60.17783	147.6428	171	.150mm mesh nets	Coyle
HX26220301.021	CalVET Net Tow End	HB2	7/22/02	14:33	60.17835	147.6445	171		Coyle
HX26220301.022	CTD33 Start	HB3	7/22/02	14:50	60.16485	147.5738	80		Danielson
HX26220301.023	CTD33 End	HB3	7/22/02	14:59	60.1642	147.575	80		Danielson
HX26220301.024	CTD34 Start	HB3	7/22/02	15:03	60.16408	147.5762	80	recast ctd33 for all depths	Danielson

HX26220301.025	CTD34 End	HB3	7/22/02	15:11	60.16367	147.5787	80		Danielson
HX26220301.026	CTD35 Start	HB4	7/22/02	15:31	60.1475	147.4996	106		Danielson
HX26220301.027	CTD35 End	HB4	7/22/02	15:42	60.14605	147.5002	106		Danielson
HX26220301.028	CTD36 Start	he1	7/22/02	19:56	60.21643	146.6101	80		Danielson
HX26220301.029	CTD36 End	he1	7/22/02	20:09	60.21313	146.6304	80		Danielson
HX26220301.030	CTD37 Start	he2	7/22/02	20:27	60.17927	146.6086	192		Danielson
HX26220301.031	CTD37 End	he2	7/22/02	20:52	60.17323	146.6429	192		Danielson
HX26220301.032	CalVET Net Tow Start	he2	7/22/02	21:05	60.17897	146.6095	192	.150mm mesh nets	Hopcroft
HX26220301.033	CalVET Net Tow End	he2	7/22/02	21:15	60.17448	146.6199	192		Hopcroft
HX26220301.034	CTD38 Start	he3	7/22/02	21:34	60.12995	146.6091	115		Danielson
HX26220301.035	CTD38 End	he3	7/22/02	21:46	60.12845	146.6222	115		Danielson
HX26220301.036	CTD39 Start	he4	7/22/02	22:08	60.0799	146.6061	115		Danielson
HX26220301.037	CTD39 End	he4	7/22/02	22:19	60.07969	146.6073	115		Danielson
HX26220301.038	CalVET Net Tow Start	he4	7/22/02	22:21	60.07978	146.6067	115	.150mm mesh nets	Hopcroft
HX26220301.039	CalVET Net Tow End	he4	7/22/02	22:31	60.0796	146.6068	115		Hopcroft
HX26220301.040	CTD40 Start	he6.5	7/22/02	22:59	60.05238	146.738	127		Danielson
HX26220301.041	CTD40 End	he6.5	7/22/02	23:09	60.05105	146.7388	127		Danielson
HX26220301.042	CalVET Net Tow Start	he6.5	7/22/02	23:11	60.05093	146.7377	127	.150mm mesh nets	Hopcroft
HX26220301.043	CalVET Net Tow End	he6.5	7/22/02	23:16	60.0505	146.7377	127		Hopcroft
HX26220401.001	HTI Transect Start	gak5	7/23/02	6:41	59.25805	148.9062	167		Coyle
HX26220401.002	HTI Transect End	gak6	7/23/02	na	na	na	na		Coyle
HX26220401.003	MOCNESS Start	gak6	7/23/02	8:32	59.11718	148.7671	152		Coyle
HX26220401.004	MOCNESS End	gak6	7/23/02	9:07	59.12318	148.737	152		Coyle
HX26220401.005	HTI Transect Start	gak6	7/23/02	9:24	59.115	148.7681	152		Coyle
HX26220401.006	HTI Transect End	gak7	7/23/02	11:10	58.97113	148.6292	245		Coyle
HX26220401.007	MOCNESS Start	gak7	7/23/02	11:13	58.97172	148.6251	245		Coyle
HX26220401.008	MOCNESS End	gak7	7/23/02	11:52	58.97777	148.584	245		Coyle
HX26220401.009	HTI Transect Start	gak7	7/23/02	12:14	58.97077	148.6299	245		Coyle
HX26220401.010	HTI Transect End	gak8	7/23/02	14:15	58.79032	148.4881	288		Coyle
HX26220401.011	CTD41 Start	gak8	7/23/02	14:22	58.79248	148.4903	289		Danielson
HX26220401.012	CTD41 End	gak8	7/23/02	14:43	58.79197	148.492	289		Danielson
HX26220401.013	CalVET Net Tow Start	gak8	7/23/02	14:48	58.79242	148.491	289	.150mm mesh	Hopcroft
HX26220401.014	CalVET Net Tow End	gak8	7/23/02	14:57	58.79187	148.4902	289		Hopcroft
HX26220401.015	CTD42 Start	gak8	7/23/02	14:59	na	na	289	surface water cast	Danielson
HX26220401.016	CTD42 End	gak8	7/23/02	15:00	na	na	289		Danielson
HX26220401.017	CalVET Net Tow	gak8	7/23/02	15:03	na	na	289	.053mm mesh	Hopcroft

HX26220401.018	Start CalVET Net Tow End	gak8	7/23/02	15:09	58.7923	148.4898	289		Hopcroft
HX26220401.019	CTD43 Start	gak8i	7/23/02	15:35	58.743	148.4183	289		Danielson
HX26220401.020	CTD43 End	gak8i	7/23/02	15:54	58.74177	148.4222	289		Danielson
HX26220401.021	CalVET Net Tow Start	gak9	7/23/02	16:26	58.67835	148.3491	275	.053mm mesh	Hopcroft
HX26220401.022	CalVET Net Tow End	gak9	7/23/02	16:31	58.67823	148.3504	275		Hopcroft
HX26220401.023	CTD44 Start	gak9	7/23/02	16:36	58.67727	148.3499	275		Danielson
HX26220401.024	CTD44 End	gak9	7/23/02	16:53	58.67435	148.3558	275		Danielson
HX26220401.025	CalVET Net Tow Start	gak9	7/23/02	16:56	58.67435	148.3553	275	.150mm mesh	Hopcroft
HX26220401.026	CalVETNet Tow End	gak9	7/23/02	17:04	58.67322	148.3578	275		Hopcroft
HX26220401.027	CTD45 Start	gak9	7/23/02	17:12	58.67833	148.3488	275	prim prod cast	Childers
HX26220401.028	CTD45 End	gak9	7/23/02	17:21	58.677	148.353	275		Childers
HX26220401.029	Ring Net Start	gak9	7/23/02	17:30	58.6755	148.3585	275		Hopcroft
HX26220401.030	Ring Net End	gak9	7/23/02	17:41	58.6745	148.3644	275		Hopcroft
HX26220401.031	Ring Net Start	gak9	7/23/02	17:42	58.67439	148.3651	275		Hopcroft
HX26220401.032	Ring Net End	gak9	7/23/02	17:59	58.67977	148.354	275		Hopcroft
HX26220401.033	CTD46 Start	gak9	7/23/02	18:00	58.67958	148.3546	275	cohorts #1	Hopcroft
HX26220401.034	CTD46 End	gak9	7/23/02	18:04	58.67902	148.3576	275		Hopcroft
HX26220401.035	CTD47 Start	gak9	7/23/02	18:13	58.67705	148.3659	275	cohorts #2	Hopcroft
HX26220401.036	CTD47 End	gak9	7/23/02	18:19	58.67652	148.3684	275		Hopcroft
HX26220401.037	CTD48 Start	gak9	7/23/02	18:22	58.67605	148.3707	275	cohorts #3	Hopcroft
HX26220401.038	CTD48 End	gak9	7/23/02	18:28	58.67508	148.3751	275		Hopcroft
HX26220401.039	CTD49 Start	gak9	7/23/02	18:41	58.68102	148.3512	275	cohorts #4	Hopcroft
HX26220401.040	CTD49 End	gak9	7/23/02	18:47	58.68128	148.3558	275		Hopcroft
HX26220401.041	Ring Net Start	gak9	7/23/02	18:53	58.6808	148.3624	275		Hopcroft
HX26220401.042	Ring Net End	gak9	7/23/02	19:01	58.68065	148.3695	275		Hopcroft
HX26220401.043	Ring Net Start	gak9	7/23/02	19:02	58.68067	148.3703	275		Hopcroft
HX26220401.044	Ring Net End	gak9	7/23/02	19:14	58.68078	148.3723	275		Hopcroft
HX26220401.045	CTD50 Start	gak9i	7/23/02	19:50	58.61325	148.282	657		Danielson
HX26220401.046	CTD50 End	gak9i	7/23/02	20:37	58.61272	148.3312	657	lost ctd comms - abort	Danielson
HX26220401.047	CTD51 Start	gak9i	7/23/02	21:01	58.61223	148.2809	657	recast of CTD50 for upper 10 bottles of ctd50	Danielson
HX26220401.048	CTD51 End	gak9i	7/23/02	21:23	58.61338	148.3042	657		Danielson
HX26220401.049	CalVET Net Tow Start	gak10	7/23/02	22:08	58.54237	148.216	1440		Hopcroft
HX26220401.050	CalVET Net Tow End	gak10	7/23/02	22:14	58.54357	148.2231	1440		Hopcroft
HX26220401.051	CTD52 Start	gak10	7/23/02	22:17	58.5437	148.2257	1440	Cast for surface water	Danielson
HX26220401.052	CTD52 End	gak10	7/23/02	22:21	58.54424	148.2296	1440		Danielson
HX26220401.053	CalVET Net Tow Start	gak10	7/23/02	22:26	58.54595	148.2336	1440	.053mm mesh nets	Hopcroft

HX26220401.054	CalVET Net Tow End	gak10	7/23/02	22:33	58.54772	148.2413	1440		Hopcroft
HX26220401.055	CTD53 Start	gak10	7/23/02	22:45	58.54267	148.2127	1440		Danielson
HX26220501.001	CTD53 End	gak10	7/24/02	0:14	58.5597	148.2833	1440		Danielson
HX26220501.002	CalVET Net Tow Start	gak11	7/24/02	1:54	58.3891	148.0728	1421	.150mm mesh	Coyle
HX26220501.003	CalVET Net Tow End	gak11	7/24/02	2:01	58.39108	148.0733	1421		Coyle
HX26220501.004	CTD54 Start	gak11	7/24/02	2:03	58.39158	148.0733	1421	100m cast	Danielson
HX26220501.005	CTD54 End	gak11	7/24/02	2:11	58.39247	148.0746	1421		Danielson
HX26220501.006	CalVET Net Tow Start	gak11	7/24/02	2:14	58.39308	148.0755	1412	.053mm mesh nets	Coyle
HX26220501.007	CalVET Net Tow End	gak11	7/24/02	2:19	58.39417	148.0756	1412		Coyle
HX26220501.008	CalVET Net Tow Start	gak12	7/24/02	3:29	58.24397	147.9341	2169	.053mm mesh nets	Coyle
HX26220501.009	CalVET Net Tow End	gak12	7/24/02	3:34	58.24545	147.9345	2169		Coyle
HX26220501.010	CTD55 Start	gak12	7/24/02	3:37	58.24612	147.9351	2169	100m cast	Danielson
HX26220501.011	CTD55 End	gak12	7/24/02	3:45	58.24855	147.9367	2169		Danielson
HX26220501.012	CalVET Net Tow Start	gak12	7/24/02	3:48	58.25002	147.9372	2169	.150mm mesh nets	Coyle
HX26220501.013	CalVET Net Tow End	gak12	7/24/02	3:53	58.25191	147.9363	2169		Coyle
HX26220501.014	HTI Transect Start	gak13	7/24/02	6:35	58.10008	147.7938	2234		Coyle
HX26220501.015	HTI Transect End	gak12	7/24/02	8:25	58.24333	147.9348	2169		Coyle
HX26220501.016	MOCNESS Start	gak12	7/24/02	8:28	58.24102	147.9311	2169		Coyle
HX26220501.017	MOCNESS End	gak12	7/24/02	9:10	58.22615	147.8934	2169		Coyle
HX26220501.018	HTI Transect Start	gak12	7/24/02	9:33	58.24428	147.9347	2169		Coyle
HX26220501.019	HTI Transect End	gak11	7/24/02	11:14	58.38872	148.0719	1412		Coyle
HX26220501.020	MOCNESS Start	gak11	7/24/02	11:18	58.38671	148.0715	1412		Coyle
HX26220501.021	MOCNESS End	gak11	7/24/02	11:57	58.37203	148.0616	1412		Coyle
HX26220501.022	HTI Transect Start	gak11	7/24/02	12:12	58.39058	148.0734	1412		Coyle
HX26220501.023	HTI Transect End	gak10	7/24/02	13:53	58.54217	148.2121	1440		Coyle
HX26220501.024	CTD56 Start	gak4	7/24/02	19:51	59.40842	149.0488	200	prim prod cast	Childers
HX26220501.025	CTD56 End	gak4	7/24/02	19:59	59.40937	149.0533	200		Childers
HX26220501.026	Ring Net Start	gak4	7/24/02	20:07	59.41092	149.0583	200		Hopcroft
HX26220501.027	Ring Net End	gak4	7/24/02	20:12	59.41102	149.0588	200		Hopcroft
HX26220501.028	Ring Net Start	gak4	7/24/02	20:10	na	na	200		Hopcroft
HX26220501.029	Ring Net End	gak4	7/24/02	20:15	na	na	200		Hopcroft
HX26220501.030	CTD57 Start	gak4	7/24/02	20:31	59.40792	149.0462	200	cohorts #1	Hopcroft
HX26220501.031	CTD57 End	gak4	7/24/02	20:37	59.40832	149.0478	200		Hopcroft
HX26220501.032	CTD58 Start	gak4	7/24/02	20:42	59.40913	149.0503	200	cohorts #2	Hopcroft
HX26220501.033	CTD58 End	gak4	7/24/02	20:47	59.40988	149.0523	200		Hopcroft

HX26220501.034	CTD59 Start	gak4	7/24/02	20:53	59.41087	149.0546	200	cohorts #3	Hopcroft
HX26220501.035	CTD59 End	gak4	7/24/02	20:58	59.41179	149.0566	200		Hopcroft
HX26220501.036	Ring Net Start	gak4	7/24/02	21:15	59.4091	149.0528	200		Hopcroft
HX26220501.037	Ring Net End	gak4	7/24/02	21:21	59.41025	149.0565	200		Hopcroft
HX26220501.038	CTD60 Start	gak4	7/24/02	21:24	59.41027	149.0565	200		Danielson
HX26220501.039	CTD60 End	gak4	7/24/02	21:43	59.41408	149.0605	200		Danielson
HX26220501.040	CalVET Net Tow Start	gak4	7/24/02	22:05	59.40932	149.0508	200	.053mm mesh nets	Hopcroft
HX26220501.041	CalVET Net Tow End	gak4	7/24/02	22:11	59.4106	149.0517	200		Hopcroft
HX26220501.042	CalVET Net Tow Start	gak4	7/24/02	22:17	59.41182	149.053	200	.150mm mesh nets	Hopcroft
HX26220501.043	CalVET Net Tow End	gak4	7/24/02	22:22	59.4128	149.0542	200		Hopcroft
HX26220601.001	CalVET Net Tow Start	gak6	7/25/02	0:29	59.11705	148.7705	150	.150mm mesh nets	Hopcroft
HX26220601.002	CalVET Net Tow End	gak6	7/25/02	0:34	59.11733	148.7675	150		Hopcroft
HX26220601.003	CTD61 Start	gak6	7/25/02	0:37	59.11773	148.7648	150		Danielson
HX26220601.004	CTD61 End	gak6	7/25/02	0:52	59.11982	148.7572	150		Danielson
HX26220601.005	CalVET Net Tow Start	gak6	7/25/02	0:55	59.11935	148.7563	150	.053mm mesh nets	Hopcroft
HX26220601.006	CalVET Net Tow End	gak6	7/25/02	1:00	59.1195	148.7533	150		Hopcroft
HX26220601.007	CTD62 Start	gak6i	7/25/02	1:33	59.04562	148.6994	188		Danielson
HX26220601.008	CTD62 End	gak6i	7/25/02	1:50	59.0469	148.6945	188		Danielson
HX26220601.009	CTD63 Start	gak7	7/25/02	2:40	58.97145	148.6277	242		Danielson
HX26220601.010	CTD63 End	gak7	7/25/02	2:55	58.97297	148.6237	242		Danielson
HX26220601.011	CalVET Net Tow Start	gak7	7/25/02	2:58	58.97328	148.6229	242	.053mm mesh nets	Hopcroft
HX26220601.012	CalVET Net Tow End	gak7	7/25/02	3:03	58.97293	148.621	242		Hopcroft
HX26220601.013	CalVET Net Tow Start	gak7	7/25/02	3:10	58.97277	148.6167	242	.150mm mesh nets	Hopcroft
HX26220601.014	CalVET Net Tow End	gak7	7/25/02	3:16	58.97245	148.6141	242		Hopcroft
HX26220601.015	CTD64 Start	gak7i	7/25/02	4:07	58.88162	148.5576	302		Danielson
HX26220601.016	CTD64 End	gak7i	7/25/02	4:26	58.88433	148.5492	259		Danielson
HX26220601.017	MOCNESS Start	gak10	7/25/02	7:14	58.53182	148.2196	1440		Coyle
HX26220601.018	MOCNESS End	gak10	7/25/02	7:46	58.51107	148.2386	1440		Coyle
HX26220601.019	HTI Transect Start	gak10	7/25/02	8:15	58.54182	148.212	1440		Coyle
HX26220601.020	HTI Transect End	gak9	7/25/02	9:51	58.67982	148.3523	280		Coyle
HX26220601.021	MOCNESS Start	gak9	7/25/02	9:53	58.67862	148.3535	280		Coyle
HX26220601.022	MOCNESS End	gak9	7/25/02	10:30	58.66096	148.3704	280		Coyle
HX26220601.023	HTI Transect Start	gak9	7/25/02	10:53	58.68185	148.3514	280		Coyle
HX26220601.024	HTI Transect End	gak8	7/25/02	12:55	58.7746	148.5163	280		Coyle
HX26220601.025	MOCNESS Start	gak8	7/25/02	12:55	58.77445	148.5165	280		Coyle

HX26220601.026	MOCNESS End	gak8	7/25/02	na	na	na	280		Coyle
HX26220601.027	CTD65 Start	gak5i	7/25/02	16:06	59.19018	148.8356	166		Danielson
HX26220601.028	CTD65 End	gak5i	7/25/02	na	na	na	166		Danielson
HX26220601.029	CalVET Net Tow Start	gak5	7/25/02	16:55	59.26163	148.9088	166	.150mm mesh nets	Hopcroft
HX26220601.030	CalVET Net Tow End	gak5	7/25/02	17:03	59.26055	148.9084	166		Hopcroft
HX26220601.031	CTD66 Start	gak5	7/25/02	17:04	59.26053	148.9084	166		Danielson
HX26220601.032	CTD66 End	gak5	7/25/02	17:17	59.2598	148.9064	166		Danielson
HX26220601.033	CalVET Net Tow Start	gak5	7/25/02	17:20	59.25887	148.9061	166	.053mm mesh nets	Hopcroft
HX26220601.034	CalVET Net Tow End	gak5	7/25/02	17:26	59.25838	148.9049	166		Hopcroft
HX26220601.035	CTD67 Start	gak4i	7/25/02	18:03	59.33458	148.9805	197		Danielson
HX26220601.036	CTD67 End	gak4i	7/25/02	18:20	59.33529	148.9788	197		Danielson
HX26220601.037	CTD68 Start	gak4	7/25/02	18:55	59.40685	149.0498	200		Danielson
HX26220601.038	CTD68 End	gak4	7/25/02	19:06	59.40703	149.0512	200		Danielson
HX26220601.039	CTD69 Start	gak3i	7/25/02	19:45	59.48098	149.1219	205		Danielson
HX26220601.040	CTD69 End	gak3i	7/25/02	20:02	59.48138	149.1243	205		Danielson
HX26220601.041	CalVET Net Tow Start	gak3	7/25/02	20:34	59.55355	149.1906	215	.053mm mesh nets	Hopcroft
HX26220601.042	CalVET Net Tow End	gak3	7/25/02	20:41	59.55422	149.1921	215		Hopcroft
HX26220601.043	CTD70 Start	gak3	7/25/02	20:45	59.55397	149.194	215		Danielson
HX26220601.044	CTD70 End	gak3	7/25/02	21:03	59.55632	149.1999	215		Danielson
HX26220601.045	CalVET Net Tow Start	gak3	7/25/02	21:06	59.55585	149.2007	215	.150mm mesh nets	Hopcroft
HX26220601.046	CalVET Net Tow End	gak3	7/25/02	21:13	na	na	215		Hopcroft
HX26220601.047	CTD71 Start	gak2i	7/25/02	21:46	59.62655	149.2594	214		Danielson
HX26220601.048	CTD71 End	gak2i	7/25/02	22:03	59.62813	149.2631	214		Danielson
HX26220601.049	CTD72 Start	gak2	7/25/02	22:33	59.6894	149.3286	227		Danielson
HX26220601.050	CTD72 End	gak2	7/25/02	22:49	59.6884	149.3304	227		Danielson
HX26220601.051	CTD73 Start	gak1i	7/25/02	23:28	59.76623	149.3945	263		Danielson
HX26220601.052	CTD73 End	gak1i	7/25/02	23:45	59.76708	149.3971	263		Danielson
HX26220701.001	CalVET Net Tow Start	gak1	7/26/02	0:19	59.84482	149.468	273	.150mm mesh nets	Hopcroft
HX26220701.002	CalVET Net Tow End	gak1	7/26/02	0:25	59.84587	149.4668	273		Hopcroft
HX26220701.003	CTD74 Start	gak1	7/26/02	0:28	59.84562	149.4659	273		Danielson
HX26220701.004	CTD74 End	gak1	7/26/02	0:44	59.8472	149.4647	273		Danielson
HX26220701.005	CalVET Net Tow Start	gak1	7/26/02	0:49	59.84738	149.4626	273	.053mm mesh nets	Hopcroft
HX26220701.006	CalVET Net Tow End	gak1	7/26/02	0:54	59.8484	149.4607	273		Hopcroft
HX26220701.007	ADCP Line Start	cf1	7/26/02	2:49	59.90722	148.8667	85		Danielson
HX26220701.008	ADCP Line End	cf15	7/26/02	6:20	59.4224	148.8735	185		Danielson
HX26220701.009	MOCNESS Start	gak5	7/26/02	7:23	59.25723	148.9088	170		Coyle
HX26220701.010	MOCNESS End	gak5	7/26/02	8:09	59.27322	148.9022	170		Coyle
HX26220701.011	HTI Transect	gak5	7/26/02	8:20	59.26263	148.9097	170		Coyle

HX26220701.012	HTI Transect Start End	gak4	7/26/02	9:49	59.40888	149.0504	202		Coyle
HX26220701.013	MOCNESS Start	gak4	7/26/02	9:52	59.40675	149.0516	202		Coyle
HX26220701.014	MOCNESS End	gak4	7/26/02	10:29	59.38785	149.0598	202		Coyle
HX26220701.015	HTI Transect Start	gak4	7/26/02	10:48	59.40905	149.05	202		Coyle
HX26220701.016	HTI Transect End	gak3	7/26/02	12:24	59.55125	149.193	216		Coyle
HX26220701.017	MOCNESS Start	gak3	7/26/02	12:25	59.551	149.1933	216		Coyle
HX26220701.018	MOCNESS End	gak3	7/26/02	12:52	59.53567	149.203	216		Coyle
HX26220701.019	CTD75 Start	gak1	7/26/02	15:06	59.84665	149.4665	269		Danielson
HX26220701.020	CTD75 End	gak1	7/26/02	15:23	59.84887	149.4742	269		Danielson
HX26220701.021	CTD76 Start	gak1	7/26/02	15:24	59.84895	149.4744	269	prim prod cast	Danielson
HX26220701.022	CTD76 End	gak1	7/26/02	15:32	59.84997	149.4778	269		Danielson
HX26220701.023	CTD77 Start	gak1	7/26/02	15:57	59.84812	149.4716	269	cohorts #1	Hopcroft
HX26220701.024	CTD77 End	gak1	7/26/02	16:02	59.849	149.4737	269		Hopcroft
HX26220701.025	CTD78 Start	gak1	7/26/02	16:12	59.84572	149.4648	269	cohorts #2	Hopcroft
HX26220701.026	CTD78 End	gak1	7/26/02	16:16	59.84692	149.4653	269		Hopcroft
HX26220701.027	CTD79 Start	gak1	7/26/02	16:22	59.84882	149.4657	269		Hopcroft
HX26220701.028	CTD79 End	gak1	7/26/02	16:26	59.84995	149.4658	269		Hopcroft
HX26220701.029	Ring Net Start	gak1	7/26/02	16:34	59.8467	149.4633	269		Hopcroft
HX26220701.030	Ring Net End	gak1	7/26/02	16:41	59.84852	149.4633	269		Hopcroft
HX26220701.031	Ring Net Start	gak1	7/26/02	16:44	59.84898	149.4641	269		Hopcroft
HX26220701.032	Ring Net End	gak1	7/26/02	16:48	59.84993	149.4648	269		Hopcroft
HX26220701.033	CTD80 Start	cf1	7/26/02	19:00	59.90827	148.8727	85		Danielson
HX26220701.034	CTD80 End	cf1	7/26/02	19:06	na	na	85		Danielson
HX26220701.035	CTD80 Start	cf2	7/26/02	19:22	59.88437	148.8655	109		Danielson
HX26220701.036	CTD80 End	cf2	7/26/02	19:28	59.88585	148.8681	109		Danielson
HX26220701.037	CTD82 Start	cf3	7/26/02	19:48	59.85132	148.8655	163		Danielson
HX26220701.038	CTD82 End	cf3	7/26/02	20:03	59.85638	148.8717	163		Danielson
HX26220701.039	CTD83 Start	cf4	7/26/02	20:23	59.81747	148.8667	181		Danielson
HX26220701.040	CTD83 End	cf4	7/26/02	20:34	59.82158	148.8713	181		Danielson
HX26220701.041	CTD84 Start	cf5	7/26/02	20:58	59.78387	148.8663	196		Danielson
HX26220701.042	CTD84 End	cf5	7/26/02	21:14	59.78962	148.8727	196		Danielson
HX26220701.043	CTD85 Start	cf6	7/26/02	21:35	59.75058	148.8658	190		Danielson
HX26220701.044	CTD85 End	cf6	7/26/02	21:43	59.75277	148.866	190		Danielson
HX26220701.045	CTD86 Start	cf7	7/26/02	22:04	59.71707	148.8655	185		Danielson
HX26220701.046	CTD86 End	cf7	7/26/02	22:21	59.72104	148.8701	185		Danielson
HX26220701.047	CTD87 Start	cf8	7/26/02	22:39	59.6836	148.8649	185		Danielson
HX26220701.048	CTD87 End	cf8	7/26/02	22:50	59.68573	148.8661	185		Danielson
HX26220701.049	CTD88 Start	cf9	7/26/02	23:08	59.64993	148.8653	181		Danielson
HX26220701.050	CTD88 End	cf9	7/26/02	23:24	59.65297	148.8694	181		Danielson
HX26220701.051	CTD89 Start	cf10	7/26/02	23:51	59.62018	148.8681	177		Danielson
HX26220701.052	CTD89 End	cf10	7/26/02	23:51	59.62018	148.8681	177		Danielson
HX26220801.001	CTD90 Start	cf11	7/27/02	0:11	59.5837	148.8654	177		Danielson
HX26220801.002	CTD90 End	cf11	7/27/02	0:27	59.5886	148.8711	177		Danielson

HX26220801.003	CTD91 Start	cf12	7/27/02	0:45	na	na	185	Danielson
HX26220801.004	CTD91 End	cf12	7/27/02	0:57	59.55257	148.8673	185	Danielson
HX26220801.005	CTD92 Start	cf13	7/27/02	1:18	59.51685	148.8656	172	Danielson
HX26220801.006	CTD92 End	cf13	7/27/02	1:33	59.52025	148.8679	172	Danielson
HX26220801.007	CTD93 Start	cf14	7/27/02	1:51	59.48337	148.8652	172	Danielson
HX26220801.008	CTD93 End	cf14	7/27/02	2:00	59.48553	148.866	172	Danielson
HX26220801.009	CTD94 Start	cf15	7/27/02	2:20	59.45032	148.8646	183	Danielson
HX26220801.010	CTD94 End	cf15	7/27/02	2:34	59.45353	148.8627	183	Danielson
HX26220801.011	MOCNESS Start	gak1	7/27/02	8:15	59.84037	149.4676	272	Coyle
HX26220801.012	MOCNESS End	gak1	7/27/02	8:52	59.81707	149.4714	272	Coyle
HX26220801.013	HTI Transect Start	gak1	7/27/02	9:19	59.84492	149.4665	272	Coyle
HX26220801.014	HTI Transect End	gak2	7/27/02	11:07	59.69043	149.3268	231	Coyle
HX26220801.015	MOCNESS Start	gak2	7/27/02	11:11	59.68735	149.3282	231	Coyle
HX26220801.016	MOCNESS End	gak2	7/27/02	11:47	59.66238	149.3312	231	Coyle
HX26220801.017	HTI Transect Start	gak2	7/27/02	12:21	59.68828	149.3259	231	Coyle
HX26220801.018	HTI Transect End	gak3	7/27/02	13:53	59.5528	149.1879	215	Coyle
HX26220801.019	CTD95 Start	gak1	7/27/02	15:58	59.84383	149.4682	270	Danielson
HX26220801.020	CTD95 End	gak1	7/27/02	16:09	59.84318	149.4695	270	Danielson
HX26220801.021	CTD96 Start	res2.5	7/27/02	17:21	60.0253	149.3604	295	Danielson
HX26220801.022	CTD96 End	res2.5	7/27/02	17:31	60.02503	149.3596	295	Danielson