GLOBEC CRUISE REPORT
CRUISE HX270 – 1-9 April 2003

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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 April 2003 cruise focused on the distribution of physical properties, nutrients, and chlorophyll, zooplankton, and seabird populations over the shelf along the

Seward Line, within western Prince William Sound, and on the shelf south of Hinchinbrook Entrance. The purpose was to characterize the along shore variability in the physical and chemical properties and the biological components of the northern Gulf of Alaska shelf.

Cruise Objectives

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

SAMPLING
DAYTIME ACTIVITIES
Occupied the various hydrographic transects and collect vertical CTD-chlorophyll-PAR profiles. Station Transect priorities are (in order): Seward, C. Fairfield, Montague Strait, Hogan Bay, Prince William Sound and Knight Island Passage. We also occupied a section (Montague-Hinchinbrook) on the inside of the entrance to Prince William Sound while we awaited a break in the weather that would allow us to sample the Hinchinbrook Entrance Section. Unfortunately, though we tried twice, the sea states would not allow us occupy that section. Collected ADCP, sea surface salinity (SSS), temperature (SST) and fluorescence (SSF) using seachest sensors, 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.
We measured Primary Productivity at Stations GAK 1, 4, 9, and 13, within Prince William Sound. Observed and documented marine mammal and seabird distributions from the bridge. A total of 18 CalVet Net casts were done along the Seward Line and at selected PWS stations. Water was gathered for Hopcroft with the 10-liter Niskins/Rosette at to collect water (from ~ 20m) for zooplankton incubations at GAK 1, 4, 9 and 13

NIGHTTIME ACTIVITIES
Hydroacoustic (HTI) samples and MOCNESS discrete samples were done along the Seward Line and within PWS

Chronology

The cruise departed Seward, Alaska at 0958 AST 1 April 2003 and proceeded to Resurrection Bay 2.5 before beginning sampling at GAK 1. Did

standard measurements from GAK1 to 2i out the Seward line CTD sampling, ring nets and CALVET net tows, then HTI and MOCNESS out to GAK6. Did daytime sampling out to GAK10 and nighttime sampling from GAK10 to 13. There were some problems with the hydrowinch with lack of power on the haulin but those were corrected by the time we got to the deep stations. We worked the daytime sampling at GAK13 working our way back into GAK 10 where we began the nighttime work from 10 into 7. Worked the day shift from 5i to GAK1 (repeat). Began the nightwork at GAK7 into GAK 5. Occupied the Cape Fairfield section outward after doing an ADCP section across it to CF1. We did CTDs in a box pattern around GAK4 while waiting for darkness. This is in support of the process cruises that will be undertaken later this month around GAK4 and elsewhere. Night sampling was carried out from GAK3 to 1. The Seward line work was completed on 5 April as the weather closed in. We continued our daytime sampling on the Montagues Strait and Hogan Bay sections along with a CTD at PWS2. The night sampling commenced with tows down to KIP2. We returned to PWS1 in daylight and completed the section and the Knight Island section. We anchored in Little Bay from 1245 on 7 April until dark. Night sampling was done on the MS and HB sections. We attempted the Hinchinbrook section but were turned back by high seas. Instead we occupied the CTD and nutrient section on inside of the entrance before anchoring to await better weather. The next morning (9 April), the sea states did not allow us to occupy the HE section. Instead we carried out 6 ADCP transects across the MH section from 0730 to 1559. We then headed back to Seward for our morning arrival. On the return we occupied 5 CTD stations in western PWS along with GAK1 and RES2.5. We also did another MOCNESS tow at GAK1.

Results

Hydrography (Royer)

At GAK1 in April 2003, the salinity is generally below normal with respect to the long term mean especially at 50-75 m and the temperature is above normal, especially from 75-200 m. However, it is not as warm as it was in March 2003, when the temperature anomaly was 3.11 at 75 m.

We were able to compare the short term changes in the water column at GAK1 from March 03 to April 03. Normally the surface layer salinity decreases from March to April whereas all of the salinities of the deeper layers increase. For spring of 2003, the salinity down to 30 meters increased while the salinity in layers from 50 to 150 m decreased. The salinity in the lower 100 m increased, similar to long term trends. Normally from March to April, temperature in the upper 75 meters increases while the temperature in the lower 150 meters decreases. For 2002, the temperatures in the entire water column decreased. Therefore the entire water column cooled while the salinity in the upper and lower layers increased while the salinities in the midlayers decreased.

The Seward Line (Figure 1) had the Alaska Coastal Current (ACC) within the first 20 km of the coast with some reversals in the offshore salinity (density) gradient beyond GAK3 with an eddy at about GAK4. Later we occupied a box pattern with CTD casts surrounding GAK4. Salinity and density displayed the usual patterns across the outer shelf. Chlorophyll was greatest within the ACC and at about GAK13. The upper layer chlorophyll was low between GAK8i and GAK12. There was also an unusual pattern of chlorophyll near to the shelf break (GAK6-8) (110-120 km) with high values at depth. It was noted that the TS structure at GAK10 was unusual with a subsurface peak in the temperature of 6 C at about 130 m. Flows seemed to be very small beyond GAK10 and there might be a portion of a mesoscale eddy on the outer end of this line.

Stable isotope samples (Kline)

Samples for stable isotope analysis (SIA) were collected from MOCNESS tows made during HX270. Sampling stations consisted of the 13 Seward line stations GAK1 to GAK 13, and 5 core LTOP stations within Prince William Sound.

Samples were saved for SIA from the contents of MOCNESS net #1, which sampled the upper 100 m, at all but two stations. These two special, 'deep', MOCNESS stations during HX270 were GAK13 and PWS2. Diapausing Neocalanus spp. were saved for SIA from the contents of a MOCNESS net that sampled between 400 and 600 m. SIA samples were also sampled from the upper 150 m at the 'deep' MOCNESS stations. MOCNESS SIA samples consisted primarily of macro-zooplankton, which were sorted to species and frozen individually in vials for further laboratory processing.

Microzooplankton (Foy)

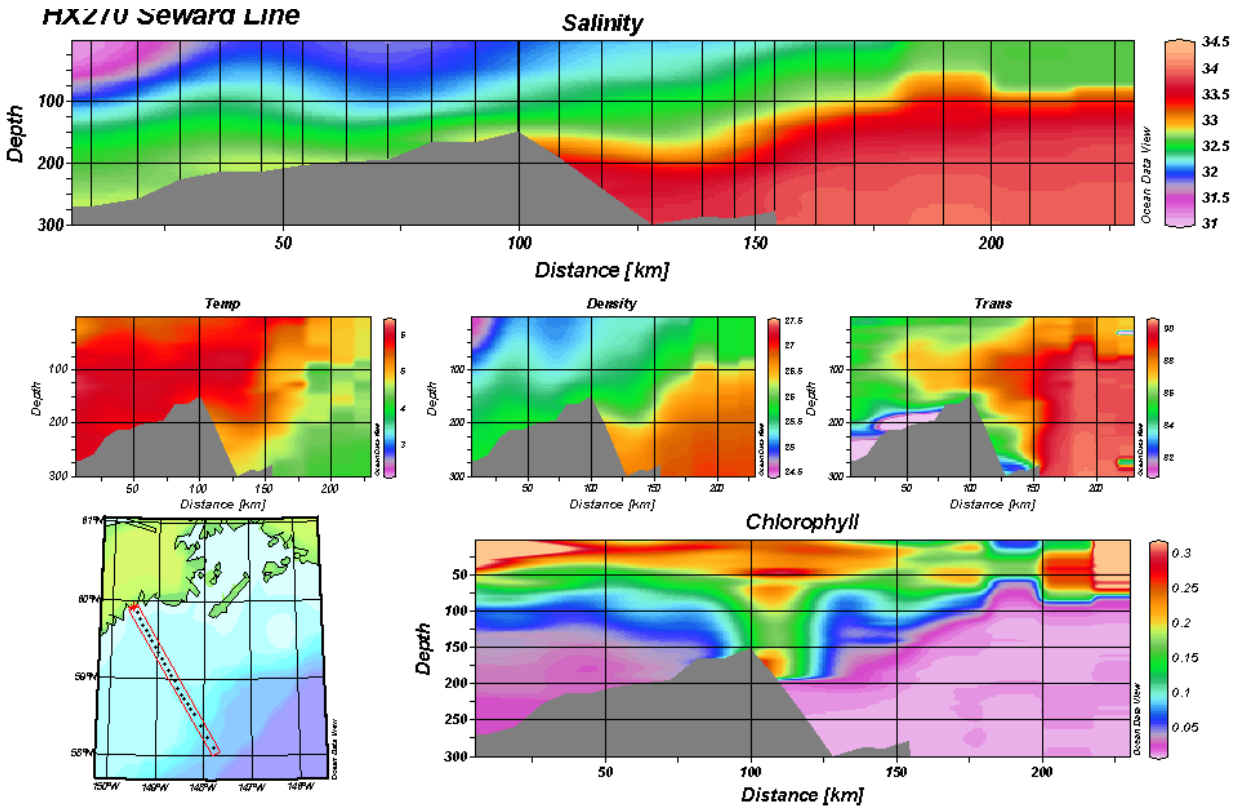
Samples were taken to determine microplankton abundance and biomass, either as discrete vertical samples or as integrated samples. Vertical samples consisted of sampling from depths 0m, 20, 30, 50m, & 100m and were taken at GAK 2,4,6,8,10,11,13 and PWS2. Integrated samples were taken by combining water for an upper layer sample (0m, 10m, 20m, 30m, 40m & 50m) and a lower layer sample (75m & 100m) and taken at GAK 1,3,5,7,9,12, CF 1,3,9, MS 2 and KIP 2. Above samples were filtered and prepared for epifluorescent microscopy as well as preserved in acid Lugols. Samples were also taken for flow cytometry. Fluorescence was highest in PWS and exceeded 2.0V at PWS2 & KIP 2. The phytoplankton community consisted of both diatoms and photosynthetic flagellates. At least 3 types of Chaetoceros were present as well as Thallasiosira, Coscinodiscus and a few Pseudonitzchia species. Fluorescence was relatively high at the inner Cape Fairfield stations (~1.0V) and the phytoplankton community was similar to what was observed in PWS. Along the Seward Line, fluorescence was highest at GAK 1 & 2 (0.4V), remained relatively

low from GAK 3 to GAK 12, and increased slightly at GAK 13. The phytoplankton community at GAK 1 & 2 was similar to what was seen in PWS and at the inner Cape Fairfield line, while small autoflagellates and cryptophytes dominated the middle stations. Interestingly, many of the diatom species that were seen inshore were observed at both GAK 12 & 13 (Chaetocerosm Thallasiosira, Coscinodiscus, vaious pennates). Phaeocystis and Corethron were also observed at the end of the Seward Line. Heterotrophic dinoflagellates, and mixotrophic and autotrophic ciliates were common at most stations. As observed in all previous cruises, cyanobacteria were common and increased in abundance from inshore to offshore stations along the Seward Line.

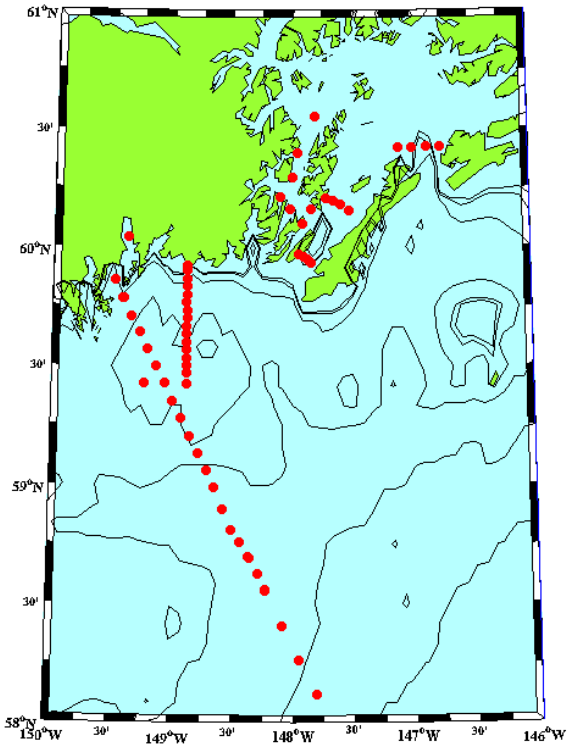
Zooplankton Growth (Hopcroft)

Copepod cohort experiments and egg production were setup at Gak 1, 4, 9, 13 and KIP2 as per normal. Single stages of Neocalanus C1-C3 were setup at most stations as well. Stage distribution appears to be ahead of 'normal', especially in PWS. Significant amounts of filamentous algae were present at most stations, but especially in the sound.
Copepod egg production: Pseudocalanus was set at all sites, except for G13 were they were virtually absent. Metridia pacifica was set at all sites, M. okhotensis at G1 and KIP. Calanus marshallae was set at G1 (small experiment) and KIP (full exp). A Eucalanus experiment was executed at G13, Acartia at KIP. Three experiments for euphausiid growth were executed. Reproductive rates accompanied some of these.

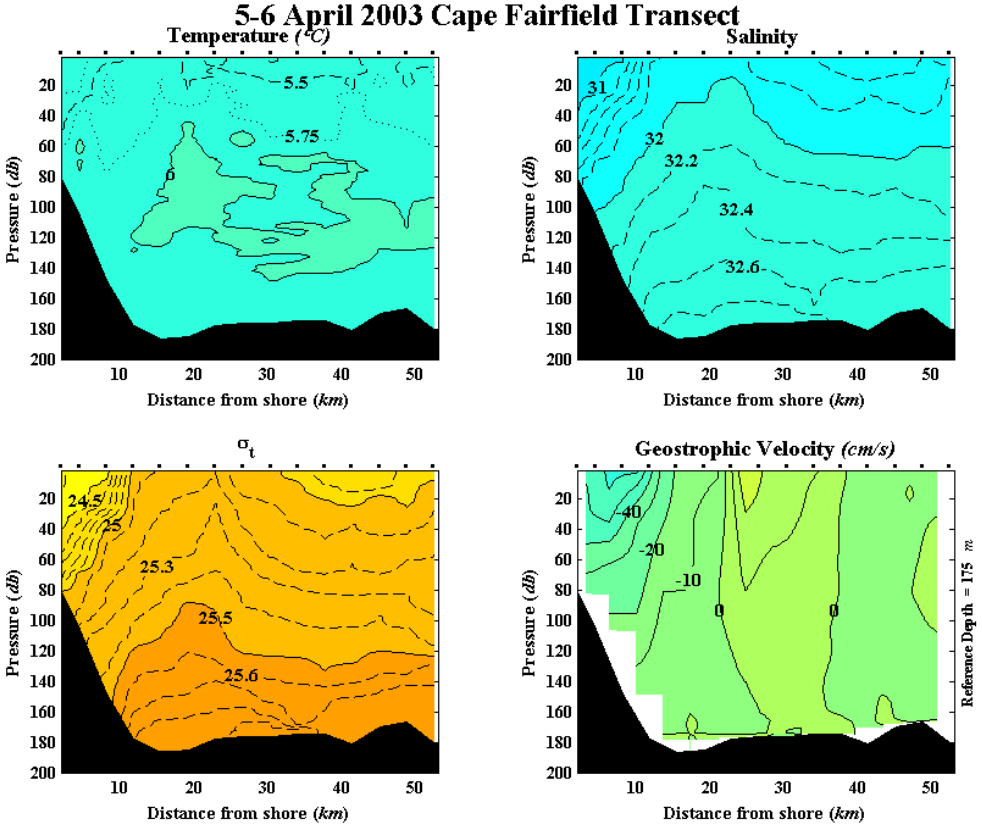
Seward Line April 2003

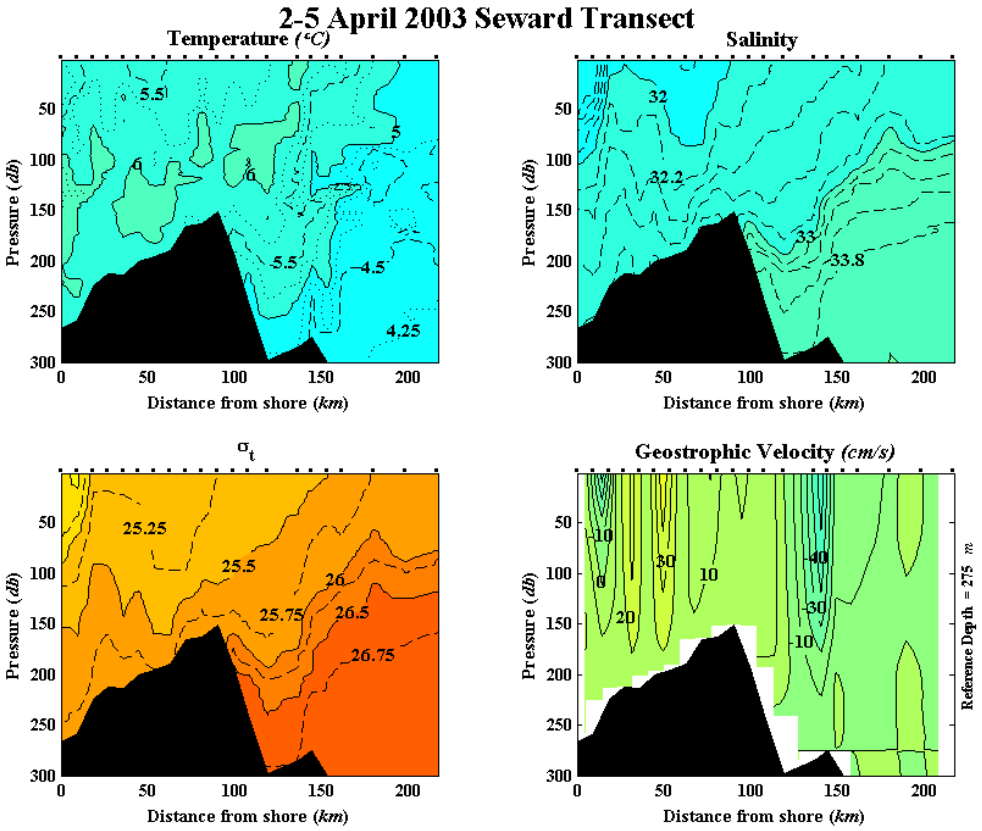


1-10 April 2003



5-6 April 2003 Cape Fairfield Transect





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	Scientist	Comments
HX27009103.001	CTD1 Start	RES2.5	4/1/03	1945	60.0245	149.3603	295	Royer	
HX27009103.002	CTD1 End	RES2.5	4/1/03	2010	60.0222	149.3617	295	Royer	
HX27009103.003	CTD2 Start	GAK1	4/1/03	2123	59.8442	149.468	263	Royer	
HX27009103.004	CTD2 End	GAK1	4/1/03	2152	59.8359	149.4617	263	Royer	
HX27009103.005	Ring Net Start	GAK1	4/1/03	2201	59.8444	149.465	263	Hopcroft	
HX27009103.006	Ring Net End	GAK1	4/1/03	2207	59.8426	149.4653	263	Hopcroft	
HX27009103.007	Ring Net Start	GAK1	4/1/03	2210	59.8417	149.4652	263	Hopcroft	
HX27009103.008	Ring Net End	GAK1	4/1/03	2215	59.84	149.4654	263	Hopcroft	
HX27009103.009	Ring Net Start	GAK1	4/1/03	2223	59.8375	149.4663	272	Hopcroft	
HX27009103.010	Ring Net End	GAK1	4/1/03	2225	59.838	149.4657	272	Hopcroft	Program failed. Late start on Event 9

HX27009103.011	CTD3 Start	GAK1	4/1/03	2232	59.8439	149.4677	272	Royer	Prods and working on the winch
HX27009103.012	CTD3 End	GAK1	4/1/03	2244	59.8408	149.4656	272	Royer	
HX27009103.013	CalVET Net Tow Start	GAK1	4/1/03	2254	59.8463	149.4688	272	Hopcroft	
HX27009103.014	CalVET Net Tow End	GAK1	4/1/03	2259	59.845	149.4689	272	Hopcroft	
HX27009103.015	CTD4 Start	GAK1	4/1/03	2303	59.8447	149.4684	272	Hopcroft	Water for Hopcroft
HX27009103.016	CTD4 End	GAK1	4/1/03	2312	59.8425	149.4667	272	Hopcroft	
HX27009203.001	CTD5 Start	GAK1	4/2/03	0027	59.8442	149.4682	272	Hopcroft	Water for Hopcroft
HX27009203.002	CTD5 End	GAK1	4/2/03	0042	59.8411	149.4653	272	Hopcroft	Working on CTD winch problems
HX27009203.003	CTD6 Start	GAK1	4/2/03	0051	59.8441	149.4678	272	Hopcroft	Water for Hopcroft Only 5 bottles on previous cast. #4 did not close.
HX27009203.004	CTD6 End	GAK1	4/2/03	0054	59.8437	149.4673	272	Hopcroft	
HX27009203.005	CTD7 Start	GAK1	4/2/03	0103	59.842	149.4654	272	Hopcroft	Water for Hopcroft
HX27009203.006	CTD7 End	GAK1	4/2/03	0105	59.8415	149.4648	272	Hopcroft	
HX27009203.007	CTD8 Start	GAK1	4/2/03	0112	59.8402	149.4636	272	Hopcroft	Water for Hopcroft. trip 6 bottles only 4 fired on last cast
HX27009203.008	CTD8 End	GAK1	4/2/03	0115	59.8397	149.4632	272	Hopcroft	
HX27009203.009	CTD9 Start	GAK1	4/2/03	0124	59.8446	149.4673	272	Hopcroft	Water for Hopcroft
HX27009203.010	CTD9 End	GAK1	4/2/03	0126	59.8442	149.4669	272	Hopcroft	
HX27009203.011	CTD10 Start	GAK1	4/2/03	0134	59.8429	149.465	272	Hopcroft	Water for Hopcroft
HX27009203.012	CTD10 End	GAK1	4/2/03	0137	59.8424	149.4643	272	Hopcroft	
HX27009203.013	CTD11Start	GAK1	4/2/03	0144	59.8411	149.4628	272	Hopcroft	Water for Hopcroft
HX27009203.014	CTD11 End	GAK1	4/2/03	0145	59.8406	149.4625	272	Hopcroft	
HX27009203.015	CTD12 Start	GAK1	4/2/03	0155	59.8385	149.4604	272	Hopcroft	Water for Hopcroft
HX27009203.016	CTD12 End	GAK1	4/2/03	0157	59.8379	149.4597	272	Hopcroft	
HX27009203.017	CTD13 Start	GAK1	4/2/03	0211	59.8439	149.4682	272	Hopcroft	Water for Hopcroft
HX27009203.018	CTD13 End	GAK1	4/2/03	0217	59.8429	149.4668	272	Hopcroft	
HX27009203.019	CTD14 Start	GAK1	4/2/03	0227	59.8406	149.4643	272	Hopcroft	Testing CTD winch
HX27009203.020	CTD14 End	GAK1	4/2/03	0242	59.8374	149.4615	272	Hopcroft	
HX27009203.021	CTD15 Start	GAK1I	4/2/03	0313	59.7653	149.3978	260	Royer	
HX27009203.022	CTD15 End	GAK1I	4/2/03	0342	59.7542	149.3979	260	Royer	

HX27009203.023	CTD16 Start	GAK2	4/2/03	0410	59.6897	149.329	227	Royer	
HX27009203.024	CTD16 End	GAK2	4/2/03	0435	59.6834	149.3313	227	Royer	
HX27009203.025	CalVET Net Tow Start	GAK2	4/2/03	0443	59.6904	149.3265	227	Hopcroft	
HX27009203.026	CalVET Net Tow End	GAK2	4/2/03	0452	59.6856	149.3286	227	Hopcroft	
HX27009203.027	CTD17 Start	GAK2I	4/2/03	0519	59.6258	149.2578	212	Royer	
HX27009203.028	CTD17 End	GAK2I	4/2/03	0540	59.6204	149.2476	212	Royer	
HX27009203.029	MOCNESS Start	GAK3	4/2/03	0714	59.5377	149.1714	211	Coyle	
HX27009203.030	MOCNESS End	GAK3	4/2/03	0744	59.5494	149.1842	211	Coyle	
HX27009203.031	HTI Transect Start	GAK3	4/2/03	0754	59.5519	149.1872	211	Coyle	
HX27009203.032	HTI Transect End	GAK4	4/2/03	0928	59.4083	149.0464	201	Coyle	
HX27009203.033	MOCNESS Start	GAK4	4/2/03	0931	59.4095	149.0477	201	Coyle	
HX27009203.034	MOCNESS End	GAK4	4/2/03	1016	59.426	149.0657	201	Coyle	
HX27009203.035	HTI Transect Start	GAK4	4/2/03	1032	59.4067	149.0471	201	Coyle	
HX27009203.036	HTI Transect End	GAK5	4/2/03	1204	59.2608	148.9064	168	Coyle	
HX27009203.037	MOCNESS Start	GAK5	4/2/03	1206	59.2615	148.9067	168	Coyle	
HX27009203.038	MOCNESS End	GAK5	4/2/03	1250	59.2786	148.9278	168	Coyle	
HX27009203.039	HTI Transect Start	GAK5	4/2/03	1308	59.2593	148.9059	168	Coyle	
HX27009203.040	HTI Transect End	GAK6	4/2/03	1439	59.1154	148.769	150	Coyle	
HX27009203.041	CTD18 Start	GAK6	4/2/03	1459	59.1145	148.7679	150	Royer	
HX27009203.042	CTD18 End	GAK6	4/2/03	1513	59.1129	148.7668	150	Royer	
HX27009203.043	CalVET Net Tow Start	GAK6	4/2/03	1515	59.1126	148.7665	150	Hopcroft	
HX27009203.044	CalVET Net Tow End	GAK6	4/2/03	1519	59.1121	148.7661	150	Hopcroft	
HX27009203.045	CTD19 Start	GAK6I	4/2/03	1550	59.0439	148.6986	190	Royer	
HX27009203.046	CTD19 End	GAK6I	4/2/03	1609	59.0411	148.6947	190	Royer	
HX27009203.047	CTD20 Start	GAK7	4/2/03	1638	58.9713	148.628	242	Royer	
HX27009203.048	CTD20 End	GAK7	4/2/03	1701	58.9698	148.6242	242	Royer	
HX27009203.049	CalVET Net Tow Start	GAK7	4/2/03	1703	58.9698	148.624	242	Hopcroft	
HX27009203.050	CalVET Net Tow End	GAK7	4/2/03	1710	58.9692	148.6232	242	Hopcroft	
HX27009203.051	CTD21Start	GAK7I	4/2/03	1745	58.8807	148.56	300	Royer	
HX27009203.052	CTD21 End	GAK7I	4/2/03	1808	58.878	148.5642	300	Royer	
HX27009203.053	CTD22 Start	GAK8	4/2/03	1849	58.7907	148.4908	288	Royer	

HX27009203.054	CTD22 End	GAK8	4/2/03	1913	58.7901	148.4981	288	Royer	
HX27009203.055	CalVET Net Tow Start	GAK8	4/2/03	1916	58.7905	148.4985	288	Hopcroft	
HX27009203.056	CalVET Net Tow End	GAK8	4/2/03	1922	58.7912	148.5	288	Hopcroft	
HX27009203.057	CTD23 Start	GAK8I	4/2/03	1947	58.7427	148.4182	290	Royer	
HX27009203.058	CTD23 End	GAK8I	4/2/03	1947	58.7427	148.4182	291	Royer	
HX27009203.059	CTD24 Start	GAK9	4/2/03	2043	58.6792	148.3481	280	Royer	prim prod cast
HX27009203.060	CTD24 End	GAK9	4/2/03	2054	58.6792	148.3481	280	Royer	
HX27009203.061	CalVET Net Tow Start	GAK9	4/2/03	2056	58.6775	148.3461	280	Hopcroft	
HX27009203.062	CalVET Net Tow End	GAK9	4/2/03	2104	58.6772	148.3463	280	Hopcroft	
HX27009203.063	CTD25 Start	GAK9	4/2/03	2112	58.6772	148.3455	280	Royer	
HX27009203.064	CTD25 End	GAK9	4/2/03	2136	58.6742	148.3466	280	Royer	
HX27009203.065	Ring Net Start	GAK9	4/2/03	2145	58.6796	148.3502	280	Hopcroft	
HX27009203.066	Ring Net End	GAK9	4/2/03	2151	58.6785	148.3485	280	Hopcroft	
HX27009203.067	CTD26 Start	GAK9	4/2/03	2157	58.6765	148.3458	280	Hopcroft	Water for Hopcroft
HX27009203.068	CTD26 End	GAK9	4/2/03	2203	58.6747	148.3442	280	Hopcroft	
HX27009203.069	CTD27 Start	GAK9	4/2/03	2213	58.6722	148.343	280	Hopcroft	Water for Hopcroft
HX27009203.070	CTD27 End	GAK9	4/2/03	2220	58.6708	148.3422	280	Hopcroft	
HX27009203.071	CTD28 Start	GAK9	4/2/03	2228	58.6759	148.3474	280	Hopcroft	Water for Hopcroft
HX27009203.072	CTD28 End	GAK9	4/2/03	2233	58.6749	148.3456	280	Hopcroft	
HX27009203.073	CTD29 Start	GAK9	4/2/03	2241	58.6765	148.3479	280	Hopcroft	Water for Hopcroft
HX27009203.074	CTD29 End	GAK9	4/2/03	2243	58.6756	148.3478	280	Hopcroft	
HX27009203.075	CTD30 Start	GAK9	4/2/03	2251	58.6733	148.3465	280	Hopcroft	Water for Hopcroft
HX27009203.076	CTD30 End	GAK9	4/2/03	2253	58.6725	148.3459	280	Hopcroft	
HX27009203.077	CTD31 Start	GAK9	4/2/03	2300	58.6708	148.3442	280	Hopcroft	
HX27009203.078	CTD31 End	GAK9	4/2/03	2303	58.6699	148.3434	280	Hopcroft	
HX27009203.079	Ring Net Start	GAK9	4/2/03	2312	58.677	148.3492	280	Hopcroft	
HX27009203.080	Ring Net End	GAK9	4/2/03	2319	58.6755	148.3481	280	Hopcroft	
HX27009203.081	Ring Net Start	GAK9	4/2/03	2321	58.6749	148.3468	280	Hopcroft	
HX27009203.082	Ring Net End	GAK9	4/2/03	2328	58.6724	148.3433	280	Hopcroft	
HX27009203.083	CTD32 Start	GAK9I	4/2/03	2358	58.609	148.2757	714	Royer	
HX27009303.001	CTD32 End	GAK9I	4/3/03	0043	58.5972	148.2606	714	Royer	
HX27009303.002	CalVET Net Tow Start	GAK10	4/3/03	0108	58.5388	148.2094	1475	Hopcroft	
HX27009303.003	CalVET Net Tow End	GAK10	4/3/03	0116	58.5378	148.2087	1475	Hopcroft	
HX27009303.004	CTD33 Start	GAK10	4/3/03	0121	58.5412	148.2123	1475	Royer	
HX27009303.005	CTD33 End	GAK10	4/3/03	0253	58.5005	148.1752	1525	Royer	
HX27009303.006	CTD34 Start	GAK10	4/3/03	0333	58.5386	148.2128	1471	Royer	Water for Hopcroft
HX27009303.007	CTD34 End	GAK10	4/3/03	0337	58.5366	148.2117	1471	Royer	

HX27009303.008	HTI Transect Start	GAK10	4/3/03	0533	58.5404	148.2117	1471	Coyle	
HX27009303.009	HTI Transect End	GAK11	4/3/03	0701	58.3882	148.0701	1424	Coyle	
HX27009303.010	MOCNESS Start	GAK11	4/3/03	0704	58.3898	148.0732	1424	Coyle	
HX27009303.011	MOCNESS End	GAK11	4/3/03	0745	58.3981	148.1077	1424	Coyle	
HX27009303.012	HTI Transect Start	GAK11	4/3/03	0805	58.3869	148.0711	1424	Coyle	
HX27009303.013	HTI Transect End	GAK12	4/3/03	0939	58.2423	147.9317	2167	Coyle	
HX27009303.014	MOCNESS Start	GAK12	4/3/03	0944	58.2448	147.9309	2167	Coyle	
HX27009303.015	MOCNESS End	GAK12	4/3/03	1025	58.2602	147.9318	2167	Coyle	
HX27009303.016	HTI Transect Start	GAK12	4/3/03	1046	58.2382	147.9287	2167	Coyle	
HX27009303.017	HTI Transect End	GAK13	4/3/03	1218	58.1003	147.7921	2094	Coyle	
HX27009303.018	MOCNESS Start	GAK13	4/3/03	1220	58.1014	147.7923	2094	Coyle	
HX27009303.019	MOCNESS End	GAK13	4/3/03	1301	58.1201	147.7986	2094	Coyle	
HX27009303.020	MOCNESS Start	GAK13	4/3/03	1341	58.1066	147.7989	2094	Coyle	deep tow
HX27009303.021	MOCNESS End	GAK13	4/3/03	1503	58.0732	147.7427	2094	Coyle	
HX27009303.022	CTD35 Start	GAK13	4/3/03	1535	58.0988	147.7957	2084	Royer	
HX27009303.023	CTD35 End	GAK13	4/3/03	1655	58.0997	147.7908	2084	Royer	
HX27009303.024	CalVET Net Tow Start	GAK13	4/3/03	1659	58.0998	147.7902	2084	Hopcroft	
HX27009303.025	CalVET Net Tow End	GAK13	4/3/03	1704	58.1001	147.7892	2084	Hopcroft	
HX27009303.026	CTD36 Start	GAK13	4/3/03	1716	58.0987	147.793	2084	Royer	
HX27009303.027	CTD36 End	GAK13	4/3/03	1720	58.099	147.7923	2084	Royer	
HX27009303.028	Ring Net Start	GAK13	4/3/03	1724	58.0993	147.7915	2084	Hopcroft	
HX27009303.029	Ring Net End	GAK13	4/3/03	1730	58.0995	147.7907	2084	Hopcroft	
HX27009303.030	CTD37 Start	GAK13	4/3/03	1740	58.1006	147.7885	2094	Royer	Prim prod
HX27009303.031	CTD37 End	GAK13	4/3/03	1750	58.1012	147.7863	2094	Royer	
HX27009303.032	CTD38 Start	GAK13	4/3/03	1821	58.0981	147.7923	2094	Hopcroft	Water for Hopcroft
HX27009303.033	CTD38 End	GAK13	4/3/03	1825	58.0984	147.7914	2094	Hopcroft	
HX27009303.034	CTD39 Start	GAK13	4/3/03	1834	58.0994	147.7905	2094	Hopcroft	Water for Hopcroft
HX27009303.035	CTD39 End	GAK13	4/3/03	1836	58.0998	147.7901	2094	Hopcroft	
HX27009303.036	CTD40 Start	GAK13	4/3/03	1844	58.1002	147.7874	2094	Hopcroft	Water for Hopcroft
HX27009303.037	CTD40 End	GAK13	4/3/03	1846	58.1002	147.7872	2094	Hopcroft	

HX27009303.038	CTD41 Start	GAK13	4/3/03	1852	58.1007	147.7868	2094	Hopcroft	Water for Hopcroft
HX27009303.039	CTD41 End	GAK13	4/3/03	1855	58.1012	147.7863	2094	Hopcroft	
HX27009303.040	CTD42 Start	GAK13	4/3/03	1902	58.1023	147.7859	2094	Hopcroft	Water for Hopcroft
HX27009303.041	CTD42 End	GAK13	4/3/03	1904	58.1025	147.7858	2094	Hopcroft	
HX27009303.042	CTD43 Start	GAK13	4/3/03	1910	58.1028	147.7853	2094	Hopcroft	Water for Hopcroft
HX27009303.043	CTD43 End	GAK13	4/3/03	1912	58.103	147.7849	2094	Hopcroft	
HX27009303.044	Ring Net Start	GAK13	4/3/03	1918	58.1032	147.784	2094	Hopcroft	
HX27009303.045	Ring Net End	GAK13	4/3/03	1922	58.1032	147.7829	2094	Hopcroft	
HX27009303.046	Ring Net Start	GAK13	4/3/03	1924	58.1032	147.7825	2094	Hopcroft	
HX27009303.047	Ring Net End	GAK13	4/3/03	1930	58.1031	147.781	2094	Hopcroft	
HX27009303.048	Ring Net Start	GAK13	4/3/03	1933	58.1031	147.7803	2094	Hopcroft	
HX27009303.049	Ring Net End	GAK13	4/3/03	1939	58.1031	147.7791	2094	Hopcroft	
HX27009303.050	CalVET Net Tow Start	GAK12	4/3/03	2050	58.2417	147.9332	2156	Hopcroft	
HX27009303.051	CalVET Net Tow End	GAK12	4/3/03	2053	58.2405	147.9324	2156	Hopcroft	
HX27009303.052	CTD44 Start	GAK12	4/3/03	2100	58.2424	147.9337	2170	Royer	
HX27009303.053	CTD44 End	GAK12	4/3/03	2230	58.2218	147.9096	2170	Royer	
HX27009303.054	CalVET Net Tow Start	GAK11	4/3/03	2348	58.3891	148.0728	1432	Hopcroft	
HX27009303.055	CalVET Net Tow End	GAK11	4/3/03	2355	58.3885	148.0736	1432	Hopcroft	
HX27009303.056	CTD45 Start	GAK11	4/3/03	2357	58.3882	148.074	1432	Royer	
HX27009403.001	CTD45 End	GAK11	4/4/03	0112	58.3871	148.0705	1432	Royer	
HX27009403.002	MOCNESS Start	GAK10	4/4/03	0532	58.5383	148.1942	1569	Coyle	
HX27009403.003	MOCNESS End	GAK10	4/4/03	0615	58.5281	148.2372	1569	Coyle	
HX27009403.004	HTI Transect Start	GAK10	4/4/03	0642	58.5427	148.2135	1569	Coyle	
HX27009403.005	HTI Transect End	GAK9	4/4/03	0835	58.6806	148.3527	279	Coyle	
HX27009403.006	MOCNESS Start	GAK9	4/4/03	0838	58.6804	148.3578	279	Coyle	
HX27009403.007	MOCNESS End	GAK9	4/4/03	0919	58.677	148.4144	279	Coyle	
HX27009403.008	HTI Transect Start	GAK9	4/4/03	0945	58.6806	148.3512	279	Coyle	
HX27009403.009	HTI Transect End	GAK8	4/4/03	1102	58.7923	148.4906	286	Coyle	
HX27009403.010	MOCNESS Start	GAK8	4/4/03	1105	58.7929	148.4967	286	Coyle	
HX27009403.011	MOCNESS End	GAK8	4/4/03	1136	58.7942	148.5391	286	Coyle	
HX27009403.012	HTI Transect Start	GAK8	4/4/03	1200	58.7929	148.4922	286	Coyle	

HX27009403.013	HTI Transect End	GAK7	4/4/03	1352	58.9721	148.6306	244	Coyle	
HX27009403.014	MOCNESS Start	GAK7	4/4/03	1354	58.974	148.6322	244	Coyle	
HX27009403.015	MOCNESS End	GAK7	4/4/03	1428	58.9874	148.6498	244	Coyle	
HX27009403.016	CTD46 Start	GAK5I	4/4/03	1559	59.189	148.8382	165	Royer	
HX27009403.017	CTD46 End	GAK5I	4/4/03	1623	59.2007	148.8529	165	Royer	
HX27009403.018	CTD47 Start	GAK5	4/4/03	1651	59.2619	148.9077	165	Royer	
HX27009403.019	CTD47 End	GAK5	4/4/03	1707	59.2613	148.9088	165	Royer	
HX27009403.020	CalVET Net Tow Start	GAK5	4/4/03	1708	59.2612	148.9085	165	Hopcroft	
HX27009403.021	CalVET Net Tow End	GAK5	4/4/03	1714	59.2619	148.9084	165	Hopcroft	
HX27009403.022	CTD48 Start	GAK4I	4/4/03	1744	59.3351	148.9777	197	Royer	
HX27009403.023	CTD48 End	GAK4I	4/4/03	1758	59.3354	148.9819	197	Royer	CTD problems
HX27009403.024	CTD49 Start	GAK4I	4/4/03	1809	59.3362	148.9857	197	Royer	Recast
HX27009403.025	CTD49 End	GAK4I	4/4/03	1847	59.3895	149.0335	197	Royer	
HX27009403.026	CTD50 Start	GAK4	4/4/03	1856	59.4087	149.0478	199	Royer	
HX27009403.027	CTD50 End	GAK4	4/4/03	1910	59.4102	149.0504	199	Royer	
HX27009403.028	CalVET Net Tow Start	GAK4	4/4/03	1915	59.4105	149.0522	199	Hopcroft	
HX27009403.029	CalVET Net Tow End	GAK4	4/4/03	1921	59.4108	149.052	199	Hopcroft	
HX27009403.030	CTD51 Start	GAK4	4/4/03	1928	59.4093	149.0482	199	Royer	Prim prod
HX27009403.031	CTD51 End	GAK4	4/4/03	1934	59.4102	149.0497	199	Royer	
HX27009403.032	Ring Net Start	GAK4	4/4/03	1944	59.4124	149.0493	199	Hopcroft	
HX27009403.033	Ring Net End	GAK4	4/4/03	1948	59.4131	149.0491	199	Hopcroft	
HX27009403.034	CTD52 Start	GAK4	4/4/03	1959	59.4079	149.0477	199	Hopcroft	Water for Hopcroft
HX27009403.035	CTD52 End	GAK4	4/4/03	2008	59.4087	149.0493	199	Hopcroft	
HX27009403.036	CTD53 Start	GAK4	4/4/03	2014	59.4098	149.0506	199	Hopcroft	Water for Hopcroft
HX27009403.037	CTD53 End	GAK4	4/4/03	2016	59.4102	149.0511	199	Hopcroft	
HX27009403.038	CTD54 Start	GAK4	4/4/03	2024	59.4117	149.0529	199	Hopcroft	Water for Hopcroft
HX27009403.039	CTD54 End	GAK4	4/4/03	2026	59.4121	149.0535	199	Hopcroft	
HX27009403.040	CTD55 Start	GAK4	4/4/03	2032	59.4132	149.0547	199	Hopcroft	Water for Hopcroft
HX27009403.041	CTD55 End	GAK4	4/4/03	2033	59.4135	149.0551	199	Hopcroft	
HX27009403.042	CTD56 Start	GAK4	4/4/03	2038	59.4146	149.0563	199	Hopcroft	Water for Hopcroft
HX27009403.043	CTD56 End	GAK4	4/4/03	2040	59.415	149.0567	199	Hopcroft	
HX27009403.044	Ring Net Start	GAK4	4/4/03	2049	59.408	149.0498	199	Hopcroft	
HX27009403.045	Ring Net End	GAK4	4/4/03	2056	59.4083	149.0524	199	Hopcroft	
HX27009403.046	Ring Net Start	GAK4	4/4/03	2058	59.4085	149.0531	199	Hopcroft	
HX27009403.047	Ring Net End	GAK4	4/4/03	2104	59.4093	149.0554	199	Hopcroft	
HX27009403.048	CTD57 Start	GAK3I	4/4/03	2134	59.482	149.1214	204	Royer	
HX27009403.049	CTD57 End	GAK3I	4/4/03	2151	59.4853	149.1251	204	Royer	

HX27009403.050	CTD58 Start	GAK3	4/4/03	2222	59.554	149.1899	214	Royer	
HX27009403.051	CTD58 End	GAK3	4/4/03	2241	59.5559	149.1931	214	Royer	
HX27009403.052	CalVET Net Tow Start	GAK3	4/4/03	2244	59.5561	149.1937	214	Hopcroft	
HX27009403.053	CalVET Net Tow End	GAK3	4/4/03	2250	59.5563	149.1944	214	Hopcroft	
HX27009403.054	CTD59 Start	GAK2I	4/4/03	2321	59.6248	149.2591	214	Royer	CTD only no nutrients
HX27009403.055	CTD59 End	GAK2I	4/4/03	2336	59.6215	149.2572	214	Royer	
HX27009503.001	CTD60 Start	GAK2	4/5/03	0010	59.6916	149.3264	227	Royer	
HX27009503.002	CTD60 End	GAK2	4/5/03	0023	59.6892	149.3273	227	Royer	
HX27009503.003	CTD61 Start	GAK1I	4/5/03	0100	59.7656	149.3964	260	Royer	
HX27009503.004	CTD61 End	GAK1I	4/5/03	0118	59.7607	149.3968	260	Royer	
HX27009503.005	CTD62 Start	GAK1	4/5/03	0155	59.8457	149.468	270	Royer	
HX27009503.006	CTD62 End	GAK1	4/5/03	0212	59.8471	149.4669	270	Royer	
HX27009503.007	HTI Transect Start	GAK7	4/5/03	0758	58.9739	148.6322	241	Coyle	
HX27009503.008	HTI Transect End	GAK6	4/5/03	0933	59.1171	148.7704	153	Coyle	
HX27009503.009	MOCNESS Start	GAK6	4/5/03	0937	59.1156	148.7707	153	Coyle	
HX27009503.010	MOCNESS End	GAK6	4/5/03	1021	59.0974	148.7495	153	Coyle	
HX27009503.011	HTI Transect Start	GAK6	4/5/03	1030	59.0974	148.7495	153	Coyle	
HX27009503.012	HTI Transect End	GAK5	4/5/03	1222	59.2694	148.9097	153	Coyle	
HX27009503.013	ADCP Line Start	CF15	4/5/03	1326	59.453	148.8664	180	Royer	
HX27009503.014	ADCP Line End	CF2	4/5/03	1743	59.9076	148.8676	85	Royer	
HX27009503.015	CTD63 Start	CF1	4/5/03	1745	59.9075	148.8682	85	Royer	
HX27009503.016	CTD63 End	CF1	4/5/03	1753	59.9073	148.8709	85	Royer	
HX27009503.017	CTD64 Start	CF2	4/5/03	1806	59.8836	148.866	112	Royer	
HX27009503.018	CTD64 End	CF2	4/5/03	1813	59.8838	148.871	112	Royer	
HX27009503.019	CTD65 Start	CF3	4/5/03	1830	59.8507	148.868	158	Royer	
HX27009503.020	CTD65 End	CF3	4/5/03	1847	59.8517	148.8812	158	Royer	
HX27009503.021	CTD66 Start	CF4	4/5/03	1905	59.8172	148.8669	182	Royer	
HX27009503.022	CTD66 End	CF4	4/5/03	1915	59.8174	148.8723	182	Royer	
HX27009503.023	CTD67 Start	CF5	4/5/03	1934	59.7842	148.8667	191	Royer	
HX27009503.024	CTD67 End	CF5	4/5/03	1947	59.7855	148.8742	191	Royer	
HX27009503.025	CTD68 Start	CF6	4/5/03	2005	59.751	148.8665	189	Royer	
HX27009503.026	CTD68 End	CF6	4/5/03	2016	59.7513	148.8721	189	Royer	
HX27009503.027	CTD69 Start	CF7	4/5/03	2033	59.717	148.8645	181	Royer	
HX27009503.028	CTD69 End	CF7	4/5/03	2047	59.7181	148.8668	181	Royer	
HX27009503.029	CTD70 Start	CF8	4/5/03	2100	59.6844	148.8652	180	Royer	
HX27009503.030	CTD70 End	CF8	4/5/03	2114	59.6845	148.8652	180	Royer	
HX27009503.031	CTD71 Start	CF9	4/5/03	2130	59.6498	148.8646	179	Royer	
HX27009503.032	CTD71 End	CF9	4/5/03	2143	59.6506	148.8662	179	Royer	

HX27009503.033	CTD72 Start	CF10	4/5/03	2201	59.6172	148.8653	179	Royer	
HX27009503.034	CTD72 End	CF10	4/5/03	2212	59.6181	148.8682	179	Royer	
HX27009503.035	CTD73 Start	CF11	4/5/03	2230	59.5841	148.866	177	Royer	
HX27009503.036	CTD73 End	CF11	4/5/03	2244	59.585	148.8713	177	Royer	
HX27009503.037	CTD74 Start	CF12	4/5/03	2304	59.5516	148.87	177	Royer	
HX27009503.038	CTD74 End	CF12	4/5/03	2312	59.5516	148.87	177	Royer	
HX27009503.039	CTD75 Start	CF13	4/5/03	2330	59.5174	148.8655	172	Royer	
HX27009503.040	CTD75 End	CF13	4/5/03	2345	59.5185	148.8669	172	Royer	
HX27009603.001	CTD76 Start	CF14	4/6/03	0000	59.4836	148.8651	171	Royer	
HX27009603.002	CTD76 End	CF14	4/6/03	0011	59.485	148.8681	171	Royer	
HX27009603.003	CTD77 Start	CF15	4/6/03	0029	59.4515	148.8658	182	Royer	
HX27009603.004	CTD77 End	CF15	4/6/03	0043	59.4531	148.8703	182	Royer	
HX27009603.005	CTD78 Start	RI10	4/6/03	0127	59.41	148.8682	166	Royer	Station surrounding the GAK4 moorings
HX27009603.006	CTD78 End	RI10	4/6/03	0134	59.4107	148.8709	166	Royer	
HX27009603.007	CTD79 Start	GAK4I	4/6/03	0211	59.3347	148.9775	197	Royer	
HX27009603.008	CTD79 End	GAK4I	4/6/03	0222	59.3351	148.9821	197	Royer	
HX27009603.009	CTD80 Start	RI8	4/6/03	0316	59.408	149.2125	190	Royer	Station surrounding GAK4 moorings
HX27009603.010	CTD80 End	RI8	4/6/03	0327	59.4058	149.2155	190	Royer	
HX27009603.011	CTD81 Start	GAK3I	4/6/03	0405	59.4823	149.1201	204	Royer	Station surrounding GAK4 mooring
HX27009603.012	CTD81 End	GAK3I	4/6/03	0419	59.4812	149.1264	204	Royer	
HX27009603.013	CTD82 Start	GAK4	4/6/03	0453	59.4092	149.0475	201	Royer	
HX27009603.014	CTD82 End	GAK4	4/6/03	0505	59.4094	149.0502	201	Royer	
HX27009603.015	HTI Transect Start	GAK3	4/6/03	0608	59.5549	149.1905	212	Coyle	
HX27009603.016	HTI Transect End	GAK2	4/6/03	0740	59.6907	149.3284	212	Coyle	
HX27009603.017	MOCNESS Start	GAK2	4/6/03	0741	59.6906	149.3279	226	Coyle	
HX27009603.018	MOCNESS End	GAK2	4/6/03	0819	59.6907	149.2973	212	Coyle	
HX27009603.019	HTI Transect Start	GAK2	4/6/03	0834	59.6901	149.3264	212	Coyle	
HX27009603.020	MOCNESS Start	GAK1	4/6/03	1022	59.8466	149.4681	273	Coyle	
HX27009603.021	MOCNESS End	GAK1	4/6/03	1109	59.8738	149.4826	273	Coyle	
HX27009603.022	CTD83 Start	MS1	4/6/03	1942	59.9537	147.9299	164	Royer	
HX27009603.023	CTD83 End	MS1	4/6/03	1955	59.9498	147.9344	164	Royer	
HX27009603.024	CTD84 Start	MS2	4/6/03	2009	59.9431	147.8952	194	Royer	
HX27009603.025	CTD84 End	MS2	4/6/03	2031	59.9343	147.9046	194	Royer	
HX27009603.026	CalVET Net Tow Start	MS2	4/6/03	2041	59.9415	147.8961	194	Hopcroft	

HX27009603.027	CalVET Net Tow End	MS2	4/6/03	2053	59.9357	147.8775	194	Hopcroft	
HX27009603.028	CTD85 Start	MS3	4/6/03	2100	59.9316	147.8578	167	Royer	
HX27009603.029	CTD85 End	MS3	4/6/03	2124	59.9208	147.833	167	Royer	
HX27009603.030	CTD86 Start	MS4	4/6/03	2127	59.9203	147.8293	109	Royer	
HX27009603.031	CTD86 End	MS4	4/6/03	2136	59.9167	147.8313	109	Royer	
HX27009603.032	CTD87 Start	HB4	4/6/03	2337	60.1472	147.5034	107	Royer	
HX27009603.033	CTD87 End	HB4	4/6/03	2345	60.1461	147.5049	107	Royer	
HX27009703.001	CTD88 Start	HB3	4/7/03	0003	60.1643	147.5768	90	Royer	
HX27009703.002	CTD88 End	HB3	4/7/03	0009	60.1632	147.5774	90	Royer	
HX27009703.003	CTD89 Start	HB2	4/7/03	0028	60.1788	147.6422	190	Royer	
HX27009703.004	CTD89 End	HB2	4/7/03	0041	60.1757	147.6429	190	Royer	
HX27009703.005	CalVET Net Tow Start	HB2	4/7/03	0043	60.176	147.6434	190	Hopcroft	
HX27009703.006	CalVET Net Tow End	HB2	4/7/03	0049	60.1746	147.6448	190	Hopcroft	
HX27009703.007	CTD90 Start	HB1	4/7/03	0106	60.1917	147.7023	245	Royer	
HX27009703.008	CTD90 End	HB1	4/7/03	0125	60.1861	147.7033	245	Royer	
HX27009703.009	CalVET Net Tow Start	PWS2	4/7/03	0441	60.5351	147.8013	742	Hopcroft	
HX27009703.010	CalVET Net Tow End	PWS2	4/7/03	0447	60.5341	147.8009	742	Hopcroft	
HX27009703.011	CTD91 Start	PWS2	4/7/03	0449	60.5334	147.7997	742	Royer	
HX27009703.012	CTD91 End	PWS2	4/7/03	0534	60.5249	147.7937	742	Royer	
HX27009703.013	MOCNESS Start	PWS2	4/7/03	0554	60.5383	147.7922	742	Coyle	
HX27009703.014	MOCNESS End	PWS2	4/7/03	0720	60.5831	147.7485	742	Coyle	
HX27009703.015	MOCNESS Start	PWS2	4/7/03	0752	60.5375	147.7977	742	Coyle	
HX27009703.016	MOCNESS End	PWS2	4/7/03	0825	60.5526	147.778	742	Coyle	
HX27009703.017	MOCNESS Start	PWS2	4/7/03	0847	60.5374	147.799	742	Coyle	Sampling 150 to 0
HX27009703.018	MOCNESS Start	PWS1	4/7/03	1023	60.3799	147.9335	335	Coyle	
HX27009703.019	MOCNESS End	PWS1	4/7/03	1105	60.3999	147.9034	335	Coyle	
HX27009703.020	MOCNESS Start	KIP2	4/7/03	1204	60.2796	147.9845	589	Coyle	
HX27009703.021	MOCNESS End	KIP2	4/7/03	1243	60.3005	147.9621	589	Coyle	
HX27009703.022	CTD92 Start	PWS1	4/7/03	1604	60.379	147.9384	356	Royer	
HX27009703.023	CTD92 End	PWS1	4/7/03	1626	60.374	147.937	356	Royer	
HX27009703.024	CalVET Net Tow Start	PWS1	4/7/03	1634	60.373	147.939	356	Hopcroft	
HX27009703.025	CalVET Net Tow End	PWS1	4/7/03	1638	60.371	147.9397	356	Hopcroft	
HX27009703.026	CTD93 Start	KIP2	4/7/03	1715	60.2768	147.9893	570	Royer	

HX27009703.027	CTD93 End	KIP2	4/7/03	1753	60.2634	147.9902	570	Royer	
HX27009703.028	CalVET Net Tow Start	KIP2	4/7/03	1804	60.278	147.9856	570	Hopcroft	
HX27009703.029	CalVET Net Tow End	KIP2	4/7/03	1811	60.2759	147.9861	570	Hopcroft	
HX27009703.030	CTD94 Start	KIP2	4/7/03	1815	60.2781	147.9877	570	Royer	prim prod
HX27009703.031	CTD94 End	KIP2	4/7/03	1820	60.2758	147.9892	570	Royer	
HX27009703.032	Ring Net Start	KIP2	4/7/03	1837	60.274	147.9881	570	Hopcroft	
HX27009703.033	Ring Net End	KIP2	4/7/03	1844	60.2716	147.9907	570	Hopcroft	
HX27009703.034	CTD95 Start	KIP2	4/7/03	1856	60.2777	147.9883	570	Hopcroft	Water for Hopcroft
HX27009703.035	CTD95 End	KIP2	4/7/03	1859	60.2767	147.9898	570	Hopcroft	
HX27009703.036	CTD96 Start	KIP2	4/7/03	1911	60.2725	147.9933	570	Hopcroft	Water for Hopcroft
HX27009703.037	CTD96 End	KIP2	4/7/03	1913	60.2716	147.9939	570	Hopcroft	
HX27009703.038	CTD97 Start	KIP2	4/7/03	1926	60.2766	147.9885	570	Hopcroft	Water for Hopcroft
HX27009703.039	CTD97 End	KIP2	4/7/03	1928	60.2757	147.9887	570	Hopcroft	
HX27009703.040	CTD98 Start	KIP2	4/7/03	1942	60.2705	147.9891	570	Hopcroft	Water for Hopcroft
HX27009703.041	CTD98 End	KIP2	4/7/03	1942	60.2702	147.9892	570	Hopcroft	
HX27009703.042	CTD99 Start	KIP2	4/7/03	1955	60.2772	147.9885	570	Hopcroft	Water for Hopcroft
HX27009703.043	CTD99 End	KIP2	4/7/03	1956	60.2771	147.9884	570	Hopcroft	
HX27009703.044	CTD100 Start	KIP2	4/7/03	2004	60.2751	147.987	570	Hopcroft	Water for Hopcroft
HX27009703.045	CTD100 End	KIP2	4/7/03	2006	60.2745	147.9865	570	Hopcroft	
HX27009703.046	Ring Net Start	KIP2	4/7/03	2012	60.2779	147.9845	570	Hopcroft	
HX27009703.047	Ring Net End	KIP2	4/7/03	2020	60.2757	147.9835	570	Hopcroft	
HX27009703.048	Ring Net Start	KIP2	4/7/03	2024	60.2744	147.9836	570	Hopcroft	
HX27009703.049	Ring Net End	KIP2	4/7/03	2030	60.2724	147.9841	570	Hopcroft	
HX27009703.050	Ring Net Start	KIP2	4/7/03	2034	60.2711	147.9844	570	Hopcroft	
HX27009703.051	Ring Net End	KIP2	4/7/03	2039	60.2694	147.9851	570	Hopcroft	
HX27009803.001	MOCNESS Start	MS2	4/8/03	0850	59.944	147.892	197	Coyle	
HX27009803.002	MOCNESS End	MS2	4/8/03	0919	59.9549	147.8708	197	Coyle	
HX27009803.003	MOCNESS Start	HB2	4/8/03	1104	60.1817	147.6761	260	Coyle	
HX27009803.004	MOCNESS End	HB2	4/8/03	1139	60.2012	147.6687	260	Coyle	
HX27009803.005	CTD101 Start	MH1	4/8/03	2010	60.4028	147.0929	137	Royer	
HX27009803.006	CTD101 End	MH1	4/8/03	2024	60.4038	147.1008	137	Royer	
HX27009803.007	CTD102 Start	MH2	4/8/03	2044	60.4018	146.9729	300	Royer	
HX27009803.008	CTD102 End	MH2	4/8/03	2122	60.4018	146.9456	300	Royer	
HX27009803.009	CTD103 Start	MH3	4/8/03	2140	60.4039	146.8513	300	Royer	
HX27009803.010	CTD103 End	MH3	4/8/03	2205	60.4159	146.8495	300	Royer	
HX27009803.011	CTD104 Start	MH4	4/8/03	2231	60.403	146.7376	232	Royer	
HX27009803.012	CTD104 End	MH4	4/8/03	2246	60.4046	146.7415	232	Royer	

HX27010003.001	Ring Net Start	RA1	4/10/03	0352	60.1438	147.8242	310	Hopcroft	
HX27010003.002	Ring Net End	RA1	4/10/03	0353	60.1438	147.8243	310	Hopcroft	
HX27010003.003	CTD105 Start	RA1	4/10/03	0353	60.1439	147.8245	310	Hopcroft	Water for Hopcroft
HX27010003.004	CTD105 End	RA1	4/10/03	0353	60.1439	147.8245	310	Hopcroft	
HX27010003.005	CTD106 Start	RA1	4/10/03	0406	60.1442	147.826	310	Hopcroft	Water for Hopcroft
HX27010003.006	CTD106 End	RA1	4/10/03	0408	60.1442	147.8262	310	Hopcroft	
HX27010003.007	CTD107 Start	EV1	4/10/03	0440	60.0836	147.9057	227	Royer	
HX27010003.008	CTD107 End	EV1	4/10/03	0455	60.0818	147.9086	227	Royer	
HX27010003.009	CTD108 Start	FI1	4/10/03	0551	60.145	148.0073	227	Royer	
HX27010003.010	CTD108 End	FI1	4/10/03	0601	60.1437	148.0118	227	Royer	
HX27010003.011	CTD109 Start	BI1	4/10/03	0647	60.1962	148.0919	261	Royer	
HX27010003.012	CTD109 End	BI1	4/10/03	0704	60.1943	148.0946	261	Royer	
HX27010003.013	CTD110 Start	GAK1	4/10/03	1205	59.8453	149.4686	271	Royer	
HX27010003.014	CTD110 End	GAK1	4/10/03	1220	59.8435	149.4698	271	Royer	
HX27010003.015	MOCNESS Start	GAK1	4/10/03	1303	59.8698	149.4643	271	Pinchuk	
HX27010003.016	MOCNESS End	GAK1	4/10/03	1304	59.8705	149.4636	271	Pinchuk	
HX27010003.017	CTD111 Start	RES2.5	4/10/03	1516	60.026	149.3604	297	Royer	
HX27010003.018	CTD111 End	RES2.5	4/10/03	1531	60.0256	149.3622	297	Royer	