CRUISE REPORT

Cruise Number: MF-01-10
FOCI Number: 4MF01

Ship:
NOAA Ship Miller Freeman

Area of Operations:
Western Gulf of Alaska

Itinerary:
Date depart / port: September 2, 2001 / Kodiak, AK
Date arrive / port: September 19, 2001 / Kodiak, AK

Participating organizations:
NOAA - Alaska Fisheries Science Center (AFSC)
University of Washington (UW)

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Cruise Objectives:

The late-summer FOCI cruise is designed to address biological and methodological questions regarding age-0 walleye pollock in the western Gulf of Alaska. The primary cruise objective was to map age-0 pollock density over an area of high environmental heterogeneity, and to relate variations in fish density with environmental variability to provide some insight regarding pollock nursery suitability. Preliminary findings indicate that age-0 pollock are best sampled in the midwater at night. Therefore, to accomplish the primary objective, nighttime samples of age-0 pollock, their prey, temperature, and salinity were collected at 39 “grid” stations between Shelikof Strait and the Shumagin Islands (Figure 1, Table 1). These stations, many of which were sampled during September 2000, are situated along ten acoustic transects and form a grid from nearshore to the outer shelf. Transits between stations will emphasize the collection of acoustic data along these transects; acoustic data will be collected continuously throughout the cruise.

Secondary cruise objectives that were addressed, from highest to lowest priority, were as follows.

1) Occupy ten “sea lion” stations, at day or night, which are near sea lion rookeries on Atkins, Chowiet, and Chirikof Islands (Figure 1, Table 1).

2) Occupy any transect segments that were missed at night, and re-occupy some or all transect segments and grid stations for day-night comparison of acoustic and trawl-catch data.

3) Opportunistically sample (net and acoustic) at two or more locations deemed suitable for studying the diel vertical movements (DVM) of age-1 and age-2 pollock.

4) Conduct neuston tows at each of the 39 grid stations (daytime collections primarily, nighttime collections if time permits) for assessment of ichthyoplankton species assemblage composition/structure. If possible, conduct an additional series (4-5) of neuston samples en route to and /or from Kodiak, AK, for data comparison.

5) Conduct Methot tows at five grid stations for comparison to the anchovy trawl in terms of age-0 size composition.

6) Opportunistically sample with trawls (Tucker and anchovy) at locations along the ten transects where the acoustic back-scatter is relatively high.

Summary of Operations:

Operation	Tows
Anchovy trawl (Ancho)	109
Seabird SeaCAT CTD (CAT)	93
CTD without bottle samples (CTD)	3
Methot trawl (Meth)	4
Neuston (Neu)	40
Shrimp Trawl (Shrimp)	3
1m_ Tucker trawl (Tuck1)	93

Samples Collected	Tows	Number
Adult pollock collected for gut analysis (A-Gut)	32	565
Adult pollock length measurements (A-Length)	53	3122
Adult pollock collected for otolith analysis (A-Oto)	1	1
Adult pollock individual length vs weight measurements (A-Wght)	6	128
Matt Wilson (capGut)	38	671
capelin shrinkage for Matt Wilson (capShrnk)	6	103
SeaBird SeaCat CTD (CAT)	93	
Cod for Alisa Abookire (CodAA)	11	24
SeaBird CTD (CTD)	3	
Matt Wilson (eulGut)	34	887
eulachon shrinkage for Matt Wilson (eulShrnk)	3	39
Frozen fish for Mike Canino (FishMC)	7	143
Stimulated fluorescence collected during CTD casts (Fluor)	2	
Matt Wilson (Isopod)	11	18
Juvenile pollock collected for gut analysis (J-Gut)	22	865
Juvenile pollock length measurements (J-Length)	75	4953
Juvenile pollock collected for otolith analysis (J-Oto)	65	2614
Neuston tows for Janet Duffey-Anderson (NeuJDA)	38	41
Photosynthetically Active Radiation data collected during CTD casts (PAR)	1	
Parasite samples for Frank Morado, AFSC. (Para FM)	15	905
Frozen pollock for Janet Duffey-Anderson (pollJDA)	10	286
pollock length/weight for Matt Wilson (polLngWt)	7	124
pollock shrinkage for Matt Wilson (polShrnk)	4	72
Quantitative tow preserved in formalin (QTowF)	177	209
ScanMar (ScanMar)	9	

Summary of Cruise:

Narrative:

The NOAA ship Miller Freeman departed Kodiak on 2 September (15:00 ADT) and returned 19 September (07:00 ADT). Most objectives were completed. The primary objective, to occupy 39 locations situated on 10 cross-shelf transects (Transects 1 through 10) between southwest Shelikof Strait and the Shumagin Islands at both day and night, was accomplished during 3-18 September. Secondary objectives were satisfied by sampling at many of these 39 grid locations and at 23 additional locations: four stations were occupied off east Kodiak Island to test gear and collect neuston samples, nine areas of relatively high echo-sign were sampled, eight of the 10 "sea lion" stations (two were omitted due to time constraints), two additional locations (Grid stations 4A, and 6A) were sampled as a matter of convenience and relevance to the sampling that occurred during September 2000. The FOCI station designator (Table 1) groups temporally consecutive operations or hauls at one location; thus, day and night sampling at one location usually resulted in multiple station numbers. Therefore, the sampling activity at 62 different locations was divided into a total of 95 stations (Figure 1). A chronological list of all samples collected and a sample tally are given in Tables 1 and in the Summary of Operations, respectively.

The primary sampling occurred along Transects 1 though 10. All but two of the 39 predetermined locations along these transects were occupied twice, once during daylight and once at night, using a 1-m Tucker trawl and an anchovy trawl. The daytime Tucker at grid location 10E was not obtained due to gear failure, and 9B was not occupied during the day due to time constraints. Thus, 77 successful Tucker trawl and 78 anchovy trawl tows were conducted at grid locations. Nighttime was observed to occur from 21:45 - 07:00 ADT (daytime was observed to occur from 0:800 – 21:00) (ADT=GMT-8), most grid stations fell into these diel categories.

Occupation of the grid began at the southernmost location ("A1") just after nightfall on 3 September. Sampling proceeded shoreward along Transect 1 until daybreak when we sampled at the three "sea lion" stations along Line 0. Usually, moving back and forth along each transect was preferable to moving across transects so that the amount of acoustic data collected along each transect could be maximized.

Sampling at each predetermined location, day or night, involved two net-sampling operations. First, a 1-m Tucker trawl (0.333 mm mesh net) was used to collect samples of potential age-0 pollock prey. This net was fished obliquely from 200 m or 10 m above bottom, whichever was shallowest, to the surface. The Tucker trawl was used to obtain depth-discrete samples by opening and closing two nets. The first net was opened at depth and fished up to the bottom of the thermocline. When the thermocline was either indistinct or extended deeper than about 70 m, the net was fished up to 40 m. Closing the first net simultaneously opened the second net, which was then fished to the surface. Second, an anchovy trawl (3-mm codend liner) was fished over a similar net path to sample age-0 pollock, associated nekton, and scyphozoans. The anchovy trawl was deployed at about 50 m/min, allowed to settle at 200 m or 20 m (headrope depth) above bottom, whichever was shallower, and then retrieved at about 10 m/min. Towing speed was about 2.7 kts during deployment and retrieval. Scanmar net mensuration equipment was used on some tows to confirm that the horizontal opening of the anchovy trawl mouth was as observed last year. The Tucker trawl was fished with a SeaCat CTD profiler, and the anchovy trawl was equipped with a SBE microbathythermograph. Thus, temperature and salinity profiles were collected at each location, and the net path was recorded. The SeaBird 911+ CTD profiler was used at three locations to collect additional CTD data (and water samples) to verify data accuracy.

A Simrad EK-500 (38 and 120 kHz) system was used to collect acoustic data throughout the duration of the cruise, but most importantly along each transect and simultaneously with net tows. Transits between transects were minimized in order to maximize acoustic coverage along each transect during each diel period (Figure 2). Acoustic data were also used to direct opportunistic sampling to boost the number of samples from locations where age-0 pollock were relatively abundant.

Secondary cruise objectives were addressed as follows.

1) Eight of the ten "sea lion" stations were sampled during the day with the anchovy trawl. Two were omitted due to time constraints. Tucker samples were also collected during the day but only at four of these stations.

2) As stated above, all but two (9B and 10E) of the 39 grid stations were occupied during the day. Due to time constraints, acoustic data were not collected at day or night for all parts of each acoustic transect (Figure 2).

3) Samples for examining the diel vertical migration of age-1 and age-2 pollock were collected at four locations (9D, 9E, 10E, and 10C). Only one of these locations (9E) was sampled at day and night, all others were sampled only during the day. Physical, plankton, and trawl-catch data were collected at each location in addition to frozen samples of age-1 and age-2 pollock.

4) Forty neuston samples were collected mostly at grid stations (n=35), but also along east Kodiak Island (n=4), and at one “sea lion” station (7Cn). Fifteen of these neuston samples were collected at day, 19 at night, and six at twilight.

5) At three grid locations, a sample was collected with the Methot trawl for comparison to that from the anchovy trawl to ensure that the smallest age-0 pollock were being adequately collected with the anchovy net.

6) Opportunistic sampling occurred at nine locations where the echo sign was relatively strong, this involved 11 anchovy and two Tucker trawl tows. This sampling was mostly restricted to daylight since most of the relatively short nighttime was needed to occupy the predetermined grid locations. Because echo-layers during the day are often vertically compressed, most of these tows targeted depth layers to identify the sign. The Tucker tows were to collect potential prey in areas of high relative abundance of age-0 pollock.

7) During the cruise, we received word that design differences between our primary and backup anchovy trawls may cause them to sample with different efficiencies, so we conducted three pairs of tows to examine potential differences in catch composition and net mouth opening as measured with Scanmar and Furuno net mensuration gear.

Acknowledgments:

The scientific party would like to acknowledge the hard work and support of the officers and crew of the NOAA ship Miller Freeman. All operations were completed with an admirable degree of efficiency and professionalism that is to be commended, particularly given that the crew is minimally staffed.

Attachments (see next pages):

Table 1. Cruise summary statistics from the cruise MF01-10 (FOCI 4MF01) aboard the NOAA ship Miller Freeman, 2-19 September 2001, in the western Gulf of Alaska.

Figure 1. Sampling locations occupied during the cruise MF01-10 (FOCI 4MF01) aboard the NOAA ship Miller Freeman, 2-19 September 2001. Except for the first five stations, the FOCI station numbers (see Table 1) along each transect are offset from their actual location according to diel sampling period: day stations are shifted slightly northeast of their true position, night stations are southwest, and twilight stations are not shifted.

Figure 2. Eleven transects along which acoustic and net sampling was concentrated during the cruise MF01-10 (FOCI 4MF01) aboard the NOAA ship Miller Freeman, 2-19 September 2001. The thin solid line indicates transect location, the thick offset lines indicate day (dashed line) and night (solid line) coverage.

Table 1. Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
03-Sep-01	05:01	1	1	EKOD01	CTD001	154	57 07.48N	152 27.03 W	CTD	CTD, Fluor, PAR, ScanMar	Scanmar depth sensor #3054 max depth = 146m
03-Sep-01	05:17	1	2	EKOD01		154	57 07.74N	152 26.98 W	Neu	NeuJDA	Max depth was really 0.15m.
03-Sep-01	05:52	1	3	EKOD01	TUCK001	153	57 08.15N	152 26.57 W	CAT	CAT	Codend on net 2 was cracked and leaked.
03-Sep-01	05:52	1	3	EKOD01	TUCK001	153	57 08.15N	152 26.57 W	Tuck1	QTowF	
03-Sep-01	05:52	1	3	EKOD01	TUCK001	153	57 08.15N	152 26.57 W	Tuck1	QTowF	Codend on net 2 was cracked and leaked.
03-Sep-01	06:49	1	4	EKOD01		154	57 06.71N	152 27.43 W	Ancho	A-Length, J-Length, polLngWt	
03-Sep-01	10:32	2	1	EKOD02		152	56 43.12N	153 08.07 W	Neu	NeuJDA	Max depth was really 0.15m.
03-Sep-01	13:27	3	1	EKOD03		80	56 21.70N	153 44.43 W	Neu	NeuJDA	Max depth was really 0.15m
03-Sep-01	16:27	4	1	EKOD04		294	55 59.86N	154 21.48 W	Neu	NeuJDA	Max depth was really 0.15m.
04-Sep-01	08:34	5	1	1A		419	54 41.30N	158 02.05 W	Neu	NeuJDA	Max depth actually 0.15m.
04-Sep-01	09:19	5	2	1A	TUCK002	656	54 40.33N	158 02.80 W	CAT	CAT	
04-Sep-01	09:19	5	2	1A	TUCK002	656	54 40.33N	158 02.80 W	Tuck1	QTowF	
04-Sep-01	09:19	5	2	1A	TUCK002	656	54 40.33N	158 02.80 W	Tuck1	QTowF	Net 1 came up from a target of 200 m to 140 m before first messenger tripped. Used TUCK001 CONFIG file instead of JAN001.
04-Sep-01	10:18	5	3	1A		486	54 41.06N	158 02.84 W	Ancho	Discard	No samples collected, only jellyfish caught
04-Sep-01	13:23	6	1	1B	TUCK003	175	54 54.67N	158 21.16 W	CAT	CAT	Had problems with wire under ship high wire angles and low wire angles.
04-Sep-01	13:23	6	1	1B	TUCK003	175	54 54.67N	158 21.16 W	Tuck1	QTowF	Had problems with wire under ship high wire angles and low wire angles.
04-Sep-01	14:15	6	2	1B		172	54 54.63N	158 20.95 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Length, J-Oto	
04-Sep-01	15:00	6	3	1B		183	54 53.00N	158 22.25 W	Neu	NeuJDA	
04-Sep-01	17:32	7	1	0B	TUCK004	86	54 50.01N	158 48.43 W	CAT	CAT	Removed 2 aequorea jellies (420g total wt.) from net 2.
04-Sep-01	17:32	7	1	0B	TUCK004	86	54 50.01N	158 48.43 W	Tuck1	QTowF	Removed 2 aequorea jellies (420g total wt.) from net 2.
04-Sep-01	18:14	7	2	OB		85	54 50.40N	158 48.29 W	Ancho	A-Length, J-Length, J-Oto	
04-Sep-01	20:43	8	1	0C	TUCK005	77	55 04.37N	159 07.77 W	CAT	CAT	
04-Sep-01	20:43	8	1	0C	TUCK005	77	55 04.37N	159 07.77 W	Tuck1	QTowF	
04-Sep-01	21:17	8	2	0C		77	55 04.23N	159 07.84 W	Ancho	Isopod, J-Length, J-Oto	
04-Sep-01	23:56	9	1	0D	TUCK006	156	55 20.04N	159 30.52 W	CAT	CAT	
04-Sep-01	23:56	9	1	0D	TUCK006	156	55 20.04N	159 30.52 W	Tuck1	QTowF	
05-Sep-01	00:43	9	2	0D		154	55 20.41N	159 30.66 W	Ancho	A-Length, capShrnk, eulGut, Isopod, J-Length, J-Oto, polShrnk	
05-Sep-01	04:15	10	1	IC	TUCK007	198	55 11.56N	158 43.46 W	CAT	CAT	Net hit bottom
05-Sep-01	04:15	10	1	IC	TUCK007	198	55 11.56N	158 43.46 W	Tuck1	Discard	Net hit bottom
05-Sep-01	04:52	10	2	1C	TUCK008	199	55 11.43N	158 43.64 W	CAT	CAT	
05-Sep-01	04:52	10	2	1C	TUCK008	199	55 11.43N	158 43.64 W	Tuck1	QTowF	
05-Sep-01	05:32	10	3	1C		197	55 11.37N	158 44.18 W	Ancho	A-Gut, A-Length, capGut, eulGut, FishMC, J-Length, J-Oto	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
05-Sep-01	06:40	10	4	1C		198	55 11.47N	158 42.89 W	Neu	NeuJDA	Actual max depth was 0.15m. Max wire out dummied due to lack of data on COD form.
05-Sep-01	07:36	10	5	1C	TUCK009	198	55 11.39N	158 43.65 W	CAT	CAT	Net 2 had 1 Aequorila removed.
05-Sep-01	07:36	10	5	1C	TUCK009	198	55 11.39N	158 43.65 W	Tuck1	QTowF	Net 2 had 1 Aequorila removed.
05-Sep-01	08:24	10	6	1C		198	55 11.48N	158 43.25 W	Ancho	A-Gut, A-Length, capGut, eulGut, Isopod, J-Gut, J-Length, J-Oto	
05-Sep-01	11:29	11	1	1D	TUCK011	146	55 27.71N	159 07.14 W	CAT	CAT	Net 2 did not trip. Discarded 1 jelly Aequorea. Net 1 sampled the whole water
05-Sep-01	11:29	11	1	1D	TUCK011	146	55 27.71N	159 07.14 W	Tuck1	QTowF	Net 2 did not trip. Discarded 1 jelly Aequorea. Net 1 sampled the whole water
05-Sep-01	12:16	11	2	1D		144	55 28.02N	159 07.13 W	Ancho	A-Gut, A-Length, capGut, eulGut, Isopod, J-Gut, J-Length, J-Oto	
05-Sep-01	14:37	12	1	1E		108	55 42.84N	159 26.18 W	Neu	NeuJDA	Actual max depth is 0.15m.
05-Sep-01	15:34	12	2	1E	TUCK012	108	55 43.07N	159 25.97 W	CAT	CAT	
05-Sep-01	15:34	12	2	1E	TUCK012	108	55 43.07N	159 25.97 W	Tuck1	QTowF	
05-Sep-01	16:09	12	3	1E		107	55 42.72N	159 26.36 W	Ancho	A-Length, capGut, J-Gut, J-Length, J-Oto, polLngWt	Max depth was not given, number dummied
05-Sep-01	18:35	13	1	1D	TUCK013	142	55 27.80N	159 06.62 W	CAT	CAT	
05-Sep-01	18:35	13	1	1D	TUCK013	142	55 27.80N	159 06.62 W	Tuck1	QTowF	
05-Sep-01	19:11	13	2	1D		141	55 27.98N	159 06.87 W	Ancho	A-Length, capGut, J-Gut, J-Length, J-Oto, Para FM	
05-Sep-01	23:52	14	1	1B	TUCK014	175	54 54.77N	158 20.63 W	CAT	CAT	
05-Sep-01	23:52	14	1	1B	TUCK014	175	54 54.77N	158 20.63 W	Tuck1	QTowF	
05-Sep-01	23:52	14	1	1B	TUCK014	175	54 54.77N	158 20.63 W	Tuck1	QTowF	3 jellies removed
06-Sep-01	00:36	14	2	1B		179	54 54.61N	158 21.40 W	Ancho	A-Length, eulShrnk, J-Length, J-Oto	
06-Sep-01	03:25	15	1	1A	TUCK015	533	54 40.89N	158 03.16 W	CAT	CAT	
06-Sep-01	03:25	15	1	1A	TUCK015	533	54 40.89N	158 03.16 W	Tuck1	QTowF	
06-Sep-01	04:08	15	2	1A		527	54 40.87N	158 03.47 W	Ancho	Discard	No fish caught
06-Sep-01	07:25	16	1	2B		81	55 05.05N	157 59.12 W	Neu	NeuJDA	Max depth was actually 0.15m.
06-Sep-01	07:55	16	2	2B	TUCK016	80	55 05.17N	157 59.53 W	CAT	CAT	Removed 1 Aequorea jelly from net 2.
06-Sep-01	07:55	16	2	2B	TUCK016	80	55 05.17N	157 59.53 W	Tuck1	QTowF	Removed 1 Aequorea jelly from net 2.
06-Sep-01	08:35	16	3	2B		81	55 05.00N	157 59.14 W	Ancho	Discard	
06-Sep-01	11:05	17	1	2C		142	55 22.05N	158 22.62 W	Neu	NeuJDA	Max depth was really 0.15m.
06-Sep-01	11:30	17	2	2C	TUCK017	141	55 22.05N	158 22.74 W	CAT	CAT	Removed 2 large jellies from net 2.
06-Sep-01	11:30	17	2	2C	TUCK017	141	55 22.05N	158 22.74 W	Tuck1	QTowF	Removed 2 large jellies from net 2.
06-Sep-01	12:08	17	3	2C		140	55 21.94N	158 21.39 W	Ancho	A-Gut, A-Length, capGut, capShrnk, J-Length, J-Oto, polLngWt, polShrnk	
06-Sep-01	14:56	18	1	2B		83	55 04.82N	157 59.17 W	Neu	NeuJDA	Actual depth was 0.15m.
06-Sep-01	15:52	18	2	2B	TUCK018	82	55 04.86N	157 59.32 W	CAT	CAT	
06-Sep-01	15:52	18	2	2B	TUCK018	82	55 04.86N	157 59.32 W	Tuck1	QTowF	
06-Sep-01	16:21	18	3	2B		82	55 05.22N	157 59.21 W	Ancho	Discard	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
06-Sep-01	18:51	19	1	2C	T019_01	139	55 22.31N	158 22.12 W	CAT	CAT	
06-Sep-01	18:51	19	1	2C	T019_01	139	55 22.31N	158 22.12 W	Tuck1	QTowF	
06-Sep-01	19:30	19	2	2C		140	55 21.70N	158 21.68 W	Ancho	capShrnk	
06-Sep-01	22:31	20	1	2D		86	55 39.50N	158 45.40 W	Neu	NeuJDA	Actual depth = 0.15 m
06-Sep-01	22:31	20	2	2D	T020_02	95	55 39.24N	158 45.23 W	CAT	CAT	
06-Sep-01	22:31	20	2	2D	T020_02	95	55 39.24N	158 45.23 W	Tuck1	QTowF	
06-Sep-01	23:05	20	3	2D		89	55 39.42N	158 45.57 W	Ancho	capGut, capShrnk, Para FM	
07-Sep-01	01:28	21	1	2E	T021_01	90	55 53.66N	159 05.00 W	CAT	CAT	
07-Sep-01	01:28	21	1	2E	T021_01	90	55 53.66N	159 05.00 W	Tuck1	QTowF	
07-Sep-01	02:00	21	2	2E		89	55 53.67N	159 05.09 W	Ancho	Discard	No samples taken, jellyfish trawl
07-Sep-01	03:21	22	1	OPP		130	55 49.09N	158 58.47 W	Ancho	A-Length, capGut, capShrnk, J-Gut, J-Length, J-Oto, Para FM	Tow done for Frank Morado samples
07-Sep-01	04:43	23	1	2E		90	55 53.49N	159 05.56 W	Meth	ScanMar	Hit bottom, filled with mud, scanmar failed
07-Sep-01	05:20	23	2	2E		87	55 53.73N	159 15.18 W	Meth	ScanMar	No fish larvae or age-0 pollock found
07-Sep-01	05:49	23	3	2E		88	55 53.75N	159 05.00 W	Neu	NeuJDA	Actual depth is 0.15m
07-Sep-01	06:21	23	4	2E	T023_04	87	55 53.60N	159 05.36 W	CAT	CAT	
07-Sep-01	06:21	23	4	2E	T023_04	87	55 53.60N	159 05.36 W	Tuck1	QTowF	
07-Sep-01	06:48	23	5	2E		85	55 53.65N	159 04.79 W	Ancho	A-Gut, A-Length, capGut, eulGut, eulShrnk, J-Gut, J-Length, J-Oto, polLngWt	
07-Sep-01	09:21	24	1	2D	T024_01	89	55 39.38N	158 45.46 W	CAT	CAT	Seacat failed on way down, still had numbers but no plot and bad file. Data recovered from SCS and saved as
07-Sep-01	09:21	24	1	2D	T024_01	89	55 39.38N	158 45.46 W	Tuck1	QTowF	Seacat failed on way down, still had numbers but no plot and bad file.
07-Sep-01	10:00	24	2	2D		88	55 39.35N	158 45.25 W	Ancho	capGut, capShrnk, eulGut, J-Length, J-Oto	
07-Sep-01	12:39	25	1	1E	TO25_01	106	55 42.87N	159 26.50 W	CAT	CAT	1 Cyanea removed from net 1. 1 Cyanea removed from net 2.
07-Sep-01	12:39	25	1	1E	TO25_01	106	55 42.87N	159 26.50 W	Tuck1	QTowF	1 Cyanea removed from net 1. 1 Cyanea removed from net 2.
07-Sep-01	13:18	25	2	1E		109	55 42.40N	159 26.60 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Gut, J-Length, J-Oto, polLngWt	
07-Sep-01	17:07	26	1	3D	TO26_01	108	55 48.77N	158 26.18 W	CAT	CAT	Jellyfish removed from net 2.
07-Sep-01	17:07	26	1	3D	TO26_01	108	55 48.77N	158 26.18 W	Tuck1	QTowF	Jellyfish removed from net 2.
07-Sep-01	17:41	26	2	3D		108	55 48.95N	158 26.83 W	Ancho	CodAA, J-Length, J-Oto	
07-Sep-01	19:19	27	1	3E	T027_01	90	55 56.13N	158 38.24 W	CAT	CAT	Removed one jelly from net 1
07-Sep-01	19:19	27	1	3E	T027_01	90	55 56.13N	158 38.24 W	Tuck1	QTowF	Removed one jelly from net 1
07-Sep-01	19:49	27	2	3E		92	55 56.10N	158 35.92 W	Ancho	CodAA, J-Gut, J-Length	
07-Sep-01	23:19	28	1	3C	T028_01	131	55 31.93N	158 02.57 W	CAT	CAT	1 jellyfish removed
07-Sep-01	23:19	28	1	3C	T028_01	131	55 31.93N	158 02.57 W	Tuck1	QTowF	1 jellyfish removed
08-Sep-01	00:33	28	2	3C		131	55 31.71N	158 02.53 W	Ancho	J-Length	Good

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
08-Sep-01	02:30	29	1	OPP		133	55 40.00N	158 13.73 W	CAT	CAT	
08-Sep-01	02:30	29	1	OPP		133	55 40.00N	158 13.73 W	Tuck1	QTowF	
08-Sep-01	03:15	29	2	OPP		133	55 40.17N	158 14.50 W	Ancho	capGut, eulGut, J-Gut, J-Length, J-Oto, Para FM, pollJDA	
08-Sep-01	05:28	30	1	OPP		118	55 52.78N	158 31.86 W	Ancho	A-Length, J-Length, J-Oto, Para FM	
08-Sep-01	06:29	31	1	3E		91	55 56.16N	158 36.05 W	Neu	NeuJDA	Actual depth is 0.15m
08-Sep-01	06:52	31	2	3E		93	55 55.76N	158 36.11 W	CAT	CAT	1 jelly removed
08-Sep-01	06:52	31	2	3E		93	55 55.76N	158 36.11 W	Tuck1	QTowF	1 jelly removed
08-Sep-01	07:27	31	3	3E		91	55 56.34N	158 36.01 W	Ancho	A-Length, capGut, CodAA, FishMC, J-Gut, J-Length, J-Oto	
08-Sep-01	08:56	32	1	3D		107	55 48.75N	158 26.07 W	Neu	NeuJDA	3 Jellyfish removed. Max depth actually
08-Sep-01	09:23	32	2	3D	TO32-02	107	55 49.06N	158 26.24 W	CAT	CAT, QTowF	Entered in MOA as Station 32 Haul 1.
08-Sep-01	09:23	32	2	3D	TO32-02	107	55 49.06N	158 26.24 W	Tuck1	QTowF	Entered in MOA as Station 32 Haul 1.
08-Sep-01	10:00	32	3	3C		108	55 48.94N	158 26.67 W	Ancho	capGut, FishMC, J-Gut, J-Length,	
08-Sep-01	12:44	33	1	3C		130	55 31.75N	158 02.58 W	Neu	NeuJDA	Actual max depth was 0.15m.
08-Sep-01	13:07	33	2	3C	TO33_02	131	55 31.96N	158 03.36 W	CAT	CAT	Removed 3 jellies from net 2.
08-Sep-01	13:07	33	2	3C	TO33_02	131	55 31.96N	158 03.36 W	Tuck1	QTowF	Removed 3 jellies from net 2.
08-Sep-01	13:49	33	3	3C		131	55 31.93N	158 02.66 W	Ancho	A-Gut, A-Length, capGut, eulGut, FishMC, J-Length, J-Oto	
08-Sep-01	16:36	34	1	3B		85	55 14.37N	157 37.94 W	Neu	NeuJDA	Actual depth was 0.15m.
08-Sep-01	17:07	34	2	3B	TO34_02	85	55 14.38N	157 38.24 W	CAT	CAT	
08-Sep-01	17:07	34	2	3B	TO34_02	85	55 14.38N	157 38.24 W	Tuck1	QTowF	Removed 2 jellies from net 2.
08-Sep-01	17:40	34	3	3B		85	55 14.38N	157 38.22 W	Ancho	Discard	
08-Sep-01	20:03	35	1	3A		278	54 57.17N	157 15.58 W	Neu	NeuJDA	Actual depth = 0.15m
08-Sep-01	20:29	35	2	3A	T035_02	298	54 56.84N	157 15.63 W	CAT	CAT	
08-Sep-01	20:29	35	2	3A	T035_02	298	54 56.84N	157 15.63 W	Tuck1	QTowF	
08-Sep-01	20:29	35	2	3A	T035_02	298	54 56.84N	157 15.63 W	Tuck1	QTowF	One jelly removed
08-Sep-01	21:15	35	3	3A		240	54 57.37N	157 16.31 W	Ancho	Discard	No fish
09-Sep-01	00:19	36	1	4B		91	55 23.04N	157 15.83 W	Neu	NeuJDA	actual depth = 0.15m
09-Sep-01	00:47	36	2	4B	T036_02	91	55 23.06N	157 16.24 W	CAT	CAT	
09-Sep-01	00:47	36	2	4B	T036_02	91	55 23.06N	157 16.24 W	Tuck1	QTowF	
09-Sep-01	01:32	36	3	4B		91	55 23.12N	157 15.29 W	Ancho	Discard	No fish
09-Sep-01	04:31	37	1	4A	T037_01	289	55 06.51N	156 54.13 W	CAT	CAT	Net 2 flowmeter suspension line broke. Used readings from similar St 20-2 to estimation revolutions. Net 2 release line broke not sure if during or after tow. Samples look diff and are large.
09-Sep-01	04:31	37	1	4A	T037_01	289	55 06.51N	156 54.13 W	Tuck1	QTowF	Net 2 flowmeter suspension line broke. Used readings from similar St 20-2 to estimation revolutions. Net 2 release line broke not sure if during or after tow. Samples look diff and are large.

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
09-Sep-01	07:01	38	1	3A		244	54 57.74N	157 15.75 W	Ancho	Discard	No fish.
09-Sep-01	08:41	38	2	3A	T038_02	271	54 57.19N	157 15.71 W	CAT	CAT	
09-Sep-01	08:41	38	2	3A	T038_02	271	54 57.19N	157 15.71 W	Tuck1	QTowF	
09-Sep-01	11:25	39	1	3B	T039_01	78	55 15.00N	157 37.95 W	CAT	CAT	Net 2 had one jellyfish removed.
09-Sep-01	11:25	39	1	3B	T039_01	78	55 15.00N	157 37.95 W	Tuck1	QTowF	Net 2 had one jellyfish removed.
09-Sep-01	11:57	39	2	3B		85	55 16.14N	157 37.84 W	Ancho	J-Length, J-Oto	
09-Sep-01	14:20	40	1	4B		90	55 23.73N	157 17.03 W	Ancho	J-Length, J-Oto	
09-Sep-01	15:02	40	2	4B	T040_01	89	55 25.43N	157 18.02 W	CAT	CAT	
09-Sep-01	15:02	40	2	4B	T040_01	89	55 25.43N	157 18.02 W	Tuck1	QTowF	
09-Sep-01	18:00	41	1	4C		135	54 43.38N	157 41.83 W	Neu	NeuJDA	Dove under ship for 1 minute. Actual max depth = 0.15m.
09-Sep-01	18:34	41	2	4C	T041_02	134	55 43.36N	157 41.47 W	CAT	CAT	
09-Sep-01	18:34	41	2	4C	T041_02	134	55 43.36N	157 41.47 W	Tuck1	QTowF	
09-Sep-01	19:11	41	3	4C		134	55 43.17N	157 41.51 W	Ancho	J-Length, J-Oto, Para FM	
09-Sep-01	22:27	42	1	4D		94	55 58.57N	158 05.96 W	Neu	NeuJDA	Actual depth = 0.15m
09-Sep-01	22:32	42	2	4D	T042_02	93	55 58.69N	158 05.82 W	CAT	CAT	
09-Sep-01	22:32	42	2	4D	T042_02	93	55 58.69N	158 05.82 W	Tuck1	Discard	Net 1 codend broken
09-Sep-01	22:59	42	3	4D	T042_03	90	55 58.65N	158 05.66 W	CAT	CAT	
09-Sep-01	22:59	42	3	4D	T042_03	90	55 58.65N	158 05.66 W	Tuck1	QTowF	1 jelly removed from net 1
09-Sep-01	23:34	42	4	4D		100	55 58.91N	158 06.21 W	Ancho	capGut, J-Length, J-Oto	
10-Sep-01	01:21	43	1	4E		61	56 07.21N	158 18.19 W	Neu	NeuJDA	ACTUAL DEPTH = 0.15M
10-Sep-01	01:50	43	2	4E	T043_02	62	56 07.08N	158 17.72 W	CAT	CAT	SOFT CODENDS USED
10-Sep-01	01:50	43	2	4E	T043_02	62	56 07.08N	158 17.72 W	Tuck1	QTowF	SOFT CODENDS USED
10-Sep-01	02:24	43	3	4E		66	56 07.02N	158 17.14 W	Ancho	Discard	No phish
10-Sep-01	03:45	44	1	OPP		103	56 03.45N	158 12.61 W	CAT	CAT	
10-Sep-01	03:45	44	1	OPP		103	56 03.45N	158 12.61 W	Tuck1	QTowF	Used soft codends
10-Sep-01	04:24	44	2	OPP		118	56 03.59N	158 12.37 W	Ancho	capGut, J-Gut, J-Length, J-Oto, Para FM	
10-Sep-01	06:09	45	1	4E	T045_01	62	56 07.07N	158 17.25 W	CAT	CAT	
10-Sep-01	06:09	45	1	4E	T045_01	62	56 07.07N	158 17.25 W	Tuck1	QTowF	Phished net 1 only because of shallow depth
10-Sep-01	06:40	45	2	4E		62	56 06.97N	158 17.73 W	Ancho	capGut, J-Length, J-Oto	
10-Sep-01	08:42	46	1	4D	T046_01	92	55 58.64N	158 05.62 W	CAT	CAT	Used soft codends. Removed 1 jelly from
10-Sep-01	08:42	46	1	4D	T046_01	92	55 58.64N	158 05.62 W	Tuck1	QTowF	Used soft codends. Removed 1 jelly from
10-Sep-01	09:18	46	2	4D		86	55 58.86N	158 05.76 W	Ancho	Discard	No fish.
10-Sep-01	12:13	47	1	4C	T047_01	133	55 43.39N	157 41.20 W	CAT	CAT	Jelly removed from net 2.
10-Sep-01	12:13	47	1	4C	T047_01	133	55 43.39N	157 41.20 W	Tuck1	QTowF	Jelly removed from net 2.
10-Sep-01	12:56	47	2	4C		133	55 43.36N	157 40.77 W	Ancho	A-Length, A-Oto, capGut, J-Gut, J-Length, J-Oto	
10-Sep-01	15:37	48	1	5C		98	55 52.41N	157 20.88 W	Neu	NeuJDA	Actual max depth = 0.15m.
10-Sep-01	16:05	48	2	5C	T048_02	95	55 52.31N	157 21.30 W	CAT	CAT	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
10-Sep-01	16:05	48	2	5C	T048_02	95	55 52.31N	157 21.30 W	Tuck1	QTowF	
10-Sep-01	16:34	48	3	5C		97	55 52.33N	157 21.21 W	Ancho	capGut, J-Length, J-Oto	
10-Sep-01	19:09	49	1	OPP		103	55 58.16N	157 29.43 W	Ancho	capGut, J-Gut, J-Length, J-Oto, Para FM	Opportunistic trawl on sign between 5C & 5D
10-Sep-01	21:16	50	1	5D		140	56 08.96N	157 45.12 W	Neu	NeuJDA	Actual depth = 0.15m
10-Sep-01	21:46	50	2	5D	T050_02	127	56 08.57N	157 45.34 W	CAT	CAT	
10-Sep-01	21:46	50	2	5D	T050_02	127	56 08.57N	157 45.34 W	Tuck1	QTowF	Used soft codends
10-Sep-01	22:24	50	3	5D		140	56 08.75N	157 45.39 W	Ancho	Isopod, J-Gut, J-Length, J-Oto, Para	
10-Sep-01	23:29	50	4	OPP		154	56 08.81N	157 45.61 W	Ancho	J-Length	net fished above sign, trace was shallow
11-Sep-01	00:16	50	5	OPP		150	56 08.47N	157 45.53 W	Ancho	J-Length	Target 100m to 5m off bottom (near bottom echo layer)
11-Sep-01	02:49	51	1	OPP6		200	56 18.17N	157 58.89 W	Ancho	A-Length, A-Wght, J-Length, J-Oto, Para FM	A-length on Age 1
11-Sep-01	04:29	52	1	5E	T052_01	101	56 26.06N	158 07.92 W	CAT	CAT	
11-Sep-01	04:29	52	1	5E	T052_01	101	56 26.06N	158 07.92 W	Tuck1	QTowF	soft codends used
11-Sep-01	05:03	52	2	5E		100	56 26.13N	158 07.94 W	Ancho	eulGut, J-Length, J-Oto	
11-Sep-01	05:39	52	3	5E		134	56 25.68N	158 07.28 W	Neu	NeuJDA	Actual depth = 0.15
11-Sep-01	06:08	52	4	5E		134	56 25.68N	158 07.28 W	Meth	J-Length	Age-0 pollock length and then discarded since they were live.
11-Sep-01	06:51	52	5	5E	T052_05	104	56 26.05N	158 07.82 W	CAT	CAT	
11-Sep-01	06:51	52	5	5E	T052_05	104	56 26.05N	158 07.82 W	Tuck1	QTowF	
11-Sep-01	07:28	52	6	5E		99	56 26.01N	158 08.00 W	Ancho	CodAA, eulGut, J-Gut, J-Length,	
11-Sep-01	10:22	53	1	5D		140	56 08.34N	157 45.22 W	CAT	CAT	Remove 1 jelly from net 2 and 1 jelly from
11-Sep-01	10:22	53	1	5D		140	56 08.34N	157 45.22 W	Tuck1	QTowF	Remove 1 jelly from net 2 and 1 jelly from
11-Sep-01	10:55	53	2	5D		139	56 08.45N	157 45.12 W	Ancho	A-Length, capGut, J-Gut, J-Length, J-Oto	
11-Sep-01	13:52	54	1	5C	T054_01	95	55 52.53N	157 20.81 W	CAT	CAT	
11-Sep-01	13:52	54	1	5C	T054_01	95	55 52.53N	157 20.81 W	Tuck1	QTowF	
11-Sep-01	14:26	54	2	5C		95	55 52.30N	157 21.01 W	Ancho	capGut, FishMC, J-Gut, J-Length,	
11-Sep-01	17:27	55	1	5B		91	55 31.74N	156 54.17 W	Neu	NeuJDA	Actual max depth was 0.15m.
11-Sep-01	17:54	55	2	5B	T055_02	90	55 31.67N	156 54.47 W	CAT	CAT	Flowmeter line broke on net 1.
11-Sep-01	17:54	55	2	5B	T055_02	90	55 31.67N	156 54.47 W	Tuck1	QTowF	Flowmeter line broke on net 1.
11-Sep-01	18:25	55	3	5B		91	55 31.67N	156 54.34 W	Ancho	Discard	No fish. All jellyfish.
11-Sep-01	21:08	56	1	5A		272	55 12.69N	156 30.23 W	Neu	NeuJDA	actual depth = 0.15m
11-Sep-01	21:35	56	2	5A	T056_02	283	55 12.66N	156 30.66 W	CAT	CAT	
11-Sep-01	21:35	56	2	5A	T056_02	283	55 12.66N	156 30.66 W	Tuck1	QTowF	
11-Sep-01	22:21	56	3	5A		233	55 12.98N	156 29.78 W	Ancho	A-Length	All adult pollock lengthed and then discarded
11-Sep-01	23:59	57	1	OPP		156	55 15.36N	156 32.52 W	Ancho	Discard	Opportunistic tow. No fish. 13.3% of total euphausiid catch preserved in 5% formalin.
12-Sep-01	02:09	58	1	6A		206	55 22.18N	156 05.86 W	Neu	NeuJDA	Actual depth = 0.15m
12-Sep-01	02:35	58	2	6A	T058_02	206	55 22.45N	156 05.48 W	CAT	CAT	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
12-Sep-01	02:35	58	2	6A	T058_02	206	55 22.45N	156 05.48 W	Tuck1	QTowF	
12-Sep-01	03:12	58	3	6A	SEECOMM	207	55 22.22N	156 05.71 W	CTD	CTD, Fluor	Alternate Station Name is CTD058_03.
12-Sep-01	05:55	59	1	6B	T059_01	236	55 41.17N	156 31.15 W	CAT	CAT	
12-Sep-01	05:55	59	1	6B	T059_01	236	55 41.17N	156 31.15 W	Tuck1	QTowF	
12-Sep-01	06:43	59	2	6B		237	55 40.88N	156 31.29 W	Ancho	A-Gut, A-Length, eulGut, polShrnk	
12-Sep-01	09:14	60	1	5B	T060_01	91	55 31.86N	156 54.50 W	CAT	CAT	
12-Sep-01	09:14	60	1	5B	T060_01	91	55 31.86N	156 54.50 W	Tuck1	QTowF	
12-Sep-01	09:47	60	2	5B		91	55 31.78N	156 54.12 W	Ancho	J-Length, J-Oto	
12-Sep-01	13:05	61	1	5A	T061_01	250	55 12.78N	156 29.62 W	CAT	CAT	
12-Sep-01	13:05	61	1	5A	T061_01	250	55 12.78N	156 29.62 W	Tuck1	QTowF	
12-Sep-01	13:55	61	2	5A		255	55 12.75N	156 29.68 W	Ancho	Discard	No fish.
12-Sep-01	17:45	62	1	6B	T062_01	236	55 41.49N	156 31.21 W	CAT	CAT	
12-Sep-01	17:45	62	1	6B	T062_01	236	55 41.49N	156 31.21 W	Tuck1	QTowF	
12-Sep-01	18:32	62	2	6B		235	55 40.92N	156 31.48 W	Ancho	A-Gut, A-Length, eulGut	
12-Sep-01	22:18	63	1	6C		80	56 02.35N	157 00.11 W	Neu	NeuJDA	Actual depth = 0.15m
12-Sep-01	22:38	63	2	6C	T063_02	80	56 02.47N	156 59.40 W	CAT	CAT	
12-Sep-01	22:38	63	2	6C	T063_02	80	56 02.47N	156 59.40 W	Tuck1	QTowF	
12-Sep-01	23:04	63	3	6C		81	56 02.38N	156 59.35 W	Ancho	CodAA	Furuno failed, depth of anchovy estimated
12-Sep-01	23:46	63	4	6C		80	56 02.19N	156 59.43 W	Ancho	A-Length	
13-Sep-01	02:26	64	1	6D		107	56 19.35N	157 24.38 W	CAT	CAT	
13-Sep-01	02:26	64	1	6D		107	56 19.35N	157 24.38 W	Tuck1	QTowF	
13-Sep-01	02:58	64	2	6D		81	56 19.26N	157 23.95 W	Ancho	CodAA, J-Length, J-Oto	
13-Sep-01	05:54	65	1	6C		83	56 02.08N	156 59.42 W	Neu	QTowF	Actual depth = 0.15m
13-Sep-01	06:18	65	2	6C	T065_02	84	56 02.10N	156 59.44 W	CAT	CAT	
13-Sep-01	06:18	65	2	6C	T065_02	84	56 02.10N	156 59.44 W	Tuck1	QTowF	
13-Sep-01	06:55	65	3	6C		83	56 01.78N	156 59.50 W	Ancho	A-Length, A-Wght, CodAA, eulGut	
13-Sep-01	09:35	66	1	6D	T066_01	92	56 19.15N	157 24.20 W	CAT	CAT	
13-Sep-01	09:35	66	1	6D	T066_01	92	56 19.15N	157 24.20 W	Tuck1	QTowF	
13-Sep-01	10:16	66	2	6D		85	56 19.17N	157 24.08 W	Ancho	capGut, Isopod, J-Length, J-Oto	
13-Sep-01	12:46	67	1	6E	T067_01	97	56 34.56N	157 45.81 W	CAT	CAT	Removed one jelly from net 2.
13-Sep-01	12:46	67	1	6E	T067_01	97	56 34.56N	157 45.81 W	Tuck1	QTowF	Removed one jelly from net 2.
13-Sep-01	13:27	67	2	6E		107	56 33.64N	157 46.00 W	Ancho	A-Length, capGut, J-Length, J-Oto, polLngWt	
13-Sep-01	15:43	67	3	6E		98	56 34.49N	157 45.78 W	Neu	NeuJDA	Actual max depth was 0.15m.
13-Sep-01	16:13	67	4	6E	T067_04	97	56 34.59N	157 45.77 W	CAT	CAT	Removed one jelly from net 1.
13-Sep-01	16:13	67	4	6E	T067_04	97	56 34.59N	157 45.77 W	Tuck1	QTowF	Removed one jelly from net 1.
13-Sep-01	16:48	67	5	6E		104	56 33.77N	157 46.01 W	Ancho	A-Length, capGut, CodAA, Isopod, J-Length, J-Oto, polLngWt	
13-Sep-01	19:46	68	1	7D		111	56 24.86N	157 09.65 W	Ancho	CodAA	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
13-Sep-01	20:55	69	1	OPP8		160	56 27.92N	157 22.25 W	Ancho	CodAA	TSRGET LAYER 49M TO SURFACE
13-Sep-01	21:40	69	2	OPP8		151	56 28.16N	157 23.09 W	Ancho	A-Gut, A-Length, J-Length, J-Oto, Para FM, pollJDA	Target layers: headrope depth at ~115m for 5 min, ~125m for 5 min and 140m for 5min. (see SEB file)
13-Sep-01	22:35	70	1	8D		52	56 29.62N	156 54.04 W	Neu	NeuJDA	Actual depth = 0.15m
13-Sep-01	23:55	70	2	8D	T070_02	59	56 29.91N	156 53.27 W	CAT	CAT	
13-Sep-01	23:55	70	2	8D	T070_02	59	56 29.91N	156 53.27 W	Tuck1	QTowF	Fished net 1 only because of shallow depth
14-Sep-01	00:23	70	3	8D		53	56 29.77N	156 53.78 W	Ancho	Discard	"capelin" larvae saved for I.D.
14-Sep-01	02:28	71	1	8E	T071_01	72	56 40.72N	157 14.48 W	CAT	CAT	
14-Sep-01	02:28	71	1	8E	T071_01	72	56 40.72N	157 14.48 W	Tuck1	QTowF	Fished net 1 only due to shallow bottom
14-Sep-01	02:54	71	2	8E		71	56 40.79N	157 14.91 W	Ancho	Discard	
14-Sep-01	04:18	72	1	OPP9		181	56 38.19N	157 07.39 W	Ancho	A-Gut, A-Length, A-Wght, capGut, eulGut, J-Length, J-Oto	
14-Sep-01	05:17	73	1	8E		94	56 40.66N	157 13.74 W	Neu	NeuJDA	Actual depth = 0.15m
14-Sep-01	05:48	73	2	8E		70	56 40.72N	157 14.14 W	Meth	QTowF	yumpin jellies removed
14-Sep-01	06:15	73	3	8E	T073_03	72	56 40.73N	157 14.48 W	CAT	CAT	
14-Sep-01	06:15	73	3	8E	T073_03	72	56 40.73N	157 14.48 W	Tuck1	QTowF	
14-Sep-01	06:43	73	4	8E		54	56 40.89N	157 15.14 W	Ancho	CodAA, J-Length, J-Oto	
14-Sep-01	08:49	74	1	8D		60	56 29.60N	156 53.58 W	CAT	CAT	
14-Sep-01	08:49	74	1	8D		60	56 29.60N	156 53.58 W	Tuck1	QTowF	
14-Sep-01	09:20	74	2	8D		59	56 29.63N	156 53.67 W	Ancho	Isopod	
14-Sep-01	11:29	75	1	8C	T075_01	197	56 16.14N	156 32.50 W	CAT	CAT	Jelly removed from net 2.
14-Sep-01	11:29	75	1	8C	T075_01	197	56 16.14N	156 32.50 W	Tuck1	QTowF	Jelly removed from net 2.
14-Sep-01	12:19	75	2	8C		198	56 16.58N	156 32.53 W	Ancho	A-Gut, A-Length, capGut, eulGut, FishMC, J-Length, J-Oto	
14-Sep-01	13:36	75	3	8C		198	56 16.40N	156 32.34 W	Neu	NeuJDA	Actual max depth is 0.15m.
14-Sep-01	14:54	76	1	7CN		90	56 13.53N	156 52.81 W	Neu	NeuJDA	Actual max depth was 0.15m.
14-Sep-01	15:24	76	2	7CN	T076_02	91	56 13.56N	156 52.55 W	CAT	CAT	Removed 3 jellies from net 2.
14-Sep-01	15:24	76	2	7CN	T076_02	91	56 13.56N	156 52.55 W	Tuck1	QTowF	Removed 3 jellies from net 2.
14-Sep-01	16:25	76	3	7CN		90	56 13.71N	156 52.24 W	Ancho	capGut, eulGut, J-Length, J-Oto	
14-Sep-01	17:51	77	1	8C	T077_01	199	56 16.33N	156 32.45 W	CAT	CAT	Large jelly in net 1, difficult to seive sample; some of sample lost. Removed one small jelly from net 2
14-Sep-01	17:51	77	1	8C	T077_01	199	56 16.33N	156 32.45 W	Tuck1	QTowF	Large jelly in net 1, difficult to seive sample; some of sample lost. Removed one small jelly from net 2
14-Sep-01	18:31	77	2	8C		200	56 16.33N	156 32.26 W	Ancho	A-Gut, A-Length, capGut, eulGut, FishMC, J-Length, J-Oto, Para FM	
14-Sep-01	21:26	78	1	8BN		213	56 05.50N	156 16.19 W	Ancho	A-Gut, A-Length, eulGut, J-Length, J-Oto	
14-Sep-01	23:48	79	1	7CS		190	56 00.63N	156 35.33 W	Ancho	A-Gut, A-Length, eulGut, Isopod, J-Length, J-Oto	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
15-Sep-01	02:59	80	1	8B	T080_01	91	55 55.14N	156 01.25 W	CAT	CAT	
15-Sep-01	02:59	80	1	8B	T080_01	91	55 55.14N	156 01.25 W	Tuck1	QTowF	
15-Sep-01	03:31	80	2	8B		86	55 55.13N	156 00.85 W	Ancho	Discard	
15-Sep-01	05:36	81	1	9B		51	56 03.64N	155 38.13 W	Neu	NeuJDA	Actual depth = 0.15m
15-Sep-01	05:59	81	2	9B		52	56 03.82N	155 38.37 W	CAT	CAT	Net 1 tripped only because of shallow depth
15-Sep-01	05:59	81	2	9B		52	56 03.82N	155 38.37 W	Tuck1	QTowF	Net 1 tripped only because of shallow depth
15-Sep-01	06:32	81	3	9B		52	56 03.94N	155 38.31 W	Ancho	Discard	No phish to keep
15-Sep-01	08:36	82	1	8B		91	55 54.75N	156 01.06 W	Neu	NeuJDA	Actual max depth 0.15m.
15-Sep-01	09:03	82	2	8B	T082_02	86	55 55.05N	156 00.57 W	CAT	CAT	Removed one jelly net 1.
15-Sep-01	09:03	82	2	8B	T082_02	86	55 55.05N	156 00.57 W	Tuck1	QTowF	Removed one jelly net 1.
15-Sep-01	09:33	82	3	8B		88	55 55.02N	156 00.82 W	Ancho	A-Gut, A-Length, eulGut, polShrnk	
15-Sep-01	11:03	83	1	7B		239	55 47.90N	156 16.88 W	Neu	NeuJDA	Actual max depth was 0.15m.
15-Sep-01	11:36	83	2	7B	T083_02	238	55 48.02N	156 16.77 W	CAT	CAT	Removed one jelly from ner 2.
15-Sep-01	11:36	83	2	7B	T083_02	238	55 48.02N	156 16.77 W	Tuck1	QTowF	Removed one jelly from ner 2.
15-Sep-01	12:29	83	3	7B		236	55 48.02N	156 16.39 W	Ancho	Discard	Cod end of net failed.
15-Sep-01	13:59	83	4	7B		235	55 48.15N	156 15.91 W	Ancho	A-Gut, A-Length, eulGut, J-Length, J-Oto	Repeat ANCHOVY since last one failed.
15-Sep-01	19:15	84	1	7B	T084_01	237	55 48.33N	156 16.67 W	CAT	CAT	
15-Sep-01	19:15	84	1	7B	T084_01	237	55 48.33N	156 16.67 W	Tuck1	QTowF	
15-Sep-01	19:54	84	2	7B		232	55 48.15N	156 16.46 W	Ancho	A-Length	
16-Sep-01	01:31	85	1	8A		135	55 40.55N	155 34.42 W	Ancho	Discard	codend liner opened
16-Sep-01	02:42	85	2	8A		139	55 40.34N	155 34.82 W	Ancho	Discard	
16-Sep-01	10:07	86	1	9C		271	56 26.03N	156 11.52 W	Neu	NeuJDA	Actual max depth was 0.15m.
16-Sep-01	10:40	86	2	9C		271	56 25.56N	156 11.80 W	CAT	CAT	
16-Sep-01	10:40	86	2	9C		271	56 25.56N	156 11.80 W	Tuck1	QTowF	
16-Sep-01	11:29	86	3	9C		270	56 25.62N	156 11.66 W	Ancho	A-Gut, A-Length, eulGut, J-Length, J-Oto, ScanMar	Matt's anchovy net
16-Sep-01	13:52	86	4	9C		268	56 25.72N	156 11.55 W	Ancho	ScanMar	Vidar's anchovy net, only weights and numbers recorded
16-Sep-01	17:46	87	1	9D	T087_01	167	56 41.87N	156 36.57 W	CAT	CAT	
16-Sep-01	17:46	87	1	9D	T087_01	167	56 41.87N	156 36.57 W	Tuck1	QTowF	
16-Sep-01	18:27	87	2	9D	T087_02	173	56 42.14N	156 35.36 W	CAT	CAT	Targeted depth Tucker. Net 1 tripped at 168m for 10 min. Net 2 tripped at 125m then brought up and towed at 75m for 10
16-Sep-01	18:27	87	2	9D	T087_02	173	56 42.14N	156 35.36 W	Tuck1	QTowF	Targeted depth Tucker. Net 1 tripped at 168m for 10 min. Net 2 tripped at 125m then brought up and towed at 75m for 10
16-Sep-01	19:30	87	3	9D		170	56 42.06N	156 35.38 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Length, J-Oto, ScanMar	
16-Sep-01	20:42	87	4	9D		168	56 41.83N	156 35.71 W	Ancho	A-Gut, J-Length, Para FM, pollJDA	Anchovy targetted at a specific depth

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
16-Sep-01	21:53	87	5	9D		170	56 42.04N	156 35.38 W	Shrimp	A-Length, J-Length, pollJDA	Actual trawl was with Shrimp net off bottom for JDA
16-Sep-01	23:53	88	1	9E	T088_01	147	56 51.21N	156 51.55 W	CAT	CAT	soft codends used
16-Sep-01	23:53	88	1	9E	T088_01	147	56 51.21N	156 51.55 W	Tuck1	QTowF	soft codends used
17-Sep-01	00:36	88	2	9E	T088_02	146	56 51.24N	156 51.70 W	CAT	CAT	fished at target depth of 135m for 10min, second layer at 55, for 10min
17-Sep-01	00:36	88	2	9E	T088_02	146	56 51.24N	156 51.70 W	Tuck1	QTowF	fished at target depth of 135m for 10min, second layer at 55, for 10min
17-Sep-01	01:39	88	3	9E		161	56 51.54N	156 51.78 W	Ancho	A-Gut, A-Length, capGut, J-Length, J-Oto, ScanMar	
17-Sep-01	02:37	88	4	9E		128	56 52.49N	156 53.58 W	CAT	CAT	Saved net 1 only for target sample.
17-Sep-01	02:37	88	4	9E		128	56 52.49N	156 53.58 W	Tuck1	QTowF	Saved net 1 only for target sample.
17-Sep-01	03:19	88	5	9E		138	56 51.69N	156 52.21 W	Ancho	A-Gut, A-Length, J-Length, Para FM	Target depth
17-Sep-01	04:25	88	6	9E		144	56 51.89N	156 52.88 W	Shrimp	A-Length, J-Length, pollJDA	Actual net used was a shrimp trawl
17-Sep-01	06:09	88	7	9E	T088_07	147	56 51.38N	156 51.48 W	CAT	CAT	flowmeter not correct for net 1, used estimate from st. 13-1, flowmeter changed
17-Sep-01	06:09	88	7	9E	T088_07	147	56 51.38N	156 51.48 W	Tuck1	QTowF	flowmeter not correct for net 1, used estimate from st. 13-1, flowmeter changed
17-Sep-01	06:58	88	8	9E	T088_08	148	56 51.34N	156 51.49 W	CAT	CAT	Net 1 target depth 10m off bottom, net 2 targeted at 100m. Note new flowmeter on
17-Sep-01	06:58	88	8	9E	T088_08	148	56 51.34N	156 51.49 W	Tuck1	QTowF	Net 1 target depth 10m off bottom, net 2 targeted at 100m. Note new flowmeter on
17-Sep-01	07:52	88	9	9E		144	56 51.30N	156 51.30 W	Ancho	pollJDA	Targeted depth tow.
17-Sep-01	08:50	88	10	9E		148	56 51.33N	156 51.42 W	Shrimp	pollJDA	Bottom trawl
17-Sep-01	10:02	88	11	9E		162	56 51.49N	156 51.94 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Gut, J-Length, J-Oto	Oblique tow.
17-Sep-01	12:32	89	1	9D	T089_01	164	56 41.01N	156 36.38 W	CAT	CAT	Net 2 did not open. Net 1 revs are low.
17-Sep-01	12:32	89	1	9D	T089_01	164	56 41.01N	156 36.38 W	Tuck1	QTowF	Net 2 did not open. Net 1 revs are low.
17-Sep-01	13:29	89	2	9D		159	56 40.44N	156 36.22 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Length, J-Oto	
17-Sep-01	16:26	90	1	9C	T090_01	267	56 25.34N	156 11.28 W	CAT	CAT	
17-Sep-01	16:26	90	1	9C	T090_01	267	56 25.34N	156 11.28 W	Tuck1	QTowF	
17-Sep-01	17:06	90	2	9C		267	56 25.62N	156 11.68 W	Ancho	A-Gut, A-Length, eulGut, J-Gut, J-Length, J-Oto	
17-Sep-01	19:58	91	1	10C	T091_01	252	56 36.89N	155 49.16 W	CAT	CAT	failed
17-Sep-01	19:58	91	1	10C	T091_01	252	56 36.89N	155 49.16 W	Tuck1	Discard	failed
17-Sep-01	20:26	91	2	10C		246	56 36.58N	155 48.36 W	Ancho	A-Gut, A-Length, eulGut, J-Length, J-Oto	
17-Sep-01	23:21	92	1	10D	T092_01	198	56 51.93N	156 11.15 W	CAT	CAT	
17-Sep-01	23:21	92	1	10D	T092_01	198	56 51.93N	156 11.15 W	Tuck1	QTowF	
18-Sep-01	00:06	92	2	10D		197	56 52.22N	156 11.62 W	Ancho	A-Gut, A-Length, eulGut, J-Length, J-Oto	
18-Sep-01	02:35	93	1	10E	T093_01	156	57 00.09N	156 23.83 W	CAT	CAT	

Table 1 (continued). Cruise Summary For FOCI Cruise 4MF01 (MF-01-10)

Date (GMT)	Time (GMT)	Station	Haul	FOCI Grid	Alternate Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
18-Sep-01	02:35	93	1	10E	T093_01	156	57 00.09N	156 23.83 W	Tuck1	QTowF	
18-Sep-01	03:21	93	2	10E		176	57 00.42N	156 23.40 W	Ancho	A-Length, A-Wght, capGut, eulGut, J-Gut, J-Length, J-Oto, Para FM, ScanMar	Matt's anchovy
18-Sep-01	04:38	93	3	10E		150	57 00.49N	156 23.79 W	Ancho	A-Gut, A-Length, A-Wght, J-Length, J-Oto, ScanMar	Vidar's Anchovy Net
18-Sep-01	06:11	93	4	10E	T093_04	180	57 00.09N	156 23.42 W	CAT	CAT	
18-Sep-01	06:11	93	4	10E	T093_04	180	57 00.09N	156 23.42 W	Tuck1	QTowF	
18-Sep-01	06:51	93	5	10E		145	57 00.46N	156 23.62 W	Ancho	A-Gut, A-Length, capGut, eulGut, J-Gut, J-Length, J-Oto	
18-Sep-01	09:00	94	1	10D	T094_01	197	56 52.05N	156 11.43 W	CAT	CAT	Removed 1 jelly from net one.
18-Sep-01	09:00	94	1	10D	T094_01	197	56 52.05N	156 11.43 W	Tuck1	QTowF	Removed 1 jelly from net one.
18-Sep-01	09:50	94	2	10D		198	56 51.98N	156 11.24 W	Ancho	A-Gut, A-Length, capGut, eulGut, eulShrnk, J-Length, J-Oto	
18-Sep-01	12:46	95	1	10C	T095_01	251	56 36.43N	155 48.84 W	CAT	CAT	night
18-Sep-01	12:46	95	1	10C	T095_01	251	56 36.43N	155 48.84 W	Tuck1	QTowF	night
18-Sep-01	13:34	95	2	10C		252	56 36.70N	155 48.92 W	Ancho	A-Gut, A-Length, eulGut, Isopod, J-Length, J-Oto	night
18-Sep-01	16:17	95	3	10C	T095_03	246	56 36.42N	155 48.38 W	CAT	CAT	Day. Net 1 was 12 minutes 30 seconds at 215m. Net 2 was 4 min 30 sec from 215 to 100m and 10 min at 100m and 1 min 54 sec to surface.
18-Sep-01	16:17	95	3	10C	T095_03	246	56 36.42N	155 48.38 W	Tuck1	QTowF	Day. Net 1 was 12 minutes 30 seconds at 215m. Net 2 was 4 min 30 sec from 215 to 100m and 10 min at 100m and 1 min 54 sec to surface.
18-Sep-01	17:22	95	4	10C		249	56 36.85N	155 48.92 W	Ancho	J-Length, J-Oto, pollJDA	Targeted Anchovy Trawl at lower layer for Janet Duffy-Anderson.
18-Sep-01	18:24	95	5	10C		248	56 36.63N	155 48.50 W	Ancho	pollJDA	Targeted Anchovy trawl at upper layer for Janet Duffey-Anderson.
18-Sep-01	18:28	95	6	10C		250	56 36.83N	155 49.11 W	Ancho	A-Length, A-Wght, Isopod, J-Length, J-Oto, pollJDA	Vidar's anchovy
18-Sep-01	20:29	95	7	10C		251	56 36.76N	155 48.98 W	Neu	QTowF	Actual depth = 0.15m
18-Sep-01	21:02	95	8	10C	CTD9508	250	56 36.62N	155 48.54 W	CTD	CTD	

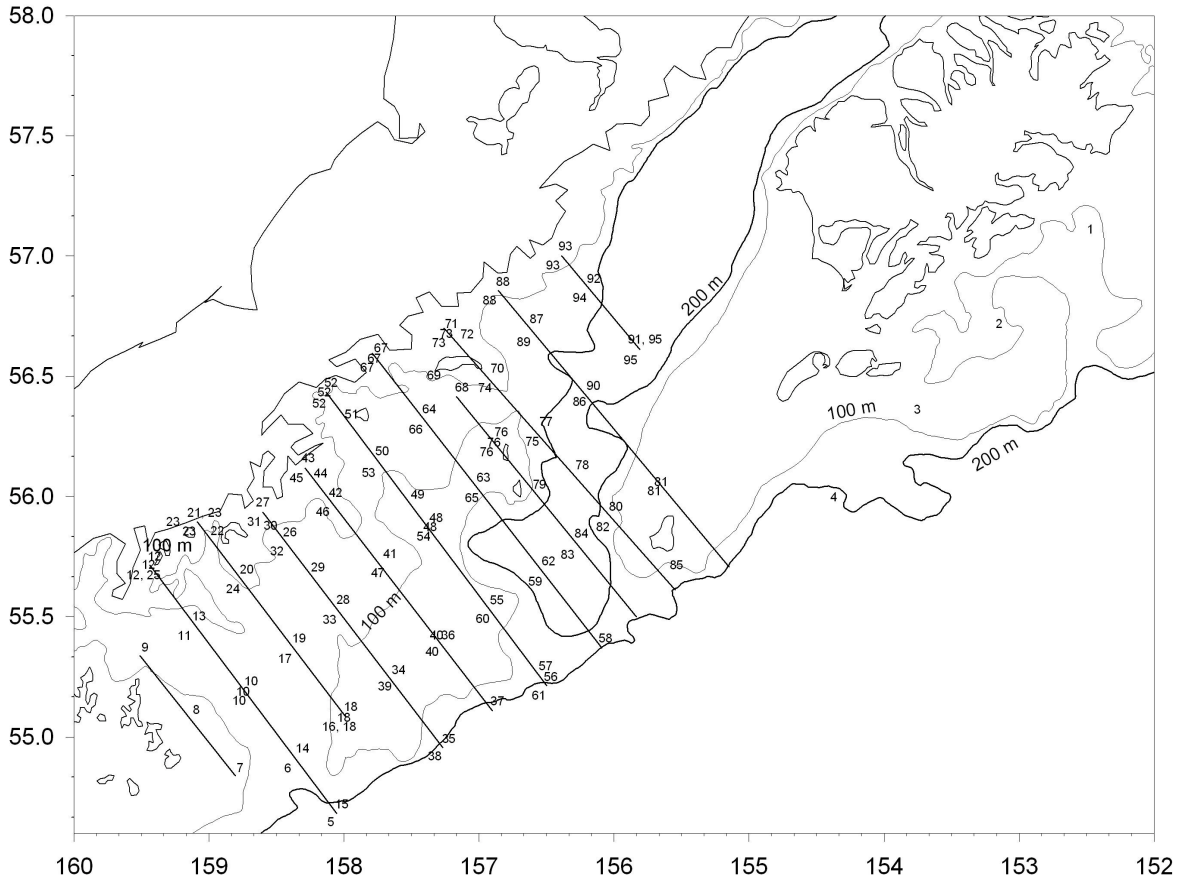

Figure 1. Sampling locations occupied during the cruise MF01-10 (FOCI 4MF01) aboard the NOAA ship Miller Freeman, 2-19 September 2001. Except for the first five stations, the FOCI station numbers (see Table 1) along each transect are offset from their actual location according to diel sampling period: day stations are shifted slightly northeast of their true position, night stations are southwest, and twilight stations are not shifted.

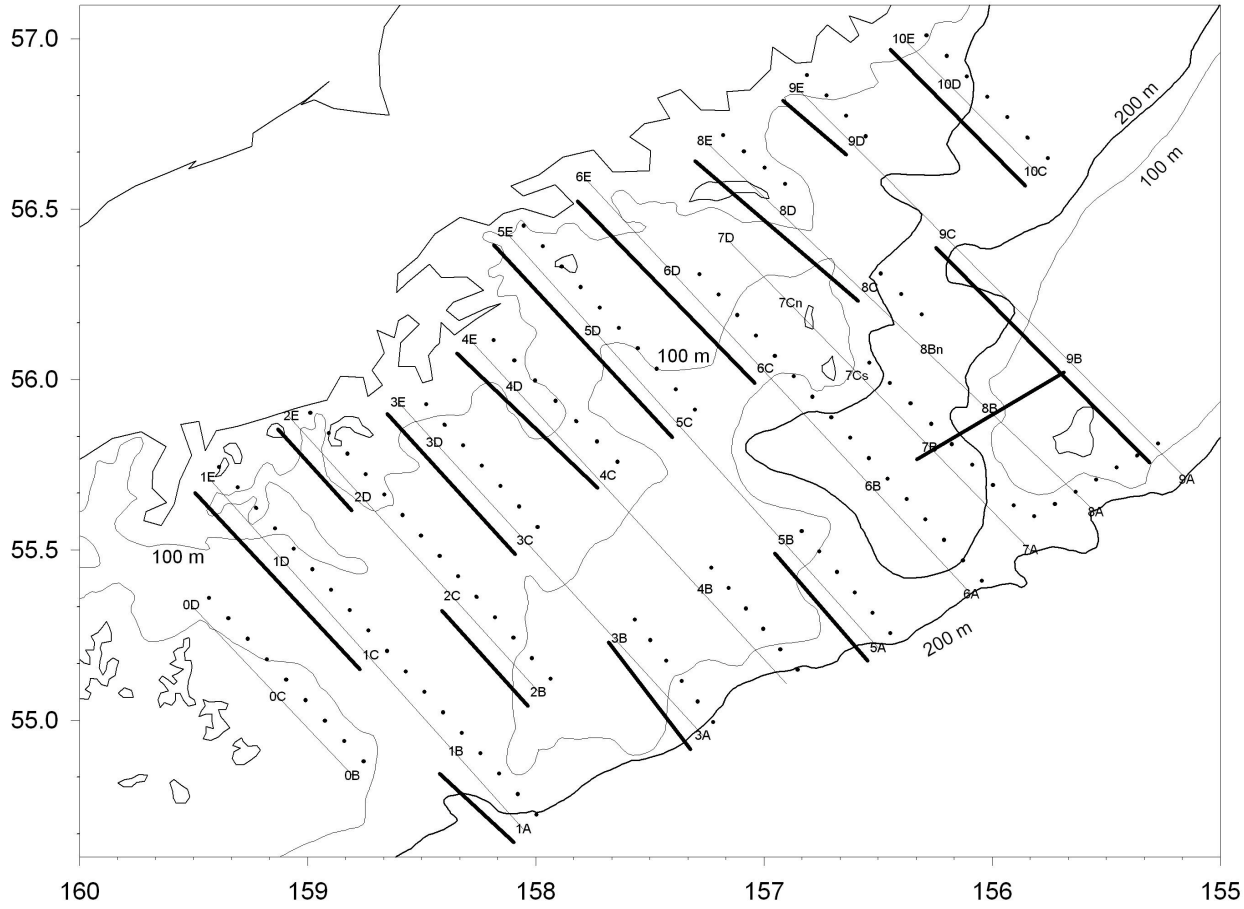

Figure 2. Eleven transects along which acoustic and net sampling was concentrated during the cruise MF01-10 (FOCI 4MF01) aboard the NOAA ship Miller Freeman, 2-19 September 2001. The thin solid line indicates transect location, the thick offset lines indicate day (dashed line) and night (solid line) coverage.