CRUISE REPORT

Cruise Number: MF-02-01, Leg 1 and Leg 2

FOCI Number: 1MF02

Ship: NOAA Ship *Miller Freeman*

Area of Operations: Gulf of Alaska

Itinerary:

Date depart/port: January 28, 2002/Seattle, WA

Date arrive/port: February 3, 2002/Kodiak, AK (end Leg 1)

Date depart/port: February 3, 2002/Kodiak, AK

Date arrive/port: February 9, 2002/Sand Point, AK (end Leg 2)

Participating organizations:

NOAA - Alaska Fisheries Science Center (AFSC)
NOAA - Pacific Marine Environmental Laboratory (PMEL)

Chief Scientists:

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Morgan S. Busby (Leg 2) (206) 526 - 4113 *Morgan.Busby@noaa.gov*	M/USA	NOAA/AFSC

Personnel (Leg 1):

Floering, William	M/USA	NOAA/PMEL

Personnel (Leg 2):

Blood, Deborah	F/USA	NOAA/AFSC
Busby, Morgan	M/USA	NOAA/AFSC
Cartwright, Rachael	F/USA	NOAA/AFSC
Floering, William	M/USA	NOAA/PMEL
Matarese, Ann	F/USA	NOAA/AFSC
Stark, James	M/USA	NOAA/AFSC
Stevenson, Duane	M/USA	NOAA/AFSC

Cruise Objectives:

The primary objectives of this cruise were to retrieve and deploy oceanographic moorings around Kodiak Island and in Shelikof Strait, and to conduct bottom trawl sampling on the outer continental shelf and upper slope in the Gulf of Alaska west of Kodiak Island. Bottom trawls were conducted to collect adult arrowtooth flounder (ATF) for sexual maturity and spawning studies. This work was needed to document the appearance of arrowtooth flounder eggs so they can be identified with confidence in plankton samples. Data (CTD) on physical characteristics of water in the area were also collected.

Summary of Operations:

Operation	Tally
CTD casts	19
Mooring recoveries	7
Mooring deployments	4
Nor'eastern bottom trawls	20

Samples Collected:

ATF lengths	541	
ATF otoliths	518	
ATF maturities	540	
ATF gonads	350	
Juvenile walleye pollock	12	(frozen for otoliths)

Summary of Cruise:

Table 1 contains a cruise summary for MF-02-01 (FOCI 1MF02).

Days Lost to Equipment Failure: 0.75 (Starboard crane)

Narrative:

After departure from Seattle at 1000 hrs on January 28, the *Miller Freeman* steamed north through the inside passage and into the Gulf of Alaska through Dixon Entrance and arrived

at the first station (56° 37.9' N, 151° 4.2' W) at approximately 0830 hrs on February 2 where a marine mammal haurophone mooring was recovered in 2635 m depth water (Figure 1). We then proceeded to Barnabus Canyon and arrived at 1400 hrs where two oceanographic moorings were recovered and paired with CTD casts. On February 3, operations in Chiniak Bay began at 0800 hrs and included CTD casts that preceded and followed recovery and deployment of a crab mooring. Upon completion, the ship proceeded to Kodiak, AK to pick up scientists for Leg 2.

The additional scientists participating on Leg 2 embarked at 1530 hrs on February 3 and the *Miller Freeman* was underway shortly afterward. We steamed around the north end of Afognak Island and arrived at Line 8 in Shelikof Strait at 1400 hrs on February 4. Three oceanographic moorings were recovered, ending at approximately 1950 hrs. A line of 7 CTD casts was then accomplished, ending at about 0200 hrs. Before the CTD line began, it was determined that the port crane was not functioning due to a hydraulic leak. When the CTD line was completed, we were informed that repairs on the port crane would not commence until daylight. At 1200 hrs on February 5, repairs on the port crane were not yet complete, so it was decided that the three remaining oceanographic mooring deployments would be accomplished using the starboard crane. These deployments were completed by 1645 hrs.

After steaming south approximately 100 nm, we arrived at station ATF-1 on the outer continental shelf at approximately 0300 hrs on February 6 and deployed the first bottom trawl at a target depth of 200 m and another at ATF-2 (400 m). At station ATF-3, the trawl gear performance was questionable, as it was found upon recovery that the footrope and roller gear on the net was twisted around the mouth, thus constricting the opening. The catch in the tow was smaller than expected. The same incident occurred on the first haul at station ATF-4. A second haul at this station also failed as the trawl doors and cables became crossed during the tow. Additional operations at station ATF-4 were suspended at 2300 hrs on February 6. On February 7, successful tows were conducted at stations ATF-5 and 6. The first haul at station ATF-7 (400 m) failed, as a very large rock was caught in the net. The tow was successfully repeated. Three apparently ripe female ATF were removed from the catch and placed in the live tank as potential sources of eggs. After completion of processing the catch from the tow at station ATF-8 (500 m) on February 7, 1915 hrs, we fertilized eggs stripped from a female ATF (81 cm FL) collected at the previous station (ATF-7) with milt from 8 males (41-47 cm FL) collected in this haul. This procedure was repeated on February 8, 2230 hrs with two females (55, 69 cm FL) from station ATF-7 haul 2 and 14 males from station ATF-8. Eggs stripped from one female caught in the second haul at ATF-8 on February 9 were fertilized with milt from 18 males from the same tow. After one final CTD cast near station ATF-7, we began the steam to Sand Point, AK at approximately 0200 hrs on February 9 and arrived at 1200 hrs.

Acknowledgments:

The scientific party would like to acknowledge the hard work and support of the Officers and crews of the Survey, Deck, and Stewards departments of the Miller Freeman who performed their duties under difficult conditions. Because of their diligence, the primary objectives of the cruise were accomplished.

Attachments:

Table 1. Cruise Summary MF-01-02 (Legs 1 and 2)

Figure 1. Station map

Table 1. Cruise Summary for MF-02-01 (FOCI 1MF02).

Date (GMT)	Time (GMT)	Statio	Hau	FOCI Grid	Alternat Station	Depth (m)	Latitude	Longitude	Gear	SamplesCollected	HaulComments
02-Feb-02	17:44	1	1		HS2	2635	56 37.78N	151 04.88 W	Moor	Recovery	Marine mammal haurophone recovery. Depth in MOA (224.4 m) is incorrect.
02-Feb-02	23:07	2	1		CTD001	123	56 48.76N	152 35.94 W	CTD	CTD	CTD (Barnabus Canyon).
03-Feb-02	0:09	2	2		01BC2A	128	56 49.04N	152 36.12 W	Moor	Recovery	Mooring Recovery (Barnabus Canyon)
03-Feb-02	1:21	3	1		CTD002	145	56 54.23N	152 24.27 W	CTD	CTD	CTD (Barnabus Canyon)
03-Feb-02	4:07	3	2		BCP1A	149	56 54.75N	152 25.27 W	Moor	Recovery	Mooring Recovery (Barnabus Canyon)
03-Feb-02	17:00	4	1		CTD003	162	57 43.17N	152 18.28 W	CTD	CTD	CTD before recovery of crab mooring (Chiniak Bay).
03-Feb-02	18:38	4	2		02CB-1A	186	57 43.33N	152 17.66 W	Moor	Recovery	Crab mooring recovery (Chiniak Bay).
03-Feb-02	19:50	4	3		02CB-1A	186	57 43.33N	152 17.66 W	Moor	Deploy	Crab mooring deployment (Chiniak Bay).
03-Feb-02	20:19	4	4		CTD004	181	57 43.32N	152 17.82 W	CTD	CTD	CTD after crab mooring deployment (Chiniak Bay).
04-Feb-02	23:19	5	1		01SSP3A	197	57 29.09N	154 48.46 W	Moor	Recovery	Mooring recovery, line 8.
05-Feb-02	1:52	6	1		01SSP2A	249	57 39.89N	155 25.98 W	Moor	Recovery	Mooring recovery, line 8. Position given is release point, recovery location not in MOA.
05-Feb-02	3:50	7	1		01SSP1A	299	57 39.58N	155 14.46 W	Moor	Recovery	Mooring recovery, line 8.
05-Feb-02	5:00	8	1		CTD005	115	57 43.10N	155 16.28 W	CTD	CTD	CTD, line 8.
05-Feb-02	5:53	9	1		CTD006	292	57 40.79N	155 11.21 W	CTD	CTD	CTD, line 8.
05-Feb-02	6:48	10	1		CTD007	255	57 38.52N	155 04.29 W	CTD	CTD	CTD, line 8.
05-Feb-02	7:36	11	1		CTD008	238	57 36.47N	155 00.72 W	CTD	CTD	CTD, line 8.
05-Feb-02	8:29	12	1		CTD009	229	57 33.20N	154 52.28 W	CTD	CTD	CTD, line 8.
05-Feb-02	9:17	13	1		CTD010	210	57 30.90N	154 47.18 W	CTD	CTD	CTD, line 8.
05-Feb-02	9:56	14	1		CTD011	70	57 28.65N	154 42.30 W	CTD	CTD	CTD, line 8.
05-Feb-02	22:06	15	1		02SSP3B	194	57 29.02N	154 48.44 W	Moor	Deploy	Mooring deployment, line 8.
05-Feb-02	22:23	15	2		CTD012	185	57 28.87N	154 48.14 W	CTD	CTD	CTD paired with mooring deployment station 15 haul 1, line 8.
06-Feb-02	0:11	16	1		02SSP2A	248	57 37.13N	155 04.39 W	Moor	Deploy	Mooring Deployment, line 8.
06-Feb-02	1:34	17	1		02SSP1A	294	57 41.11N	155 12.21 W	Moor	Deploy	Mooring deployment, line 8.
06-Feb-02	11:00	18	1			186	55 41.81N	155 18.93 W	Eastern	Discard	Trawl aborted-needed to repair shackle on net lines (not logged on MOA).
06-Feb-02	12:37	18	2		ATF-1	186	55 41.81N	155 18.93 W	Eastern	A-Length, A-Oto, A-Wght, MWOCD	ATF SURVEY Haul 1
06-Feb-02	14:31	18	3		CTD013	190	55 41.64N	155 19.18 W	CTD	CTD	CTD
06-Feb-02	16:29	19	1		ATF-2	411	55 38.70N	155 18.94 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY – NO FURUNO correctly used wire out as a guide, fished longer than 15 minutes, 4.3-4.4 degrees C
06-Feb-02	18:05	19	2		CTD014	406	55 38.52N	155 19.70 W	CTD	CTD	CTD
06-Feb-02	19:13	20	1		ATF-3	623	55 36.88N	155 18.51 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY, see furuno temperatures, very small sample, questionable net opening. Roller gear was wisted around net opening.
07-Feb-02	2:00	21	1		ATF-4	207	55 06.73N	157 02.53 W	Eastern	Discard	ATF SURVEY. Roller Gear twisted around net opening (again). Only one fish in net.

Table 1 (continued). Cruise Summary for MF-02-01 (FOCI 1MF02).

Date (GMT)	Time (GMT)	FOCI Statio	Alternat Hau	Grid	Depth Station	(m)	Latitude	Longitud	Gear	SamplesCollected	HaulComments
07-Feb-02	3:57	21	2		ATF-4	181	55 07.49N	157 02.35 W	Eastern	Discard	Doors crossed, tow failed, species composition was noted.
07-Feb-02	8:44	22	1		ATF-5	404	55 02.83N	157 02.88 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY - NO FURUNO
07-Feb-02	12:07	23	1		ATF-6	623	55 00.91N	157 04.73 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY - FURUNO WORKING - TEMP PROFILE RECORDED
07-Feb-02	20:24	24	1		ATF-7	399	54 31.02N	158 46.34 W	Eastern	Discard	ATF SURVEY - TOW FAILED DUE TO A LARGE ROCK IN NET.
07-Feb-02	20:24	24	2		ATF-7	403	54 30.88N	158 46.76 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY - Furuno working well. Three apparently gravid female ATF placed in live tank.
08-Feb-02	2:33	25	1		ATF-8	507	54 28.99N	158 50.66 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY. HAULBACK STOPPED DUE TO HYDRAULIC LEAK FOR 5 MINUTES 0305-0310. Eggs from one female ATF (81 cm FL) from st. 24 haul 2 fertilized with milt from 8 males (41-47 cm FL) from this haul.
08-Feb-02	5:16	25	2		CTD015	506	54 28.90N	158 51.52 W	CTD	CTD	
08-Feb-02	7:13	26	1		ATF-9	630	54 27.92N	158 54.50 W	Eastern	Discard	ATF SURVEY
08-Feb-02	9:57	26	2		CTD016	701	54 27.82N	158 55.11 W	CTD	CTD	
08-Feb-02	11:26	27	1		ATF-10	475	54 29.33N	158 50.94 W	Eastern	Discard	ATF SURVEY- TRAWL ABORTED, NO FURUNO (GEAR DEPTH APPROX.)
08-Feb-02	13:15	27	2		ATF-10	468	54 29.21N	158 52.37 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY
08-Feb-02	15:15	27	3		CTD017	449	54 29.27N	158 53.40 W	CTD	CTD	
08-Feb-02	17:48	28	1		ATF-11	452	54 27.71N	159 03.69 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY
08-Feb-02	21:19	29	1		ATF-12	194	54 34.41N	158 46.21 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY
08-Feb-02	22:54	29	2		CTD018	192	54 34.44N	158 46.40 W	CTD	CTD	
09-Feb-02	0:06	30	1		ATF-7	391	54 30.99N	158 46.78 W	Eastern	Discard	DOORS CROSSED, TOW FAILED
09-Feb-02	2:56	30	2		ATF-7	369	54 31.31N	158 46.77 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY. Several apparently gravid female ATF placen in live tank.
09-Feb-02	6:02	31	1		ATF-8	482	54 29.13N	158 51.81 W	Eastern	Discard	ATF SURVEY - Catch not processed. Eggs from two female ATF (55, 69 cm FL) from st. 30 haul 2 fertilized with milt from 14 males (43-50 cm FL) collected in this trawl.
09-Feb-02	9:29	31	2		ATF-8	511	54 29.04N	158 50.75 W	Eastern	A-Length, A-Oto, A-Wght	ATF SURVEY. Eggs from one gravid female ATF (72 cm FL) fertilized with milt from 18 males. Both sexes collected in this tow.
09-Feb-02	11:26	32	1		CTD019	377	54 31.25N	158 46.87 W	CTD	CTD	

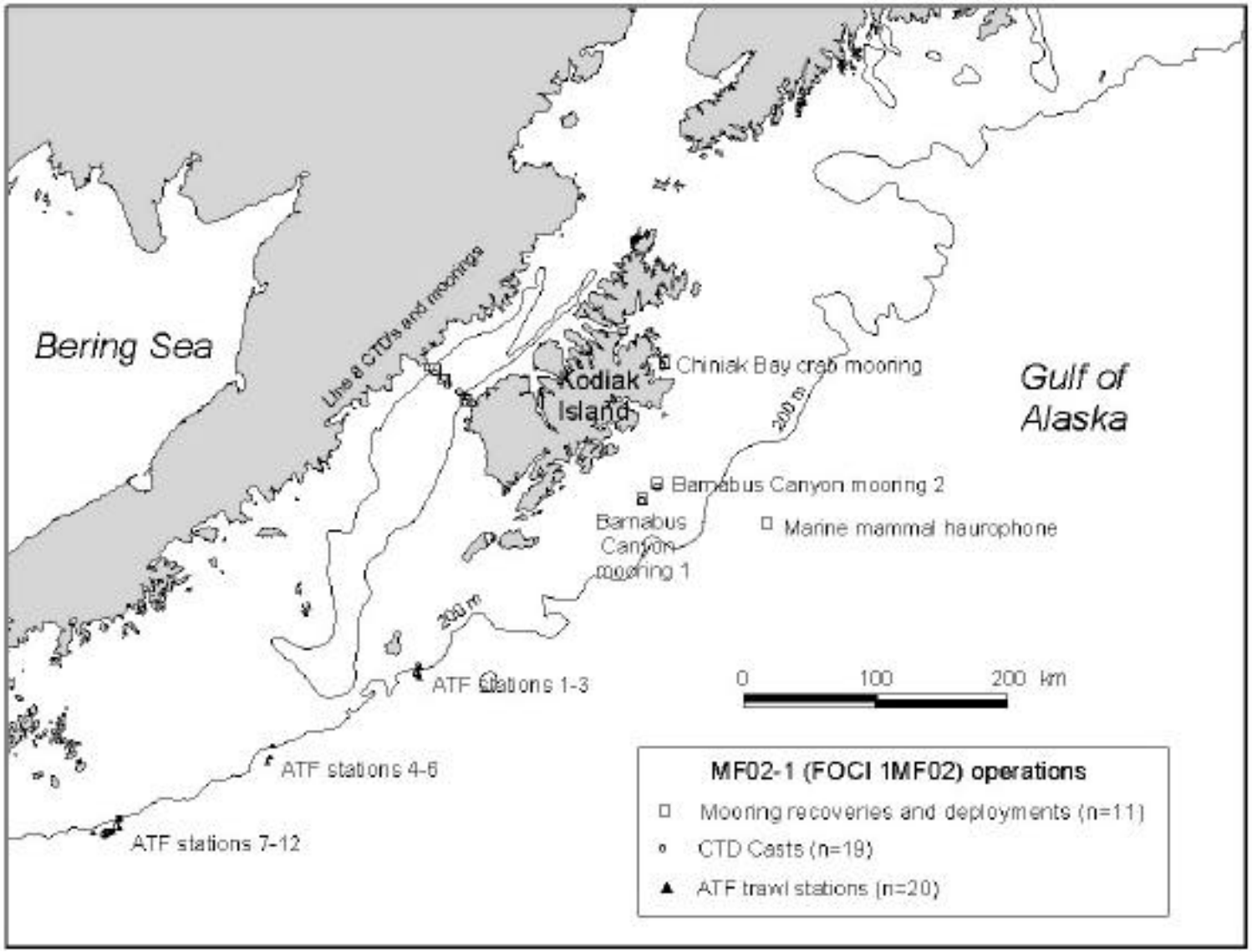

Figure 1. Station map for MF-02-01.