

FINAL CRUISE INSTRUCTIONS

FOCI

Miller Freeman Cruise *MF-02-01 – Leg 2*
February 3 – February 9, 2002

Morgan Busby, Chief Scientist
NOAA Alaska Fisheries Science Center
7600 Sand Point Way, NE
Seattle, Washington 98115

Cruise No: MF02-01 Leg 2
FOCI No: 1MF02

January 3, 2002

AREA:

Northern Gulf of Alaska

ITINERARY:

Depart Kodiak AK, 0300 February 3, 2002
Arrive Sand Point, AK 1200 February 9, 2002 (TNG)

PARTICIPATING ORGANIZATIONS:

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

CRUISE DESCRIPTION:

Fisheries-Oceanography Coordinated Investigations (FOCI) is an effort by NOAA and associated academic scientists. The FOCI core study is a Shelikof Strait (western Gulf of Alaska) walleye pollock project. FOCI also supports associated projects, such as the Arctic Research Initiative, U. S. GLOBEC, and Steller sea lion research that address scientific issues related to FOCI and NOAA's mission. FOCI's goal is to understand the effects of abiotic and biotic variability on ecosystems of the North Pacific Ocean and Bering Sea in order to discern the physical and biological processes that determine recruitment variability of commercially valuable finfish and shellfish stocks in Alaskan waters.

CRUISE OBJECTIVES:

We will be retrieving and deploying oceanographic moorings in Shelikof Strait and conducting bottom trawl sampling on the outer continental shelf and upper slope in the Gulf of Alaska between Kodiak Island and the Shumagin Islands to collect ripe adult arrowtooth flounder (ATF). This work is needed to establish the appearance of arrowtooth flounder eggs in the plankton, so they can be identified with confidence in samples. Data on physical characteristics of water in the areas where spawning ATF are found will also be collected.

APPLICABILITY:

These instructions, with FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN dated October 12, 2000 present complete information for this cruise.

1.0. PERSONNEL

1.1. Chief Scientist:

Busby, Morgan (206) 526-4113 Morgan.Busby@noaa.gov	M/USA	NOAA/AFSC
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The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not: (1) jeopardize the safety of personnel or the ship; (2) exceed the overall time allotted for the project; (3) result in undue additional expenses; (4) alter the general intent of these project instructions.

1.2 Participating Scientists:

Busby, Morgan	M/USA	NOAA/AFSC
Blood, Deborah	F/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

1.3 NOAA Marine Operations Center- Pacific Contact:

Larry Mordock
NOAA/Marine Operations Center-Pacific (MOP1x1)
1801 Fairview Ave. East
Seattle, WA 98102-3767
(206) 553 - 4764
Larry.Mordock@noaa.gov

1.4 Program Contacts:

Dr. Jeffrey Napp
NOAA/AFSC
7600 Sand Point Way NE
Seattle, WA 98115
(206) 526-4148
jeff.napp@noaa.gov

2.0. OPERATIONS

A standard oceanographic watch will be utilized which consists of a winch operator, a scientific staff of three and a Survey Tech on deck. Operations will be conducted 24 hours a day. A fishing crew will be required to assist with bottom trawls, which will be conducted day and night.

2.1. Summary Of Activities:

The first set of operations will be to retrieve and deploy three oceanographic moorings on line 8 in Shelikof Strait. During the night we will complete a CTD line along the 6 standardized line 8 stations. This CTD line will satisfy the requirement for a pre-recovery CTD at the line 8 mooring sites. Below is a listing of the 3 line 8 mooring stations. The direction we run the CTD transect and/or the direction we pick up and re-deploy the 3 line 8 moorings is not critical.

01-SSP-3A is at 57° 29.033' N 154° 48.477' W

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01-SSP-2A is at 57° 37.137' N 155° 04.479' W
01-SSP-1A is at 57° 41.115' N 155° 12.209' W

All three of these moorings have an ADCP current profiler with metal floats, an acoustic release, and will be redeployed after recovery. A CTD cast will follow each redeployment or we will complete a second CTD transect across line 8, if time allows.

The ship will then proceed to ATF station 1 (appendices 1 and 2), and locate trawlable bottom at a depth of 200 m to deploy the first bottom trawl. This sampling will be repeated at two stations along a line moving offshore at depths of 400 (station 2) and 600 m (station 3). One additional line consisting of three stations (4-6) of 200, 400, and 600 m depth is also planned during the survey but, others will be added if time permits. Opportunistic fishing will then be conducted in the vicinity of station 7 at depths of approximately 400 m until the end of the cruise. Whenever ripe adult ATF are found, a CTD cast with bottles will be deployed to collect data on the physical properties of water at the bottom and water for holding live eggs. We will then attempt to fertilize eggs from gravid females with sperm from ripe males aboard ship. Live eggs will be held in gallon jars placed in constant temperature refrigerators at 3.0, 5.0, and 7.0° C until the end of the cruise. From the catch in each trawl, a random sample of adult ATF will be lengthed, weighed, and dissected to determine sex, remove gonads, estimate maturity state, and remove otoliths. Gonads representing each maturity state identified will be photographed with a digital camera and preserved.

2.2 Procedures For Operations:

The following are operations to be conducted on this cruise. The procedures for these operations are listed in the FOCI SOI. Operations not addressed in the SOI and changes to standard procedures are addressed below. **NOTE:** Because the trawling and mooring operations may overlap we will not use the stern platform during this cruise. Mooring deployments will use the port side deck crane. Mooring recoveries may use the port side crane or the stern A-frame.

Oceanographic mooring retrievals/deployments
Bottom trawl (see below)
CTD/Water samples (SOI 2.2.1)
EK500 monitoring (SOI 2.2.12)

A poly nor'eastern bottom trawl with roller gear and "Fish Buster" doors will be used to collect live adult ATF to spawn on board ship to obtain live fertilized eggs. A FURUNO net sounder system will be used to monitor the depth of the net and mouth opening. After deployment and settling of the net on bottom, it will be towed for 15 minutes at a speed of 1.5 m/sec. Location and duration of trawls, however, may be altered if bottom conditions will not allow a complete haul. Seven trawl sets are scheduled but additional hauls will be added as time permits. ATF will be the only species processed in the catch. Species composition of the remainder will be determined and quantities estimated. In the event of a large catch, only subsamples of ATF will be processed. Eggs will be stripped from gravid ATF females and mixed with milt from ripe males and then counted and placed in gallon jars and held at three constant temperature refrigerators (3, 5, and 7° C) until the end of the cruise. Niskin bottles (10 liter) will be deployed to collect water at the bottom for holding and transporting eggs. A random sample of ATF will be measured for fork length, somatic weight, gonad weight and macro-maturity stage will be recorded for each fish. Gonads will be collected from selected individuals and preserved in 10% neutral buffered formalin. Digital photos of ATF gonads will be taken of representative maturity stages for future comparison with microscopically determined maturity stages. At the end of the cruise, any live eggs collected will be placed in thermoses and coolers and transported by air to Seattle.

3.0. FACILITIES AND EQUIPMENT

The following systems and their associated support services are essential to the cruise. Sufficient consumables, back-up units, and on-site spares and technical support must be in place to assure that operational interruptions are minimal. All measurement instruments are expected to have current calibrations, and all pertinent calibration information shall be included in the data package.

3.1 Equipment and Capabilities to be Provided by the Ship

- Oceanographic winch with slip rings and 3-conductor cable terminated for CTD
- Wire-angle indicator and readout for oceanographic winch
- Oceanographic winch for bongo net (and other nets when used) with slip rings and 3-conductor cable terminated for the SeaCat
- Sea-Bird 911 plus CTD system with stand (Each CTD system should include underwater CTD, weights, and pinger and there should be one deck unit and tape recorder for the two systems)
- For CTD field corrections: AUTOSAL salinometer
- Sea-Bird SBE-19 Seacat system (backup system)
- Wire speed indicators and readout for quarterdeck
- Refrigerator for live fish eggs (in Slime Lab)
- Blast freezer for fish specimens
- Simrad EQ-50 echo sounder
- JRC JFV-200R color sounder recorder
- Use of Pentium PC in DataPlot for data analysis
- SCS (Scientific Computer System)
- Furuno net sounder
- Stern platform removed for trawl ramp use
- Laboratory space with exhaust hood, sink, lab tables and storage space
- Sea-water hoses and nozzles to wash nets (quarterdeck and aft deck)
- Sorting table
- Adequate deck lighting for night-time operations
- Navigational equipment including GPS and radar
- Safety harnesses for working on quarter deck and fantail

3.2 Equipment to be Provided by the Project

- Sea-Bird 911 plus CTD system
- Sea-Bird SBE-19 Seacat system (primary system)
- PMEL PC with SEASOFT software for CTD data collection and processing
- Fluorometer and light meter to be mounted on CTD
- CTD stand modified for attachment of fluorometer
- Conductivity and temperature sensor package to provide dual sensors on the primary CTD
- CTD rosette sampler
- IAPSO water
- Poly Nor'eastern bottom trawl with roller gear with "Fish Buster" doors
- Miscellaneous scientific sampling and processing equipment
- Sorting tables and baskets for processing trawl catches
- Motion compensating scale
- Cruise Operations Data Base software and forms
- Digital or SLR camera
- Plastic five-gallon buckets
- Dissection tools
- Refrigerators for holding fish eggs
- Microscope for examining, sorting, and measuring fish eggs
- Thermoses and coolers for transporting live eggs

3.3. Scientific Computer System (SCS)

The ship's Scientific Computer System (SCS) shall operate throughout the cruise, acquiring and logging data from navigation, meteorological, oceanographic, and fisheries sensors. See FOCI Standard Operating Instructions for specific requirements.

4.0 DATA AND REPORTS

Data disposition, responsibilities and data requirements are listed in the FOCI Standard Operating Instructions.

5.0 ADDITIONAL INVESTIGATIONS AND PROJECTS

5.1 Piggyback projects:

No piggyback projects are scheduled for this cruise.

6.0 MISCELLANEOUS

6.1. Hazardous Materials:

The Chief Scientist shall be responsible for complying with NC Instruction 6280A, Hazardous Waste; policy, guidance, and training, dated February 4, 1991, paragraph 7.g and paragraph 9. By federal law, the ship may not sail without a complete inventory of MSDS, and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount aboard.

The following hazardous materials will be provided and controlled by the scientists with the Chief Scientist assuming responsibility for the safe handling of such substances:

<u>Agent</u>	<u>Quantity</u>	<u>Neutralizing Agent(s)</u>
• Ethyl Alcohol (Ethanol)	2 liters	H2O/vermiculite
• Formaldehyde	40 liters	Formalex
• Stockards solution	1 liter	Baking soda/Formalex
• Sodium acetate-trihydrate	4 kg	N/A (Buffering agent)
• Saturated sodium borate solution	20 liters	N/A (Buffering agent)
• Glycerine with thymol	2 liters	vermiculite

7.0 COMMUNICATIONS

7.1 Important phone numbers, fax numbers and e-mail addresses:

AFSC/RACE Fax: (206) 526-6723

MILLER FREEMAN COMSAT (government account numbers): These are much cheaper than Inmarsat direct numbers and should always be used first.

800-678-0872, after voice prompt dial 330-394-113, after tone dial customer ID# (Voice)

800-678-0872, after voice prompt dial 761-267-348, after tone dial customer ID# (Fax)

Inmarsat (direct numbers)

011-872-330-394-113 (voice)

011-872-761-267-348 (fax)

CELLULAR: 206-660-7167

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KODIAK ROAMER: 907-528-7626
DUTCH HARBOR ROAMER: 907-391-7626
(First dial the roamer, wait for dial tone, then dial cellular number.)

AFSC person: Firstname.Lastname@noaa.gov
PMC radio room: Radio.Room@noaa.gov
Direct to ship: noaa.ship.Miller.Freeman@noaa.gov
(include the person's name in the subject field)
Individual on ship: Firstname.Lastname@mfnems.pmc.noaa.gov

8.0 APPENDICES

Appendix 1: Approximate positions for operations.

Operation	Latitude	Longitude
01SSP3A	57° 29.03' N	154° 48.48' W
01SSP2A	57° 37.13' N	155° 04.48' W
01SSP1A	57° 41.11' N	155° 12.21' W
ATF 1	55° 40.94' N	155° 19.25' W
ATF 2	55° 38.87' N	155° 17.99' W
ATF 3	55° 36.83' N	155° 18.91' W
ATF 4	55° 06.84' N	157° 02.44' W
ATF 5	55° 02.95' N	157° 02.45' W
ATF 6	55° 01.24' N	157° 04.22' W
ATF 7	55° 30.94' N	158° 46.83' W

Appendix 2: Map showing locations of operations (attached)

