

November 06, 2007

CRUISE REPORT

Cruise Number: MF07-12
RACE-EBS Slope Habitat Studies & Survey Equipment Testing

Vessel: NOAA Ship Miller Freeman

Area of Operations: Eastern Bering Sea Slope

Itinerary: Depart Dutch Harbor, Alaska 2 October 2007
Arrive Dutch Harbor, Alaska 13 October 2007

Participating Organizations: NOAA/RACE/REFM

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Cruise Objectives: The objectives of this cruise were comprised of eight biological studies and a comparison between an existing net mensuration system and equipment from a potential new vendor.

Summary of Operations and Samples Collected:

Bottom Trawl Tows	17
Demersal Bongo Tows	14
Skate Nursery Samples	7
Stomach Samples	978
Rockfish Genetic Tissue Samples	204
Rockfish Habitat Assessment	1
Visual Pigment Specimens	21
Cephalopod Specimens	185
Whole Fish Specimens	51
Stable Isotope Samples	296
Kamchatka Flounder Biological Samples	117
Bering Flounder Biological Samples	58
Shortraker Rockfish Otoliths	9
Skate Vertebrae Samples	139
Bigmouth Sculpin Biological Samples	14
Pacific Cod Maturity State Observations	6
Teaching Collections	4

Cruise Summary:

On October 2nd, 2007 the NOAA Ship MILLER FREEMAN –with all scientific personnel aboard, departed Dutch Harbor, Alaska in the late evening hours.

The vessel proceeded directly to the nursery site of the Aleutian skate at the head of Bering Canyon. On October 3rd an oblique bongo tow and benthic bottom trawl tow were conducted at this site. Biological data as well as a random sample of egg cases and embryos were collected. The vessel then proceeded to the nursery site of the Alaska skate and sampling was repeated, completing an oblique bongo tow and a benthic bottom trawl tow. Similar biological data and a sample of embryos and egg cases were collected from this site. All bottom trawls were conducted with either an 83-112 eastern trawl or a Poly Nor'Eastern trawl with mudsweep groundgear. The bongo configuration was a 60 cm array with 333 mm mesh in the codend.

On October 4th the vessel was unable to proceed with trawling operations due to a storm system over the entire area and the day and evening was spent at anchor on the lee side of St. George Island (Pribilof Islands).

On October 5th the weather had subsided and the vessel proceeded to the Pribilof Canyon area, where we conducted two oblique bongo tows and bottom trawl tows targeting Kamchatka flounder. The tows were successful in capturing Kamchatka flounder and ovary and otolith collections were made.

On October 6th the vessel returned to Dutch Harbor for assessment of an ill crewman. The vessel remained in port until midmorning on October 6th. On the evening of the 6th the vessel returned to Bering Canyon and conducted a single oblique bongo tow and a bottom trawl tow to collect

Kamchatka flounder specimens. The tows were successful in capturing Kamchatka flounder and ovary and otolith collections were made.

On October 7th the vessel conducted a bongo tow and a bottom trawl tow in the Pribilof Canyon area to obtain Kamchatka flounder specimens. The tow was successful in capturing Kamchatka flounder and ovary and otolith collections were made.

On October 8th the vessel proceeded to the southern arm of Zhemchug Canyon and proceeded to determine the distribution of rockfish and map the terrain in a unique habitat of rugged boulders along two ridge formations using the vessels EK50 echosounder and Globe software with Terrain Builder. Two areas were selected for bottom trawling and a single bongo tow and bottom trawl tow was conducted in each area to assess the rockfish species composition and collect rockfish age structures and genetic tissue samples. The ridges possessed at least three species of rockfish; the northern and dusky rockfish, and Pacific ocean perch.

On October 9th the vessel proceeded to Pervenets Canyon and conducted bongo tows and bottom trawl hauls to determine the extent of a nursery site for the Aleutian skate. Five trawl tows were completed in this area and biological samples including egg cases, and embryo samples were obtained from each tow. The nursery site was found to be small in area with a central location containing a high abundance of skate egg cases.

On October 10th the vessel traveled northeast to a location northwest of St. Matthew Island where historically Bering flounder had been caught in large numbers. Two bottom trawl tows were conducted in this location and biological samples were collected for Bering flounder including ovaries and otoliths which will be used to assess age at maturity for this species.

On October 11th the vessel proceeded to the northern arm of Zhemchug Canyon and conducted a single bongo tow and two bottom trawl tows at depths of 1018 and 1024 meters to obtain deepwater and mesopelagic fishes. Both trawl tows were successful and midwater as well as demersal fish were collected.

On October 12th the vessel proceeded to Dutch Harbor and arrived early morning on October 13th. All scientific party disembarked the MILLER FREEMAN at 10:00 am on October 13th and returned to Seattle via aircraft.

Summary of Cruise:

One day was lost to weather and another partial day lost to medical attention of crew members during the MF0712 cruise. The cruise completed all goals and objectives as stated in the Final Cruise Instructions submitted August 23, 2007.

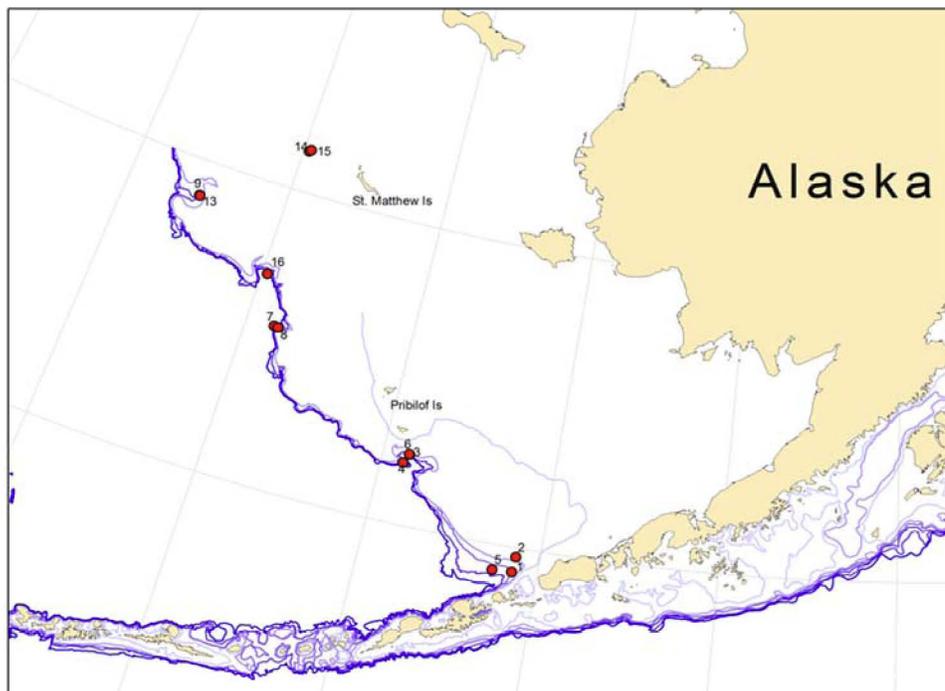
Results of Ancillary Biological Sampling:

Biological sampling was conducted on many fish and invertebrates species throughout this cruise. Many were sampled whenever encountered and several species, including the Kamchatka and Bering flounder, were targeted to obtain large samples necessary to determine size and age at maturity.

Specimen collections for museums and of ichthyologic interest were collected when encountered. Stomach samples were collected from every trawl haul on a variety of piscivorous fishes including skates, grenadiers, arrowtooth and Kamchatka flounder, turbot, cod, rockfish and pollock. Collections were gathered from a variety of hauls to provide a diverse mix of slope fish and invertebrate specimens for local high school biology teachers.

Results of Net Mensuration Comparison:

Seventeen bottom trawl hauls were made during the cruise to collect biological specimens and data on demersal species composition. Typically, RACE groundfish surveys employ instrumentation to measure the fishing dimensions (height and width of the mouth opening) of the survey trawls. Both Scanmar and Netmind instrumentation are routinely used. A new vendor, Marport, has entered the market and we leased their instruments to evaluate its performance and durability during this cruise. Marport spread and height sensors were deployed during each trawl haul; spread sensors were attached to the trawl doors during some hauls and to the wingtips during others. Scanmar spread sensors were also added to the wingtips during several hauls to compare measurements with the Marport equipment. Signals from the Marport spread sensors were received with RACE's net mensuration system and proved comparable to the Scanmar equipment. Marport's proprietary display software was needed to receive signals from their headrope-mounted height sensors (Trawl Explorer and Compact Trawl Explorer) due to the multiple channels of data it transmits. Displays from the Marport equipment in the labs were networked to a monitor in the trawlhouse, providing fishing officers with excellent real-time visibility of the trawl's position in relation to the bottom. A Marport hardware engineer accompanied us on the cruise, affording us the opportunity to experiment with various sensors aboard their instruments and ways to display and analyze their output. The Compact Trawl Explorer was also deployed on most of the oblique bongo tows, enabling real-time monitoring of that gear's position relative to the bottom.



Map of station location (red circles) where bongos and bottom trawls were conducted during the MF0712 cruise.

Station Location and details of bottom trawls (top table) and bongo tows (bottom table) conducted during the October Miller Freeman cruise MF0712 in the eastern Bering Sea.

BOTTOM TRAWLS

Haul	Date	ADT	Gear	Start latitude	Start longitude	Bottom depth (m)	Bottom temperature (°C)
1	3-Oct-07	13:12	83-112	54.59448	-165.72570	373	3.7
2	3-Oct-07	18:11	83-112	54.85300	-165.68380	145	4.4
3	5-Oct-07	9:48	83-112	56.20190	-169.22980	498	3.5
4	5-Oct-07	15:04	83-112	56.03980	-169.36530	337	3.6
5	6-Oct-07	18:27	Poly Nor'Eastern	54.57130	-166.25200	422	3.7
6	7-Oct-07	11:12	Poly Nor'Eastern	54.20200	-166.24300	542	3.4
7	8-Oct-07	12:08	Poly Nor'Eastern	56.70370	-169.11900	125	3.5
8	8-Oct-07	14:35	Poly Nor'Eastern	57.71340	-174.01700	113	3.5
9	9-Oct-07	9:27	83-112	57.39860	-174.69760	360	3.8
10	9-Oct-07	14:41	83-112	59.40580	-177.66400	340	
11	9-Oct-07	16:11	83-112	59.41380	-177.65600	318	3.8
12	9-Oct-07	18:08	83-112	59.40700	-177.39656	311	3.8
13	9-Oct-07	20:12	83-112	59.39800	-177.67010	330	3.8
14	10-Oct-07	8:59	83-112	60.67968	-174.82625	94	0.5
15	10-Oct-07	11:21	83-112	60.70593	-174.77188	92	0.5
16	11-Oct-07	6:58	Poly Nor'Eastern	58.51620	-174.83540	962	2.9
17	11-Oct-07	12:01	Poly Nor'Eastern	58.50700	-174.81960	965	2.8

BONGO TOWS

Haul	Date	GMT time	Start latitude	Start longitude	Gear Depth (m)	Bottom Depth (m)
1	3-Oct-07	1616	54.59205	-165.71042	358	370
2	4-Oct-07	0:00	54.85142	-165.66965	139	147
3	5-Oct-07	16:27	56.19977	-169.23813	527	550
4	5-Oct-07	21:54	56.04047	-169.36985	321	331
5	7-Oct-07	0:40	54.57293	-166.25777	303	422
5	7-Oct-07	1:22	54.57017	-166.25517	409	419
6	7-Oct-07	17:56	56.20583	-169.24303	450	461
7	8-Oct-07	21:09	57.71340	-174.13975	115	133
8	9-Oct-07	0:03	57.70770	-174.00348	111	121
9	9-Oct-07	16:04	59.40668	-177.68500	337	345
13	10-Oct-07	5:33	59.40152	-177.66208	311	318
14	10-Oct-07	16:04	60.67968	-174.82625	92	98
15	10-Oct-07	20:43	60.70593	-174.77188	87	97
16	11-Oct-07	17:42	58.51620	-174.83540	987	995