FINAL Cruise Instructions

Date Submitted: 5 February 2010

Platform: NOAA Ship *Oscar Dyson*

Cruise Number: DY-10-02

Project Title: Echo Integration-Trawl Surveys of Walleye Pollock along the Gulf of Alaska shelf break near Chirikof Island, in the Shelikof Strait area, and in Marmot Bay

Cruise Dates: 16 March-1 April 2010

Approved by: _____ Dated: _____

Dr. Doug DeMaster

Science and Research Director Name

Alaska Fisheries Science Center

Approved by: _____ Dated: _____

Captain Michele Bullock, NOAA

Commanding Officer

Marine Operations Center - Pacific

I. Cruise Overview

A. Cruise Period: 16 March-1 April 2010

B. Operating Area (in order conducted): along the Gulf of Alaska shelfbreak near Chirikof Island, the Shelikof Strait area, and Marmot Bay

C. Summary of Objectives: (1) collect echo integration data and trawl (EIT) data necessary to determine the distribution, biomass, and biological composition of walleye pollock; (2) collect target strength data using hull-mounted transducers or a lowered transducer for use in scaling echo integration data to estimates of absolute abundance; (3) calibrate the ER60 acoustic system using standard sphere calibration techniques; (4) collect physical oceanographic data (temperature and salinity profiles) at selected sites, and continuously collect sea surface temperature and salinity data; (5) conduct trawl hauls (AWT and Methot) to ground truth multi-frequency echo integration data collection; and (6) collect data on fish distributions and school characteristics using ME70 multi-beam echosounder.

D. Participating Institution: Alaska Fisheries Science Center, Seattle, WA

E. Personnel:

Michael Guttormsen	Chief Scientist
Paul Walline	Fish Biologist
Scott Furnish	IT Specialist
Kresimir Williams	Fish Biologist
Darin Jones	Fish Biologist
Taina Honkalehto	Fish Biologist
Annette Dougherty	Fish Biologist

F. Administrative

1. Point of Contact: Michael Guttormsen (Chief Scientist), 7600 Sand Point Way NE, Seattle, WA. 98115, 206-526-4163, Mike.Guttormsen@noaa.gov

2. Diplomatic Clearances: N/A

3. Licenses and Permits: This cruise will be conducted under a Scientific Research Permit issued by the Alaska Regional Office, National Marine Fisheries Service (Permit number 2010-B1), and a Fish Resource Permit issued by the State of Alaska (application pending). The Chief Scientist is included as an authorized participant on both permits.

II. Operations

A. Cruise Plan/Itinerary:

Mar 15	Embark scientists in Kodiak, AK
Mar 16	Depart Kodiak, AK at 1500. Transit to survey start location south of Barnabas Trough
Mar 17-31	EIT surveys in the Gulf of Alaska
Mar 31	Conduct sphere calibration in a location TBD
Apr 1	Arrive Kodiak at 0900; disembark scientific party

B. Staging and Destaging: Scientific gear will be loaded and mounted onto the vessel prior to its departure for the pre-season field trials from Seattle, WA, on 9 February, 2010. Upon completion of the cruise, trawl gear can be offloaded and stored in the Kodiak NOAA warehouse until being re-loaded for the summer Bering EIT survey, which begins on 4 June, 2010.

C. Operations to be Conducted

1. Underway Operations:

1A. Survey operations will be conducted 24 hours per day. Acoustic data will be collected continuously along a series of parallel transects with a Simrad ER60 echo integration system incorporating five centerboard-mounted transducers (18 kHz, 38 kHz, 70 kHz, 120 kHz, and 200 kHz) and an ME-70 multibeam echosounder. The vessel must not operate other echo sounders or acoustic equipment that interferes with collection of scientific acoustic data. The need for ADCP data collection is currently under review. If required, the ADCP will be operated using a sequential trigger system. The bow thrusters, Doppler speed log and bridge Furuno depth sounder should all be secured, as they degrade the quality of acoustic data.

Parallel transect spacing will be 6.0 nm along the shelfbreak, 7.5 nm in the Shelikof Strait area, and either 1.0 or 2.0 nm in Marmot Bay. A narrowly spaced exploratory survey of the 'Snakehead' area on the shelf east of Chirikof Island (see Figure) will also be conducted. Trackline start and end points will be provided in an electronic file via email to the Field Operations Officer (ops.oscar.dyson@noaa.gov) prior to the vessel's departure from Seattle for Alaska, with a cc to the Navigation Officer (nav.oscar.dyson@noaa.gov). Because the start point of the first trackline of each survey is selected randomly, tracklines will not match tracklines from prior surveys. Optimal pitch and RPM settings will be specified. Ship speed is expected to average 11.0 to 12.0 knots in favorable conditions.

EIT survey operations require that an Aleutian wing trawl (AWT) and poly Nor'eastern bottom trawl (PNE) with roller gear be loaded onto the net reels. A spare AWT and PNE with roller gear will serve as backups. Codend liner mesh size will be 0.5 in. for both the AWT and the PNE. Fishbuster doors will be used with all trawls. We request that the chief boatswain keep a trawl gear logbook to record any modifications made to trawl gear during the cruise. Small fishes or zooplankton may be sampled using fine-mesh nets (e.g. Methot net).

Trawl hauls will be made to identify echo sign and provide pollock samples and other biological data. Haul duration will be kept to the minimum necessary to ensure an adequate sample. Biological data collected from each haul will include species composition, sex composition, length frequencies, whole fish and ovary weights, maturities, and otoliths. Pollock tissue samples will be taken from selected hauls for fecundity studies.

The Scientific Computing System (SCS) will run continuously throughout the cruise and will be configured to log data from various sensors using a list provided by the Chief Scientist.

1B. Target strength data collection will occur on an opportunistic basis. These data are used to validate the relationship between fish length and target strength. Data will be collected when certain conditions (i.e., low fish densities, single species, unimodal size composition, appropriate depth range) are encountered. Collecting target strength data typically involves repeated passes over an aggregation of fish at a vessel speed of less than 3 knots. One or two trawl hauls are made to provide species composition and biological data. When calm seas are encountered along with the above-mentioned conditions, a second approach to collecting target strength data may be attempted: with the vessel stopped, a “drop TS” assembly containing a 38-kHz transducer will be lowered to a depth just above the fish sign.

1C. A standard sphere calibration of the centerboard-mounted scientific acoustic systems (18, 38, 70, 120, and 200 kHz) will be conducted at a location to be determined at the end of the survey period. This requires anchoring the vessel at the bow and stern and suspending a calibration sphere assembly directly beneath the vessel’s centerboard. A CTD cast will be conducted prior to the calibration.

ID. Conductivity-temperature-depth (CTD) data may be collected with a Seabird SeaCat system at trawl locations and at other selected locations. Temperature and depth profile data will be collected with a Seabird SBE39 micro-bathythermograph attached to the trawl headrope.

1E. If single-species aggregations are encountered (e.g. rockfish, euphausiid, capelin), opportunistic trawl hauls (AWT and Methot) may be conducted to ground truth multi-frequency echo integration data collection.

1F. Data on fish distributions and school characteristics using multi-beam echosounder will be collected. This effort will consist of repeated passes over identified echosign and a confirmation trawl.

2. Station Operations: N/A

D. Dive Plan: it is requested that divers inspect the propeller and hull sensors, either dockside previous to sailing or while anchored at the calibration site. Also, it may be necessary to deploy divers, if possible, during the survey if it is suspected that the propeller has been fouled.

E. Applicable Restrictions: N/A

III. Facilities

A. Equipment and Capabilities Provided by the Ship (amount is 1 unless specified)

1. Acoustic Equipment
   - GPS with NEMA 183 to ER60 (2)
   - 50/200 kHz ES60 Bridge sounder
   - Furuno FE-700 fathometer

2. Trawling Equipment
   - 3rd wire FS-70 net sonar with winch and accessories (2)
   - Simrad ITI net mensuration system (2)
   - Furuno CN24-40 headrope transducer

3. Oceanographic Equipment
   - Seabird CTD System

4. Biological Sampling Equipment
   - Fish lab conveyor system
   - Catch sorting and weighing table

5. Computing equipment
   - Scientific Computing System
   - Fisheries Scientific Computer System

B. Equipment and Capabilities Provided by the Scientists (number is 1 unless specified)

1. Acoustic Equipment
   - Simrad ER60 system (2)
   - Simrad ES18 transducer
   - Simrad ES38B transducer (2)
   - Simrad ES38DD transducer
   - Simrad ES70 transducer

Simrad ES120-7C transducer
Simrad ES200-7C transducer
Standard target & suspension assembly
Simrad ME70 system

2. Trawling Equipment
   Aleutian wing trawl w/accessories (e.g., 0.5" mesh liners) (2)
   Poly nor'eastern trawl w/accessories (e.g., 0.5" mesh liners) (2)
   Dandylines (10 fm x ½ in.)
   Dandylines (30 fm x 5/8 in.)
   Fishbuster door with accessories (2 sets)
   Spare webbing & twine
   Spare hardware
   500 lb. tom weights (4)
   250 lb. tom weights (4)
   Opening/closing codend and accessories
   Methot net with accessories (2)
   Miscellaneous supplies*
3. Oceanographic Equipment
   Seabird SBE39 (2)
4. Biological Sampling Equipment
   Dynamometer
   Marel M60 60 kg scale (2)
   Marel M60 6 kg scale (2)
   Mechanical platform scale (2)
   Fish baskets (30)
   Glycerin*
   Misc. biological supplies*
5. Computing equipment
   IBM compatibles w/XP Op.System*
   Dell PowerEdge MACEBASE Server
   Printers*

Note: * indicates amount not specified.

IV. Hazardous Materials

A. Policy and Compliance The Chief Scientist is responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Chief Scientist.

B. Radioactive Isotopes: N/A

C. Inventory: N/A

V. Additional Projects

A. Supplementary ("Piggyback") Projects: Secondary objectives of the cruise include scientific research requested by AFSC and other investigators. Detailed descriptions of ancillary projects associated with this cruise will be provided as soon as received. Significant changes to these projects that affect vessel operations will be communicated as soon as they are known. Final project descriptions will be delivered to the Field Operations Officer prior to the vessel's departure from Seattle.

B. NOAA Fleet Ancillary Projects: N/A

VI. Disposition of Data and Reports

A. Data Responsibilities

1. An electronic Marine Operations Abstract (MOA) will be created to log all operations via daily transfers of position data from the ship's SCS system to MACE. An appropriate logging interval will be chosen for automated track position data. Specific events (and frequency) to be recorded will be decided at the beginning of the cruise. Globe software will be available to log operations data as a backup. All times should be recorded as Greenwich Mean Time (GMT)

2. The data sets requested by the Chief Scientist from the ship will include the following: electronic files (MOA) from the SCS of all operations logged during the cruise, and backup media (e.g., DVDs) with all sensor data logged to the Scientific Computer System (SCS).

3. The Chief Scientist will represent the AFSC lab director for data disposition. A single copy of all data gathered by the vessel will be delivered to the Chief Scientist for forwarding to the AFSC lab director, who in turn will be responsible for distributing data to other investigators desiring copies.

B. Pre and Post Cruise Meetings: Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of

cruise objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Following completion of the field season, a meeting will be held at a date and time to be determined. The meeting will be attended by the ship's officers, the Chief Scientist and members of the scientific party, the Vessel Coordinator and the Port Captain to review the cruise. Concerns regarding safety, efficiency, and suggestions for improvements for future cruises should be discussed. Minutes of the post-cruise meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report: Within seven days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfation@noaa.gov . If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

VII. Miscellaneous

A. Meals and Berthing: Meals and berthing are required for up to 7 scientists. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the cruise, and ending two hours after the termination of the cruise. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the cruise and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts: The NOAA Health Services Questionnaire (NHSQ, Revised: 08/08) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website at http://www.omao.noaa.gov/medical/NHSQ_Final_wi_Instructions_fill.pdf. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

Contact information:

Regional Director of Health Services
Marine Operations Center - Pacific
1801 Fairview Avenue East
Seattle, WA 98102
Telephone 206.553.8704
Fax 206.553.1112
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide a listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number.

C. Shipboard Safety: Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted.

Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

D. Communications: A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various modes of communication, the ship is able to maintain contact with the Marine Operations Center on an as needed basis. These methods will be made available to the Chief Scientist upon request, in order to conduct official business. Due to a new directive from Marine Operations Center, the ship must charge the science party for all calls made on the cell or sky-cell telephone. INMARSAT, Sky Cell and cellular communication costs shall be reimbursed to the ship for telephone calls made by all scientific personnel. Currently, Sky Cell and cellular telephone services are about $0.89 per minute and INMARSAT Mini-M is around $1.68 per minute for voice. These charges will be assessed against the program after the ship receives the bill. There is generally a three-month delay receiving the bill for review. The Chief Scientist will be required to keep a log of all calls made by the science party.

E. IT Security: Any computer that will be hooked into the ship's network must comply with the *NMAO Fleet IT Security Policy* prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

(1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
(2) Installation of the latest critical operating system security patches.
(3) No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is preferable.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship network must complete NOAA’s IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms: N/A

Appendix—Proposed survey areas.

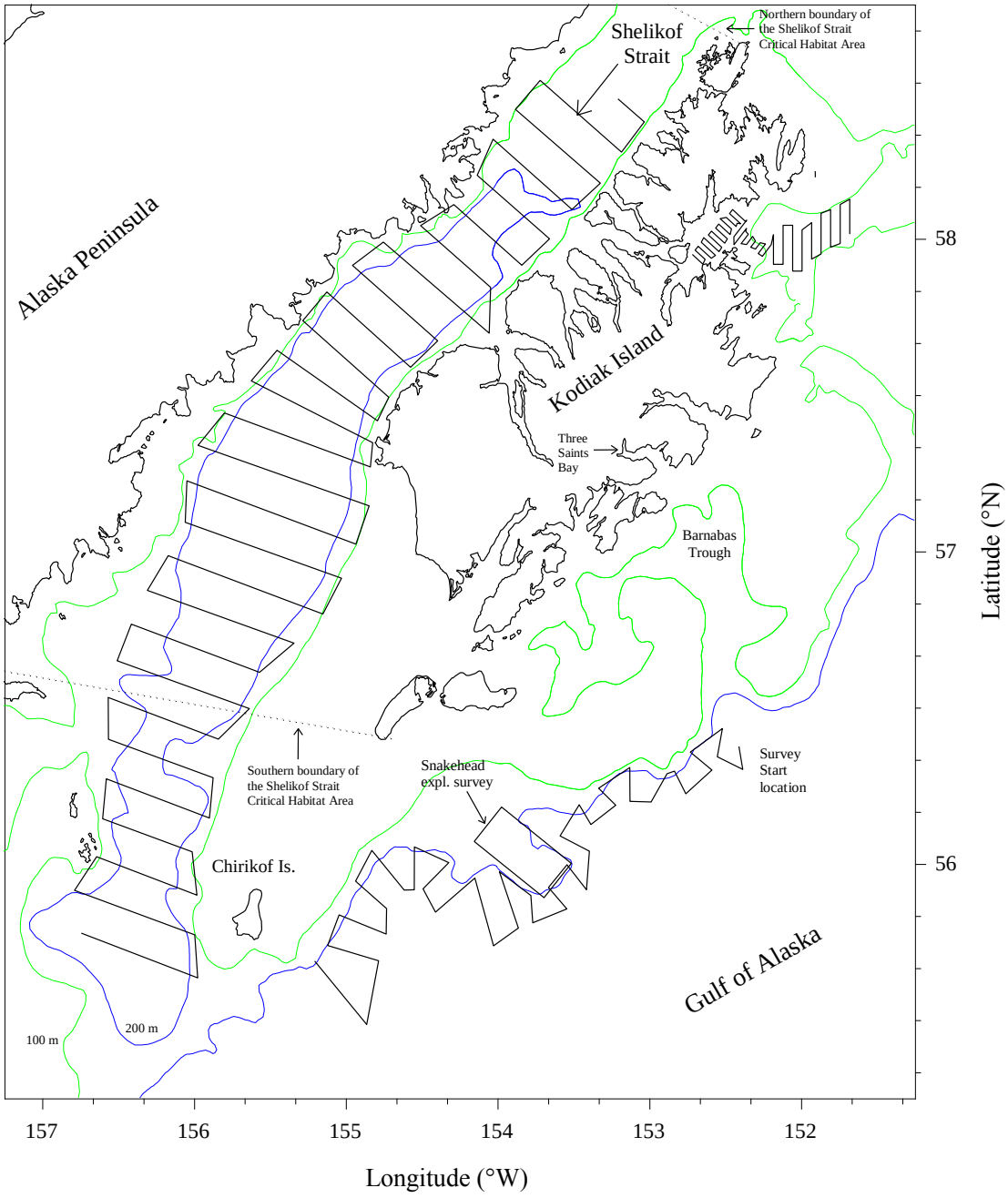

Figure 1. Proposed trackline for the 2010 echo integration-trawl surveys of the Shelikof Strait area, the Gulf of Alaska shelf break from near Chirikof Island, and Marmot Bay.