



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES SCIENCE CENTER
P.O. BOX 271
LA JOLLA, CA 92038-0271

July 2, 2003

F/SWC1:DAG

CRUISE ANNOUNCEMENT

VESSEL: F/V *Frosti*, 0307-FR.

CRUISE DATES: July 6 - July 25, 2003.

PROJECT: Oregon - Washington Sardine Survey, Fisheries Resources Division.

ITINERARY: Leg I: Depart Newport, Oregon at approximately 1000 on July 6, 2003. Proceed to first station of the proposed survey track and occupy all 42 scheduled stations (see attached cruise track). The vessel will stop on or about July 15 to exchange scientific personnel in Port Angeles, Washington.

Leg II: Once personnel exchanges are complete, the *Frosti* will return to areas of observed high concentrations of fish schools and egg densities. The vessel will return to Astoria, Oregon on July 24, 2003.

OBJECTIVES: 1. Collect fishery independent adult sardines for spawning biomass estimates.

2. Map sardine egg distribution with CUFES (Continuous Underway Fish Egg Sampler) off of Oregon and Washington.

3. Collect oceanographic data over a fixed cruise track which covers the region 42°N to 48°N out to 127° W.

4. Collect acoustic data continuously throughout the survey using the vessel's ES-60 Simrad sounder.

5. Coordinate survey with airborne LIDAR (Light Detecting and Ranging) system operated by OAR.

6. Work in cooperation with fish spotter pilots for directing the ship onto fish schools as well as identifying remote schools not accessible to the vessel.

7. Conduct quantitative plankton tows using a Pairovet net for calibration of the CUFES and attempt to quantify the sardine spawning biomass using an EPM (Egg Production Method).

8. Collect continuous underway temperature and conductivity measurements of surface waters. These measurements will be collected using NOAA's SCS software which is also interfaced with the CUFES software.

PROCEDURES: 1. Forty-two primary stations have been plotted on the survey track design with an approximate spacing of 30 nautical miles (please refer to attached diagram). At each station the following activities will be performed:

a. Deployment of a Seabird SeaCat down to 100 meters, bottom depth permitting. The self-contained CTD will collect depth, temperature, conductivity and chlorophyll data.

b. Standard Pairovet cast down to 70 meters depth deployed concurrently with the CUFES system.

c. Standard meteorological data including SST, wind speed and direction, wave height and direction, cloud cover, relative humidity, air temperature and barometric pressure.

d. During all transit between stations continuous measurements will be made of pelagic fish eggs (CUFES) and acoustic targets using the ES-60. All acoustic targets and egg densities will be recorded for reoccupation during the night portion of the survey.

2. Trawling Procedures

a. With the occupation of stations during the daylight hours, the less distance traveled will make it easier to reoccupy the areas of high egg densities and strong acoustic targets. Basically, if 3 stations are occupied during the daytime, a distance of only 60 miles will be covered that will be re-sampled during the night. If no targets are seen, the decision will be made to either continue surveying along the track line or to deploy the net in a blind trawl.

b. Trawling operations will begin just before sunset to maximize the amount of dark trawling time. Since time will be short, it would be beneficial to trawl toward targets noted during the day rather than to run back to the targets to perform a second survey. In a sense this would be a semi-blind trawl. Trawling operations will continue until it is necessary to break off to arrive at the next transect start point by 08:00.

c. To maximize our trawling efficiency, trawling will be performed with the assistance of a spotter pilot. Radio contact will be maintained with the vessel at all times while the aircraft is airborne.

d. The airborne LIDAR system will be used in coordination with the survey and trawling portion of the cruise. The first flight will be on July 8 and conducted over the transect lines.

3. Projected Time Frame

a. With an average station time of 1 hour for a 100 meter CTD and Pairovet tow and a running speed during the daytime portion of 9 knots, it is feasible to cover the proposed pattern in 8.2 days. This is assuming cooperative weather and mechanical perfection. With a total project duration of 20 days, this would allow approximately 10 days for further survey work after accounting for travel time from Newport, OR to the first station and from Astoria, OR to the vessel's home port in Qualicum Beach, British Columbia.

b. Once the primary pattern has been occupied, the vessel will return to areas of known high abundances of eggs and previous positive trawls. During this portion while returning to the intended areas, adaptive sampling will be performed when egg concentrations exceed 1 egg/minute during daylight hours. At this point, if time permits, additional lines may be inserted between the primary pattern lines to allow for higher spatial definition.

c. Night operations will be dedicated to maximizing trawling operations in areas of previously observed high acoustic

targets and/or previously performed positive trawls. This may be the most advantageous time to utilize the spotter pilots in directing the ship to areas of opportunity.

- EQUIPMENT: 1. Supplied by scientific party:
- 37% Formalin (SWFSC)
 - Sodium borate (SWFSC)
 - 30 cc and 50 cc syringes (SWFSC)
 - Canulas (SWFSC)
 - Pint, 8 oz and 4 oz jars (SWFSC)
 - Inside and outside labels (SWFSC)
 - CalCOFI net tow data sheets (SWFSC)
 - CalCOFI 150 μ m Calvet nets and codends (SWFSC)
 - CalCOFI Pairovet frames (SWFSC)
 - 333 μ m mesh codends (SWFSC)
 - Digital flowmeters (SWFSC)
 - Standard CalCOFI tool boxes (SWFSC)
 - Bucket thermometers and holders (SIO)
 - Hand held inclinometer (SWFSC)
 - Weather observation sheets (SIO)
 - SeaCat CTD (NWFSC)
 - CUFES system
 - Midwater trawls (NWFSC, SWFSC)
 - Trawl doors (NWFSC, SWFSC)
 - Winch for plankton tows (NWFSC)
 - SBE 45 Micro TSG (SWFSC)
2. Supplied by *F/V Frosti*:
- Winch monitoring system
 - Simrad EK-60 color sounder
 - Port and starboard side trawl winches

MISCELLANEOUS:

1. The disposal of fish caught will be in accordance with NOAA Administrative order 202-735B dated January 25, 1989.
2. At the completion of the cruise an inspection will be made of scientific working and berthing spaces by the Commanding Officer or his designated representative. The Scientific party is responsible for the condition and cleanliness of spaces assigned to the scientific party.
3. The Cruise Leader will hold a pre-cruise meeting aboard the vessel before departure.
4. The Cruise Leader will hold a post-cruise meeting upon termination of the cruise.
5. All dates and times recorded will be in Pacific Standard Time.

PERSONNEL: Dave Griffith, Cruise Leader	SWFSC
Bev Macewicz	SWFSC
Elaine Acuña	SWFSC
Daniel Waldeck†	PFMC
Todd Miller	OSU
Jean McCrae‡	ODFW

NOAA personnel authorized per diem at the rate of \$2.00 per day to be paid via the Imprest Fund at the termination of the cruise.

† Disembarking in Port Angeles, WA.

‡ Embarking in Port Angeles, WA.

WATCH HOURS: 0000-1159
1200-2359

Charge to account #8L4S0D05

OVERTIME: 120 hours (Authorized total per NMFS personnel)
NIGHT DIFF: 120 hours (Authorized total per NMFS personnel)

Date: _____

Prepared by: _____
D.A. Griffith

Approved by: _____
Michael F. Tillman Ph.D
Science & Research Director
Southwest Region

