UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES SCIENCE CENTER
8604 LA JOLLA SHORES DRIVE
LA JOLLA, CA 92037

June 25, 2004 F/SWC1:DAG

CRUISE ANNOUNCEMENT

VESSEL: NOAA Vessel *David Starr Jordan*, 0404-JD, DS 04-02 (342).

CRUISE DATES: April 12 - 25, 2004.

PROJECT: CalCOFI Survey, Fisheries Resources Division.

ITINERARY: Depart San Diego, California at 0800 on April 12, 2004. Proceed to first station 73.3/100.0 (position 31° 5.1'N/122° 39.7'W) and continue the proposed pattern started by the Scripps Institution of Oceanography research vessel *New Horizon*(see attached cruise track). To complete the proposed cruise track, it will be necessary to maintain maximum speed between stations whenever possible. Once the pattern has been completed, attempts will be made to collect adult sardines in areas of high egg density observed during the first sweep. The ship will return to San Diego on April 25, 2004.

OBJECTIVES:

1. The National Marine Fisheries Service (NMFS) and the California Department of Fish and Game (CDFG) have the responsibility of determining the status of the Pacific sardine (*Sardinops sagax*) population along the west coast of North America. During the 2004 sardine survey, data will be collected to determine the biomass of the sardine population located between San Francisco as the northern boundary and San Diego as the southern boundary. These data will be analyzed using a daily egg production method (DEPM) to determine the spawning biomass. This method measures the abundance of newly spawned eggs and the rate at which mature females are producing eggs.

2. To conduct continuous underway sampling of surface waters. Temperature and salinity will be automatically logged by computer with the output from the GPS navigational unit.

3. To record current profiles throughout the duration of the cruise with the Acoustic Doppler Current Profiler in an attempt to estimate net transport in the northern region.

4. To continue an ongoing assessment of pelagic fish stocks between La Jolla and San Francisco, California.

5. To monitor environmental conditions within the CalCOFI survey area.

6. To make continuous observations of sea birds and marine mammals.

7. To record continuous acoustic targets obtained with the EK-500 scientific sounder.

8. To collect adult sardines for biomass estimates.

PROCEDURES:

1. The *Jordan* will conduct operations in conjunction

with the Scripps Institution of Oceanography research vessel *New Horizon*. During the southern occupation of the pattern (San Diego to Point Conception), the *New Horizon* will occupy the standard 66 CalCOFI stations from March 23 to April 10 and the *Jordan* will sample the northern region from Point Conception to San Francisco beginning on April 13 (see attached diagram). Both the *Jordan* and the *New Horizon* will conduct directed adaptive sampling of pelagic fish eggs using the following protocol: Water will be continuously sampled using the CUFES (Continuous Underway Fish Egg Sampler) from a depth of three meters. Approximately 640 liters/minute is sent through a concentrator which filters all material larger than 505 µm. The sieved material is then collected and identified. All fish eggs are identified to lowest taxa, counted and entered into the data acquisition software.

Sampling intervals will vary in length, depending on the number of fish eggs seen, from five to 30 minutes. If two consecutive samples have a concentration of Pacific sardine eggs equal to or greater than 1 egg per minute, the ship will stop to conduct a Pairovet tow. Pairovet tows will continue at four mile intervals until a concentration of less than one egg per minute is observed in two consecutive samples. All Pairovet samples will be taken concurrently with CUFES samples in addition to sampling continuously between Pairovet samples. The four mile interval may be adjusted if SST's from satellite images suggests a potentially large spawning habitat.

2. The Pairovet net will be fished from 70 meters to the surface (depth permitting) using paired 25 cm diameter 150 µm mesh nets. The technical requirements for Pairovet tows are: Descent rate of 70 meters per minute, a terminal depth time of 10 seconds and an ascent rate of 70 meters per minute. All tows with wire angles exceeding 15° during the ascent will be repeated.

3. Each standard CalCOFI station will include the following:

   a. A CTD/Rosette consisting of 20 10-liter hydrographic bottles will be lowered to 500 meters (depth permitting) to measure physical parameters and collect water at discrete depths for analysis of: oxygen concentration, salinity, nutrients, chlorophyll and phytoplankton.

   b. A CalBOBL (CalCOFI Bongo) standard oblique plankton tow with 300 meters of wire out, depth permitting, using paired 505 µm mesh nets with 71 cm diameter openings. The technical requirements for this tow are: Descent rate of 50 meters per minute. All tows with ascending wire angles lower than 38° or higher than 51° in the final 100 meters of wire will be repeated. Additionally, a 45° wire angle should be closely maintained during the ascent and descent of the net frame.

   c. A Manta net (neuston) tow, using a 505 µm mesh net on a frame with a mouth area of 0.1333 m^2.

   d. Weather observations.

   e. A Pairovet (vertical) plankton tow will be taken using protocols as described previously.

   f. During transit between stations, a bird observer will be

recording location and species of various sea birds and marine mammals

EQUIPMENT: 1. Supplied by scientific party:

- -80°C Freezer (SWFSC)
- 37% Formalin (SWFSC)
- Ethanol (SWFSC)
- Tris buffer (SWFSC)
- Sodium borate (SWFSC)
- 30 cc and 50 cc syringes (SWFSC)
- Canulas (SWFSC)
- Pint, quart and gallon jars (SWFSC)
- Scintillation vials (SWFSC)
- Inside and outside labels (SWFSC)
- CalCOFI net tow data sheets (SWFSC)
- 71 cm CalCOFI Bongo frames (SWFSC)
- 71 cm CalCOFI 505 µm mesh nets (SWFSC)
- CalCOFI 150 µm Calvet nets and codends (SWFSC)
- CalCOFI Pairovet frames (SWFSC)
- 333 µm mesh codends (SWFSC)
- Inclinometer for bongo tows (SWFSC)
- Digital flowmeters (SWFSC)
- 75 lb Bongo weight (SWFSC)
- 100 lb hydro weights (SWFSC)
- CalCOFI Manta net frames (SWFSC)
- 60 cm CalCOFI 505 µm mesh Manta nets (SWFSC)
- Standard CalCOFI tool boxes (SWFSC)
- Bucket thermometers and holders (SWFSC)
- Hand held inclinometer (SWFSC)
- Oxygen titration rig with reagents (ODF)
- Oxygen flasks (ODF)
- Guideline Portasal (ODF)
- Salinity bottles (ODF)
- Standard sea water (SWFSC)
- Data sheets for scheduled hydrographic work (SIO)
- Weather observation sheets (SIO)
- CTD and rosette (SWFSC)
- 2 liter hydrographic bottles (SWFSC)
- CUFES (SWFSC)
- CUFES data acquisition software (SWFSC)
- CUFES data acquisition notebook computer (SWFSC)
- High speed mid-water trawl (SWFSC)
- Foam core trawl doors (NWFSC)

2. Supplied by *David Starr Jordan*:

- Starboard hydro winch with ¼" cable for standard Bongo, Pairovet and Manta tows
- Port winch with .322" conductive cable
- Paired trawl winches w/ ⅝" cable for trawling
- J-frame w/block to accommodate .322" cable
- Constant temperature room set at 22°C ±1°C (71.5°F ±2°F)
- Winch monitoring system
- Seabird thermosalinometer
- EK-500 Scientific sounder
- Serial cable from the SCS for egg pump data acquisition (port lab)
- Knudsen 12 kHz depth recorder
- Acoustic Doppler Current Profiler w/writeable CD drive
- Stern mounted net reel
- Trawl gantries
- Trawl blocks mounted on gantries

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. NOAA Fleet Medical Policy requires that all scientific personnel embarking on NOAA vessels complete an SF-93 form, Report of Medical History.

6. All dates and times recorded will be in Pacific Standard Time.

7. There is the potential for the trawl work proposed under these project instructions to be supplemented by a contracted vessel. Once the conformation for the charter has been defined, the command and crew of the Jordan will be notified immediately so the necessary accommodations can be arranged.

PERSONNEL:

Dave Griffith, Cruise Leader	SWFSC
Amy Hays	SWFSC
Noelle Bowlin	SWFSC
Marguerite Blum	MBARI
TBD	MBARI
Cornelia Oedekoven	PRBO

SWFSC personnel authorized per diem at the rate of $3.00 per day to be paid via the Imprest Fund at the termination of the cruise.

WATCH HOURS: 0000-1159
1200-2359

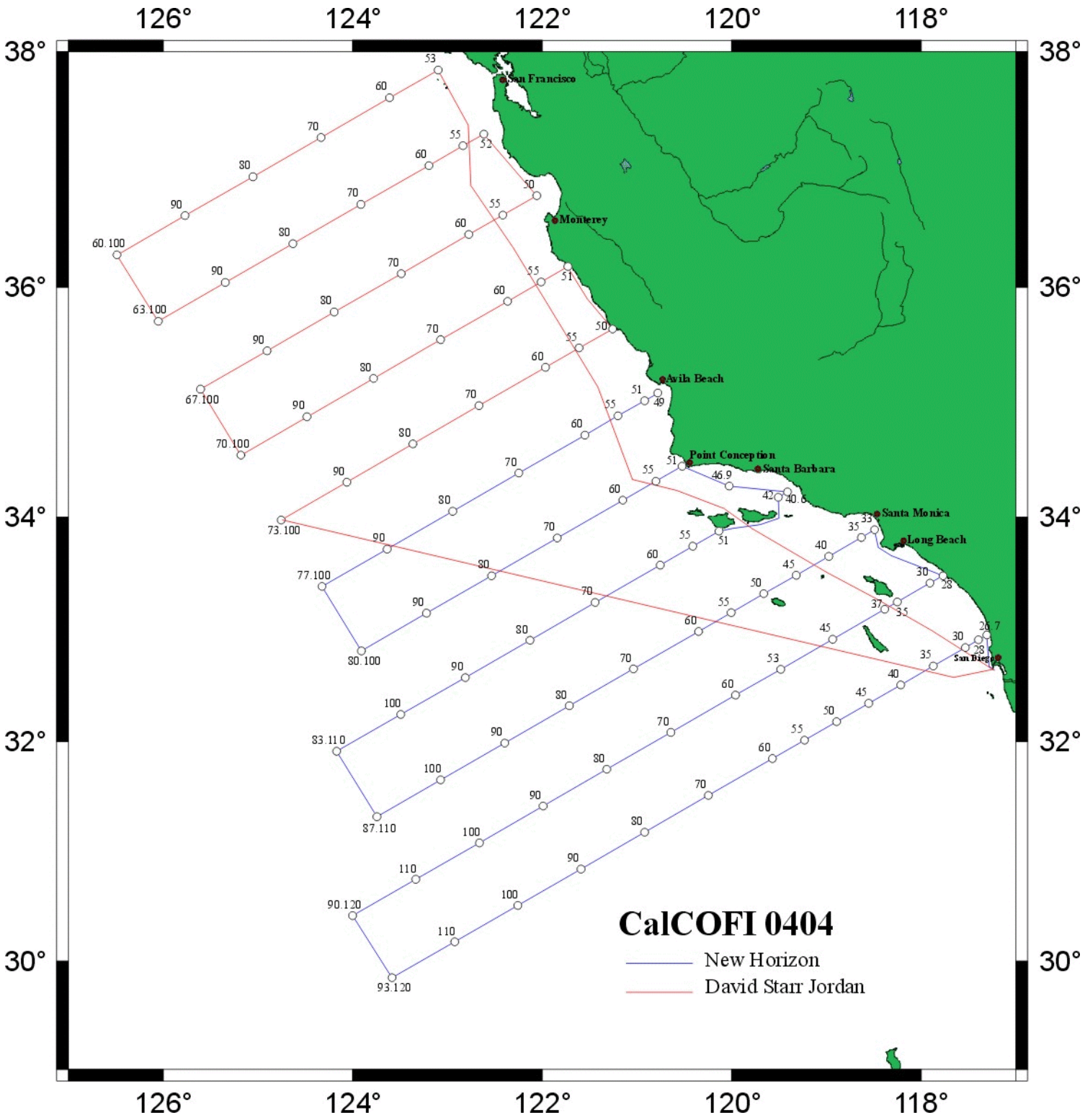
Charge to account 8L4S0D05

OVERTIME: 196 hours (Authorized total per NMFS personnel)
NIGHT DIFF: 204 hours (Authorized total per NMFS personnel)

Date:_____

Prepared by:_____
D.A. Griffith

Approved by:_____
Richard A. Neal Ph.D
Acting Science & Research Director
Southwest Region


126°
124°
122°
120°
118°
38°
36°
34°
32°
30°
San Francisco
Monterey
Avila Beach
Point Conception
Santa Barbara
Santa Monica
Long Beach
San Diego
60.100
63.100
67.100
70.100
73.100
77.100
80.100
83.110
87.110
90.120
93.120
CalCOFI 0404
New Horizon
David Starr Jordan