



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

February 15, 2007

F/SWC1:DAG

CRUISE REPORT

VESSEL: NOAA Vessel *David Starr Jordan*, 0701-JD, DS 07-01.

CRUISE DATES: January 12 - February 3, 2007.

PROJECT: CalCOFI Survey, Fisheries Resources Division.

ITINERARY: Leg I: Departed the Nimitz Marine Facility at 0800 on January 12, 2007 and moved to the Navy fuel pier to begin fueling. Departed the fuel pier around 15:00 and proceeded to the first station (93.3/26.7 - position 32° 57.38N 117° 18.32W). Continued to occupy stations up to 76.7 100.0 at which time operations were discontinued and the ship pulled into Monterey, California to complete leg I on January 31.

Leg II: Departed Monterey on January 31 after exchanging scientific personnel and began occupying stations on line 66.7. Completed stations out to 85.0 and then returned to San Diego on February 3, 2007.

OBJECTIVES: 1. To continue an ongoing assessment of pelagic fish stocks between Monterey Bay and La Jolla, California.

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

3. To conduct a continuous sampling of surface waters using the ship's underway system. Temperature, salinity and chlorophyll were automatically logged by computer with the output from the GPS navigational unit.

4. To record current profiles throughout the duration of the cruise with the Acoustic Doppler Current Profiler (ADCP).

5. To measure optical profiles within the California bight. The optical profile measurements will include pigment concentration and particle absorption.

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

PROCEDURES: 1. Each standard CalCOFI station included the following:

a. A CTD/Rosette consisting of 24 10-liter hydrographic bottles was lowered to 500 meters (depth permitting) to measure physical parameters and collect water at discrete depths. Additional intermediate stations were added to line 66.7 and the CTD casts were sent down to 1000 meters. Sea water from each hydrographic bottle was analyzed for chlorophyll, salinity, and nutrients. Continuous profiling during the cast was obtained for oxygen, temperature, conductivity, light transmittance and chlorophyll fluorescence.

b. A CalBOBL (CalCOFI Bongo) standard oblique plankton tow with 300 meters of wire out, depth permitting, used paired 505  $\mu\text{m}$  mesh nets with 71 cm diameter openings.



The technical requirements for this tow were: Descent rate of 50 meters per minute, ascent rate of 20 meters per minute. All tows with ascending wire angles lower than 38° or higher than 51° in the final 100 meters of wire were repeated. Additionally, a 45° wire angle was closely maintained during the ascent and descent of the net frame. Contents of the starboard side net were preserved in buffered formalin for later identification. The port side net contents were preserved in buffered ethanol for later identification of ichthyoplankton and DNA studies for stations at and inshore of station 70.

c. A Manta net (surface) tow, using a 505 µm mesh net on a frame with a mouth area of 0.1333 m<sup>2</sup>. The duration of each tow is 15 minutes at approximately 1½ knots.

d. Weather observations.

e. A Pairovet (vertical) plankton tow was taken at all stations inshore of, and including station 70. The Pairovet net was fished from 70 meters (depth permitting) to the surface using a 25 cm diameter 150 µm mesh net. The technical requirements for Pairovet tows are: Descent rate of 70 meters per minute, ascent rate of 70 meters per minute. All tows with wire angles exceeding 15° during the ascent were repeated.

f. A PRPOOS (Planktonic Rate Processes in Oligotrophic Ocean Systems) net tow was taken at all stations on line 90.0 and 80.0 as well as stations out to and including station 70.0 on lines 86.7 and 83.3. These stations were occupied as part of the LTER (Long Term Ecological Research) project. The mesh of the PRPOOS net is 202 µm and the tow is a vertical cast up from 210 meters, depth permitting.

g. Up to and including line 76.7, at about 1100 hours on each day of the cruise a primary productivity CTD cast consisting of six 10-liter hydrographic bottles was carried out. The cast arrangement were determined by a Secchi disc observation. The purpose of the cast was to collect water from 6 discrete depths for daily *in situ* productivity experiments. Measurements of extracted chlorophyll and phaeophytin were obtained with a fluorometer. Primary production was measured as C<sup>14</sup> uptake in a 6 hour *in situ* incubation. Nutrients were measured with an auto-analyzer. All radioisotope work areas were given a wipe test before the departure of the SIO technical staff.

h. During transit between stations, a bird observer and marine mammal observer recorded locations and species of various sea birds and marine mammals.

i. During transit between most daylight stations, an acoustic hydrophone array was towed off the stern with a cable/winch to record sounds from marine mammals. Upon approaching a station, a sonobuoy was deployed one nautical mile prior to stopping for station work.

2. The egg pump (CUFES - Continuous Underway Fish Egg Sampler) was mounted inside the ship's hull drawing water from a depth of three meters. During the grid occupation, the pump ran continuously between stations to sample any pelagic fish eggs.
3. An additional nine stations were occupied within the CalCOFI pattern for SCCOOS (Southern California Coastal Ocean Observation System). These were 20 meter depth stations and consisted of a CTD lowered to within a few meters from the bottom and a Bongo tow.

These stations were included in the original station plans provided to the ship.

RESULTS:

<u>Activity</u>	<u>Requested</u>	<u>Completed</u>	<u>Aborted</u>
Bongo tows	94	79	15
Manta	85	71	14
Paironet	61	46	15
PRPOOS tows	35	35	0
CTD	95	84	11
Salinity	95	84	11
Oxygen	95	84	11
Nutrients	95	84	11
Chlorophyll	95	84	11
Phytoplankton	66	66	0
Primary productivity	16	16	0
Weather	95	84	11
Surface Temp.	95	84	11
Underway data (hours)	552	552	0
ADCP (hours)	552	552	0
CUFES samples	417	417	0

In addition, approximately 500 total hours of bird and marine mammal observations were logged by Annie Douglas, Lisa Sheffield, Greg Campbell and Nadia Rubio.

DISPOSITION  
OF DATA:

CalBOBL, Manta tow data sheets and formalin preserved samples - Richard Charter, FRD (SWFSC).

Station activity logs, weather data and surface temperature data - Richard Charter, FRD (SWFSC) and Ralf Goericke, IOD (SIO).

ADCP data - Richard Charter, FRD (SWFSC).

CTD data - Ralf Goericke, IOD (SIO) and Tim Pennington (MBARI).

Water analysis data (temperatures, salinities, nutrients and chlorophylls) - Ralf Goericke, IOD (SIO) and Tim Pennington (MBARI) .

CUFES data - Richard Charter, FRD (SWFSC).

Underway data - Richard Charter, FRD (SWFSC).

Alcohol preserved bongo samples - William Watson, FRD (SWFSC).

Marine mammal observation and acoustic data - John Hildebrand, GRD, MPL (SIO).

Bird observation data - William Sydeman, MED (PRBO).

Underway CO<sub>2</sub> data - Gernot Friederich, (MBARI).

INCIDENTS &  
MALFUNCTIONS:

The ship moved to the Navy fuel pier at 0800 and arrived around 0900. Departed fuel pier around 1500 and arrived at first station 1730. Due to fueling at departure, we were unable to occupy the first primary productivity station. Initially there were problems with a starboard main engine cylinder running hot, but by adjusting the fuel mixture, the problem was corrected. On the first station, the starboard winch rate could not achieve 70 m/min. Problem was corrected by station 93.3 40.0.

The LOPC mounted in the bongo frame stopped working on station 93.3 50.0 and was later removed on station 93.3 60.0 and replaced by the standard CalBOBL setup.

At station 93.3 100.0, one of the high pressure hoses to the starboard side winch burst and a replacement hose was built and re-installed. Total time for repair was a little over an hour.

Completed station 90.120 and decided to break off from the pattern and head into Dana Point to drop off scientific personnel due to family emergency. A loss of approximately 1½ days. During transit into Dana Point, steering was lost for approximately 30 minutes but no time was lost to the survey.

COMMENDATIONS:

The personnel of the *David Starr Jordan* should be recognized and commended for their dedication and professional manner, ensuring the completion of the cruise:

The deck department for their ability to meet the needs of all types of gear with speed and expertise.

The bridge officers for their assistance with all sampling operations as well as assuring the safety and well-being of all personnel aboard. Efforts to complete stations in a timely manner and meet specific time schedules contributed to the completion of the majority of the scheduled work.

The engineering department for their performance and ability correcting major and minor malfunctions to allow the completion of the cruise with little or no loss of time.

The electronics specialist for his assistance with communications and correcting any electronic malfunctions for both the ship and scientific gear.

The stewards department for providing excellent meals and accommodations in all weather conditions.

In addition, the combined scientific staff from SWFSC, SIO, MBARI, CDFG, PRBO and Cascadia Research should be commended on their ability to continuously collect high quality data throughout the duration of the cruise.

PERSONNEL:

Leg I:	
Dave Griffith, Cruise Leader	SWFSC
Ron Dotson	SWFSC
Amy Hays*	SWFSC
Sue Manion**	SWFSC
Bryan Overcash	CDFG
Dave Wolgast, SIO coordinator	SIO
Jim Wilkinson	SIO
Jennifer Sheldon	SIO
Kathryn Stanaway	SIO
Greg Campbell†	SIO
Nadia Rubio‡	SIO
Shonna Dovel	SIO
Megan Roadman	SIO
Susan Becker, chemist	SIO
Annie Douglas	CR
Lisa Sheffield	PRBO
Jeffrey Lewis, volunteer	SIO

\* Disembarked in Dana Point, CA

\*\* Embarked in Dana Point, CA  
† Disembarked in Port San Luis, CA  
‡ Embarked in Port San Luis, CA

Leg II:

Dave Griffith, Cruise Leader	SWFSC
Ron Dotson	SWFSC
Sue Manion	SWFSC
Bryan Overcash	CDFG
Dave Wolgast, SIO coordinator	SIO
Jennifer Sheldon	SIO
Nadia Rubio	SIO
Annie Douglas	CR
Lisa Sheffield	PRBO
Marguerite Blum	MBARI

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.

SWFSC PERSONNEL  
WATCH HOURS:

1200 - 2359  
0000 - 1159

Charge to account #28LEF01-P15

Date: \_\_\_\_\_

Prepared by: \_\_\_\_\_  
David Griffith

Approved by: \_\_\_\_\_  
William W. Fox Ph.D  
Science & Research Director  
Southwest Region

