



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

Aug. 5, 2004 F/SWC1:AEH

CRUISE REPORT

VESSEL: NOAA Vessel *David Starr Jordan*, 0407-JD, DS 04-05(345).

CRUISE DATES: July 12- July 28, 2004.

PROJECT: CalCOFI Survey, Fisheries Resources Division.

ITINERARY: Leg I: The *David Starr Jordan* departed for the first station 93.3/26.7 (position 32° 57.4'N/117° 18.3'W) on July 12, 2004, at 0800. Prior to occupying the station, the ship fueled at the Navy Fuel Pier and carried out the yearly underway fleet inspection. Three inspectors were brought back to Marfac Pier via small boat after completing their inspections. We arrived on the first CalCOFI station at 1950. Personnel exchanges were made at Dana Point. The ship returned to San Diego on July 28, 2004.

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

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

3. To conduct a continuous underway sampling of surface waters using the ship's SCS (scientific computing system) and thermosalinograph (TSG).

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

5. 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 20 10-liter hydrographic bottles was lowered to 500 meters (depth permitting) to measure physical parameters and collect water at discrete depths. Sea water from each hydrographic bottle was analyzed for chlorophyll from 200 meters and above, oxygen, salinity, and nutrients from all depths. Continuous profiling during the cast was obtained for oxygen, temperature, conductivity, light transmittance and fluorometry.

b. An OPC/CalBOBL (CalCOFI Bongo with and optical particle counter installed) standard oblique plankton tow with 300 meters of wire out, depth permitting, used paired 505 µm 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.

c. A Manta net (surface) tow, using a 505  $\mu\text{m}$  mesh net on a frame with a mouth area of 0.1333  $\text{m}^2$ . The duration of each tow is 15 minutes at approximately  $1\frac{1}{2}$  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  $\mu\text{m}$  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. 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 in conjunction with the normal 500 meter CTD cast. The cast arrangement of sample bottles used for productivity measurements was determined by a Secchi disc observation and the chlorophyll maximum layer and mixed layer depth measured during the CTD cast. 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  $\text{C}^{14}$  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.

g. Approximately one mile prior to daylight stations, a sonabouy was deployed to record frequency soundings from marine mammals in the area. This work was carried out by an SIO graduate student and was funded by ONR via John Hildebrand at SIO.

h. An acoustical towed array was deployed during transit to all daylight stations. This instrument was funded by ONR via John Hildebrand and is still in development. Hildebrand hopes to use this instrument on future CalCOFI cruises.

i. On some stations, trace metal work was carried out by an SIO graduate student. He collected water using a dip method, a go-flow bottle cast or by pneumatic pump/hose for trace metal analysis.

2. Nine additional near shore(SCCOOS)Southern California Coastal Ocean Observing System stations were added to the cruise:

80.0 50.5(34° 27.7'N,120° 29.1'W)  
81.7 43.5(34° 24.2'N,119° 48.1'W)  
83.3 39.4(34° 15.5'N,119° 19.5'W)  
85.4 35.8(34° 0.8'N,118° 49.9'W)  
86.7 32.4(33° 54.6'N,118° 26.9'W)  
88.5 30.1(33° 40.4'N,118° 5.6'W)  
90.0 27.7(33° 29.6'N,117° 44.9'W)  
91.7 26.4(33° 14.8'N,117° 27.8'W)  
93.4 26.4(32° 57.2'N,117° 16.8'W)

All but one station, 86.7 32.4, were occupied. The stations were on the 10 fathom line. A CTD and CalBOBL tow were done on all stations. The CalCOFI program expects to add these stations to future cruises, funds permitting.

## RESULTS:

<u>Activity</u>	<u>Requested</u>	<u>Completed</u>	<u>Aborted</u>
OPC/bongo tows	75	74	1
Manta	66	66	0
Paironet	42	42	0
CTD	75	74	1
Salinity	75	74	1
Oxygen	75	74	1
Nutrients	75	74	1
Chlorophyll	75	74	1
Weather	75	74	1
Surface Temp.	75	74	1
Secchi	32	32	0
Phytoplankton	66	66	0
Primary Prod.	14	13	1
HPLC	75	74	1
Trace Metal	22	22	0
Sonabuoy	37	37	0
SCS (hours)	384	384	0
ADCP (hours)	384	384	0
TSG (hours)	384	384	0

In addition, approximately 210 hours of bird and mammal observations were logged by Kristie Nelson (PRBO), Robin Baird (Cascadia Research) and Annie Douglas (Cascadia Research). Additional mammal observations using big eye binoculars and traditional mammal line transect procedures were funded by ONR via John Hildebrand (SIO). The CalCOFI program anticipates these observations on future cruises.

DISPOSITION  
OF DATA:

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

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

ADCP data - Teri Chereskin (SIO).

Water analysis data (temperatures, salinities, oxygens, nutrients and chlorophylls) - Arnold Mantyla, IOD (SIO).

Phytoplankton samples - Elizabeth Venrick, IOD (SIO).

CTD, primary productivity data, HPLC data - Ralf Goericke, IOD (SIO).

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

OPC data - David Checkley, IOD (SIO).

Bird and mammal observations - Bill Sydeman (PRBO).

Line transect mammal observations, sonabuoy and acoustic towed array data - John Hildebrand (SIO).

Trace Metal data - Kathy Barbeau (SIO).

INCIDENTS &  
MALFUNCTIONS:

The first station, which is typically occupied 3 hours from the start of the cruise, was delayed approximately 10 hours due to fueling and underway fleet inspections.

Midway through the cruise the port side fuel pump went down. This was quickly repaired and resulted in no negative impact or time loss to our cruise. Thank you chief engineer and crew !

After station 93.3 40.0, 3 flares were seen by the mammal observers on the flying bridge. The ship started a search pattern and contacted the Coast Guard. After a bit of confusion, the Coast Guard informed the ship that the flares were from a submarine, thus ending the search effort. Two hours were lost.

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. Special thanks for helping our graduate student, Melissa Soldevilla, with troubleshooting of her acoustical towed array.

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 for projects contributed to the completion of all scheduled work. Thank you for allowing extra station work in very shallow waters !

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. Special thanks for assistance on our scientific deck loaded winch.

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, excellent job Ricky and Drew!

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

PERSONNEL :

Amy Hays, Cruise Leader	SWFSC
Dimitry Abramenkoff ††	SWFSC
Ronald Dotson †	SWFSC
Sue Manion	SWFSC
Jim Wilkinson	SIO
Fernando Ramirez	SIO
Dave Wolgast, IOD technical coordinator	SIO
Jennifer Sheldon	SIO
Ryan Rycakzewski, graduate student	SIO
Doug Masten, ODF chemist	SIO
Melissa Soldevilla, graduate student	SIO
Andrew King, graduate student	SIO
Robin Baird, mammal observer	CR
Annie Douglas, mammal observer	CR
Kristie Nelson, bird observer	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.

† Disembarked in Dana Point, CA  
†† Embarked in Dana Point, CA

WATCH HOURS: 1200 - 2359  
0000 - 1159

Charge to account #8L4S0D05

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

Prepared by: \_\_\_\_\_  
Amy Hays

Approved by: \_\_\_\_\_

William W. Fox, Jr. , Ph.D.  
Science & Research Director  
Southwest Region

