



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

March 12, 2003 F/SWC1:RCD

CRUISE REPORT

VESSEL: NOAA Vessel *David Starr Jordan*, 0302-JD, DS 03-01, (335).

CRUISE DATES: January 30 - February 25, 2003.

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 January 30, 2003. Personnel exchange was made at Dana Point on February 5. The ship stopped in Pt. Hueneme for fuel on February 10 and resumed operations the same day. Once the designated station work was completed, the ship stopped off of Monterey for personnel exchange on February 18.

Leg II: After personnel exchange on February 18, the *David Starr Jordan* continued to occupy stations up to San Francisco. En route home, the vessel re-occupied station 80.60 to complete a Bongo tow that had been canceled due to weather, and returned to San Diego on February 25, 2003.

- OBJECTIVES:
1. To continue an ongoing assessment of pelagic fish stocks between Morro Bay 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 CUDLS (CalCOFI Underway Data Logging 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 make continuous observations of sea birds and marine mammals.

- PROCEDURES:
1. Each standard CalCOFI station on Leg I 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 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. 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 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.

g. The egg pump was run periodically throughout the first leg for continued work associated with the REFLICS (Real-time Flow Imaging and Classification System) while the ship was underway.

2. On Leg II, CalCOFI lines 73.3 through 60.0, sampling was curtailed due to the reduced scientific staff and different objectives.

a. The CTD rosette was reduced to 3 bottles, with salinity check samples taken at 0, 100, and 500 meters. No other chemistry was performed on samples.

b. The OPC was removed from the Bongo on lines 66.7, 63.3 and 60.0.

c. Manta was unchanged

d. Weather was taken at each station.

e. No pairovets were taken after line 76.7.

f. No primary productivity was performed after line 76.7.

#### RESULTS:

<u>Activity</u>	<u>Requested</u>	<u>Completed</u>	<u>Aborted</u>
OPC/bongo tows	100	99	1
Manta	100	98	2
Pairovet	42	40	2
CTD	100	100	0
Salinity	100	100	0
Oxygen	66	66	0

Nutrients	66	66	0
Chlorophyll	66	66	0
Weather	100	100	0
Surface Temp.	100	100	0
Secchi	29	28	1
Phytoplankton	66	64	2
Primary Prod.	15	14	1
CUDLS (hours)	630	630	0
ADCP (hours)	630	630	0
Trace Metals	36	30	6

In addition, 250 hours of bird observations were logged by Dave Gardner.

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).

ADCP data - Paul Smith, FRD (SWFSC) and Teri Chereskin (SIO).

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

Phytoplankton samples - Elizabeth Venrick, MLRG (SIO).

CTD, primary productivity and CUDLS data - Ralf Goericke, MLRG (SIO).

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

OPC data - David Checkley, MLRG (SIO).

Trace Metal Samples - Katherine Barbeau, MRD, (SIO)

Bird and Marine Mammal Observation data - Bill Sydeman, PRBO

INCIDENTS &  
MALFUNCTIONS:

Due to a problem with the shipboard alarm system and a starter on one of the generators, departure was delayed by 2.5 hours.

Inclement weather on two separate days caused suspension of operations until weather subsided. Approximately 30 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.

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.

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. Attempts to



