

**SOUTHERN CALIFORNIA EDUCATIONAL INITIATIVE
PROGRAM YEAR 13
QUARTERLY REPORT 2**

for the period

October 1, 2001 – December 31, 2001



*A Cooperative Program
between the
University of California
and the
Minerals Management Service*

January 23, 2002

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Russell J. Schmitt
Program Manager

Coastal Research Center
Marine Science Institute
University of California
Santa Barbara, California 93106

January 23, 2002

Program Manager's Report

for the period October 1, 2001 – December 31, 2001

This constitutes the quarterly report for the second quarter of Program Year 13 of the Southern California Educational Initiative, a cooperative research agreement between the Minerals Management Service, the state of California and the University of California.

As of this quarter, 3 projects currently are being conducted under the aegis of the Southern California Educational Initiative.

Actions Pending MMS Approval:

- We are waiting for MMS comments on the Draft Final Report for *Mitigating the Impact of Offshore Oil Development*, Woolley and Lima, PIs.

Major programmatic progress and actions during the quarter are summarized below for the period of October 1 – December 31, 2001.

- The Draft Final Report for project *A Design for a Time Series Study of a NIMBY Response*, Smith PI has been submitted. It is being formatted and will be forwarded to MMS for review next quarter;
- The Final Report for project *Ecological Effects of Chronic Exposure to Produced Water: A Field Test and Environmental Effects of Produced Water: A BACIP Field Assessment*, Osenberg, Holbrook, Schmitt and Carr, PIs, will be submitted to MMS next quarter in hard copy and PDF formats;
- The Final Report for project *Effects of Produced Water on Demographic Rates and Environmental Recovery Following Cessation of a Produced Water Discharge*, Schmitt and Osenberg, PIs, will be submitted to MMS next quarter in hard copy and PDF formats;
- The Final Report for project *Effects of Biologically Degraded Oil on Marine Invertebrate and Vertebrate Embryos and Larvae*, 2001-048, Cherr, Griffin and Higashi, PIs will be submitted to MMS next quarter in hard copy and PDF formats.

Detecting Ecological Impacts: Effects of Taxonomic Aggregation in the Before-After/Control-Impact Paired Series Design

Principal Investigators: **Sally Holbrook**, Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara, CA 93106, **Mark H. Carr**, Department of Biology, University of California, Santa Cruz, CA 95064, **Craig W. Osenberg**, Department of Zoology, University of Florida, Gainesville, FL 32611-8525.

Major Accomplishments, October 1, 2001 – December 31, 2001

- Processing of bivalve and crustacean samples for size-frequency analysis continues in Carr's lab at UCSC with the image analysis system. At present, bivalve samples from Gaviota have been imaged and processing of *Carpinteria* samples continues. A senior thesis, being conducted in his lab is being completed and is entitled, "Effects of cessation of a produced water discharge on the size frequency of a bivalve, *Telina carpenterii*, off Carpinteria, California".
- We continue to contribute to the application of BACI methodology in other contexts. BACI and the SCEI projects were highlighted in a lecture in Carr and Raimondi's UCSC undergraduate course, "Conservation in the Sea". Osenberg was an invited participant in a workshop at Lee Stalking Island, Bahamas which had as one goal to interact with Bahamian agencies to assist in the design and monitoring of a marine reserve network.

Future plans:

- Osenberg will conduct data analyses during Winter 2002, now that files have been completely updated. At this time he also will fully document and archive these files for storage (on CD). We expect this to take until *at least the end of March 2002*. We are also continuing our effort to have all samples not involved in size frequency analyses to be archived at the Los Angeles County Museum.

Estimated Percentage of Budget Expended:

All funds were expended last year. Due to unforeseen delays in the taxonomic identifications, the project will be completed as soon as possible.

Effects of an Oil Spill on Multispecies Interactions that Structure Intertidal Communities

Principal Investigator: Peter Raimondi, Department of Biology, University of California, Santa Cruz, California 95460.

Major Accomplishments, October 1, 2001 - December 31, 2001

The Barnacle casts at Pt. Sierra Nevada and Boathouse have been sampled monthly (for 18 months) for the presence of tar (Fig. 1). In October, at Point Sierra Nevada tar was found on 40% of the casts in the barnacle zone, while 53% of the casts in the *Silvetia* zone and 47% of the casts in the *Endocladia* zone had tar. Overall, at Boathouse tar has accumulated primarily in the barnacle and *Silvetia* zones (Fig. 1). In October, at Boathouse tar was present on 53% of the casts in the barnacle zone, 73% of the casts in the *Endocladia* zone and on 67% of the casts in the *Silvetia* zone. While, only 27% of the casts in the *Mytilus* zone at Boathouse had tar. However, tar does not persist long in the *Mytilus* zone.

In the fall of 2001, we sampled our permanent plots at Point Sierra Nevada, Shell Beach, Boathouse and Government Point (Fig. 2). The % tar cover is higher in the barnacle plots as compared to the *Endocladia* zone plots for Pt Sierra Nevada, Shell Beach and Government Point. At Boat House a different pattern is observed; the % tar cover is higher in the *Endocladia* zone as compared to the barnacle zone plots. This may be a result of the upward shift in species assemblages at this site, which was unprecedented. At each site the number, size and relative freshness of tar patches per marked plot were recorded. It is important to note that not all tar that accumulates persists. There is import and export of tar into these plots. Once larger tar patches accumulate they persist. With the exception of the *Endocladia* zone at Boat house the % tar cover within zones is relatively constant across our sites. However, the average size of tar patches as well as the average number of tar patches varied (Fig. 3). In the fall the average size of the tar patches is larger, but the average number of tar patches is smaller. In the spring the pattern is reversed there are more tar patches, but their overall size is smaller. This pattern has persisted throughout our study. Overall, the % tar cover remains fairly stable across the zones and across all sites.

In November 2001, Christy Roe presented our data at the Western Society of Naturalists meetings in Ventura, California.

Future Plans: We plan to complete our final report in the upcoming months.

Personnel:

Samantha Forde is funded as a graduate student research assistant
Christy Roe is funded as a laboratory technician

Estimated Percentage of Budget Expended:

Project Year 1	100%
Project Year 2	98%

Early Development of Fouling Communities on Offshore Oil Platforms

Principal Investigators: H. Mark Page, Jenifer Dugan, and Jason Bram, Marine Science Institute, University of California, Santa Barbara, California 93106

Major Accomplishments, July 1, 2001 – September 30, 2001

Progress to Date

During the reporting period, we continued data analysis on the species composition, biomass and percent cover of invertebrates that colonized ceramic tiles (15x15 cm) exposed for various time intervals (2, 4, 6, 12, 24 months) at depths of 6, 12, and 18 m at Platform Houchin. We also continued data analysis on the percent cover and biomass of invertebrates that colonized experimentally scraped 20 cm x 20 cm quadrats on conductor pipes and plastic mesh tuffys at depths of 6, 12, and 18 m at Platform Houchin from April 1999 to April 2001. The removal experiment using the anemone, *Metridium senile*, was monitored at Houchin at depths of 6, 12, and 18 m.

Preliminary analysis shows that biomass on both the experimental surfaces and the surface of the platform itself increased significantly over time at all depths, and varied among depths. Biomass was significantly greater at the 6 m depth than at the two deeper depths. Additionally, there was a greater rate of biomass accumulation in the second year of the study at all depths. The amount of biomass on these surfaces also varied with the time of year. Percent cover of selected taxa on the tiles varied significantly over time, among depths, and among dates of initial exposure of the surface. There is a successional sequence over time, which is influenced by depth. Compound tunicates and bryozoans have the greatest cover in the first four months of exposure at all depths, with barnacles, mussels, and sponges becoming the predominant taxa after 12 months of exposure at the 6 m depth. Sponges are the dominant taxa after 12 months of exposure at the 12 and 18 m depths.

A talk on the results of this study was given at the Western Society of Naturalists conference in November. A master's thesis and a manuscript on these results are both in preparation.

Upcoming work

The anemone removal experiment will continue to be monitored. Data analysis from the vacuum samples of scraped plots and the tiles will continue. Hypotheses concerning factors influencing community development will be examined using additional statistical analyses. The results section will be written for the master's thesis and manuscript.

Problems Encountered: None

MMS Action Required: None

Estimated Percentage of Budget Expended:

Project Year 1	100%
Project Year 2	100%
Project Year 3	1%