

# **THE SOUTHERN CALIFORNIA EDUCATIONAL INITIATIVE**

**A University Research Initiative Program  
involving the**

**University of California,  
The State of California**

**and the**

**Minerals Management Service  
Department of the Interior**

## **CLOSING REPORT**

**for the period July 1994 – June 2004**

**Cooperative Agreement Number 14-35-001-30761  
March 2006**



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## **BACKGROUND**

The University Research Initiative involving the Minerals Management Service (MMS), State of California and the University of California, the Southern California Educational Initiative, (MMS Agreement numbers 14-35-001-30471 and 30761) was active from July 1989 through June 2004. This document summarizes activities and achievements during the second agreement (30761) covering the 10 year period from July 1994 through June 2004.

The Environmental Studies Program (ESP) of the Minerals Management Service recognized the need for more and better information on long-term environmental and social effects of OCS oil and gas production well over a decade ago. Additionally, the agency sought mechanisms to foster innovative, peer-reviewed science, and to more effectively engage academic scientists to work on questions relevant to MMS. The University Research Initiative (URI) program was developed as a novel approach to these issues, and in mid-1989 two such programs were established – one in the Pacific OCS region and one in the Gulf of Mexico OCS region.

In the Pacific OCS region, the URI entitled the Southern California Educational Initiative (SCEI) was a cooperative research program involving the Minerals Management Service, the State of California and the University of California. Prior to SCEI, little research by regular and research faculty at the 9 campuses and 3 national laboratories of the University of California dealt with issues pertaining to offshore oil and gas activities. As detailed below, the Initiative stimulated considerable new research by UC faculty in this vital area, and was instrumental in training large numbers of students in the application of science to issues of importance to decision makers throughout its term. The Initiative had great visibility with the UC system, and became increasingly known to state and other federal regulatory agencies. The large number of peer-reviewed publications and invited talks resulting from research sponsored by the SCEI underscores the merit of the approach in fostering innovative science of the highest caliber, and doing so in a highly cost-effective manner.

## **PROGRAM OVERVIEW**

### **Program Objectives**

The Southern California Educational Initiative addressed long-term environmental and social effects of offshore oil and gas production. As stated by MMS in its original Request for Proposals, the purposes of the Initiative included: a means to "...foster interdisciplinary investigations of offshore issues in a peer review environment..."; to "broaden the scope of participation and ideas being addressed"; to be "...an efficient way of encouraging innovation in approaches to these study issues..."; and "...to encourage and train students in environmental research...". These general objectives were divided into two categories: (1) *development of information* useful to the mission of MMS, and (2) *development of human resources* to address MMS information needs. With respect to *Information Development*, major goals included: (a) using a new perspective to identify information needs, (b) devising and implementing innovative approaches to resolve those issues, (c) producing information, using the highest caliber of science possible, that leads to a deeper understanding of the issues, and (d) disseminating findings in the peer-reviewed literature and at appropriate scientific conferences. Prominent goals with respect to *Human Resource Development* include: (a) attracting high caliber faculty and scientists to pursue new research endeavors on identified issues, and (b) training students in research applicable to decision-making. The primary intent was to develop and enhance the pool of academic expertise to address issues of interest to MMS. Accordingly, the SCEI was composed of several different integrated elements to achieve these objectives.

### **Structure of the Initiative**

#### ***Distinctiveness of Approach***

The structure of the Southern California Educational Initiative differed from other research programs sponsored by the Environmental Studies Program in that specific research projects conducted under the initiative were not explicitly defined by MMS. Rather, information needs, together with research projects to address priority issues, were derived internally within the University program. MMS suggested or requested that the University submit proposals on general topics of interest, or particular issues related to offshore oil and gas production, although there was no obligation for the Initiative to respond specifically to such requests. The Initiative also sponsored workshops on specific topics to better define information needs.

#### ***Program Organization***

The organizational model for the Southern California Educational Initiative was a multi-campus equivalent of a Center of Excellence. The Initiative was a multi-campus, interdisciplinary program that was administered through UC Santa Barbara. However, any scientist with status as a Principal Investigator (PI) at any of the 9 campuses and 3 national

laboratories within the UC system was eligible to participate. Further, scientists at other non-UC (and indeed, non-California) institutions could participate as Co-Principal Investigator by linking up with a faculty PI from the UC system. Thus, an extraordinary breadth of expertise was available to the SCEI. An additional strength of the multi-campus nature of our program was the diversity of facilities and equipment that was collectively available to meet the needs of participating researchers.

***Administration***

The Southern California Educational Initiative was administered through the Coastal Research Center, Marine Science Institute at the University of California Santa Barbara. The Program Director, Dr. Russell J. Schmitt, Director of the Coastal Research Center, was responsible for administration of the program and served as the liaison with the Minerals Management Service. Other key personnel involved with administration of the Initiative are listed in Table 1. Based on recommendations of an independent MMS-sponsored review of the program, a position of Deputy Program Director was established for the 10 year term of the second SCEI agreement (1994-2004). Dr. Mark Carr served as Deputy Program Director for the first five year period, and Dr. Jenifer Dugan served as Deputy Program Director for the second five year period.

The Program Director received programmatic and policy advice from an internal Steering Committee, and from an external Advisory Committee. The Steering Committee assisted the Program Director in the identification of priority research issues for upcoming funding cycles, in the review and selection process of research proposals, and in the resolution of internal management and logistical problems. The external Advisory Committee provided programmatic

advice, and was involved in the proposal selection process. Members of the Advisory Committee represented a diversity of academic, agency and industry perspectives, and were knowledgeable of, but external to, the Minerals Management Service and the Southern California Educational Initiative. Participation by representatives of local and state regulatory agencies and by the industry also served to heighten awareness by these groups of the Initiative, including its mission, approach and findings.

<b>Table 1</b>	
Key Administrative Personnel involved with the Southern California Educational Initiative	
<b>Name</b>	<b>Title/Affiliation</b>
Dr. Fred Piltz	Contract Officer's Tech Rep./MMS
Jane Carlson	Contract Officer/MMS
Dr. Russell J. Schmitt	Program Director/UCSB
Dr. Mark Carr	Deputy Director/UCSB
Dr. Jenifer Dugan	Deputy Director/UCSB
Grace Henderson	Administrative Assistant/UCSB
Karina Johnston	Administrative Assistant/UCSB
Jennifer Lape	Administrative Assistant/UCSB
Beth O'Connor	Administrative Assistant/UCSB
Jada-Simone White	Administrative Assistant/UCSB
Bonnie Williamson	Contract & Grants Officer/UCSB
Marie Ciluaga	Budget Officer/UCSB

### ***Program Support***

The ten-year total amount of funds provided by MMS to the SCEI was \$3,143,843. The allocation of these funds to the various components of the Initiative was as follows: 77% (\$2.4 million) was devoted to individual research projects, 3% to 3 workshops, and 20% for administration and management (which included administrative costs of the workshops, symposia, and retreats). Although no level of match for the URI program was stipulated by MMS, the SCEI received a substantial level of matching funds from State sources. The majority of the match received was used to support student research and research training.

### ***Research Component***

The core of the Initiative consisted of individual research projects that addressed identified study issues (see Appendix A or the SCEI website located at the url: [www.coastalresearchcenter.ucsb.edu/SCEI](http://www.coastalresearchcenter.ucsb.edu/SCEI)). Research areas relevant to the Southern California Educational Initiative fell into two broad categories: (i) effects on marine organisms and their environment, and (ii) effects on the human environment. Accordingly, the research program had a natural sciences element and a related social and policy component.

A major direction of the natural sciences component concerned whether and how populations and communities of marine animals and plants are affected by prolonged exposure to sublethal concentrations of toxicants or from persistent effects caused by acute responses to disturbances of shorter duration. This, of course, required an interdisciplinary approach. At the inception of the Initiative in 1989, an effort was made to organize much of the natural science effort around a common theme. This effort extended into the renewal of the Initiative in 1994. The particular focus chosen was effects arising from the discharge of produced water into the coastal marine environment. This topic was identified as of high priority for Southern California by local and state regulatory agencies (e.g., Energy Division, County of Santa Barbara), and in a review of national information needs (Boesch and Rabalais, 1987). The focus was particularly timely given the interest by the Environmental Protection Agency in revising discharge standards for the release of produced waters into the nation's coastal ocean. The concentration also provided an effective means to integrate the varied disciplines in the SCEI by providing a "critical mass" of scientists working on a common problem from different perspectives. By focusing on linkages among the varied perspectives, the natural science research was integrated in a particularly rich and productive way for much of the Initiative. The focus on produced water did not exclude other research topics from being considered or funded.

Examination of social effects of offshore oil and gas activities was challenging given the serious gaps in our knowledge and the lack of cohesive syntheses of available information. Because of this, the social science component was not centered on any particular theme. Rather, projects that considered any direct social effect, and whether and how these were mixed with or magnified by second-level impacts, were of high priority. Public response included both public opinion and the related responses of public officials. Concern for understanding the dynamics of public response to oil development in its broadest form



provided one vehicle for integrating the research of the natural scientists and the social scientists. While in substantial degree, the two research components were quite separate in terms of data, method, and object of inquiry, there was an important linkage to explore via the study of public response. A high priority for the Initiative during the last 10 years was to develop the social and economic studies component, and to integrate the social and natural sciences components where possible. For more information and details of the Initiative, please see our website: [www.coastalresearchcenter.ucsb.edu/SCEI](http://www.coastalresearchcenter.ucsb.edu/SCEI).

### ***Research Training Component***

One of our fundamental goals was to train students near the beginning of their careers in environmental and social research that is relevant to decision-makers. The Southern California Educational Initiative used two mechanisms to involve students. The first involved integration with a research training program within the University of California system, entitled the Coastal Toxicology Training Program. This state-funded training program provided stipend support for the training of graduate and post-graduate students in research related to major environmental issues. It also supported undergraduates interested in exposure to the application of science to environmental issues. Virtually all of the funds provided to the Coastal Toxicology Training Program were designated for students to work on projects sponsored by the Southern California Educational Initiative. A product of this arrangement was that many graduate students who participated in the UC training program developed thesis / dissertation research on issues related to offshore oil and gas production, but which were not directly funded by the Initiative (Appendix B). It also should be noted that the SCEI was one of the principal factors underlying the development of the training program. As such, the Initiative contributed disproportionately to the training of UC students in applied research.

A second mechanism by which we involved students was to hire undergraduates (and to a lesser extent, graduate students) on sponsored projects to actively participate on specific research tasks (see list of participating students: Appendix C). This process also provided an important pipeline for talented undergraduates to develop an area of interest and move directly into graduate study following graduation. The multi-campus aspect of our program was especially valuable because students could receive a phase of their training on one campus (B.A. or M.A. degree), then move to another campus to pursue another phase (Ph.D. or Post-doctoral).

An important aspect of all training efforts involved cross-exposure of students to disciplines and approaches in addition to their primary field of study. This was achieved through a combination of course-work for undergraduates and by course seminars and symposia for graduate and post-graduate students. Student trainees participated in symposia associated with the Southern California Educational Initiative and the UC Coastal Toxicology Component. These included the Annual Site Visit Symposium of the Southern California Educational Initiative, the Annual Symposium for the UC Toxic Substances Research and Teaching Program, and the Annual UC Coastal Toxicology Research Retreat.

## **Initiative Approach**

### ***Project Funding Cycle and Selection Process***

The Southern California Educational Initiative used a diversity of sources to identify regional and national information needs. Primary among these were deliberations by Regional Technical Working Groups and the Scientific Advisory Committee (SAC) of the Minerals Management Service, the Federal Interagency Committee on Ocean Pollution, Research Development and Monitoring (COPRDM; Boesch and Rabalais 1987), and the National Academy of Sciences (1975, National Research Council 1983, 1985, 1989a, 1989b, 1990, 1992a, 1992b, 1993). Additions to these sources included comments received by the Minerals Management Service on their draft Environmental Studies Plans. Additional regional input was solicited by the Program Director from personnel associated with state and local resource and regulatory agencies. To the extent that specific topics were identified, these were highlighted as Targeted Areas in the Request for Pre-proposals released as part of the SCEI funding cycle.

The selection process for new research projects typically began with a request for Pre-proposals (RFP), and was widely distributed within the University of California system. RFPs were sent to regular and research faculty at UCSB, and notice of the RFP was released in campus newsletters and in monthly *Funding Resources* circulars on relevant UC campuses. Following receipt of pre-proposals, each application was evaluated by the Steering Committee to determine whether a full proposal should be solicited. This was a coarse review with the sole criterion being whether the proposed topic was potentially relevant, and a fraction of applications were eliminated at this stage. Full proposals were then requested for the subset of pertinent applications, with feedback provided by the Program and Deputy Directors to assist with developing a stronger proposal.

Full proposals were subjected to a more thorough review and evaluation procedure, and were judged on the basis of three criteria: (i) quality of the proposed science, (ii) quality of the applicant, and (iii) relevance to priority research issues. Each full proposal was sent to a minimum of four external scientists for peer review. A second, parallel evaluation was made for each proposal as to the relevance of the proposed work to identified priority issues; proposals that were judged to be of low regional and/or national priority were eliminated. Conversely, proposals that were assessed to be of high priority were not considered further if the quality of the science, as judged by peer-review, did not measure up to expectations. When sufficient funds were available for several new starts, each proposal and associated peer reviews were considered in a panel format at a joint meeting of the Steering and Advisory Committees. A discussant presented each proposal and summarized the peer-review, which was the basis for discussion by the collective group. Recommendations then were made as to which should be forwarded to MMS for final consideration, as well as a final ranking of the proposals for final negotiation with the agency. The Program or Deputy Director then notified the applicant of the action taken, and provided the applicant with anonymous copies of the peer-reviews and a summary of the panel discussion.

## *Final Program Summary*

A final step in the selection process involved a discussion of the proposal by each applicant at a Site Visit by MMS in most cases. Each applicant gave a short oral summary of the proposed work and answered questions from representatives of the Minerals Management Service and members of the Scientific Advisory Committee. Following the Site Visit, the MMS Contract Officer's Technical Representative (COTR) provided the agency's funding priority list to the SCEI Program Director. There was generally no substantial disagreement between the MMS ranking and that established by the SCEI panel. Selection of new projects was based on a final ranking, with the number of new starts in a given cycle ultimately determined by the amount of funds available. Once the funding list was completed, applicants and appropriate campus contract officers were notified.

Ongoing projects received administrative and scientific scrutiny at several points. Each project submitted a quarterly report to highlight research progress and results, and to identify any logistical or fiscal difficulties. An annual report summarized results and placed findings to date into broader significance; these were reviewed by the Program Director, the Steering Committee and the Minerals Management Service. Oral presentations were given on occasion at the MMS Site Visits to provide the agency and its Scientific Advisory Committee with an opportunity to ask questions and provide direct feedback to ongoing research.

## **PROGRAM ACCOMPLISHMENTS AND APPRAISAL**

### ***Criteria for Evaluating Success***

Summary statistics and other supporting materials selected to summarize the success of the Initiative appear below. To provide a context in which to assess the information, the following general measures and criteria were used for the preparation of this document.

### ***Human Resource Development***

A major intent of the Initiative was to develop a pool of academic expertise to address research questions of interest to MMS, and to better prepare students in the application of science to issues relevant to decision-makers. Accordingly, the following information is provided in this context:

#### *Faculty Involvement*

- ◆ number of faculty attracted to MMS related research;
- ◆ number of UC campuses and laboratories involved;
- ◆ extent to which this represented a new research area to the faculty;
- ◆ quality of the faculty that were attracted.

#### *Student Training*

- ◆ number and type of students trained;
- ◆ number of graduate student dissertations on MMS related topics;
- ◆ number of graduate students finished and their job placement success.

### ***Information Development***

The primary goal of the Initiative was to produce peer-review quality information that was useful to MMS. Summary information is provided in this context as follows:

#### *Quality and Quantity of Information Produced*

- ◆ number and diversity of proposals and innovation of approach;
- ◆ number of peer-reviewed publications;
- ◆ comparative cost per publication;
- ◆ number of talks at scientific conferences;
- ◆ number of research retreats co-sponsored with UC TSR&TP;
- ◆ number of annual symposia co-sponsored with UC TSR&TP;
- ◆ number and description of workshops organized

#### *Utility of Information to Decision-making*

- ◆ appropriateness of research questions;
- ◆ contribution as an advancement of understanding;
- ◆ awareness and use of results by MMS and other relevant groups.

**Institutional Support and Interest**

In addition to "direct" measures, an important indicator of program success is its perceived value to the University community. Accordingly, information is provided on the nature of institutional support for the SCEI, and the influence of the Initiative on programmatic development at UCSB.

**Summary Statistics for Human Resource Development**

**Faculty**

The Initiative was very successful at attracting interest from faculty from many different campuses of the University of California (Table 2). In fact, pre-proposals were submitted from 7 of 9 campuses and 3 of 5 laboratories in the UC system. Of the campuses and laboratories where expertise appropriate to the SCEI exists, the Initiative failed to receive a pre-proposal from only 1. This indicates the success of the RFP distribution in advertising research opportunities to the UC community at large, as well as the broad appeal for conducting work on oil and gas related issues to the UC faculty.

A total of 31 University of California faculty were funded to conduct research on long-term effects of OCS oil and gas production during the last 10 years of the Initiative (Table 3; see Appendix D for complete listing of investigators). Many of the faculty funded by the SCEI agreements had limited or no previous experience conducting research on aspects of offshore oil and gas activities. During the last 10 years, the Initiative continued to successfully attract substantial new faculty interest to issues related to offshore oil and gas activities rather than merely supporting ongoing research interests of UC faculty in OCS related issues.

Campus	Pre-Proposals Received	Proposals Funded
Berkeley	x	x
Davis	x	x
Irvine	-	-
Los Angeles	x	x
Riverside	x	-
San Diego/SIO	x	-
San Francisco	-	-
Santa Barbara	x	x
Santa Cruz	x	x
<b>Laboratories</b>		
Bodega Marine Lab	x	x
Lawrence Livermore NL	x	-
Lawrence Berkeley	-	-
Los Alamos NL	-	-
Long Marine Lab	x	x

In addition to the number of faculty attracted, it is important to assess the quality of the scientists that were involved in research sponsored by the Initiative. One standard for assessing this aspect was the degree to which the participating faculty attracted extramural funding from highly competitive Federal sources. Of the 31 faculty funded, 61% have (or had during the Initiative) research grants from NSF, NIH, NIEHS and/or ONR. To place these figures in some context, the funding rate within the Division of Biological Oceanography at NSF currently is <20% of the proposals received. As a group, then, the faculty attracted to oil and gas issues by the SCEI were highly competitive for scarce

extramural research dollars and could be discriminating about the type of research enterprise in which they choose to participate.

A second indicator of the quality of the faculty involved in the Initiative was the number of awards received for research excellence, as well as the number and type of prestigious scholarships received. Collectively, SCEI-funded PIs received 8 awards for research excellence from national and international scientific societies. Finally, overall research productivity was another strong indicator of the quality of researchers involved throughout the SCEI program (see enclosed CD-ROMs of Scientific Publications for this SCEI Agreement 30761, 1994-2004, and the previous SCEI Agreement 30471, 1989-1994).

### **Students**

A total of 106 students participated in the Southern California Educational Initiative during the last 10 years of the program (Table 3; see list in Appendix C). The largest group (55%) was undergraduate students, followed by graduate students (36%), then post-doctoral students. A total of 244 students participated in the 20 years of the entire SCEI program (both agreement numbers). It should be emphasized that this extraordinary amount of student participation was made possible by the substantial fiscal contribution of the state to the SCEI Initiative.

	<u>Total</u>
Faculty/Researchers	<b>31</b>
Laboratory Technicians	27
Students	
Post-doctoral	10
Graduate Students	38
Undergraduates	<u>58</u>
Total Students	<b>106</b>

In addition to "hands-on" research training, graduate students were encouraged to develop thesis or dissertation topics on oil and gas related issues. About one-quarter of the graduate student participants followed this direction and a total of 35 theses were produced by students supported by SCEI during the last 10 years of the program (Appendix B provides a list of dissertations/theses). Student training reached far beyond participation in research activities. Undergraduate and graduates alike took courses, seminars, and tutorials to become better educated about the application of science to the resolution of environmental issues; much of this effort used offshore oil and gas as a unifying model for instructional purposes. As a sign of success, there were several students who, after initial exposure to these issues as undergraduates, subsequently chose to pursue graduate degrees in this area.

The students who completed their studies provide some indication of the likely future success of SCEI trainees to compete in the marketplace and the lasting contribution of the SCEI to human resource development. Of the postdoctoral and PhD trainees that finished; 41% accepted University faculty positions, 22% took positions with Federal agencies, 16% accepted post-doctoral positions in other Universities, 13% found positions in industry, and the rest became University researchers. Of the Master's students that finished, 50% entered private industry, 25% went on to PhD programs, and 25% became Lab Managers on a University of California campus. More than half of the participating undergraduates who completed the B.A. degree entered graduate school.

## **Summary Statistics for Information Development**

### ***Quality and Quantity of Information Produced***

A total of 20 Final Study Reports and Final Technical Summaries were produced by the SCEI Agreement 30761. A list of these Final Study Reports from research projects supported by the SCEI and those continued as CMI projects appears in Appendix A. In addition, CD-ROMs of all Final Study Reports and Final Technical Summaries for both SCEI Agreements can be found in Appendix F. These reports can also be downloaded from the SCEI website located at the URL: [www.coastalresearchcenter.ucsb.edu/SCEI](http://www.coastalresearchcenter.ucsb.edu/SCEI).

Innovation in the approaches taken by these projects should be judged relative to the standard typically applied to the issues in question. There is little doubt that the approaches taken were appropriate for the questions being answered, and that they represented strong science which was unconstrained by regulatory stipulations or prior perspectives. Hallmarks of the program included evaluation and refinement (or rejection) of traditional approaches, the questioning of (often untested) assumptions, and the application of scientifically rigorous approaches. For example, to the extent possible, the focus in the environmental component was on estimating effects on organisms and habitats in the field, with due consideration to natural sources of temporal and spatial variability. Laboratory explorations by and large were in support of the field emphasis such that estimates of effects did not rest on standard assumptions underlying the extrapolation of laboratory effects to the field. Innovation also was expressed through the development and application of novel techniques and approaches both in the natural and social sciences.

An excellent measure of scientific quality is the peer-review standard, and there was no difficulty in publishing the results from SCEI sponsored research in the peer-reviewed literature. The Initiative funded a total of 22 projects and co-funded an additional 4 projects with the MMS-CMI Initiative (Appendix A), which to date have resulted in 106 peer reviewed publications and approximately another 100 published abstracts. Scientific Publications for SCEI Agreements 30471 and 30761 are provided as PDF files in the enclosed CD-ROMs (Appendix F). Three books<sup>a</sup> were also produced and published by SCEI-funded scientists and graduate students. All SCEI funded projects have produced peer-reviewed publications. These data indicate that the SCEI selection process resulted in the support of a highly productive group of researchers.

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<sup>a</sup> Sabin, P. 2005. *Crude Politics: The California Oil Market, 1900-1940*. University of California Press, Berkeley, California, USA.

Schmitt, R.J. and C.W. Osenberg (editors and contributing authors). 1996. *Detecting Ecological Impacts: Concepts and Applications in Coastal Habitats*. Academic Press, San Diego, California, USA.

Smith, E.R.A.N. 2002. *Energy, the Environment, and Public Opinion*. Rowman and Littlefield Publishers, Boulder, Colorado, U.S.A.

On a dollar basis, SCEI researchers produced 3.42 peer-reviewed publications per \$100,000 of MMS<sup>a</sup> funding (Table 4). To place this productivity into context, we provide comparative data from several agencies that fund similar marine research: the Division of Biological Oceanography of the National Science Foundation<sup>b</sup>; Ocean Biology, Optics and Chemistry Program of the Office of Naval Research<sup>c</sup>; Geological, Antarctic and Optical Sciences Program of the Office of Naval Research<sup>c</sup>; and the California Sea Grant Program. It should be noted that funding by NSF and ONR for ship-time has been excluded from these calculations, which make this comparison highly conservative (i.e., inflates the NSF and ONR publication rates). Despite this conservatism, the SCEI had the highest per dollar publication rate of these funding sources, which was *more than 50% greater* than for NSF's Biological Oceanography Program. The impressive publication productivity of SCEI researchers is an accurate reflection of the high caliber of scientist (i.e., NSF-quality) who were attracted to the Initiative. In terms of peer-reviewed publications, the SCEI was extremely cost-effective, and was equivalent to agencies that are well known for funding premier quality science on a highly competitive basis.

	Funding Source			
	MMS <u>SCEI</u> <sup>a</sup>	NSF <u>BioOcean</u> <sup>b</sup>	ONR <u>OceanBio</u> <sup>c</sup>	ONR <u>GeoOpticSci</u> <sup>c</sup>
<b>Publication Rates</b>				
No. per \$100,000	3.42	1.60	1.68	1.43

### ***Workshops, Symposia, and Retreats***

In addition to publications, researchers associated with the Initiative communicated their SCEI research results at scientific meetings and symposia. The level of such activity during the last 10 years of the program was considerable, with over 120 talks and presentations given at scientific meetings on SCEI-sponsored research. This activity included 11 research retreats held at Bodega Bay through UC Davis, and 11 Annual Symposia in cooperation with the UC Coastal Toxicology Program. Both sets of events incorporated direct student involvement and training.

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<sup>a</sup> The 3.42 publications per \$100,000 of MMS funds *includes* funds used for program management; the figure is based on the number of publications printed (106) and the total amount of MMS dollars received to date for projects and program management (\$3.1 million).

<sup>b</sup> Figures approximate and exclude ship-time costs. Source of data: Dr. Philip Taylor, Program Director, Biological Oceanography Program, National Science Foundation.

<sup>c</sup> Figures exact. Source of data: Dr. Richard Spinrad, Program Director, Ocean Sciences, Office of Naval Research.



Four workshops were sponsored by the SCEI program in the last 10 years:

- *Methods for performing monitoring impact, and ecological studies on rocky shores* – Murray, S.N., R.F. Ambrose, and M.N. Dethier (Report Study number: 2001-070)
- *Decommissioning and removal of oil and gas facilities offshore California* – Schmitt, R.J. (Report Study number: 1998-023; edited by Manago, F., and Williamson, B.)
- *Synopsis of the interagency rocky intertidal monitoring network workshop* - Engle, J.M., R.F. Ambrose, and P.T. Raimondi (Report Study number: 1997-012)
- *Development of an SCEI social and economic research agenda* - Carr, M.H., and R.J. Schmitt (For more details, see Appendices E and G)

### ***Utility of Information to Decision-making***

Evaluation of the extent to which information generated from SCEI-sponsored research was useful to MMS (and other organizations that make decisions regarding offshore oil and gas activities) must, of course, be made by MMS and its Scientific Advisory Committee. The Initiative, however, fulfilled an important role by focusing on long-term questions and post-lease issues rather than information needed immediately by MMS for lease-sale decisions. The value of the URI focus was highlighted by the NRC (1993), which stated that (Conclusion 7; p. 3) "The committee commends the ESP's University Research Initiative for explicitly recognizing the importance of post-lease studies and of increasing academic involvement in the ESP."

### ***Institutional Support and Interest***

The SCEI was a highly visible and valued research program at UCSB. As tangible evidence of UCSB's interest and commitment, the Initiative and its associated training program received a significant amount of matching funds each year from *campus* sources, although there was no contractual obligation for the campus to provide matching funds to the program.

One reason for the great campus interest in the SCEI during its term concerns the nature of programmatic development at UCSB. The campus has embraced the application of science to environmental issues as a primary thrust for growth of research and educational programs. As the appropriate campus Organized Research Unit<sup>a</sup>, the Marine Science Institute (MSI) is involved in developing and administering research programs that focus on coastal and marine environmental issues. Within MSI, the Coastal Research Center<sup>a</sup> has served as one of the primary entities involved in this enterprise through initiatives such as the SCEI.

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<sup>a</sup> An *Organized Research Unit* (ORU) is an administrative entity devoted to research, and is not a degree-granting academic department. An ORU can have *Centers*, which constitute areas of emphasis. The Marine Science Institute, which has 3 Centers, is the largest ORU at UCSB, and has about 100 Ph.D. scientists consisting of regular faculty with joint appointments in academic departments and Professional Researchers.

*Final Program Summary*

Finally, a measure of the importance of the MMS research programs to the State and University can be gauged by the level of fiscal commitment to the follow-on MMS program, the Coastal Marine Institute (CMI). The Coastal Marine Institute was funded by MMS at up to \$1,000,000 per year, provided a dollar-for-dollar match from non-Federal sources was obtained. The MMS-UC Coastal Marine Institute program secured commitments for virtually all of the required matching funds from state, university and campus sources. As such, the SCEI and the related CMI have truly represented an active partnership among the Minerals Management Service, the State and the University of California.

## REFERENCES

- Boesch, D.F. and N.N. Rabalais, eds. 1987. Long-term Environmental Effects of Offshore Oil and Gas Development. Elsevier Applied Science, NY. 708 pp.
- National Academy of Sciences. 1975. Petroleum in the Marine Environment. National Academy Press. Washington, D.C.
- National Research Council. 1983. Drilling Discharges in the Marine Environment. National Academy Press, Washington, D.C. 180 pp.
- National Research Council. 1985. Oil in the sea. Inputs, Fates and Effects. National Academy Press, Washington, D.C. 601 pp.
- National Research Council. 1989a. The Adequacy of Environmental Information For Outer Continental Shelf Oil and Gas Decisions: Florida and California (Draft). National Academy Press, Washington, D.C. 85 pp.
- National Research Council. 1989b. Using Oil Spill Dispersants on the Sea. National Academy Press, Washington, D.C. 335 pp.
- National Research Council. 1990. Assessment of the U.S. Outer Continental Shelf Environmental Studies Program: I. Physical Oceanography. National Academy Press, Washington, D.C. 143 pp.
- National Research Council. 1992a. Assessment of the U.S. Outer Continental Shelf Environmental Studies Program: II. Ecology. National Academy Press, Washington, D.C. 152 pp.
- National Research Council. 1992b. Assessment of the U.S. Outer Continental Shelf Environmental Studies Program. III. Social and Economic Studies. National Academy Press, Washington, D.C. 153 pp.
- National Research Council. 1993. Assessment of the U.S. Outer Continental Shelf Environmental Studies Program. IV. Lessons and Opportunities. National Academy Press, Washington, D.C. 59 pp.

## APPENDIX A

### SCEI Final Report List (Completed n=20, Pending CMI Final Reports n=4)

- 1997-012; Engle, J.M., R.F. Ambrose, and P.T. Raimondi: *Synopsis of the Interagency Rocky Intertidal Monitoring Network Workshop.*
- 1997-021; Cherr, G.M. and T.W-M. Fan: *Effects of Barium and Divalent Cations Associated with Oil Production Wastes on Developing Marine Organisms.*
- 1997-022; Higashi, R.M., A.D. Jones, and T.W-M. Fan: *Characterization of Organic Constituent Patterns at a Produced Water Discharge Site/Barium Relations to Bioeffects of Produced Water.*
- 1998-023 (I); Edited by: Manago, F. and B. Williamson: *Decommissioning and Removal of Oil and Gas Facilities Offshore California: September 1997 Workshop.*
- 1998-023 (II); Edited by: Manago, F. and B. Williamson: *Decommissioning and Removal of Oil and Gas Facilities Offshore California: September 1997 Workshop.*
- 1998-023 (III); Edited by: Manago, F. and B. Williamson: *Decommissioning and Removal of Oil and Gas Facilities Offshore California: September 1997 Workshop.*
- 1998-023 (IV); Edited by: Manago, F. and B. Williamson: *Decommissioning and Removal of Oil and Gas Facilities Offshore California: September 1997 Workshop.*
- 1998-042; Smith, E.R.A.N.: *How Political Activists See Offshore Oil Development: An In-depth Investigation of Attitudes on Energy Development.*
- 1999-020; Flegal, A.R.: *Characterization and Fate of Produced Water in Shallow Waters.*
- 1999-061; Osenberg, C.W. and R.J. Schmitt: *Ecological Responses to, and Recovery from, Produced Water Discharge: Application of a BACIPS Assesment Design.*
- 1999-062; Osenberg, C.W.: *Long-Term Monitoring of Biological Parameters at a Proposed Produced Water Discharge: Application of a BACIPS Assessment Design.*
- 2001-006; McGinnis, M.V., L. Fernandez, and C. Pomeroy: *The Politics, Economics, and Ecology of Decommissioning Offshore Oil and Gas Structures.*
- 2001-016; Engle, J.M., D.M. Hubbard, and D. Farrar: *Rocky Intertidal Resource Dynamics at Point Loma, San Diego County, CA.*
- 2001-048; Cherr, G.M., F.J. Griffin, and R.M. Higashi: *Effects of Biologically Degraded Oil on Marine Invertebrate and Vertebrate Embryos and Larvae.*

- 2001-070; Murray, S.N., R.F. Ambrose, and M.N. Dethier: *Methods for Performing, Monitoring, Impact, and Ecological Studies on Rocky Shores.*
- 2002-051; Smith, E.R.A.N.: *The Role of Knowledge in the Public's Trust in Science about Offshore Oil and Gas Development.*
- 2003-033; Roe, C.A., P.T. Raimondi, and S.E. Forde: *Variability in the accumulation and persistence of tar in four intertidal communities along the Central and Southern California Coast.*
- 2003-035; Stewart-Oaten, A.: *Using Before-After-Control Impact in Environmental Assessment: Purpose, Theoretical Basis, and Practical Problems.*
- 2003-052; Schurman, R.A. and P.E. Sabin: *Public Policy, Oil Production, and Energy Consumption in Twentieth-Century California.*
- 2003-075; Holbrook, S.J., M.H. Carr, and C.W. Osenberg: *Species Level Identification of Infaunal Samples and the Relationship between Taxonomic Aggregation and the Before/After/Control Impact Paired Series Design.*
- no OCS #; Sorlein, C.C. and M.J. Kamerling: *Folding and Faulting Along the Hosgri Fault and North Channel Fault: Timing and Rates from 3-D Map Restoration.*
- 2005-003; Page, H.M., J.E. Dugan, and J. Bram: *Spatial and Temporal Variability in Early Successional Patterns of an Invertebrate Assemblage at an Offshore Oil Platform.*

## **Final Reports Completed for SCEI Projects continued under the Coastal Marine Institute**

2001-043; Nisbet, R.M. and E.B. Muller: *Sublethal Effects of Toxicants on Organisms: A Modeling Approach with Dynamic Energy Budgets.*

## **Final Reports in Progress for SCEI Projects continued under the Coastal Marine Institute**

Ambrose, R.F., P.T. Raimondi, J.M. Engle, and S.N. Murray. *Inventory of Rocky Intertidal Resources in San Luis Obispo, Santa Barbara and Orange Counties.*

This study was funded for one year by the SCEI and is currently three ongoing CMI research projects. It will be reported in *three* CMI Final Reports.<sup>a</sup> Data from this study are currently available in the MARINE database and as plotted trends on the public website: [www.marine.gov](http://www.marine.gov).

Hodges, S.A., D.S. Bush, and D.C. Reed. *Application of Genetic Techniques for Use in Restoration of Surfgrass (*Phyllospadix torreyi*)*

This study was funded for one year by the SCEI and is currently an ongoing CMI research project.<sup>b</sup> It will be reported as a CMI Final Report.

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<sup>a</sup> Raimondi, P.T. Inventory of Rocky Intertidal Resources in San Luis Obispo and Northern Santa Barbara Counties - CMI Task Order 17604 - report completion expected in 2006.

Ambrose, R.F. Inventory of Rocky Intertidal Resources in Southern Santa Barbara, Ventura and Los Angeles Counties - CMI Task Order 17602 - report completion expected in 2006.

Schmitt, R.J. and S.N. Murray. Inventory of Rocky Intertidal Resources in Orange County - CMI Task Order 17603 - report completion expected in 2006.

<sup>b</sup> Hodges, S.A., D.S. Bush, S.J. Holbrook, and D.C. Reed. Population Genetics of Surfgrass (*Phyllospadix torreyi*) for use in restoration. CMI Task Order 17606 - report completion expected in 2006.

## APPENDIX B

### SCEI Thesis List (n = 35)

- Abu-Saba, K. 1998. *Spatial and Temporal Variability in the Aquatic Cycling of Chromium*. PhD Thesis, University of California, Santa Cruz.
- Bacon, C.E. 1994. *An Ecotoxicological Comparison of Organic Contaminants in Sea Otters (*Enhydra lutris*) Among Populations in California and Alaska*. Masters Thesis, University of California, Santa Cruz.
- Bashey, F. 2002. *Causes and Consequences of Offspring Size Variation in the Trinidadian Guppy (*Poecilia Reticulata*)*. PhD Thesis, University of California, Riverside.
- Beck, N. 2001. *Biogeochemical Cycling in Estuarine Environments of the Central California Coast*. PhD Thesis, University of California, Santa Cruz.
- Bram, J. 2003. *Spatial and Temporal Variability in Early Successional Patterns of an Invertebrate Assemblage on an Offshore Oil Platform*. Masters Thesis, University of California, Santa Barbara.
- Brooks, A. 1999. *Factors Influencing the Structure of an Estuarine Fish Community: the Role of Interspecific Competition*. PhD Thesis, University of California, Santa Barbara.
- Creasey, C. 1998. *Trace Metal Contamination in Groundwater: Impact of Colloids on Mobility and Implications for Sampling Practices*. PhD Thesis, University of California, Santa Cruz.
- Dvorsky, J. 2001. *The Influence of Valley Morphology and Coarse Sediment Distribution on Rainbow Trout Populations in Sespe Creek, California at the Landscape Scale*. Masters Thesis, University of California, Santa Barbara.
- Forde, S. 2002. *The Effects of Recruitment Variation on Population and Community Dynamics*. PhD Thesis, University of California, Santa Cruz.
- Ganguli, P. 1998. *Mercury Speciation in Acid Mine Drainage: New Idria Quicksilver Mine, California*. Masters Thesis, University of California, Santa Cruz.
- Garcia, S. 1997. *The Differing Motivations for Political Involvement, Political Aspirations and Ambition: Party, Gender, and Race Differences*. PhD Thesis, University of California, Santa Barbara.
- Giambalvo, E. 2001. *Factors Controlling Fluxes of Fluid, Heat, and Solutes from Sedimented Ridge-Flank Hydrothermal Systems*. PhD Thesis, University of California, Santa Cruz.

- Hamdoun, A. 2003. *Molecular Physiology of Stress Tolerance in Marine Invertebrates: The Heat Shock Response and Multidrug Resistance*. PhD Thesis, University of California, Davis.
- Hosseini, P. 2001. *The Effects of Localized Interactions, Movement Rules, and Space on Predator-Prey Dynamics*. PhD Thesis, University of California, Santa Barbara.
- Huang, H. 1992. *Transport Properties of Drilling Muds and Detroit River Sediments*. PhD Thesis, University of California, Santa Barbara.
- Jarmann, W.M. 1991. *Identification and Levels of Organochlorine Compounds in Birds and Marine Mammals*. PhD Thesis, University of California, Santa Cruz.
- Marquez, M. 2002. *Political Tolerance in Higher Education: Identifying the Threshold of Support for Diversity Policies*. PhD Thesis, University of California, Santa Barbara.
- Noonburg, E. 2000. *Resource Allocation, Foraging Activity, and Life History Optimization in a Variable Environment*. PhD Thesis, University of California, Santa Barbara.
- Owen, B.D. 1996. *Blood Lead Concentrations in Northern Elephant Seal Pups (*Mirounga angustirostris*) Evidence Natural Background Levels in Humans*. Masters Thesis, University of California, Santa Cruz.
- Poteet, M. 2001. *Effects of Disturbance on Host-Parasite Interactions: a Case Study Involving the Pacific Giant Salamander*. PhD Thesis, University of California, Berkeley.
- Ritson, P. 1994. *Historical and Contemporary Cycling of Contaminant Lead in Aquatic Systems*. PhD Thesis, University of California, Santa Cruz.
- Rivera-Duarte, I. 1995. *Porewater Geochemistry of Trace Elements in San Francisco Bay Sediments*. PhD Thesis, University of California, Santa Cruz.
- Sabin, P.E. 2000. *Petroleum Polity: Law and Politics in the California Oil Economy, 1900-1940*. PhD Thesis, University of California, Berkeley.
- Sanudo-Wilhelmy, S.A. 1989. *Trace Metal Distributions and Stable Lead Isotopic Composition in Surface Waters Along the US - Mexican Boundary*. Masters Thesis, University of California, Santa Cruz.
- Sanudo-Wilhelmy, S.A. 1993. *Geochemistry of Trace Metal Contamination in the Southern California Bight*. PhD Thesis, University of California, Santa Cruz.
- Seydel, K. 1998. *Direct and Indirect Effects of Organic Enrichment on Larval Recruitment of the Red Abalone*. Masters Thesis, University of California, Santa Barbara.



- Smith, D.R. 1991. *Lead Isotope Systematics in Environmental and Clinical Lead Contamination*. PhD Thesis, University of California, Santa Cruz.
- Spangenberg, J. 1997. *Reproductive and Developmental Effects of Barium (Ba) Exposure in Two Marine Invertebrates: The California Mussel (Mytilus californianus) and the White Sea Urchin (Lytechinus anamesus)*. PhD Thesis, University of California, Davis.
- Swall, L.M. 1992. *Hydrolytic Detoxification of a Model Surfactant by the Dungeness Crab*. Masters Thesis, University of California, Santa Cruz.
- Valeva, A.K. 2002. *On the Bid-ask Spread in Asymmetric Information Models*. PhD Thesis, University of California, Santa Barbara.
- Van Dyke, N. 2000. *Values, Policy Preferences, and the Gender Gap*. PhD Thesis, University of California, Santa Barbara.
- Vines, C. 1998. *Factors Affecting Sperm Motility, Fertilization, and Early Development in the Pacific Herring*. PhD Thesis, University of California, Davis.
- Vonesh, J. 2003. *Density and Size-Mediated Consequences of Predation Across Life History Stages*. PhD Thesis, University of Florida.
- Wilson, J. 2001. *Experimental and Observational Patterns of Density-Dependent Settlement and Survival in the Marine Fish Gobiosoma*. PhD Thesis, University of Florida.
- Witter, A. 1996. *Chemical Speciation: an Important Determinant for Predicting Metal Ligand Reactivity in Aquatic Systems*. PhD Thesis, University of California, Davis.

## APPENDIX C

### List of SCEI Participants / Students (n=137)

NAME	STATUS	SUPERVISOR	FISCAL YR*
AbuSaba, K.	Graduate	Flegal	1994
Adams, C.	Undergraduate	Hodges	1999-2001
Aherne, D.	Undergraduate	Page/Dugan	1999
Allstatt, J.	Laboratory Technician/Graduate	Engle/Ambrose	1997-1999
Anghera, M.	Laboratory Technician	Reed/Schmitt/Carr	1994-2001
Anghera, M.	Graduate	Ambrose	1998-1999
Anzak, A.	Field Assistant	Engle	1997
Aragon, L.	Undergraduate	Cherr	1997-1998
Arnold, M.	Administrative Assistant	Williamson	1998
Aumack, C.	Undergraduate	Page/Dugan	1999
Bailey, D.	Undergraduate	Raimondi	1998
Bartsch, E.	Undergraduate	Kamerling	1995-1996
Bashey, F.	Graduate	Osenberg	1994
Beck, N.	Graduate	Flegal	1994
Berdzar, C.	Laboratory Technician	Engle	1997
Berman, D.	Undergraduate	Carr	1997-1998
Bills, J.	Undergraduate	Page/Dugan	1999
Blanchette, C.	Postdoctoral	Reed	1997
Bonesh, J.	Graduate	Osenberg	1999
Bram, J.	Graduate	Page/Dugan	1999-2004
Bremmer, J.	Undergraduate	Flegal	1994
Brooks, A.	Graduate	Nisbet/Holbrook/Schmitt	1994-1997
Bullock, J.	Undergraduate	Schmitt	1994-1996
Campbell, C.	Laboratory Technician	Schmitt	1994
Clark, S.	Undergraduate	Carr	1998
Clark, S.	Undergraduate	Page/Dugan	1999
Conway-Cranos, T.	Laboratory Technician	Raimondi	2000-2001
Countermain, B.	Undergraduate	Bush/Hodges	1998-2001
Craig, C.	Graduate	Stewart-Oaten	1998
Creasey, C.	Graduate	Flegal	1994
Dominguez, A.	Undergraduate	Stewart-Oaten	1994-1996
Dugan, D.	Graduate	Page/Dugan	1999
Dvorsky, J.	Graduate	Mertes	1997
Eisner, B.	Undergraduate	Washburn	1994
Erlich, K.	Undergraduate	Osenberg	1994
Espada, L.	Graduate	Schmitt	1995-1996
Esquerra, M.	Undergraduate	Schmitt	1994
Evans, B.	Undergraduate	Schmitt/Carr	1994-1997
Faist, C.	Undergraduate	Page/Dugan	1999
Farrar, D.	Laboratory Technician	Engle	1999
Forbes, M.	Undergraduate	Carr	1998
Forde, S.	Graduate	Raimondi	1997-2001
Francioch, C.	Undergraduate	Carr	1998
Francis, L.	Undergraduate	Ambrose	1998
Frodsham, R.	Laboratory Technician	Carr/Schmitt	1994-1997
Ganguli, P.M.	Graduate	Flegal	1994
Garcia, S.R.	Graduate	Smith	1994
Garman, G.	Postdoctoral	Cherr/Anderson	1994
Giambalvo, E.	Graduate	Flegal	1994

Golden, B.	Laboratory Technician	Page/Dugan	1999
Graziani, B.	Undergraduate	Bush	1998
Griffin, F.	Postdoctoral	Cherr	1994
Hamdoun, A.	Graduate	Cherr	1997-1999
Hamera, T.	Undergraduate	Carr	1998
Hansen, D.	Undergraduate/Graduate	Carr	1998, 2000
Henry, M.	Undergraduate	Page/Dugan	1999
Herns, W.	Graduate	Smith	1998
Hibbard-Robbins, T.	Laboratory Technician	Griffin	1994, 1998-1999
Hitz, S.	Undergraduate	McGinnis/Fernandez	1999
Holley, W.	Administrative Assistant	Williamson	1998-1999
Hosseini, P.	Graduate	Nisbet	1995-1996
Hubbard, D.	Laboratory Technician	Engle	1997, 1999
Hudson, R.	Undergraduate	Carr	1995-1996
Irwig, B.	Laboratory Technician	Carr	1995-1996
Jensen, S.	Undergraduate	Schmitt	1994
Johnson, E.	Undergraduate	Page/Dugan	1997
Kendall, A.	Laboratory Technician	Raimondi	2000-2001
Knope, M.	Lab Technician	Page/Dugan	1999
Kusic, K.	Laboratory Technician	Raimondi	2000-2001
Kwong, L.	Undergraduate	Cherr	1997-1998
Lackey-Schaffer, N.	Laboratory Technician	Schmitt/Carr	1994-1996
Lee, L.	Undergraduate	Cherr	1997
Lee, S.	Staff Research Associate	Ambrose	1998-2001
Lika, D.	Postdoctoral	Nisbet	1997
Livingston, H.	Laboratory Technician	Raimondi	2000
Machula, J.	Laboratory Technician	Griffin	1998-1999
Mardian, B.	Undergraduate	Page/Dugan	1999, 2000
Marquez, M.	Graduate	Smith	1994
Martin, Daniel L.	Staff Research Associate	Engle	1997, 1999
McClellan, A.	Laboratory Technician	Schmitt/Carr	1994-1996
Milne, N.	Undergraduate	Page/Dugan	1999
Minchinton, T.	Graduate	Raimondi	1999-2000
Miyagishima, J.	Undergraduate	Smith	1998-1999
Moran, S.	Undergraduate	Carr	2000-2001
Morrow, M.	Undergraduate	Flegal	1994
Muller, E.	Postdoctoral	Nisbet	1995-1997
Navarro, C.	Undergraduate	Page/Dugan	1999
Noonburg, E.	Graduate	Nisbet	1995-1996
O'Connor, B.	Undergraduate	Carr	1998
Ohman, C.	Undergraduate	Page/Dugan	1997
Owens, B.	Graduate	Flegal	1994
Owings, S.	Undergraduate	Raimondi	1998
Parkin, E.	Undergraduate	Kamerling	1995-1996
Pillai, M.	Postdoctoral	Cherr	1994
Pinckard, D.	Undergraduate	Page/Dugan	1999
Poteet, M.	Graduate	Osenberg	1994
Ramirez, R.	Undergraduate	Flegal	1994
Ritson, P.	Graduate	Flegal	1994
Rivera-Duarte, I.	Graduate	Flegal	1994
Redlin, J.	Undergraduate	Page/Dugan	1999
Reese, D.	Laboratory Technician	McGinnis/Fernandez	1999
Roe, C.	Laboratory Technician	Raimondi	1999-2002
Royer, C.	Undergraduate	Carr	2000-2001
Sabin, P.	Graduate	Schurman	1997-1998
Sandstedt, C.	Undergraduate	Carr	1995-1996

Sberze, A.	Laboratory Technician	Osenberg	1994
Schmidt, K.	Undergraduate	Page/Dugan	1997
Scholes, J.	Undergraduate	Holbrook	1994
Scott, M.	Undergraduate	Page/Dugan	1999
Seydel, K.	Graduate	Schmitt	1994-1997
Shinen, J.	Undergraduate	Carr	1998, 2000-2001
Siciliano, D.	Undergraduate	Schmitt	1994-1996
Smith, D.	Postdoctoral	Flegal	1994
Smith, D.	Laboratory Technician	Raimondi	1998
Snyder, M.	Asst. Research Biochemist	Cherr	1997-1999
Spangenberg, J.	Graduate	Cherr	1994
Steenblock, E.	Field Assistant	Engle	1997
Stier, J.	Undergraduate	Carr	1997-1998, 2000
Taylor, C.	Graduate/Lab Technician	Engle	1997, 1999
Tongo, Y.	Laboratory Technician	Jones	1994
Townsend, S.	Undergraduate	Carr	1995-1996
Valeva, A.	Graduate	Stewart-Oaten	1998
Van Dyke, N.	Graduate	Smith	1995-1996
Vines, C.	Graduate/Postdoctoral	Cherr	1997-1999
Vonesh, J.	Graduate	Osenberg	2000
Watkins, R.	Undergraduate	Mertes	1997
Watson, J.	Undergraduate	Page/Dugan	1999
Williams, M.	Laboratory Technician	Raimondi	2000-2001
Williamson, B.	Program Manager	Schmitt	1998-2001
Wilson, J.	Graduate	Osenberg	1997-2000
Wilson, M.	Staff Research Associate	Raimondi/Engle	1997-2002
Willis, A.	Laboratory Technician	Page/Dugan	2002
Witter, A.E.	Graduate	Jones	1994
Wolcott, B.	Undergraduate	Page/Dugan	1999
Wood-Charlston, E.	Undergraduate	Carr	1998
Yonehiro, J.	Undergraduate	Raimondi	1998
Zabaronick, K.	Laboratory Technician	Carr	1997

\* Fiscal Year = year starting July 1

## APPENDIX D

### Project Principal Investigators (n=31)

**Ambrose, Richard F.**

Associate Professor of Environmental Health and Sciences, UCLA  
Marine Science Institute, UCSB

**Anderson, Susan**

Associate Research Biologist  
Bodega Marine Laboratory, UCD

**Bush, Douglas S.**

Marine Science Institute, UCSB  
Adjunct Associate Professor of Evolution, Ecology and Marine Biology, UCSB

**Carr, Mark H.**

Marine Science Institute, UCSB  
Assistant Professor III of Biology, UCSC

**Cherr, Gary N.**

Lecturer in Biological Sciences, UCD  
Bodega Marine Laboratory, UCD

**Dixon, John**

Marine Science Institute, UCSB

**Dugan, Jenifer E.**

Marine Science Institute, UCSB

**Engle, John M.**

Marine Science Institute, UCSB

**Fan, Teresa W.-M.**

Assistant Research Biochemist, UCD

**Fernandez, Linda**

Visiting Assistant Professor  
Bren School of Environmental Science and Management, UCSB

**Flegal, A. Russell**

Professor of Earth Science, UCSC

**Griffin, Fred J.**

Lecturer and Research Biologist, UCD

**Higashi, Richard M.**

Crocker Nuclear Laboratory and Bodega Marine Laboratory, UCD

**Hodges, Scott A.**

Assistant Professor of Ecology, Evolution and Marine Biology, UCSB

**Holbrook, Sally J.**

Professor of Ecology, Evolution and Marine Biology, UCSB

**Jones, A. Daniel**

Assistant Adjunct Professor in School of Veterinary Medicine, UCD

**Kamerling, Mark J.**

Institute for Coastal Studies/UCSB

**McGinnis, Michael V.**

Marine Science Institute, UCSB

**Murray, Steven N.**

Professor of Biological Sciences, California State University, Fullerton

**Nisbet, Roger M.**

Professor of Ecology, Evolution and Marine Biology, UCSB

**Osenberg, Craig W.**

Assistant Professor of Integrative Biology, UCB

Marine Science Institute, UCSB

**Page, Mark H.**

Marine Science Institute, UCSB

**Pomeroy, Carolyn**

Institute of Marine Sciences, UCSC

Lecturer, Ocean Sciences Board, UCSC

**Raimondi, Peter T.**

Assistant Professor of Biology, UCSC

Marine Science Institute, UCSB

**Reed, Daniel C.**

Marine Science Institute/UCSB

**Schmitt, Russell J.**

Professor of Ecology, Evolution and Marine Biology, UCSB

**Schroeter, Stephen**  
Marine Science Institute, UCSB

**Schurman, Rachel A.**  
Energy and Resources Group and Department of Sociology, UCB

**Smith, Eric R.A.N.**  
Associate Professor of Political Science, UCSB

**Sorlien, Christopher C.**  
Institute for Coastal Studies, UCSB

**Stewart-Oaten, Allan**  
Associate Professor of Biological Sciences, UCSB

## APPENDIX E

### List of Workshop Participants (n=11)

**Appelbaum, Richard:** Professor of Sociology, Director, Community and Organization Research Institute, UC Santa Barbara

**Carr, Mark H.:** Deputy Director, Southern California Educational Initiative & Coastal Marine Institute, UC Santa Barbara

**Freudenburg, William:** Professor of Rural Sociology, University of Wisconsin, Madison

**Kolstad, Charles:** Professor of Economics, UC Santa Barbara

**Molotch, Harvey:** Professor of Sociology, UC Santa Barbara

**Opaluch, James:** Professor of Resource Economics, University of Rhode Island

**Piltz, Fred:** Chief, Environmental Studies Program, Pacific OCS, Minerals Management Service

**Schmitt, Russell J.:** Program Manager, Southern California Educational Initiative & Coastal Marine Institute, UC Santa Barbara

**Sonstelie, Jon:** Professor of Economics, Chair, Department of Economics, UC Santa Barbara

**Weber, Ken:** Sociologist, Pacific OCS Region, Minerals Management Service

**Williamson, Bonnie:** Office Manager, Southern California Educational Initiative & Coastal Marine Institute, UC Santa Barbara



## APPENDIX F

### Contents of Enclosed CD-ROMs

The Southern California Education Initiative research program sponsored by the Minerals Management Service produced a significant number of study products in the form of Scientific Publications, Final Study Reports, and Final Technical Summaries. We have compiled and catalogued these publications and reports as searchable Portable Document Format (PDF) files on the four enclosed CD-ROMs. Each CD-ROM contains a copy of Adobe Acrobat Reader 7.0; the free software can be easily installed in the event that the PDF files do not open.

The two CD-ROMs labeled “Final Study Reports and Final Technical Summaries,” contain the Final Study Reports and Final Technical Summaries for the two terms of the Southern California Educational Initiative, 1989-1994 and 1994-2004, respectively (MMS agreement numbers 30471 and 30761). These CD-ROMs also contain the respective closing memos for the two SCEI Agreements listed above.

The two CD-ROMs labeled “Scientific Publications,” contain the Scientific Publications for the two terms of the Southern California Educational Initiative, 1989-1994 and 1994-2004, respectively (MMS Agreement numbers 30471 and 30761).

For additional copies of this memo or any of the enclosed CD-ROMs, please contact the Coastal Research Center in one of the following ways:

Coastal Research Center  
Marine Science Institute,  
University of California, Santa Barbara  
Santa Barbara, CA 93106-6150

Phone: (805) 893-2051  
Fax: (805) 893-3777

The closing memos for this program will also be available on the SCEI website located at the following URL: [www.coastalresearchcenter.ucsb.edu/SCEI](http://www.coastalresearchcenter.ucsb.edu/SCEI).

## APPENDIX G

### Summary of the SCEI Social and Economic Research Agenda Workshop

After a brief introduction to the goals and objectives of both the CMI and SCEI programs and a review of the MMS - POCS Region's suggested/targeted topics of sociological and economic research, participants identified research areas that incorporated and placed MMS' research interests into broader academic contexts. It was strongly recommended that mention of particular research topics of strong interest to social scientists and economists be included in the requests for Letters of Interest. Such research topics included: (1) innovative approaches to extend, improve or test economic valuation methods, (2) aspects of local and regional economics, (3) community studies, including environmental justice, (3) de-industrialization, including facilities abandonment, (4) risk perception, and (5) cultural and discourse analysis, including media analysis.

#### Product(s):

- Participants listed researchers in the University of California system who had interests and/or expertise in the research topics generated by MMS and the Research Agenda Workshop. This list was used to target specific researchers and Organized Research Units for requests for Letters of Interest (see attached list of targeted researchers, Appendix E). Requests for Letters of Interest were also sent to departmental heads of the Social Science, Economics, Political Science, and Environmental Science departments of all UC campuses. At UCSB, all faculty of these departments as well as the Marine Science Institute received individual copies of the requests.
- Participants generated text to be incorporated into the requests for Letters of Interest
- Request for *Letters of Interest* for the Coastal Marine Institute (CMI) program
- Request for *Letters of Interest* for the Southern California Educational Initiative (SCEI) program.



## The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



## The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The **MMS Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.