MPA Baseline Program

Annual Progress Report

Principal Investigators - please use this form to submit your MPA Baseline Program project annual report, including an update on activities completed over the past year and those planned for the upcoming year. This information will be used by the MPA Baseline Program Management Team to track the progress of individual projects, and will be provided to all MPA Baseline Program PIs and co-PIs prior to the Annual PIs workshop to facilitate discussion of project integration. Please submit this form to California Sea Grant when complete (sgreport@ucsd.edu, Subject [Award Number, project number, PI, "Annual Report"].) *Award # 09-015, Project # R/MPA-8*

Project Information

Project Year	2 - 2011	**Study Region**	North Central Coast
Project Title & Number	North Central Coast MPA Baseline ROV Data Collection for Deep Benthic Rock and Soft-Bottom Ecosystem Characterization and Monitoring (20-116 m)		
PI name	Dr. James Lindholm	**Co-PI name**	Mr. Dirk Rosen

PI Contact Info **Co- PI Contact Info**

(please list additional PIs and contact info in the "Project Personnel" section if necessary)

Address	Institute for Applied Marine Ecology at California State University, Monterey Bay 100 Campus Center Seaside, CA 93955	**Address**	Marine Applied Research & Exploration (MARE) 1230 Brickyard Cove Road, Suite 101 Point Richmond, CA 94801
Email	jlindholm@csumb.edu	**Email**	Dirk@maregroup.org
Phone	831-582-4662	**Phone**	510-232-1541

Project Goals & Objectives

Our project objectives address ecological components of the Baseline Program goals as stated in the RFP and contribute to the nearshore community structure and monitoring plan evaluation components. All are directed toward using ROV technology to provide videographic and still photographic imagery of seafloor habitat structure and associated biological communities in the NCC study region to develop a basis for tracking status and changes in deep subtidal communities over time.

GOAL 1: Baseline Characterization and Monitoring Recommendations

- Task 1 Historical summary
- Task 2 Collect year 1 imagery
- Task 3 Summary and assessment
- Task 4 Evaluate draft monitoring plan
- Task 5 Integrate data

GOAL 2: Assessment of Initial Ecological Changes

- Task 6 Collect year 2 imagery
- Task 7 Describe initial changes

Summary of Project Activities Completed to Date

Overview of Project Year _2_ Activities, including progress towards meeting goals & objectives

In project year 2, we completed the second, and final, field data collection cruise to our four primary survey geographies. Our project was also expanded, at the request of Pt. Reyes National Seashore, to complete MPA baseline evaluation of the Pt. Reyes MPA cluster as well as additional fish surveys using CDFG protocols at three of our sites, Farallon Islands, Bodega Head, and Pt. Arena. Pt Reyes provided funding for both imagery and data collection as well as analysis for the additional work.

The complete list of five MPA clusters sampled during 2011 are (listed north to south):

1) Pt. Arena SMCA and SMR	2 dives, 737 stills, 10.6 km bottom surveyed (with CDFG)
2) Bodega Head SMCA and SMR	18 dives, 4608 stills, 36.3 km bottom surveyed (with CDFG)
3) Pt. Reyes SMCA and SMR	13 dives, 2783 stills, 25.7 km bottom surveyed
4) South Farallon Island SMCA and SMR	13 dives, 2545 stills, 32.7 km bottom surveyed (with CDFG)
5) Montara SMR and Pillar Point SMCA	15 dives, 2239 stills, 20.5 km bottom surveyed

We exceeded all of our minimum goals for year 2 imagery collection with the exception of the Pt. Arena geography. A total of 125.8 km of sea floor habitat was surveyed during the 58 ROV dives between 6 July – 10 August, 2011. We were able to operate 21 out of 36 days, losing a total of 8 days to inoperable weather conditions, six in Pt. Arena. We amassed 245 hours of video and 12,912 still images. We have additionally completed a rapid assessment for year 2 imagery and the summary is provided as an attachment to this report.

Post-processing data collection is not yet complete but we anticipate completing final data collection and compilation in our geo-referenced Access database by mid-July 2012.

MPA Baseline Program Annual Report

Highlights from project progress so far, such as successes achieved or interesting stories from the past year

We have completed two highly successful field data collection seasons. With the addition of 245 hours of video and more than 12,000 still images in year 2, we now possess approximate 338 hours of video and more than 19,000 still images from which we are collecting habitat and community information for subsequent analysis.

Our project was also highlighted for an episode of KQED's Quest series in which the PI's were interviewed on camera and a complete camera team joined us for ½ day at sea (all except the cameraman were seasick the entire cruise). The piece is still available for viewing online through KQED's website and was very well-done.

We have been able to involve a significant number of students in both at-sea operations and lab-based data collection and analysis. We took a total of 11 students (rotating) to sea with us during imagery collection, many of which had very little sea experience and none onboard a commercial fishing boat such as we used for this project. They were able to interact not only with science personnel, but also with the commercial fishing family that operates the boat and the professional ROV crew that operates the vehicle. That experience has proven highly valuable in developing their understanding of both the environment and the economics and conservation value of the MPA system.

A real strength of this project is the experience brought to bear through collaborations among multiple organizations that represent a variety of stakeholders. We have professional ROV, professional fishermen, professional scientists, and a number of students that all work together and everyone benefits from the collaboration.

Description of any unforeseen events and substantial challenges, and resulting effect on data collection

Overall, the field imagery collection went exceptionally well in both 2010 and 2011 with generally good weather conditions and reliable ROV operations. We experienced some weather-related operational shifts but most areas were surveyed as planned over the two-year time period. The one exception was the Pt Arena survey that presented an operational challenge in 2011. High winds prevented us from operating in the MPA's. We were able to operation for one day only and then weather prevented us from completing the survey and thus the dataset.

The six-month delay in receipt of project funds initially delayed our ability to entrain an appropriate number of qualified students to support the field work and data post-processing. Now that we have a trained cadre of graduate and undergraduate students, with more in the pipeline, progress is rapid and the students are proving a reliable and knowledgeable work force for MPA data collection.

Data status (i.e., paper/raw format or digitized; if digitized, what format?)

Rapid assessment data collected from down video imagery is complete and uploaded to a geo-referenced relational database. Individual segment and summary graphs have been produced for both years and are included in the year 1 report and as an attachment to this report.

Detailed data collection from both forward and down video and still imagery is ongoing and being entered directly into a geo-referenced relational database structure. Data collection will be complete by mid-July and analyses and interpretation, including spatial analyses in ArcGIS, will be the focus of further efforts.

Still imagery is being uploaded to the MBNMS species identification website for further dissemination and use by a broader audience for both esthetics and education. Good organismal video clips are being uploaded to the IfAME YouTube site for broader dissemination and use by other researchers.

Activities Planned for following Project Year _3_ (if applicable) – *Please describe remaining work and approximate timelines for completing that work, including any anticipated budget variances necessary to complete the project.*

In Year 3 we will bring all of our data and information together with the ultimate goal of preparing a final summary report and recommendations for monitoring deep rocky and unconsolidated sediment habitats in the North Central California Coast MPAs as well as integrating our data with that of other projects (tasks 1, 2, 4, 5, 7).

All data from both cruises are currently being entered directly into Access databases for compilation as well as further statistical and spatial analyses. We should have sufficient data from the two cruises to confidently characterize both deep rock and unconsolidated sediment communities and associated habitats from all five study sites between 20 and 116 meters. We will also evaluate which types of imagery and metrics are more likely to yield meaningful, long-term monitoring capabilities and pertinent information for future planning purposes.

In the analysis phase of the project, we will evaluate the draft long-term monitoring plan for the area and offer recommendations for future monitoring of deep subtidal communities.

Another goal for year 3 is to complete a comparison of data collection protocols and analytical design between the IfAME/CSUMB and the California Department of Fish and Game methodologies. Working in partnership, Marine Applied Research and Exploration (MARE), California State University's Institute for Applied Marine Ecology (IfAME) and the Department will evaluate the data collected by both methods for comatibility, differences, and effeciencies gained**.** The protocols and hypotheses will be compared in the areas defined above for hard bottom rocky habitat where both survey techniques are applicable.

Project Personnel – *Please indicate additional project personnel involved in your MPA baseline project, including students and volunteers, or additional PI contact information if necessary.*

	Students Supported	*Student Volunteers*
K-12	*0*	*0*
Undergraduate	*6*	*0*
Masters	*7*	*0*
PhD	*0*	*0*

Number of other Volunteers not counted above:

12 guests

Additional PI contact info not listed on first page:

Other staff participants:

Donna Kline – Research Associate – IfAME
Andy Lauerman – MARE
Steve Holz – MARE
AJ Reiter – MARE
Yuko Yokozawa - MARE
Patricia Cheng - MARE

Cooperating Organizations and Individuals - *Please list organizations or individuals (e.g., federal or state agencies, fishermen, etc.) that provided financial, technical or other assistance to your project since its inception, including a description of the nature of their assistance.*

Name of Organization or Individual	*Sector (City, County, Fed, private, etc.)*	*Nature of cooperation (If financial, provide dollar amount.)*
UROC, CSUMB	*Private*	*Financial – 3 UG student support* ***$$$***
The Nature Conservancy	*Private*	*Provided ROV at reduced cost and consultant services.*
The Maricich Family	*Private*	*Provided boat support for ROV and technical expertise in operations.*
Tom Mattusch	*Private*	*Advised locations for reference sites – technical expertise and time*
Dr. Bob Lea	*Private*	*Technical expertise and time*
Dr. Gregor Cailliet	*Private*	*Technical expertise and time*
Phil Saunders	*Private – Urchin diver*	*Technical expertise – location advice*
Pt. Reyes National Seashore	*Federal*	*Funding for additional surveys -* ***$$$$***
Karl Menard, Manager, Aquatic Resources Group, Bodega Marine Lab	*State*	*Technical expertise.*

Additional Information – *Please provide any other project-relevant information, such as descriptions of attached materials, media coverage your project has received, etc.*

Media Coverage:

KQED – QUEST Northern California Program: online access http://science.kqed.org/quest/video/one-fish-two-fish-monitoring-marine-protected-areas/ "One Fish Two Fish: Monitoring Marine Protected Areas" by Chris Bauer

Print news articles:

David Perlman. "Submarine to explore mysteries of sea life." San Francisco Chronicle May 21, 2011, p. A1.

Poster presentations:

Lindholm, J., D. Rosen, D. Kline, M. Gleason, J. Watson, A. Alfasso, and B. Downey. 2011. ROV surveys of soft and rocky deep-water habitats along California's North Central Coast; MPA baseline data collection. Monterey Bay National Marine Sanctuary Currents Symposium, Seaside, California. April 2011.

Lindholm, J., D. Rosen, D. Kline, M. Gleason, A. Alfasso, C. Denney, B. Downey, H. Kelley, A. Launer, F. Moye, C. Turner, and J. Watson. 2011. Playing from the baseline: Characterization of the deep subtidal in the North Central Coast's MPAs. California Cooperative Fisheries Investigations Conference, San Diego, California. December 2011.

2011 Harbor Posters – A public information poster (36X48") that presented our approach and participants was presented to the harbormaster of each harbor from which we operated.

Oral presentations:

Saint Francis Yacht Club (San Francisco), March 16, 2011
San Ramon Rotary Club, January 19, 2012
Dirk Rosen Interview on KTVU's "Bay Area People" August 31, 2011

Attached materials:

Year 2 cruise report and rapid assessment summary.