

**Channel Islands National Marine Sanctuary
Sanctuary Advisory Council**

Research Activities Panel

**DRAFT Key Meeting Outcomes
April 15, 2015**

CINMS Ocean Science Education Building, UCSB

Attendance:

Robert Warner	Ben Ruttenberg	Rachel Cartwright
Chris Caldow	Jenn Caselle	Sean Hastings
Chris Mobley	Milton Love	Michael Murray
Julie Bursek	Steve Wertz	Julia Leo
Ryan Freedman	Jessie Altstatt	Steve Worth
Mark Steele	David Kushner	John Richards
Dave Siegel	Jonna Engel	Morgan Visalli
Dan Reed	Donna Schroeder	

Public Attendance: Kristi Birney, Jenna Driscoll, Lee Moldaver, Kristen Hislop, Paul Petrich

CINMS Announcements

Sanctuary Superintendent Chris Mobley welcomed the group and discussed the importance of the sanctuary's research partnerships with agencies and universities including the Bureau of Ocean Energy Management (BOEM), National Aeronautics and Space Administration (NASA), and University of California Santa Barbara (UCSB).

Turnover in CINMS research team and introductions to new additions –

There has been substantial turnover with the departure of Steve Katz, Dani Lipski, Natalie Senyk, and Ben Waltenberg. The research team is completely re-organized and welcomes a number of new staff.

Chris Caldow – The new research coordinator comes to CINMS after being the Chief of the Biogeography branch in the National Centers for Coastal Ocean Science (NCCOS). In his time with the Biogeography branch, Chris led efforts across the nation to provide scientific expertise to a number of management entities. He looks forward to establishing new research partnerships and working with existing partners to continue research around CINMS

Julie Bursek is the team lead for CINMS education and outreach as well as the unit diving supervisor.

Ryan Freedman is working as a Research Specialist for CINMS after a year as a California Sea Grant Fellow at CINMS

Libby Mackie is CINMS' Vessel Operations Coordinator.

New RAP invitees include Ben Ruttenberg (Cal Poly), Cause Hanna and Rachel Cartwright (Cal State Channel Islands).

Upcoming opportunities for RAP

Large Vessel Time

CINMS recently had 10 operational days aboard NOAA Ship Bell M. Shimada for a research cruise focusing on the effects of ocean acidification on deep water coral as well as sanctuary mapping efforts. There may also be some local opportunities aboard the NOAA ship OKEANOS EXPLORER. Additionally, there is potential for ocean exploration with the Ocean Exploration Trust's R/V Nautilus in CINMS and the surrounding waters. Bob Ballard has an office at CINMS as well as a seat on the UCSB Board of Trustees. He will be active in raising money for OCTOS.

ONMS Leadership Team meeting in Santa Barbara this year

It will occur the week of September 14 and a visit to OSEB/UCSB will likely be included in the agenda. A workshop on the Center of Excellence is planned along with presentations on emerging marine technologies.

Shearwater/Sharkcat vessel allocation

Timing and mission relevance is important for cruises requesting time aboard sanctuary vessels. Cruise purposes must fall within the sanctuary's mission. A number of projects have been allocated sea days aboard CINMS' vessels this year. UCSB liability issues appear to be cleared with having students aboard the Shearwater. There have been 40 days allocated in 2015 for supported days at sea and some days are still open if researchers have funding to cover operational costs. Next year researchers should apply for vessel support through the RFP process which occurs early in the year. For more vessel information, please contact Libby Mackie (Elizabeth.mackie@noaa.gov).

Mechanisms for external funding of vessels

CINMS has a new Memorandum of Agreement with UCSB, including \$130K in funds for a post-doc. Another new mechanism for moving money to cost-share vessel days is available to researchers as CINMS is also working with Cardinal Point Captains for vessel operations.

CINMS Research Program Prioritization

Sean Hastings is the Resource Protection coordinator at CINMS and took time to explain the scientific information gaps needed by CINMS managers. His talk focused on two major concerns of managers: the risk of large whale mortality from ship strikes and the MPAs around the island. There is a large need for socio-economic research for these issues. CINMS is working with NCCOS and Bren to start to fill some of these socio-economic questions.

Sean explained that anything that would violate sanctuary activities requires a permit (e.g., disturbance of the seabed, discharge, or flying below 1000 feet within the sanctuary). Sean coordinates with Brian Owens at CDFW and noted that activities in state reserve waters do not require a CINMS permit.

Research priorities

Chris Caldwell discussed CINMS mapping efforts and shared the current priority map. He noted that the recent research cruise with NOAA ship Bell M. Shimada revealed an uncharted pinnacle in sanctuary waters. Currently less than half of CINMS is mapped and one of the major goals of the CINMS research department is fill in the bathymetry gaps around the sanctuary. The research team aboard the Shimada used the Beagle ROV from Marine Applied Research & Exploration (MARE) and also deployed temperature probes to be collected this summer, along with samples of *Lophelia pertusa* coral (collected live for experimentation) and sea fan samples for age and growth studies. Another focus of the research team will be building upon the telemetry array around the islands in collaboration with a number of research partners. Chris also mentioned the Sanctuary Integrated Monitoring Network website as a resource for the RAP, and clarified that the site is not currently designed to be used for data integration.

Research Activity Updates:

Ben Ruttenberg (Cal Poly) reported that Cal Poly is working to build its marine program and he is interested in replicating some CINMS area projects up north. He works with Crow White, who is also a RAP member. Crow is currently involved in an assessment of Kellet's Whelk along the mainland and out at the islands.

Milton Love (UCSB) reported that he is working with Doug McCauley (UCSB) on a Giant Sea Bass Project. The Great Giant Sea Bass Count began last summer, and Milton's group worked with the SeaSketch team using data collected from recreational divers. He has received funds from the Coastal Fund for undergrads to promote this program. He plans to work with SeaSketch to expand the program so that divers can report year-round. Doug and Milton will begin a small pilot tagging project of Giant Sea Bass and is looking for possible data sources with landings or presence absence of the species. Milton is also working on a study comparing impacts from electrically charged and non-charged cables and how renewable energy power cables might alter the behavior of crabs. No effects seen so far.

Stephen Wertz provided a handout with updates on CDFW activities and also reported that the department has been comparing the status of sea cucumbers in and outside the marine reserves. Biologists are concerned about the status of the sea cucumber fishery outside the reserves.

Dave Siegel reported that the Plumes and Blooms project, which he heads, has been renewed for three years, though the amount of funding has decreased each time the program is renewed. His group focuses on phytoplankton community structure and couples with the Marine Biodiversity Observing Network (MBON). He also reported on work assessing kelp forest cover using remote

sensing and ongoing hyperspectral imagery work. He is currently evaluating through 30m spatial resolution LANDSAT data.

Jessie Altstatt (CINMS) reported that she has been working to digitize files of Jack Engel, who retired last year. The data from Jack's monitoring now exist at the UCSB science library for those interested in the data from that work. In partnership with CINMS Jessie plans to continue that work with CINMS this summer along with an assessment of the extent of eelgrass beds around Anacapa. Jessie manages the CINMS LIMPETs program and is also writing a quality assurance plan for program participants.

David Kushner (CINP) reported that the Park is continuing kelp monitoring efforts and updated the group on changes to the intertidal program, including the likely addition of vertical transects. If past patterns repeat he predicts an upcoming increase of purple sea urchins at the islands associated with the sun star die-off. While black abalone have dramatically increased at some sites at Santa Cruz and San Nicolas Islands, their recovery has been much slower at the other Islands. NPS is seeing a moderate number of small sea stars during their intertidal trips to the islands. He also noted the increasing amount of *Sargassum horneri* at the Islands – this species was first noticed in Long Beach Harbor in 2003 and was likely introduced to the region most likely via shipping. Additionally, Dave noted the presence of likely one of the longest periods of warm water at the islands and its potential to impact species presence there.

Mark Steele (Cal State Northridge) reported that he is working on a new National Science Foundation (NSF) study on sex changing fish. Graduate students in his lab are working on a variety of projects including artificial reef studies, densities of green abalone at Catalina and the effects of *Sargassum horneri*.

Dan Reed (UCSB) updated the group on MBON projects, including a genomics/molecular component funded by BOEM that looks at prokaryotes and eukaryotes. Dan is also working on a NSF-funded coastal research project that uses an autonomous glider and collects physiological and biological data. He will be speaking about LTER data at an upcoming Scripps workshop. Dan's group is also working on a Sea Grant project studying the ecological consequences and biotic resistance of *Sargassum horneri*. PhD student Lindsay Marks has a fellowship to focus on this work, and the lab received funding from National Marine Fisheries Service (NMFS) to test control measures (i.e., a super sucker machine). Dan also noted that giant kelp has disappeared at Catalina Island due to warm water.

Jenn Caselle (UCSB) reported that PISCO has wrapped the field work for the South Coast MPA baseline and data integration is beginning. Results from the MPA monitoring will be featured in a special issue of Marine Ecology. Jenn and PISCO have also released a pamphlet on 10 years of subtidal monitoring around the Channel Islands, and the full results are in a manuscript currently submitted to *Scientific Reports*. Data show that a number of fishery targeted species are increasing both inside and outside the reserves. Invertebrates however are not showing the same level of recovery. PISCO has also been assisting CDFW on a number of projects including monitoring Sea Star die-off and Sea Cucumber populations. Jenn is also working with BRUVs

(Baited Remote Underwater Vehicles) to assess their ability to measure populations. Jenn is also looking to develop species distribution models of different fish species around the island.

Jonna Engle (CCC) reported that the Beacon kelp restoration project around Goleta Beach has been permitted and installation of the granite columns will begin soon. The reef ball project is not proposed for a permit. Also, the CCC received NOAA funds to assess the ecological effects of development on beach communities and these will now be used in future permit processes.

Donna Schroeder (BOEM) updated the panel on some of BOEM's priority research areas including digital elevation models, predictive modeling focused on seabirds and marine mammals, and seafloor mapping (noting that huge areas of the sanctuary have yet to be mapped). BOEM is also involved in a submerged landforms project with CINMS and CINP that will study underwater archaeology and could provide information on early human migration patterns. Donna added that the addition of social and economic interests/components could be useful for the RAP.

Rachel Cartwright (Cal State Channel Islands) introduced herself as a new member of the RAP. Although much of her research is based in Hawaii, she is very interested in more local projects. She studies marine mammal tissue samples from baleen whales and added that she recently used LIMPETS data in her biostatistics class. She is looking for connections to anyone with access to cetacean tissue for research purposes.

Jenna Driscoll (Santa Barbara Channelkeeper) reported that Channelkeeper wants to expand partnerships with the research community and has a boat that can visit the Channel Islands or Naples. The boat is about 30 feet and can go about 12 knots. The boat makes MPA watch trip every two weeks and currently visits the islands 1-2 times per year.

**Channel Islands National Marine Sanctuary
Sanctuary Advisory Council**

Research Activities Panel

DRAFT Key Meeting Outcomes

April 2, 2013

Marine Science Research Building, UCSB

Attendance:

Robert Warner
Mark Steele
Dave Siegel
Dan Reed
Jack Engle
Steve Wertz

Steve Schroeter
Jenn Caselle
Kevin Lafferty
Crow White
Libe Washburn
David Kushner

Steve Katz
Danielle Lipski
Sean Hastings
Andrea Dransfield
Michael Murray

Public Attendance: Kristi Birney, Jim Marshall, Paul Petrich, Dan Robinette

CINMS Announcements

- **Budget** - Congress passed a continuing resolution to fund the federal government for the rest of the fiscal year. For the Office of National Marine Sanctuaries this is approximately a flat budget but with a 5% sequestration cut, and other taxes that will take a few more percentage points off our budget. In addition, there is no PAC funding that has funded some construction and other large projects in the past. What this means for CINMS is that we will get our FY13 allocation soon, and the focus will be providing funding to cover absolute "must pay" items. In addition, there is a de facto hiring freeze across NOAA and travel is extremely limited.
- **Staffing update** –Natalie Senyk, CINMS Physical Scientist on our research staff, has left our office to pursue a new career.
- **Vessels** - We have currently planned for about 34 research days at sea on Shearwater and about 20 days on Sharkcat. When we get our budget sometime in April we should have a better idea of what that means for vessel operations for the rest of the year. This is a significant reduction from years past and therefore we were unable to support many of the over 200 days that were requested.
- **Ocean Science Education Building** - We are targeting a move-in date in May to occupy the administrative offices. The education wing will be a shell until about \$10 million can be raised to complete exhibits.

Research Activity Updates:

Dave Siegel reported that he is working on a project funded by NASA to look at climate variability. This project includes a detailed optical assessment of phytoplankton properties. Dave reported that the Plumes and Blooms project has one more year of funding in place and the

budget for this work at NASA is good. Since 1996 Dave has been partnering with CINMS to help look at water quality, sediment work, toxic diatoms and domoic acid.

Sean Hastings reported that along with David Kushner he is serving as a federal agency representative on the State Lobster Fishery Management Plan Advisory Committee. The group is in the early phases of developing a plan.

Crow White reported that he is working on an abalone project on San Miguel Island, and a Sea Grant funded project on offshore aquaculture in the southern CA bight.

Libe Washburn stated that he is working with Gretchen Hoffman's group. He is also looking at the effects of wind relaxation effects on circulation around islands. This is an NSF project to look at low frequency wave motions and to study the circulation patterns that develop when the winds weaken.

Steve Schroeter reported that his main project around the islands and mainland is a time series of settlement, particularly sea urchins. There are stations along the mainland and Anacapa Island. Steve thinks the time series data may be useful in studying the effects of ocean acidification. Funding for this project is provided by California Department of Fish and Wildlife's proceeds from the landing tax for commercial sea urchin industry.

Milton Love announced that since last fall he has been working on a BOEM funded project related to potential effects of offshore renewable energy, specifically effects of cables on fish, lobsters, and other organisms. They are surveying hot and cold cables using scuba surveys and manned submersible. Milton reported that in deep water there seemed to be no difference but sea pens seemed to be numerous around hot cables. Published literature on this topic is limited but there have been some lab experiments.

Steve Wertz reported that the California Department of Fish and Wildlife has completed quarterly surveys at Anacapa Island for sea cucumber density and size at maturity. Also, they continue to survey the BART modules for abalone settlement at park service kelp forest monitoring sites with David Kushner. Steve reported that pink and red abalone have been found in these recruitment modules, although there has been a decrease in recruitment abundance at the islands over the last few years. CDFW is working with the wet fish industry to conduct sardine biomass surveys. They are conducting aerial surveys and groundtruthing on the water at different times of year. Steve reported that they are in the second year of baseline monitoring for the south coast MLPA. Steve reported that MLPA monitoring information from the central coast can be viewed on the Oceanspaces web site operated by Ocean Science Trust Monitoring Enterprise. For the south coast there are intertidal, subtidal, and seabird surveys on multiple islands from 12 different monitoring groups. Steve said that there was a peak abundance of larvae of market squid off Santa Cruz and Santa Barbara Islands in 2012 according to a processor survey. 2013 is expected to be a normal year for market squid.

Jack Engle reported that Multi-Agency Rocky Intertidal Network (MARINE) just finishing a 3rd year of a 5 year funding cycle. There are over 200 sites on the west coast but there have been cut backs. This year they are looking at goals, revising protocols to adapt to the changing times. Jack

reported that funding for his subtidal work from the Tatman Foundation is winding down and has just one more year of final funding. Jack will do virtually no field work this year and instead will concentrate on culminating projects and bringing it all together. This means the end of a 32 year data set of subtidal monitoring at Anacapa Island focusing on a sea urchin-dominated habitat at Survey Rock. Another project monitoring soft-bottom sand and eelgrass habitat at Frenchy's Cove since 1992 will also end. Jack reported that they have been monitoring invasive *Sargassum horneri* at the islands. It has now been found on Catalina, San Clemente, Santa Barbara, Anacapa, and Santa Cruz Islands. On the north side of Santa Cruz Island, it has expanded westward from Cavern Point to Orizaba Cove.

Dani Lipski announced that she has an ocean acidification research and monitoring inventory summary that was recently completed in response to recommendations made in the West Coast Sanctuaries Ocean Acidification Action Plan. Dani requested anyone to contact her if they have anything to add to the inventory. The intention is to understand what activities are occurring in and near sanctuaries and how sanctuaries can contribute or collaborate. Dani reported that a project to analyze opportunistic ROV surveys from the NOAA ship Okeanos Explorer shakedown cruise in 2011 is nearing completion and products will be available soon. Dani reminded researchers that she is the contact person for permits in the sanctuary and to contact her if you have upcoming field work in the sanctuary to see if a permit is required.

Dan Reed announced that he is the Principal Investigator of the Long Term Ecological Research program in the SB Channel (LTER) which looks at ocean and land processes that structure local near shore systems. This program focuses on kelp, monitoring, experiments, modeling, and synthetic studies. By partnering with groups like Dave Seigel's lab, and others they have a data set of kelp biomass since 1984. All LTER data are publically available. Dan said that they also have a project funded by BOEM to look at both multiple data sets of kelp forest ecology and examine impacts and resilience. Dan reported that LTER just got re-funded for a third cycle of funding.

David Kushner reported that Channel Islands National Park continues kelp forest, intertidal, and beach monitoring. Because of sequestration cuts there continues to be a vacant sea bird biologist position. The NPS Ocean and Coastal Resources had some funding for fine scale seafloor mapping looking at habitat and biological data. The areas attempted to be mapped were fifty meters on either side of some permanent transects. David mentioned he is a representative on the Lobster Advisory Committee.

Mark Steele stated that he has grad students working on a fish ecology project around Catalina Island.

Dan Robinette from PRBO reported on a MLPA funded seabird monitoring project he has conducted at Santa Cruz Island and at some sites on the mainland. They are conducting a census of the seabird population and examining how seabirds are using habitat inside and outside reserves. They are also examining roost utilization, foraging rates, reproduction, and diet. The long term goal is to use seabirds as indicator species for ecosystem health. As he develops his time series, he will look at PISCO data and oceanographic data. Dan said that they are in their second year of two year funding. Dan reported that PRBO is working with sanctuaries on

another project called Whale Aware, a web based tool for managers to see when whales are in the area. Dan reported that in June PRBO will be called Point Blue.

Kevin Lafferty reported that he has been working on the black abalone rickettsial pathogen and they have not been able to keep the abalone in culture pathogen free. Kevin reported that hatcheries along the coast are discharging pathogens from their culture facilities and this is a large scale problem. They are looking for funding to explore this problem further, including how far the pathogen can be distributed. Kevin said that he is also monitoring sea otters and developing a habitat model for southern California. He is also looking at how wave energy affects kelp forest communities.

Jenn Caselle reported that the PISCO monitoring program, which she runs, has been monitoring subtidal habitat at the islands since 1999. There are three main projects: community kelp forest monitoring surveys, which have recently included the southern CA MLPA baseline study, recruitment settlement, and oceanographic monitoring using current meters and temperature loggers. For the subtidal surveys, the recent funding has been for a two year baseline data collection project that is over this year. Secondly, the recruitment settlement surveys and invertebrate settlement surveys have been successful and have benefited from help and boat time from CDFW and the sanctuary. These projects have provided a good dataset on fish and other variables. Third, in partnership with the sanctuary, PISCO has maintained oceanographic instrumentation arrays including current meters and temperature loggers. The future of that is also unclear. The final project, this past summer, was a data collection period funded through BOEM. This project used data collection and modeling to determine local fish stocks, focused mainly on rockfish. Jenn has also worked on a project to populate a dataset for ecosystem modeling that the public can access and add to. Jenn reported that the R/V *Cormorant* is winterized at the dock, they have laid off the captain, and they are probably going to lose the boat which will affect several research programs at UCSB.

Steve Katz reported that he has been working on a paper for submission and has just finished statistics of sampling design for a textbook. Steve said that the work that he did with Megan McKenna on ocean acoustics and whale tagging work has resulted in two papers: one on acoustics in the channel, and one using the AIS data to make an assessment of the success of voluntary actions by mariners. Steve said that his work on a CAMEO grant has resulted in a few papers on assessments of community structure using time series analysis. This work provides quantitative estimates of stability, resilience, and the importance of species interactions vs. direct environmental effects. Steve is working with a post-doc in Seattle who is doing an analysis of moments of change using a regression technique. Steve announced that the website Hydra that houses the data on tagged fish movements, including the data from receivers in CINMS, has launched a new version.

Marine Reserves Progress Report Discussion:

Bob Warner stated that the 10 year anniversary of the state reserves at Channel Islands is in 2013 and although there is not a requirement from the Fish and Game Commission for a report as there was at the 5 year mark, there has been interest from some RAP and SAC members in reporting on progress to date. Bob opened the item up for discussion about whether marine

reserves research should be reported and in what venue or format. The group had a healthy discussion about the range of options, from a presentation to the public to a symposium, and what is expected from agencies and the community. Issues discussed included whether there is any expectation for information to be presented, the possibility of the Channel Islands to be included in the 5 year South Coast MLPA report, what resources and lead time would be needed for a robust review, the variety of audiences that would be interested, and the limited and dwindling number of research programs that address marine reserve effectiveness at the islands. The RAP evaluated two options: presentations by scientists at SAC meetings, and a larger comprehensive report or symposium. The RAP decided to present these questions and options to the SAC at the May 17th 2013 meeting. Bob Warner will draft the questions, circulate them for review by the RAP, and address the SAC. The goal is to seek input from agencies and constituents on their interest and possible resources for a larger review.

Public Comment:

Kristi Birney announced that she is the new Conservation Member on the Sanctuary Advisory Council taking over for Linda Krop who served for many years.

Paul Petrich stated that he would appreciate any new information about marine reserves. He gives many talks to the public and always incorporates messages about marine reserves. He said the public is very interested in this kind of information and if there is any new information, he would like to see it made available.

National Condition Report:

Steve Katz provided a presentation on the National Condition Report. Steve reminded the RAP that some members provided information for the Channel Islands condition report and the RAP also provided a review of the condition report several years ago. Steve explained that all 14 sites of the National Marine Sanctuary System have completed their condition report and the Office of National Marine Sanctuaries headquarters staff has compiled all the condition reports across the country into one executive-level report called the “National Condition Report”. Steve provided a summary of this national report, which is in draft form. Steve pointed out that some of the criticisms that the RAP provided for the Channel Islands report are not addressed in the national report, such as acknowledging the types of information used to determine ratings and the lack of a comprehensive monitoring program. Steve suggested that the RAP could provide comments to the report authors. The RAP discussed the national condition report, the purpose and audience of the report, and concerns about how it might be used. The RAP decided that Bob Warner would draft a letter to circulate to RAP members and then present to the SAC on May 17th 2013.

**Channel Islands National Marine Sanctuary
Sanctuary Advisory Council**

Research Activities Panel

**FINAL Key Meeting Outcomes
March 2, 2012
Marine Science Institute, UCSB**

Attendance:

Robert Warner	Kristi Birney	David Kushner	Michael Murray
Dave Siegel	Kevin Lafferty	Steve Katz	Chris Mobley
Jonna Engel	Mark Steele	Dani Lipski	
Jenn Caselle	Dan Reed	Sara Hutto	

Public attendance: Jim Marshall, Armand Kuris, Darcy Bradley.

CINMS Announcements:

Chris Mobley announced that the move-in date for the Channel Islands National Marine Sanctuary (CINMS) staff office on UCSB campus is now expected to be summer 2012. Chris reported that the sanctuary program continues to be faced with a very tight budget. Both Chris and Steve Katz discussed Shearwater use and funding. Chris reported that CINMS is working with procurement staff at UCSB to develop ways to transfer research funds for vessel use and they will continue to explore alternative pathways such as using the sanctuary foundation to help with this. Chris also spoke about the increase in illegal panga activity around the islands and urged everyone to keep a sharp look out for this activity when conducting research. Sanctuary staff are working with enforcement partners on the issue and will provide updates to the RAP and recommendations to boaters.

Research Activity Updates

Dave Siegel is continuing his work on the Plumes and Blooms project to understand ocean color variability and is providing support for the time series sampling of harmful algal blooms (the funding for which, provided by NSF, is up in August). Dave also asked members to consider areas for stable platforms in deep water for instrumentation used by NOAA satellites. Dave described a current project with Rachel Simons and Bruce Kendall on the mesoscale connectivity of larval stages across the Southern California Bight. Dave also mentioned the LTER glider that collects and transmits data in real time; it looks like a yellow torpedo and communicates with satellites via radio antenna.

Jenn Caselle reported that PISCO is getting smaller every year, with some monitoring programs continuing through 2012: community surveys in kelp forests to evaluate MPAs, fish larval recruitment, and physical oceanography modeling. Jenn is working on two manuscripts: hot spots for recruitment in the Channel Islands and the importance of monitoring recruitment to evaluate changes in MPAs. Jenn described a new project that is funded by BOEM to better understand fish-habitat relationships for stock assessment by using benthic habitat maps and

predictive modeling. Jenn also proposed that the RAP discuss the option for conducting a 10-year review in 2013 of the Channel Island MPAs using the data that is already collected. Various members offered comments that the state has no plans for a review, and that perhaps a workshop should be developed to discuss conducting a full synthesis with funding through a multi-agency project. David Kushner indicated that some data analysis has already occurred (sea cucumbers, for example). Bob Warner agreed that it would be good for the RAP to continue to discuss how they could support a 10-year review.

Kevin Lafferty is working on food web software modeling with Mark Carr on the CAMEO project. Kevin also discussed a project by a Lenihan student on the exposure of wild black abalone to pathogens found in the outflow from an abalone farm. Kevin is looking for funds to explore how far these pathogens may travel. Other projects include producing data papers from the kelp forest monitoring database at the northern Channel Islands and San Nicholas (funded by BOEM) and sea otter monitoring at Gaviota.

Dan Reed just submitted the proposal for the third round of the Santa Barbara Coastal (SBC) LTER monitoring funded by NSF. Funding comes in 6-year increments and has been provided for twelve years so far. The focus of this work is land-shore processes and the impact on kelp ecosystems. SBC LTER is also managing Steve Schroeters's larval settlement work with 3 sites in Santa Barbara and 1 at Anacapa. With NASA and NSF funding SBC LTER is using LANDSAT to get surface biomass of kelp. The kelp imaging has been ongoing since 1984. A new satellite will be launched in January 2013. Dave Siegel and Dan hope to secure funding to modify methods and calibration.

Jonna Engel received a grant to investigate the ecological value of beaches. The coastal commission receives many project proposals that would impact beaches so this funding will allow for the development of a model to determine their ecological value in order to mitigate for these projects. She is working with a coastal engineer and will be contracting ecologists and economists.

Kristi Birney is partnering with the sanctuary to host a Bren group project investigating private boat use of the Channel Islands using data from former CINMS Socioeconomic Coordinator Chris LaFranchi. She also described the current EDC project of investigating the impacts of wind and wave energy and producing a report to evaluate these impacts and existing regulations and policy. Kristi is looking for information on all aspects of ocean energy from technology to impacts and asked the RAP members to contact her if they have information or know of a good contact for this.

Mark Steele reported that his work is mainly along the coast and at Catalina but not currently within Channel Islands National Marine Sanctuary.

David Kushner reported for Dan Richards and Stephen Whitaker on current Channel Islands National Park intertidal monitoring trends including rockweed declines and black abalone population changes on the Channel Islands. The monitoring shows that San Nicholas and Santa Cruz have recent increases in black abalone. David also reported that their spring sampling is hampered by not receiving Shearwater days this year. David is working on a paper that

addresses the abalone populations on San Nicholas and the presence of a virus that inhibits expression of a deadly pathogen. David also reported that NPS will be hiring four scientific divers for kelp forest monitoring and that two pH loggers were recently installed at the park pier and at Prisoner's Cove. He also mentioned that the Channel Islands Symposium call for abstracts will be released soon. The symposium will be held October 23-25, 2012.

Steve Katz discussed current research projects including: the impact the recession had on ocean noise in the channel, high-res mapping of the Santa Cruz Basin and south of Santa Rosa and San Miguel by the NOAA ship Okeanos Explorer, time-series analysis of wind patterns and climate models, AIS tracking and whale distribution and a funding proposal to develop a science plan for coordinating deep sea coral activities. He also discussed current partnerships and papers in review.

Dani Lipski reported for **Natalie Senyk** that the Sanctuary Aerial Monitoring Spatial Analysis Program (SAMSAP) is suffering from limited funds and availability of contract aircraft and no NOAA aircraft (Twin Otter), so surveys are very limited in the last year and will be this year. However, Natalie is working on publishing data and creating products. Also, Natalie has worked on revising the SAMSAP software which is now being used in other sanctuaries around the country. Natalie is still working with the Navy on survey flights to help Navy understand shipping patterns in their range but they have been very limited because of the unavailability of access to the sea range, aircraft availability and weather. Natalie continues to work on the Automated Information System project to track shipping patterns, and she continues to work on tracking whale sightings through the marine mammal sightings of the volunteers.

Dani Lipski reported that in addition to many coordination activities and some field work she is involved in the planning process for the 3rd year of a 3 year internal NOAA funding process for deep sea coral field work on the west coast. Dani reported they are in the process of developing the west coast deep sea coral science plan for 2012 so we may see some more work in southern CA. Dani reported that they hope to complete an analysis of the ROV images from the Okeanos Explorer opportunistic cruise in 2011.

Public Comment

- Armand Kuris, disease ecologist at UCSB, requested that the Research Activities Panel support streamlining the California Department of Fish and Game scientific collecting permitting process for research and teaching in the MPAs. With a lead time of 6 months, current permitting prohibits many undergraduate and visiting scientists from conducting research inside state MPAs.
- Jim Marshall is an urchin diver and former SAC member; he requests that the RAP re-examine the recommendations that they made about post-hoc stratified sampling for abalone from 5-6 years ago.

CINMS Advisory Council Marine Reserves Research Speaker Series

Dani reported that the Sanctuary Advisory Council consistently ranks learning about marine reserve research highly in their annual work plan and to facilitate this, the Executive Committee of the council suggested inviting scientists conducting MPA research to speak at SAC meetings throughout the year. On behalf of the Executive Committee Dani requested suggestions for

speakers and invited anyone interested to present their work at a SAC meeting in 2012. The SAC meetings for the remainder of 2012 are:

- Friday March 16, 2012 (Ventura)
- Friday May 18, 2012 (Santa Barbara)
- Friday July 20, 2012 (Ventura)
- Friday September 21, 2012 (Santa Barbara)
- Friday November 16, 2012 (Ventura)

If you are interested in speaking to the SAC, please contact Dani.

CINMS Research Program Prioritization

Steve Katz presented to the RAP the process by which CINMS research staff has prioritized research needs. He described factors that influence the particular need (e.g., mandates, information gaps, community support) and factors that limit the ability to address needs (e.g., capacity, expertise, ability to make a unique contribution, risk). Steve described the steps in the ranking process and the outcomes. Steve reported that the highest priority research needs were identified as climate change and human dimensions and the lowest were invasive species and historical ecology. RAP members discussed the methods and merit of this prioritization, but overall the RAP was pleased by the effort that went into this analysis. The RAP discussed how they could help support this effort and decided to draft a letter of support for the prioritization project and research efforts of CINMS. The RAP continued discussion of funding sources and limitations to address all research needs. Dr. Warner concluded this discussion with a plan to put together a letter of approval and support of this research prioritization to be shared with all RAP members.

**Channel Islands National Marine Sanctuary
Sanctuary Advisory Council**

Research Activities Panel

**DRAFT Key Meeting Outcomes
February 11, 2011
Marine Science Institute, UCSB**

Attendance:

Mark Steele
Donna Schroeder
Carol Blanchette
David Kushner
Dan Richards
Jenn Caselle

Merit McCrea
Jack Engle
Michael Sheehy
Dave Siegel
Greg Helms
Steve Katz

Dani Lipski
Chris Mobley
Mike Murray
Kristen Hislop

Approximately four members of the public were in attendance.

CINMS Announcements:

Chris Mobley spoke about the Sanctuary budget, noting a 10 percent budget decrease, which will cause a decrease in *Shearwater* days at sea. Chris stressed the importance of creative approaches and collaboration in the future, both between users and by benefiting from volunteers. Chris also spoke about the new building, and potential for undergraduate and graduate volunteers as docents in the outreach center, and the potential for collaboration with researchers and staff.

Research Activity Updates:

Mark Steele reported that his research is mainly at Catalina, not in the sanctuary. Some of his work, however, is along the mainland coast looking at how artificial reefs sustain kelp.

Jack Engle reported that the Bureau of Ocean Energy, Management, Regulation, and Enforcement (BOEMRE) recently approved another five year contract for the Multi Agency Rocky Intertidal Network (MARINE). Jack reported he is receiving reduced funding from the Tatman Foundation for subtidal work. In 2011, a total of 18 days of subtidal field work are planned. He will be continuing subtidal monitoring at Survey Rock at Anacapa (a 29 year dataset), subtidal surveys for fish, abalone, *Sargassum horneri*, and eelgrass. Jack will continue his intertidal research along the coasts. Although some sites are struggling for support, there are some new sites added in areas designated as new MPAs or ASBSs.

Merit McCrea reported he is working with the Love lab, surveying offshore pinnacles to look at young of the year recruitment through fish counts (time counts on transects).

Steve Katz reported that planning for future projects is limited because of uncertainty in the budget. His ongoing projects include: blue whale behavioral and ecological response to shipping (using tags); nutrient subsidies at sea lion rookery and how it is being incorporated into the water column; climate nutrient interaction; water quality; partnering with PISCO to maintain moorings with temperature. Steve is also working on a project that involves tagging fish for movement profiles. Steve is writing a paper looking at MPA effects at different trophic levels, and how to get protection for all trophic levels. Steve is also collaborating with Lee Hanna on LTER.

Dani Lipski reported that she is currently working on planning and coordination of the NOAA Coral Reef Conservation Program's (CRCP) funding for deep sea coral research on the west coast. In 2010, CINMS was involved in a cruise on *McArthur II* to look at deep sea corals in the Footprint Marine Reserve at Anacapa Island. This research included ROV and AUV surveys for corals and water sampling. There are two more years of funding from CRCP but in 2011 the activities will not take place in CINMS.

Dani for Natalie Senyk: Natalie provided an update on the aerial survey program at CINMS. CINMS staff described the various partnerships we have for aerial surveys because they no longer have their own aircraft. CINMS is able to work on Navy, Coast Guard, and contract aircraft. Recently, CINMS has been partnering with the Navy to address concerns of both agencies, with flights every couple of weeks. These surveys are used to determine distribution of whales in the sea range. Also, the Southwest Fisheries Science Center is working with Ben Waltenberger and Natalie to update SAMSAP software so it can be used on various platforms and missions. The NOAA Twin Otter will be available in 2011 for California sanctuaries for about 115 hours. SAMSAP surveys are still ongoing to look at vessel use of the sanctuary but are less frequent than in previous years because of a limited ability to fund contract aircraft time.

Dave Siegel reported that funding for Plumes and Blooms, a project in place since 1996, was renewed by NASA. The research provides optical data sets and full hydrographic surveys. Because the *Shearwater* availability has changed, Dave has been working on a smaller boat which presents challenges. Dave reported on work mapping kelp biomass with Landsat. Dave also reported on an underwater glider he has acquired to sample oceanographic conditions.

Mike Sheehy reported that Santa Barbara Channelkeeper has begun watershed monitoring in Carpinteria, Ventura River, and Goleta to document rain events. Eelgrass surveys are occurring on the mainland, and they are hoping to continue monitoring of eelgrass beds at the islands.

Jenn Caselle reported that PISCO's funding has been dramatically reduced, with more "strings" attached. Funding will continue for ongoing subtidal monitoring, specifically to monitor MPAs. It looks as though PISCO will have funding through 2011, and will be looking for new funding opportunities after that. In the summer of 2011 she will be able to continue northern Channel Islands monitoring. Recruitment monitoring has expanded in the last couple years, adding invertebrate collections (commercially important crabs and urchins), and fish recruitment is in the 11th year and has resulted in two recent papers. However, funding for recruitment research has been cut. PISCO and CINMS are partnering on oceanographic data collection on moorings at the islands but funding for the data processing is at risk. Jenn noted that 2010 was a good year for rockfish recruitment.

Dan Richards announced that the park seabird monitoring program is hiring a biologist with funding from the Montrose program. They are conducting sandy beach monitoring once a year at Santa Rosa Island (sand crabs, beach hoppers), and would like more information on Pismo clams. In the rocky intertidal there is emphasis on revamping databases, catching up on reports, handbook revision, and continuation of regular monitoring in the fall. Funding is coming from NMFS for black abalone work, including movement, survival, and recruitment modules for black abalone (hope for more input for current settlement). The marine program has grown in the National Park Service over the last couple of years, with emphasis on climate change, discussion on coordination, and setting up pH monitoring.

Ian Tanaguchi reported on the progress on a San Miguel Islands red abalone fishery. The process is still ongoing with four options on the table. Decision making has been put on hold until a new risk assessment model can be developed. Ian described some of the process and research that has been done in the past including withering foot studies and translocation or outplanting studies for some species. The group also discussed where abalone recovery has been observed.

David Kushner reported that long term kelp forest monitoring has continued at 33 sites, which includes sites that were established to look at MPA analysis. Data is available to look at comparative analysis. David reported on his observations of *Sargassum horneri* and abalone at the islands, and on the park's work with PISCO on developing a new data map.

Carol Blanchette reported that PISCO funding has run out of funding for intertidal work, and thus intertidal work at Santa Cruz Island is in jeopardy of ending. However, they have a good dataset of intertidal recruitment since 1995 that they are using to look at climate signals. They are also working on ocean acidification as part of project with Libe Washburn and Gretchen Hoffman, measuring pH in nearshore and intertidal sites. Carol is working on the Outreach Center for Teaching Ocean Science (OCTOS) and they applied to the state for Proposition 84 money.

Donna Schroeder announced that BOEMRE has been directed to restructure, and at the end of the year will be BOEM (Bureau of Ocean Energy Management) and BSEE (Bureau of Safety and Environmental Enforcement). The West Coast Regional office in Camarillo is responsible for renewable energy strategies in the ocean, such as wind, tidal, and current. Donna announced that there is an oceanographer vacancy at BOEMRE and the job announcement can be found on USAjobs. They have recently hired a marine archaeologist/biologist who will be working on creating an inventory analysis of coastal and submerged resources, a georeference database on shipwrecks, looking for prehistoric site potential, and identifying a database of coastal historic properties. They also have a partnership with USGS for mapping OCS in the Santa Barbara Channel area, and looking at the southern sea otter range expansion and interaction with manmade structures. Additionally, partnerships with NPS, USGS and UCSC hope to make use of long term databases to understand human interaction with changes in kelp forests. There is also work on seabird, marine mammal abundance, and benthic communities up north. They are also continuing submersible sub surveys.

Research projects that inform MPA effectiveness

The participants identified the following activities that could inform MPA effectiveness if a ten –year review is held in 2013:

- a. PISCO research: fish surveys, oceanographic monitoring, recruitment studies
- b. Hunter Lenihan lab: MPA related and fisheries management work looking at grass rockfish and lobster.
- c. Landsat data can provide information for kelp biomass changes.
- d. SAMSAP can be analyzed to look at vessel patterns in response to MPA implementation.
- e. Jenny Dugan, sandy beach monitoring.
- f. Volunteer Citizen Science: Reef check and REEF. Both programs are active.
- g. Collaborative fisheries research. Currently not a lot going on but Peter Nielson will be distributing an RFP for collaborative research funding.

Discussion: The group also discusses some projects that had been designed for MPA analysis but are now not funded, such as the CDFG ROV surveys. Also, a participant commented that south coast monitoring funding is not divided equally across ecosystem features.

Public comment

- (Name unknown) There have been several deaths associated with MPA positioning in Guam related to boat strikes on freedivers.
- Paul Petrich asked about the condition of scallops and David responded that there is some temporal variation of scallops, with a greater abundance inside reserves. He doesn't think the population is under any threat. Jenn also says recruitment is variable, and scallops are spatially patchy.

CINMS Science Needs Assessments

Steve Katz stated that the research department at CINMS has obligations to a larger organization and also community expectations. At the same time they have limited resources and diverse needs. Steve presents some information and products that explain how CINMS manages those interests and prioritizes research. The condition report, management plan, and science needs assessments all shape the research departments priorities. Other drivers include: legal mandates (e.g. NMSA, ESA), community input, and ONMS headquarters initiatives. There are also a series of reporting requirements. CINMS is looking at all of these drivers and needs in a holistic way.

Dani Lipski continued by introducing the science needs assessment to the RAP. The science needs assessments were developed for all sanctuaries by site staff and they identify what information is needed to make management decisions at the site. CINMS science needs include: Climate Change, Habitat Characterization, Protected Species, Water Quality, Marine Zoning Monitoring, Deep Water Monitoring, Invasive Species, Human Dimensions, Informatics, Science-based Decision Support Protocols. Dani stated that the science needs assessments are meant to be shared with interested researchers, such as the RAP, so that the community knows what our management needs are. At the same time, it is important for CINMS to listen to the research community and understand where the gaps are. Science needs assessments are available at: <http://sanctuaries.noaa.gov/science/assessment/cinms.html>

Research Activities Panel

A WORKING GROUP OF THE
CHANNEL ISLANDS NATIONAL MARINE SANCTUARY ADVISORY COUNCIL

Monday November 23, 2009
9:00 am – 12:00 pm

Draft Meeting Notes

In Attendance:

Steve Katz (CINMS)
Bob Warner (UCSB, RAP Chair)
Chris Mobley (CINMS)
Dani Lipski (CINMS)
Mike Murray (CINMS)
Megan McKenna (SIO & Cascadia Res.)
John Ugoretz (US Navy)
Dan Reed (UCSB, LTER)
Jenn Caselle (UCSB PISCO)
Dave Seigel (UCSB, ICESS)
Jack Engle (UCSB)
Jessie Altstatt (Channel Keeper/Citizen Scientist)
Donna Schroeder (MMS)
Libe Washburn (UCSB)

Public: Paul Petrich, Leslie Abramson

1. **Introductions**

Bob introduced himself and reviewed the role of the RAP, reminding everyone that it is a public meeting and he will take public comment later on. Bob reviewed the agenda for the day.

Chris Mobley reviewed the budget outlook for 2010 and priorities for NOAA. Chris announced that he expected the budget to remain very tight and that he expects there will be challenges for continuing research and he hopes that the future will present more opportunities.

2. **CINMS Announcements**

Steve Katz provided a presentation on the Condition Report. Steve reviewed the purpose, process, and content of the report. The report is available at www.noaa.sanctuaries.gov. Steve summarized the RAP review of the report, including criticism of the type of data that was available to make assessments. The RAP review included recommendations for using the report

to set priorities and to support the development of decision support tools. Steve reviewed the survey that CINMS did to characterize the type of information. Steve described how we will use the Condition Report to help use prioritize research needs.

Dani told the group she can provide copies or links to the report and expresses gratitude to those that contributed.

Bob Warner stated that he was initially skeptical of the report but that he was pleased with the analysis of the report that Steve had presented.

A brief discussion followed focused on the data used and development of the report.

3. CINMS Operating Plan 2010

Steve reviewed the days-at-sea completed in 2009. He reviewed the process for requesting time for 2010. Steve listed these priorities for allocating boat time in 2010:

- 1) Does the activity maintain continuity of a time series research project?
 - In evaluating the costs of research, the lost opportunity costs of gaps in a time series are significant. The costs for re-starting a project at the conclusion of a hiatus are high, but the costs of lost time series data that can not be recovered at a later date should funding be renewed is infinite.
- 2) Does the activity addresses a core sanctuary need as defined in the CINMS research department foundation documents that include:
 - CINMS Management Plan
 - CINMS Condition Report
 - CINMS Research Needs Assessment.
- 3) Does the activity occur inside vs. outside sanctuary?
 - The CINMS receives base funds to manage this domain within its borders so projects occurring within the boundaries of CINMS will receive priority. Having said that, recognition of the connectedness of marine resources-e.g. propagation of sound, current-based transport of larvae and pollutants- makes it of interest to support research that is in areas adjacent to the CINMS domain.
- 4) Does the project have funds available to pay your own way?
 - The limit to operations in 2010 is believed to be based on available funds rather than an upper limit to safe operations of the r/v Shearwater. Therefore, if funds are available, the vessel can be made available for days at sea beyond what CINMS can cover with base operations.
- 5) Does the project have access to an alternate vessel?
 - In an effort to service the needs of the research community as a whole – rather than single partnerships one at a time – we will factor the availability of alternate vessels, exploitation of which could maximize the total amount of work done within CINMS. For example, in past years it has proven more cost effective to provide funds to charter other vessels, rather than days at sea aboard Shearwater in those cases where alternate vessels were available. More recently, limited funding forces us to prioritize maximizing the total project days at sea over

servicing a partnership with days aboard Shearwater – where the CINMS contribution to the partnership was days at sea for a partner who had access to other vessels.

- 6) Is this research activity near an end point that days aboard Shearwater will allow to reach completion?
 - If there are projects that otherwise might rate low priority, but with a small number of vessel days can achieve completion, then we will prioritize those projects somewhat higher.

4. Public Comments

No Comment

5. Roundtable

PISCO - Jenn Caselle announced that PISCO took a significant hit. They will have funding for 2 more years at 1/3 level and money has strings attached that the work must relate to MLPA (new MPAs as a result of MLPA process). Historically have three priorities: physical oceanography (instruments on moorings), recruitment (SMURF modules on moorings), subtidal community (SCUBA surveys). In 2010, PISCO will only be able to pursue subtidal community research, no recruitment research and reduced oceanography. For oceanography, PISCO will be able retrieve equipment and download data, but not complete analysis. For subtidal communities, they will reduce sites from 40 to 10 sites and will shift effort to the mainland, about 15-20 sites. SBI has been dropped already. SRI and SCI that have intermittent data will be dropped. Areas with longer time series will be prioritized. Need from sanctuary: Shearwater for 2 projects (oceanography, subtidal community surveys). The R/V Garibaldi (DFG vessel) is a potential alternative vessel, but needs 40K repair, but they do have operating money.

Plumes & Blooms - Dave Siegel has 1.5 years of funding in place. Next year they will write renewal proposal. That call will be 20% less. Last week's comparison study was successful. They support a variety of other projects during plumes and blooms cruise, including a domoic acid study, and some Ocean Acidification (OA) sampling. Need from sanctuary: need ship time. If SW not available: will end program. Also, they are developing techniques to map kelp from satellite imagery. They will have a complete 20 year dataset by the end of next year.

Coastal Kelp Forrest LTER - Dan Reed does most of his work on the mainland with 2 sites on SCI – the sites are near Hazards and are Russ Schmidt and Sally Holbrook's old sites. This constitutes a 26-28 year dataset. The program consists of monthly water sampling, creek sampling, reef community surveys at 9 sites from Hollister to Carpinteria community monitoring. Dan also reported that they used to do UNOLS cruises across the channel but do not do them any longer. He has no plans to change LTER moorings.

Other moorings have been reconfigured to retrieve less frequently and to sample at a lower resolution.

PISCO & Physical Oceanography - Libe Washburn reported on 4 moorings in Channel and real time sampling on Stearn's Wharf, domoic acid sampling from Gaviota, Stearns, Goleta. Surface currents with high freq radar. He would like SW for antennae calibrations. Funding by CCC and NOAA. He hopes to keep 4 moorings (current meters) going because El Nino is expected this year, but he is concerned about the ability to keep these going. Libe has an overview paper that summarizes findings in preparation. He would like to establish sites for OA. For surface currents work, he hopes to get through 2010.

Scripps Institution of Oceanography & Cascadia Research - Megan McKenna reported that for the long term acoustic monitoring they are scaling back in 2010. They will pull out 2 sites and leave 2 long term sites of HARPs. They need Shearwater for 2 days 4 times a year for 8 days total. They have funding from the Navy. If Shearwater days are not available, these acoustic monitors will be removed from the CINMS vicinity.

Megan reported that they are continuing to monitor AIS. They are also continuing to look at whale distribution with John Calambokidis: surveying shipping lanes, sonar data, and working with tagging boat. This past year, they were able to work with SW and tagged 3 whales within 200m of an oncoming ship.

Minerals Management Service - Donna Schroeder announced that MMS has allocated money for projects adjacent to the sanctuary rather than inside. MMS is paying USGS to complete mapping in the west channel. At that point all fed waters would be mapped in the channel. In 2011 allocated funding for deep water surveys using the Delta sub, primarily around the platforms. Then will fund synthesis of that work. MMS will survey reference sites when time allows - Footprint and Point Conception. Anacapa Passage Reef is another high priority area that will be funded for the next 2 years. MMS is continuing to fund MARINE for 5 more years. They are partnering with USGS to tag otters because of vulnerability to oil spills. They are seen around natural seeps and do not appear to be harmed so tagging would help find out how they are avoiding oiling. MMS is also funding chemical signatures of natural seeps and tar. This could provide some information about oceanography. For example some tar found at Monterey Bay came from Santa Barbara Channel. MMS is partnering with USGS to look at habitat mapping in shallower waters and geology, and rockfish recruitment. Sampling would occur in 2011. In 2010 they plan to organize geology and habitat mapping. Projects not dependent on sanctuary vessel, but could be opportunities to leverage resources. They have an ongoing project on water quality looking at heavy metals in fish tissue. In the past, they looked at platforms and reference sites, one of which was at SCI (Coches Point). They sampled for 40 different metals. Kelp rockfish had high levels of heavy metal. It is possible that it was a result of geology at sampling site. The sampling was unable to detect PAHs in fish but they did find some near natural seeps. In the future, they are considering using passive samplers rather than looking at fish.

UCSB research by Jack Engle – Subtidal work funded through Tatman and they have had cutbacks. They will decide in mid December what their level of support can be (none to little). But they do have ship time on Cormorant. Survey rock site at ACI is a key site – 27 years (and data that goes even further back from Mark Neushell). Site is urchin dominated, permanent transects. Jack reported that it is the highest priority to keep that going and would be a 3-5 day effort to complete that. If he could continue that site, it could be combined with eelgrass monitoring, so they could continue to monitor eelgrass if ACI work is possible. Jack is also tracking Sargassum horneri. There is a 3 day cruise on Cormorant coming up to look at ACI and SCI for Sargassum. Jack would like to do more on invasive seaweed and has some flyers and datasheets to distribute. This could be an opportunity to use long term datasets, and to monitor the spread.

Jack also reported that Southern California Eelgrass Monitoring Regional Program coordinated by SCCWRP and focused mainly on mainland but does include islands. The report is available in draft now but should be final by end of year. The project is looking for ways to standardize sampling.

Jack has applied for NFWF funding from National MPA program to re-survey ASBS sites at the islands. This is a 1 year study that would begin in May and would be a broader level reconnaissance for species lists. He expects to cover this project with Cormorant ship time along with other partners. Need from CINMS: Ship time for eelgrass and Sargassum, if Cormorant is not available. Responding to comments by Donna Schroeder, Jack reported that MARINE has been working with NOAA mussel watch – 3 sites in sanctuary. 2010 is next cycle of sampling (every 2 years). Sampling may be revised because of changing priorities, including sampling for emerging contaminants.

Channel Keeper - Jessie Altstatt – Channelkeeper had 8 days of time for eelgrass monitoring and mapping in 2009. As a citizen scientist, she will be working with Jack Engle to try to continue work on Cormorant or Shearwater. She anticipates producing a report on eelgrass work in the next few months.

US Navy - John Ugoretz – DFG did not fund 2009 kelp overflights but Navy is interested in funding San Nicolas and San Clemente through same contractor. Kelp mapping of the whole SoCal bight is 40K, San Nicolas only is 4K. DFG is not likely to fund it next year either. [Dan Reed: Lansat data has a good correlation and is done 6x a year.] At San Nicolas, they are likely to start MARINE-like sampling in the intertidal. John has contracted Peter Raimondi to do 1 marine biodiversity site. They expect to do more sampling for ASBS. His office is doing a revised management plan to include ocean out to shallow depth, probably including shallow subtidal monitoring. John would like to have consistent sampling with PISCO or CRANE. They Navy does not have vessel assets to offer. There were diverse discussions about other sampling efforts at navy islands.

Steve K reports on some people who could not be here:

TNC & MARE - Dirk Rosen will not be doing the ROV project at CINMS this year due to DFG concentrating efforts on the mainland and TNC funding. However, there is possible funding available for symposium on deep water technology in late 2010.

CINMS - Steve Katz reports on CINMS activities:

- Nutrient inputs at SBI from Sea Lion Rookery.
 - Animal movement projects
Both are funded for activities, but not vessel time and both are on hold until further notice.

 - Whale tagging project with Megan and John Calambokidis. Part of project examines ship strike issue with funding from NMFS. Project continues until next year with small amount of funding.
- Official plan, as per CINMS annual operations plan, is to not have field operations next year.

Question from the public about red abalone project – John Ugoretz responds that they did a smaller survey this year. There was some discussion about abalone advisory group activity and proposed plans. More detailed discussion of alternatives was beyond the scope of the RAP at this time.

6. Closing discussions

Bob said the best opportunity for planning is to discuss opportunities for collaboration and sharing assets. The expectations for collaboration are based on the recognition of assets going to the islands. There is a presumption that individuals involved in work out there are working to common goals, and this may or may not be true. There are good reasons why people will want to send divers to places that don't service the research needs of their neighbors. The opportunities for collaboration, however, are based on the ability of resources to do multiple duties. This also turns out to be more challenging than simply piling dive teams on the Shearwater at the same time as a CTD rosette. Whether economies can be improved by coordinating research activities may or may not be possible, but for certain a prerequisite is knowledge of what others are doing. This was the point of the roundtable discussion at this meeting of the RAP, and CINMS will maintain this information and build on it as opportunities present themselves.

Research Activities Panel

A WORKING GROUP OF THE
CHANNEL ISLANDS NATIONAL MARINE SANCTUARY ADVISORY COUNCIL

meeting jointly with the

Channel Islands Marine Science Committee

Monday May 12, 2008

9:00 am – 1:00 pm

Meeting minutes for SAC

1. Round table introductions and brief updates

Research/activity updates from John Ugoretz (CFG), Kevin Lafferty (USGS), Fred Piltz (MMS), Jack Engle (MSI), Dave Siegel (UCSB), Carol Blanchette MSI/PISCO Jenn Caselle, MSI/PISCO, and Donna Schroeder (MMS).

2. CINMS announcements by CINMS staff (Dani Lipski, Research Specialist, and Steve Katz, Research Coordinator).

- Budget – we did not receive a budget until March 2008, 5 months into the fiscal year. The budget we did receive was about the same as in previous years. For the research department this left us with about a few thousand dollars, which have already been allocated to research projects.
 - Staff updates: Dr. Steve Katz is the new Research Coordinator and Unit Dive Supervisor.
 - Two contract staff members became permanent federal employees in 2008: Natalie Senyk (Physical Scientist), Dani Lipski (Research Specialist)
- Research Vessel Updates
 - Shearwater is scheduled for a total of about 200 days this year and has had a full schedule since February; Matt Davis, Vessel Operations Coordinator, has replaced Kate Peet on the NOAA Corp billet.
 - New Vessel – we are expecting a new vessel, a 41 foot catamaran designed for day trips and about 12 passengers. First trips probably will occur Fall 2008.
 - Aircraft Updates
 - NOAA Lake Seawolf aircraft has been reassigned and is no longer in Santa Barbara
 - We have been contracting a Partnavia Observer from Aspen Helicopters for SAMSAP flights

3. Ocean Acidification

- Shiva Polefka was unable to attend the meeting to present the draft Ocean Acidification Report by the Conservation Working Group so the group did not discuss this item. Review of the document by the RAP may occur at a later date.
- Steve Katz provided an update on the Sanctuary's Green Seas, Blue Communities project, which was a challenge from Office of National Marine Sanctuaries headquarter to the Sanctuary Advisory Councils around the country to come up with ways to raise awareness about environmental issues.

A few CINMS Advisory Council members worked with Steve to develop a carbon budget for the sanctuary to understand the carbon flow into and out of the sanctuary. This project asks the following questions:

- What are the sources of human inputs of carbon to CINMS?
- What are their magnitudes?
- What are the long term trends?
- Are management practices (such as changing fuel use or limiting activities) effective?
- The project was not funded; however, the group intends to move forward with some preliminary data collection and analysis.

4. Black Abalone Extinction Risk Review

Melissa Neuman, NMFS member to the SAC, presented information on the Draft Status Review Report at the last SAC meeting in March 2008. The SAC had many questions about the extinction risk model and approved a motion for the RAP to provide review and comments of the technical aspects of the report.

Dr. Barb Taylor from Southwest Fisheries Science Center provided an informative presentation on the development of the model (*presentation available on request from CINMS staff*).

The RAP had the following comments:

- The label for the extinction risk assessment – “population modeling” – is misleading. It is not a population model and should be called an “expert assessment of risk” or similar label.
- It is not clear how extinction risk would change if the time horizon changed, from 30 years to 20 years for example.
- This risk assessment is based entirely on estimated probabilities of extinction due to withering syndrome. Given that, it is not clear that the approach taken here is the best practice. As stated, this is a problem in disease ecology, being evaluated by people who may not be experts in this field. There is much new literature that discusses how infectious disease can drive extinctions, and thus there is need for this assessment to be peer reviewed by epidemiologists.
- The wording obscures the fact that the stated extinction risk is based on an average derived from a poll, and not a calculated probability.

Dr. Taylor appreciated the group’s review and suggested that there would be an opportunity for more involved population models in the recovery plan, where they would perhaps be more relevant. She states that the current model, while not perfect, may provide enough information for the proposal to list the species as Endangered.

- Bob Warner will present a summary of RAP comments on this issue to the SAC at the 30 May meeting. If approved, they will then convey those comments to the Black Abalone risk assessment team.

5. Blue Whale Subcommittee

Steve Katz provided an update on the Sanctuary Advisory Council’s Subcommittee on Large Cetaceans and Shipping Draft Emergency Response Plan and the accompanying research plan. (*Presentation available from CINMS staff on request*) The emergency response plan is based on oil spill response plans and designates which agencies and individuals will be involved in different phases. The more ambitious research plan, which would result in an integrated ecosystem assessment and adaptive management, was not funded.

6. Bight '08

Steve Katz provided an update on the planning for this project, a collaborative regional monitoring program that occurs every five years and involves a consortium of 65 local agencies that work together.

There are five program areas for Bight '08

- Coastal ecology

- Water quality

- Rocky subtidal (untrawlable habitat)

- Areas of Special Biological Significance

- Shoreline microbiology

Each program area has 3 or 4 main questions that the study will try to address, and the rocky subtidal data will be integrated into monitoring plans for the upcoming MLPA process in Southern California. CINMS, PISCO, and CINP are participating.

7. California Draft Coastal Assistance Plan

Jenn Caselle presented this agenda item. The draft plan has just been released and is open to public comment. The plan provides funds to coastal communities that have offshore oil and gas operations. The funds are used for a wide variety of activities varying from beach access enhancement to research and this plan proposes how the funds will be used. RAP members will review the plan with special attention paid to research areas. For example, the proposed activities for MPA monitoring are limited to ROV surveys.

8. RAP membership

The group discussed whether and how RAP membership should be updated or changed. RAP will look at the roster and provide their ideas or nominations for new members.

Joint Meeting of the
**Channel Islands National Marine Sanctuary
Research Activities Panel
and the
Channel Islands Marine Science Committee**

Thursday, January 19, 2006

Marine Science Institute,
University of California, Santa Barbara

DRAFT MEETING NOTES

RAP/CINMS members in attendance:

Mary Elaine Dunaway, MMS/MARINE
Jessie Alstatt, SBCK
Dave Siegel, UCSB
Donna Schroeder, UCSB, CIMSF
Jack Engle, UCSB
Mary Bergen, CDFG
Tom McCormick, Channel Islands Marine Resource Institute
David Kushner, CINP
Greg Sanders, F&W but moved to MMS
Dan Richards, CINP
Bob Warner, UCSB
Christy Semmens, REEF, RAP
Melissa Neuman, NOAA/NMFS
Greg Helms, Ocean Conservancy
Ian Tanaguchi, CDFG
Pete Haaker, CDFG
Satie Airame, PISCO, MSI, UCSB
Kevin Lafferty, USGS
James Lindholm, Pflieger Institute of Environmental Research (PIER)
Gail Osherenko, MSI, UCSB
Hunter Lenihan - UCSB

Other Observers present:

Bernardo Bruitman, post-doc, NCEAS, UCSB
Carol Blanchette, PISCO, MSI, UCSB
Paul Petrich, Jr, CINCorp (Naturalist Corp)
Ron Velarde, City of San Diego, CIMSC
Christopher Voss, CAA Calif Abalone Assoc.
Mike Murray, CINMS
Dani Lipski, CINMS

Michael Smith, Gray Whales Count (note – wants to be added to RAP list and considered for membership)

Jim Marshall, CAA, Sea Urchin Fishery

Daryl Austin, CINMS intern

Stephanie Chan – UCSB student

Meeting highlights:

- **There is a large amount of research being conducted at the Islands, but funding for long-term projects (such as monitoring of reserves) appears to be in short supply.**
- **To complete the required State of the Sanctuary Report, RAP/CIMSC members will be contacted to help identify experts to be consulted on specific issues. Sanctuary staff will prepare the report based on input from experts, and then RAP will review and advise on the draft report.**
- **In consultation with RAP/CIMSC members via email and phone, Sanctuary staff will produce documents summarizing current monitoring activity in the CINMS. These documents will form the basis for judgment as to the adequacy and coverage of the present monitoring program.**
- **There was general consensus that the RAP and the CIMSC will stay as separate groups but possibly hold joint meetings from time to time.**

Detailed notes:

Introductions

Todd's introduction

Sanctuary announcements:

Chris Mobley is out of town and could not be here today although he would have liked to. CINMS had a 16% budget decrease in this fiscal year and the NMSP had a 30% budget cut. However, reserves and reserve monitoring are still a top priority; we will maintain full focus and support. There is a misperception right now that there is not monitoring going on and it is important to show the results and quantify the efficacy of reserves. It is our job to make sure the results are being communicated and the story is being told. It would be a tragedy to lose the reserves to a misconception that monitoring has not happened

Regarding the possibility of the RAP and CIMSC merging, I have no preference on that but consider that the RAP is part of the SAC and as such meetings need to be public (compliant with Federal Advisory Committee Act).

Regarding the Sanctuary Condition Report: It is a broad brush approach that has been determined is needed to be consistent at all Sanctuaries. It may be provided to political folks and the public as a research outreach tool.

The Research Coordinator position will be open soon.

Each member has an opportunity to introduce themselves, summarize research in the past year and describe planned efforts for 2006, including funding status.

Dan Richards, chair of Channel Islands Marine Science Committee starts off with some background on his group. This is the 59th meeting of CIMSC which usually meets quarterly but has become less frequent. The group is an informal, small meeting of people doing research at islands. Past discussions and efforts have been to formalize/standardize monitoring efforts, discuss abalone and efforts to recover white and black abalone. Offers that it might be a good idea to keep meetings of RAP and CINMS separate.

Dan continues with his research summary: Rocky intertidal monitoring conducted at 22 sites. Just hired a new research assistant. Continue to monitor black abalone and owl limpets in fixed photo plots. Limpets have been declining but seem to be stabilizing. Although they are fairly low in some plots, they are higher in others. Have seen individuals over 100mm at Santa Rosa Islands and have seen recruitment at sites that had low recruitment before. Black abalone abundance has been down but appears stabilized, and no withering syndrome has been seen. Have seen just a few individual black abalone but those seen had high biomass (over 170mm). Possibility that they have been released from competition? However, no juveniles were seen.

Greg Sanders – Formerly of Fish and Wildlife and now with MMS. At F&W worked on the southern sea otter recovery project where otters were translocated to San Nicholas Island. They were not successful establishing otters at San Nicholas and now they are evaluating the program. A comment period ends March 6th. The proposed action is to abandon translocation, allow otters to move where they will. There is a prediction that otters will expand to SB along coast and reach carrying capacity in 10 years. Researchers monitoring sites should look for otters. Concern about how sea otter recovery will affect abalone was discussed.

Dave Kushner – National Park Service Kelp Forest Monitoring – a long term data set on ecologically based monitoring. Currently have 32 monitoring sites but after 2007 program will discontinue unless more money becomes available. Funding has dwindled and program is now solely on soft money. Concerns about monitoring continuation expressed.

Tom McCormick – Channel Islands Marine Resource Institute, white abalone project. Collection began by Fish and Game in 2000, first spawn at UCSB. Now have 5 families with several thousands of individuals. There is a research need for basic life history knowledge and basic research on abalone hatchery techniques. Experiments have been done with low temperatures, food preferences and behavior. Plan to place animals in wild next year; currently animals are 60 mm and they need to be 100mm to place in field. Recruitment devices are currently out in field. Spent four days checking sites for abalone and on the last trip, found 1 abalone.

Mary Bergen – California Department of Fish and Game, reserves monitoring. Last year one-time money from the state was used to monitor from Monterey to San Diego (including Channel Islands) using the CRANE protocol. Consulting firm Tenera has been contracted for data analysis and the data should be available to PIs soon. Eventually the data will be on website for public. In 2005, CDFG also helped PISCO by providing divers for reserves monitoring. However, budget for 2006 remains unclear. Plan to continue with ROV surveys and to develop protocols to compare data to submersible surveys. In 2004, surveyed with ROV at 4 sites and in 2005 at 10 sites (5 in reserves, 5 outside). In 2006, hope to do 10 sites again. Acknowledge support of Sanctuary for use of RV Shearwater.

Jack Engle – UCSB, subtidal and intertidal monitoring. Hands out an overall summary of 2005 work at Channel Islands. Monitoring work, including long-term work at permanent transects is supported by a private foundation and has been ongoing for many years. Overall trends: seeing a recovery of kelp after the warming cycle (kelp appears almost as good as it was in the 1970s at some islands), however, urchin dominated sites still exist at some islands. Water temperatures have been up and down and there has been storm activity causing fluctuations in kelp. However, they do see recovering urchin barrens and also see brittle star dominated sites. See improvements in kelp forest health moving from the west to east along the islands with urchin dominated sites at intermediate islands. Also work at Santa Catalina Islands where they monitor the invasive Japanese kelp *Undaria*. This is the only population at islands but they have seen it spread 1 mile. The population tends to peak in the spring. It was first discovered on soft bottom habitat deep water and has since spread to shallow rocky habitat. *Undaria* requires protected waters and other areas have not been extensively searched. Engle advises everyone to watch for it in protected waters as it is only a matter of time before it spreads.

Discussion of seastar disease: Saw the first outbreak in 1978 and have seen it off and on since then. It appears to be associated with warmer waters but it has not received adequate research. First populations affected were at Catalina and these populations have still not fully recovered. Intertidal sites near Scripps have recovered and populations at northern islands have seen some recovery. Affects *Pisaster ochraceus* and may affect other echinoderms.

They have been documenting records of new species since the El Nino such as treefish, pearl oysters, others (?) and these may now be part of ecosystem.

Monitoring eelgrass populations: see new areas close to existing beds indicating bed is spreading. Once a year monitor transplanted site at Frenchy's cove and have found 15 patches further east from Frenchy's (the original site was lost to urchins). Always on the lookout for abalone when monitoring but do not see often. Red abalone is common at San Miguel in dense kelp but concern that harvest would eliminate all legal sized individuals.

There is a biotechnology company in late stage testing for development of a cancer vaccine using blood hemolymph from the giant keyhole limpet, *Megathura*. Very concerned about the emerging fishery that may develop as a result of this demand for this resource. Suggests that it would better to examine and regulate such a fishery early on rather than wait for fishery to decimate populations. Natural history information on

keyhole limpets is non-existent and suggests that any information would be useful. John Ugoretz (on conference call) comments that keyhole limpet fishery concern has been raised to Fish and Game commission. Department of F&G will watch the emerging fishery closely. Although it is not an issue now it has the potential to become an issue if the pharmaceutical product is approved. F&G has closely watched landings which currently match what the biotech companies are using and these landings are generally coming in southern California sites under a scientific collecting permit. Jim Marshall, local fisherman present, is not aware of people collecting.

Rocky intertidal (hands out summary sheet): Network has total of 80 sites. Includes surveys at islands by CIMP and goes back to the 1980s for some sites while other sites added more recently. Most sites were sampled last year but face funding problems. Eleven sites were unfunded for 2006 and will be dropped. At Catalina, 2 sites were unfunded. There is a protocol handbook for core monitoring, and data exist in an Access database. Much of these data are accessible including description of many sites, numbers, and who is monitoring which sites and for how long. Received a grant from CA DFG for quick response to oil spill. Developing a photo database which will eventually be available on line.

Donna Schroeder – UCSB – Studies effects that oil platforms have on fish populations, particularly rockfish. Survey for recruit of rockfish at Anacapa and Santa Cruz Islands. Conducted CRANE surveys in 2004 and continued fish monitoring using CRANE methods at Santa Rosa Islands (Johnson's Lee, Cluster Point) in 2005.

In 2005, worked with F&G to calibrate ROV surveys in deeper water by doing surveys using the submersible Delta and are now almost finished analyzing videos. Purpose is not whether one method, ROV or Delta surveys, is better than the other but rather each method reinforces the other and allows coverage of a larger area for deep water monitoring. Documents will be made public when complete. Received 20k for that pilot project and will need much, much more to do bigger project. Delta surveys were also done at the Footprint (proposed MPA site). As a side note, we are seeing giant kelp in all sorts of areas that you would not expect it and seeing shifts in its range. This species provides a good link between shallow and deep species. Have been using habitat maps developed by many others to ground truth them. Also involved with the Sanctuary Foundation's Collaborative Marine Research Program. CMRP was designed for stakeholders to be involved with research in the Sanctuary; have been focused lately on marine reserves. Funded 4 projects recently: 1) Recruitment surveys of urchins and other large invertebrates; 2) David Bacon with Carrie Culver to engage anglers in a kelp bass tagging study at Gull Island area; 3) Outreach project to survey scientists on their interests in working with fishermen; 4) Outreach program at Goleta Pier regarding fishing practices (catch and release) and MPAs.

Mary Bergen on ROV survey funding: future is uncertain; there is a pending NFWF grant.

Donna on MSI Delta survey funding: should be OK because of oil industry and low rockfish populations, perhaps for the next few years OK.

Dave Siegel – UCSB Plumes and Blooms Project, running since 1996. This project attempts to get a picture of regional water quality. In the past, took samples every 3 weeks but now down to 10 days/year on the Shearwater due to increased demand for vessel time by research community. Funding is secure from NASA into 2007. Linked closely to Santa Barbara LTER project. Ocean color datasets - working at a km scale and it changes every few days. Secondly, a center has been set up at UCSB to allow for use of “SPOT”, a high resolution French satellite providing images. These satellites provide images of kelp coverage of the four northern Channel Islands. Mary Bergen asked if this could be shared with DFG, but Dave is not sure because of the French company’s proprietary interests. Dave leads a biocomplexity project focused on looking at how uncertainty (physical, biological, etc.) influences how fishermen behave. Currently in year 2 of 5; NSF funded. Idea is to look at management options.

Jessie Altstatt – Santa Barbara Channel Keepers. Eelgrass transplant area at Frenchy’s Cove is doing well over past few years and starting to spread. Found a new patch a few hundreds yards from their site. SBCK has also worked on a small transplant site at Scorpion, and at Prisoner’s Cove.

Mary Elaine Dunaway - Minerals Management Service (MMS). Looks like all of the region’s monitoring projects will remain funded for now, but the research budget is hurting because of costs associated with the opening of a new Gulf Coast MMS office. MMS funds MARINE sites -- 24 this year. Don’t really have funding for seven sites this year, but are still looking. Want to produce a State of the Rocky Intertidal report, starting with the SB Channel. MMS has been working to do multi-beam mapping in the eastern SB channel with USGS. They are scanning southern California Bight coastline slides into digital files from 1979-80. Working with Pflieger Institute to transplant a small number of V-tagged rockfish (vermillion, green spotted) from platforms into reserves, to see if they stay. Ann Bull at MMS, and Chris Lowe are the MMS contacts and are working with the Sanctuary on this too. New program coming on line includes a new grant program for coastal work; intent is that it be research-based and monitoring (a murmur through the crowd) but no further details yet. Also an alternate energy research grant program will come on line (e.g., wind, wave, etc.).

Ron Velarde - City of San Diego. Monitors sewage outfall off the city. A few years ago this type of monitoring expanded to all of Southern California bight. 1994 was the first year for this project with sampling from Pt. Conception to Mexican border in depths of 10 to 200 m. Project looked at benthic infauna. In 1998, for the Bight 98 project, the Channel Islands were added. Survey was dropped back to 10-120m range. In 2003 there was Bight03, which also included Channel Islands, and also looked at even deeper waters. Data analysis continues. 1998 report is available. Looking ahead there is talk about including rocky intertidal and sandy beach areas. Want to do a more expanded survey, will need more cooperation. Dan Richards commented that near shore/intertidal surveys would be important for understanding water quality.

Hunter Lenihan – UCSB, Ecologist with the Bren School. Hunter is working on a collaborative research program centered on the spiny lobster fishery. This would be a

monitoring program for inside and outside Channel Islands reserves, with tagging. Program will look at socioeconomic factors of reserves, such as how the reserves can improve fishery management and will look at development of quantitative adaptive management model. Fishing industry interested in using reserves as part of a larger regional fishery management approach. Received a grant for almost \$500,000 for this collaborative interdisciplinary program.

James Lindholm – Pflieger Institute of Environmental Research (PIER) - acoustic telemetry. 102 sites from Pt. Conception to Catalina focused on northern Channel Islands. Black sea bass tagged since 2001, white sea bass tagged since 2003, and kelp bass and CA sheephead tagged since 2004. Array is designed to track movement across reserve boundaries at Anacapa. The acoustic array is funded primarily by the George T. Pflieger Foundation, with some support from the NMSP in 2004 and 2005, and is available for others to use. Future funding is not guaranteed. Existing acoustic tags will transmit to 2008. PIER working with sanctuary and will publish data. Project examines how vagility varies across species range and movement in and out of reserves. Preliminary results show spill into, but not out of, reserve for sheephead at Anacapa. James loses lots of expensive equipment (about \$2k each) so if you see any gear floating around marked “PIER,” call James! PIER is considering upgrading the array at Anacapa to a cabled system. There has been a cabled array proposed by UCSB which would allow data to transmit real time.

Kevin Lafferty - USGS – Starting project on Black abalone which asks 2 questions: 1. Are the abalone that are still out there resistant to withering disease? Will expose individuals to disease and track status. 2. Test ideas of spawning.

Satie Airame – UCSB/PISCO - Acknowledges value of discussion of monitoring activities from marine policy perspective and defers discussion of PISCO activities to Carol Blanchette.

Carol Blanchette – UCSB/PISCO - linking bio/eco/ocean patterns to larval dispersal. Have deployed oceanographic moorings: ADCP moorings measure 3-D movement of water and CODAR arrays measure surface currents. Taking CODAR technician out next week to set up CODAR site at islands. First time surface currents will be mapped out islands. Collaborate with subtidal research at CINP and others with rocky intertidal monitoring. Monitor rocky intertidal sites at all park sites at islands, repeating on semi-annual basis. Also monitor larval settlement at islands and recently published two papers: one in Limnology and Oceanography and one in Marine Biology. Studies link recruit and adult abundance. Data sets have been compiled into an ecological metadata database which will be available on the web soon.

Christy Semmens - REEF - citizen science monitoring program. Standardized method for volunteer divers to count fish. There are over 90K surveys in database, which is available online. West coast data are increasing (about 5k surveys) at sites in CINMS, MBNMS and others. Surveys are conducted on an individual basis and at REEF events. A few years ago organized an effort for surveys inside and outside reserves. Previously

only focused on fish but now expanding to invertebrates (primarily in the Northwest but hope to expand). Working with state to identify invertebrates to monitor here. Funding: organization is a non-profit and most costs are borne by volunteers although some funding received through grants. Bob Warner - any effort to standardize methods to compare with other programs? Christy - only in Caribbean.

Melissa Neuman - NOAA/NMFS - white abalone is the only abalone species listed under ESA. Recovery plan is being circulated for technical review with hopes to go public by end of year. Pink, green, black and pinto abalone are on "Species of Concern" list. Purpose of listing is to put funding into research of these species; to be proactive in their management. There is a new grant program: proactive species of concern grant program. NMFS will select 2 complexes of species and provide \$250k over 2 years for each species (another low murmur through the crowd).

For white abalone NMFS has -plans to protect surviving populations and habitat. Starting in 2002, John Butler in La Jolla collected at southern locations. In 3-4 days identified 200 individuals. Multi beam sonar identified greater areas of abalone habitat than previously measured. NMFS wants to expand habitat surveys to Channel Islands. Also want to identify spots for out-planting with preference for out-planting in reserves for protection of the species.

Pete Haaker - CDFG - Continuing to look at green and pink abalone at Catalina and seeing good signs of recovery. Deployed ARMS (recruitment collection devices) and collaborating with grad student at Scripps. Recovery management plan was accepted by F&G commission in December and plans are available on web. Opening of abalone fishery is not a given; much research needs to be done and a stock assessment is needed. Fishers want to be involved and CDFG is working with fishers to monitor populations.

Ian Tanaguchi - CDFG - Commission has asked them to work with fishers. CDFG has identified tasks for process: 1 - need EIR, 2 - need assessment protocols, 3 - need to establish funding mechanisms, 4 - need decision on what process to use for fishery.

Chris Voss - fisherman in Santa Barbara. Fished abalone for 8 years before fishery closure. Wants to establish stock assessment, use models, distribute total allowable catch among constituents. Intend to implement management plan, including a plan to divide island into 3 areas, use an ITQ program. Possibility of using this program for keyhole limpets. Press release was recently issued. Issues about ITQs and about the sequence of process are raised. First need stock assessment. Regulatory documents are still needed. Jim Marshall - Fishermen's abalone association still has about \$200K that was collected when fishery was operating. These funds could be used for the initial surveys that need to be done.

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Sanctuary Condition Report

Sarah Fangman joins from Gray's Reef, Kathy Dalton and Steve Gittings join from NMSP HQ to introduce the Condition Report and request advisory help from the RAP.

Sarah Fangman: Referring to the Stellwagen Bank NMS draft condition report. Each of the Sanctuaries will have to tackle the 17 questions listed on page 2. This is a requirement we have to report back to Congress and the public as an executive summary. We know that because of uncertainties this will be difficult. Steve Gittings reiterated that this is just an executive summary, and in no way meant to supplant the actual monitoring reports that exist. Bob Warner asked who this report is for, and how is any kind of uncertainty communicated to the reader/decision maker. Sarah and Kathy pointed out some places in the tables and the text where the basis for conclusions can be explained. Steve Gittings clarified that this is not a report that at a site-level the Manager would use for taking action. Congress will use this to help understand how the whole national system of Sanctuaries is doing.

Kathy explained that at Stellwagen the staff first took on each of the questions themselves, then sent it out for review. At Cordell Bank NMS they are meeting one-on-one with local experts (that are on their Sanctuary Advisory Council) and have had some work group meetings on this. Gittings acknowledged that expert input is needed, but there are many ways to go about it. Bob Warner suggests that emails could be used to identify experts to be consulted, then have staff prepare the report based on checking with those experts, and then bring the report to the RAP for review.

Dave Siegel asked why the condition report questions only talk about the state of resources and don't talk about their use/utilization and socioeconomic values. Gittings said that this was a source of much discussion when the report format was developed. Decision to not include socio-economic aspects was made because of the various kinds of results, the extent to which many of the findings might be unrelated to the state of the resources.

Kevin Lafferty mentioned that a series of independent opinions/guesses might provide a more accurate picture than if a group gets together and tries to work by consensus.

Mary Bergen suggested that an "unknown" or "lack of information" category might be needed.

Carol Blanchette suggested that a baseline and time scale component would be important for the summary table. Gittings said that the intent is to generate these either every 5 years or to coincide with the development of revised management plans, which is also supposed to be every 5 years. Because this is the first time around, each site has the flexibility to use whatever time frame is best for estimating trends. As for baselines, this report is not meant present itself as a new baseline for the site. Don't want it to become the baseline for future monitoring and evaluation.

James Lindholm: What would you do if 50 fish species were crashing and 50 were doing well, what would a consolidated symbol look like? Gittings: that is difficult but managers have to estimate.

Consensus that RAP members will be emailed to help identify experts to be consulted, then Sanctuary staff will prepare the report based on input from experts, and then RAP will review and advise on the draft report.

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Future meeting announcements:

Pete Haaker on abalone again. In Monterey March 26-31 the National Shellfish Association will meet. A symposium on abalone will be held.

Dan Richards: Society for Conservation Biology will meet in June in San Jose. California and the World Ocean will meet in September.

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Reserves Monitoring Meeting and Report:

Dani Lipski - CINMS - discusses possibility of a monitoring planning meeting for 2006 to discuss funding, gaps in monitoring, plans, data sharing, etc. Mary Bergen not sure a meeting is needed, you've heard from us. Dave Kushner agrees; he's working on a summary table.

Satie - Feels it is important to communicate what we do know and what has been done, as well as where there are gaps. The monitoring that is occurring does address much of what the Fish and Game Commission is looking for. Suggest a table based on what questions we can answer, and one on what we can't yet answer. Agrees that a table can be filled out via email distribution.

Mary Bergen says a sheet could easily be produced that summarizes what's been done and what is happening. Satie recommends that the questions of interest to the Commission, which are in the DFG MPA Monitoring Plan on line, be used as the framework for the reporting on this.

Consensus that Satie and Dani can work together to produce summary documents and will consult RAP members via email and phone.

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Should RAP combine with the CIMSC?

Dan Richards feels that they should remain separate. Cross-updates like this are valuable, though. Perhaps some of the updates could be summarized in advance via email. The CINMS is not a set group, so others are invited, even if only occasionally to report something. Because the CIMSC is not an advisory body, the meetings don't have to be public.

Jack Engle: Important that the CIMSC focuses on all the Channel Islands. For people that are on both groups and traveling a long distance, maybe hold both group meeting on the same day back-to-back. And maybe updates could be provided less frequently by members.

Consensus that groups will stay separate but possibly hold joint meetings from time to time.

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New Fish and Game Regulations on Invertebrates:

Tidal Invertebrates Act: Dan commented that six more species groups were added for allowable sport harvest, including owl limpets and wavy top snails. The current limits are now 35 a day. Concerned about the harvest impacts, such as possible changes in community structure. In the spring proposals could be made to ask Fish and Game to take these off the list. Jack Engle thinks this could have been a mistake, and is important to be corrected. Ian said that the invertebrate team at DFG looks at issues like this, and revisions could be made next year. They will need to hear arguments on this. Mary suggested letters to the Fish and Game Commission are OK. Jack feels that this should be about correcting an oversight, which should be a straight-forward technical correction.

RAP Meeting
February 2, 2005
Marine Science Institute
University of California, Santa Barbara

Participants

Chris Mobley, CINMS Manager
Dan Brumbaugh, AMNH at MPA Science Institute
Hunter Lenihan, UCSB Marine Community Ecology
Churchill Grimes, SWFSC Santa Cruz
Kevin Lafferty, USGS UCSB
Nicki Adams, Cal Poly SLO
Donna Schroeder, MSI, Board of Directors Sanctuary Foundation
Jackie Buhl, CINMS
Satie Airame, PISCO
Natalie Senyk, CINMS
Dave Seigel, UCSB Geography, ICESS
Jessie Allstadt, Santa Barbara Channel Keeper
Jack Engle, MSI, Marine Network
Jenn Caselle, PISCO
Bob Warner, PISCO
Mike Murray, CINMS SAC Coordinator
Mary Bergen, Research Coordinator at DFG

Audience

Peter Skyler, Catalina I, Santa Cruz I
Shari Smith, Naturalist Corps

Background

Collaborative Research Monitoring Program

\$30 k in bank
\$80 k will be added

Social Science Coordinator, Chris LaFranchi, was hired by the CINMS to function as a local and regional coordinator. He will gather information on the local and regional status and trends of socioeconomic data.

ACTION: Invite Chris LaFranchi to the next RAP meeting.

NOAA Science Integration Project: The MPA Center is working with SWFSC to integrate MPAs into traditional fisheries science and management.

Review Types of Monitoring in Table 1 of CDFG Monitoring Plan

SHALLOW SUBTIDAL ACTIVITIES (Highest DFG Priority)
SCUBA Surveys, Figure 1 shows shallow subtidal monitoring sites

SCUBA surveys are conducted on rocky reef habitats using a specific set of protocols.

Partners who conduct SCUBA surveys

National Park Service (NPS)

PISCO

Crane (Love, PISCO, Pondella)

CRANE funding was federal money given to the state for mitigation of offshore oil. This was one-time funding. CRANE consists of 75-80 sites in central and southern California, with all sites following same protocol.

NPS protocols sufficiently different from CRANE, making an integrated analysis difficult. NPS could adjust protocol to be more consistent with CRANE.

NPS may be interested in contracting fish surveys to PISCO/CRANE.

Recommend that NPS do at least one cool water site in their new experiment.

Sites that will be surveyed in 2005

Anacapa

Scorpion

Santa Barbara

Likely sites to add in 2005

Gull Island

San Miguel

Potential gaps in 2005

Santa Rosa

San Miguel

Southeast side of Santa Cruz

Soft substrate habitats

Two main gaps are SRI and SMI. At least one pair of core sites is needed at each of those islands. Monitoring should occur in cooler water region, not just warm water region. Several replicates of sites at several islands are needed to establish the baseline during the first few years.

SRI is ringed with shallow rocky reef. The MPAs at SRI may have impacts on the distribution of urchin fishing. The southern area (South Point) is possible to monitor more easily than other areas around SRI. It costs more money to work at SRI than the eastern islands, requiring more personnel time, more vessel time.

Considerations

Continuity of monitoring

Data analysis

Data management

Temporal range of expected changes

Monitoring of both biogeographic regions

Often monitoring programs break down over time because of lack of funding.

Need to set up a hierarchy of core sites and additional sites.

Need core sites to answer basic questions

Add other layers on as funding becomes available (not part of the core)

Possible solutions:

Depending on the temporal range of expected changes, it might not be necessary to survey each site every year. Develop a set of core sites to be done every year and then add additional sites as funding becomes available for short-term projects.

Timeframe

Should sites be monitored every year, every other year or longer?

The first major report to Fish and Game Commission is due at the end of year 5. A minor report is given each year.

To pick up trends, SCUBA surveys should focus on species that have a faster response times.

Criteria for selecting core sites:

- Cover all islands
- Subset of sites in 2004
- Preference to areas that have been monitored for a long time
- Sites to investigate hypotheses about inside and outside of MPAs

Funding

To maintain the array of core sites is a high priority. Funding for monitoring comes from existing monitoring programs:

- CINMS
- PISCO
- DFG

When considering a funding/support request to CINMS, need to work in coordination with NMSP fiscal year budget cycle.

Surveys are conducted annually during the summer and fall

Each site is well sampled

What is counted in SCUBA surveys?

- Fish size and density
- Swath count (macroinvertebrates, benthic cover)

Ecological changes that may be detected

Changes in size structure may be more apparent than spillover, for example.

Increase in size, quicker response

Increase in abundance, slower response

CDFG Monitoring Plan: Table 3, Page 12: Target species list for monitoring

Criteria for species list

Exploited species

Unexploited species

Easy to count

Species with detectable, measurable responses to MPAs

List was developed, in part, during the 2003 monitoring workshop

Lafferty paper: Determined that 7 species can indicate kelp forest and urchin barrens (2 of these are included on the list of target species for monitoring: kelp and urchins).

Seven indicators of kelp forests and urchin barrens

- Kelp
- Urchins
- Cover of bare substrate
- Cover of *Coryanactis* and *Astrangia*
- Bryozoan *Dioprepia*
- Crustose coralline algae

Kevin Lafferty's Recommendation:

Do as many sites as possible, but survey only target species that give as much information as possible.

Jenn Caselle's comment:

List of 20 species in Table 3 is appropriate because the question relates to target species and responses to MPAs. Surveys focus on population density and size changes for the MPA experiment.

Is it important to assess whether or not MPAs lead to state changes in communities?

If so, monitoring species that indicate those state changes should be included.

Recommendation: To insure that monitoring can capture changes in state, maintain the monitoring list and add the species that indicate state changes. If constraints prevent a full survey, then only key species should be monitored.

Table 3 is misleading due to growth rate and fecundity columns.

Species not effectively monitored with SCUBA

Lobster (state managed fishery)

Abalone

Cabazon (could be monitored with other techniques)

For abalone, need to keep them in the survey because previously they were much more abundant.

Stock assessment of urchin fishery is a great idea, but it is not part of monitoring.

Doyle Hannon is conducting fish tagging survey (hook and line) in central and southern California. Using recreational fishermen, primarily targets rockfish in shallow waters, massive program geared toward returns of tagged fish.

Pfleger Institute: SBI, ANI are ringed with double rings of receivers. Newly tagged fish can be added to the array. Species already studied include black seabass, sheephead and kelp bass (James Lindholm), ocean whitefish (Cal State Long Beach grad student).

Is there a need for the trap-fixed gear project? Should this be a target for the collaborative research funding from CINMS?

Engle recommends that the fixed gear project focus in one area, Anacapa or east end of Santa Cruz. Need intensity and array at one or more sites to figure out rate of spillover. Need adequate coverage, intensive study in a few places.

TRAP-FIXED GEAR

Trap-fixed gear surveys equally important to SCUBA surveys

- Fishermen can participate
- Can figure out gradients of CPUE (outside of MPAs)
- Catch species that are not adequately monitored.
- Visual survey, vs. trapping, vs. hooks to calibrate the trap surveys
- Can get specimens in hand to weigh or tag

Bren School Project:

Fixed gear monitoring of lobster at

- Anacapa
- Scorpion
- Gull Island
- Inside, near, and far from MPAs

Collaborative project

Need more feedback from fishermen themselves and NMFS Science Center should be involved. Need to get “fisheries scientists” involved in the project.

Church suggested possible involvement of NMFS through their scientific interest in MPAs.

Schroeder suggested trapping, not just warm water area, but also in cold water areas.

Trap fixed gear data could be coordinated with commercial take. Need to do both because there might not be sufficient fishery-dependent data.

No logbooks exist for live-fish fishery. Need a project to create a logbook for live-fish fishery.

Could collaborate with the recreational fishing industry to recapture tags.

Recommendation: Fixed gear trapping program is a gap in the monitoring program with high priority, and is a good candidate for collaborative research.

What are priorities for biological monitoring for collaborative research program?

Recommendation: Species that are not adequately monitored by other means are of high priority for monitoring.

What is the level of adult spillover or movement? Is this a monitoring question or an experiment? We need to know ARE THESE FISH SPILLING OVER INTO OPEN AREAS? The answer to this question advances marine reserve science and design. How do we build a monitoring program that can detect spillover or movement? [Dave Seigel: This is just another parameter that describes the demography of the population.] The supporting documents claim that establishment of reserves will result in net increase in fish in the fishery.

Several possible answer: model, or trap data, CPUE, along a gradient from MPAs to open areas. Need to figure out transport of individuals from point A to point B. Empirical evidence can be measured through tagging or telemetry. Do we do this every year, or do we figure out for each species the home range size and then use the data to model possible spillover? Mark and recapture programs could determine where animals are going and if the flux increased over time. Should this be a priority for monitoring?

Recommendation: Within trap-fixed gear program should be implemented. Some attention should be paid to differences in density and mark-recapture. This would provide valuable information about movement. Trapping program would provide the opportunities for tagging focal species, but this is not a long-term monitoring program. This is research that could be done over several years (dissertation project) to determine characteristics of focal species.

Political pressure is a function, in part, of the success of fishing industry.

Perspective of the fishermen: Establishment of reserves forces fishermen into open areas, leading to congestion.

Other ways of figuring out effects of MPAs on fisheries: Track landings and distribution of boats.

Adult spillover –can be detected through telemetry and trap and fixed gear surveys

Benefits of fixed gear surveys over SCUBA surveys: Can tag individuals and recapture them

To determine changes in movement over time; need a fixed gear or trap program. Could be done every few years, could be 1-2 year project every 5 years or so.

Lindholm: Need for additional fish and invertebrate movement data
Telemetry is the primary method of gathering movement data (process study)
Trap (mark and recapture is part of monitoring)

Over time, do we see congestion of fishermen at the boundaries of MPAs? Fishing the line? Over time we are likely to see the socioeconomic

Socioeconomic monitoring includes the Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP) aerial surveys, which can also assist in examining spillover

Coordination of Biological Monitoring

Priority of the Sanctuary: Data management and synthesis
Need a good system to archive the data and make it available without violating individual rights.

Perhaps we need a coordinator of monitoring data
(Also recommended at the Starr monitoring workshop)

Priorities:

Coordination
Accessibility of data
Coordinated person or central location of data

Recommendation: A coordinator is needed to:

- Keep track of existing monitoring programs
- Coordinate data streams
- Analyze data
- Archive data
- Report annually to RAP on preliminary results

The Sanctuary has offered to provide support for a person to coordinate the monitoring effort.

Models for coordination:

- MARINE (Multi-Agency Rocky Intertidal Network monitoring program). Jack Engle is the coordinator. MARINE has developed an effective approach to coordinate among participating scientists who share a common database. A

public website is available for outreach and a private website is available for internal communications among group members.

- OOS, CenCOOS, etc: The first task of the ocean observing system is data management. The OOS tend to attract more physical oceanographers, but biological data also is housed within OOS.
- National Marine Sanctuary Program Integrated Monitoring Network: Long-term monitoring strategy is being planned for the National Marine Sanctuary Program.

Options for outreach to scientific community

- Channel Islands Symposium

The Monterey Bay National Marine Sanctuary sponsors an annual meeting reviewing research efforts

Aerial Monitoring of Kelp Canopy

Statewide aerial kelp (DFG staff is dwindling but project will be maintained)

1999

2002

2003

2004

2005 (expected)

CI-CORE (Center for Integrative Coastal Observation, Research and Education, Moss Landing; Dick Zimmerman) performs multi-spectral aerial surveys of kelp along the central coast and may expand to the southern coast as well. Surveys were conducted as far south and Santa Barbara in 2004.

Newly Settled Fish Surveys

Bbi-weekly visual surveys, as well as with PISCO Standardized Monitoring Units for Recruitment of Fishes (SMURFS), were conducted in 2004.

SMURFS can be used to address the question of larval spillover, which is an exceedingly difficult question it may not be possible to answer. SMURF program can figure out year class size and monitor fluctuations through the entire island chain. The current program will not answer the question about increased recruitment outside of MPAs.

Monitoring of recruitment is important.

SMURFs monitor recruitment and are most useful for establishing a baseline and follow age classes through marine reserves. To detect the effects of MPAs on patterns of recruitment, a more extensive array must be established, and even then, it would be difficult.

Urchin recruitment was useful.

Lafferty detected no differences in recruitment inside and outside MPAs, but large differences in adult population sizes. Recruitment data will help determine whether or not fluctuations are due to MPA effects or fishing effects.

ROV Surveys

DFG conducted three ROV surveys in deeper water (20-80 m).

Nov 2003 and May 2004 (developmental surveys)

Sept 2004 (full surveys) with replication at Gull Island, Santa Cruz, Carrington Point, and Santa Rosa. (1 site at Anacapa Island, 2 at Santa Cruz Island and 2 sites at Santa Rosa Island)

Can easily do: 2 reserves, inside and outside paired surveys

Target: 5 paired surveys inside and outside MPAs

Need 2 weeks of boat time

NMSP has contributed boat time

Deep submersible surveys

Associated with oil platform work by Milton Love

Deep submersible surveys depend on weather. If weather is good, then the oil platform surveys and additional surveys can be done. There is some before data from 1995-1999. Mary Yaklovich has conducted surveys of Santa Barbara Island in 2002, which is part of the Cowcod Conservation Area. In 2002 and 2004, the Sanctuary provided 4 days on boat to do monitoring.

On Footprint, there has been consistent monitoring inside the proposed MPA. However, no other areas are available for comparison with the Footprint because of its unique, heterogeneous habitats.

Other surveys occurred at Gull Island and north shore of San Miguel and Anacapa Islands. Future funding to do oil platform surveys will continue but the additional surveys done in MPAs depend on good weather. From observations, there appears to be movement of large fish into protected areas (oil platforms).

Beginning of deep submersible monitoring program

- Gull Island
- Anacapa
- Santa Barbara Island (from monitoring of Cowcod Closure)

Some monitoring of SBI should be done to respond to criticisms that the effects of the Cowcod closure were not considered in the MPA design.

John Bulter (ROV work on cowcod) probably conducted research at Cortez and Tanner Banks in waters deeper than the reserves.

Results of submersible surveys

Impacts of MPAs can be detected through submersible surveys.

Current regulations

Bottom fishing is prohibited below 60 fa (through the rockfish conservation area). Therefore it will be difficult to detect the differences between MPAs and non-MPA areas because all areas are currently closed. It may be possible to detect differences in large inverts that were affected by roller gear and prawn trap fishing. In addition, black coral has been observed only in high relief spots that were not trawled. Some of the responses are very rapid. For example, large sponges grew in less than 10 years on some of the deep Exxon platforms.

Problems:

- Scheme of sampling sites has not occurred every year. There is no dependable source of funding.
- No processing of data. In 2004, there was some extra money to do analysis, which is being done now. Additional funding must be acquired for processing of data.
- No coordination of submersible and ROV work. Dirk tried to coordinate, but funding was limited.

Recommendation

Better coordination of efforts

Focus on minimum, systematic sites (atleast one paired site) with opportunistic sites added if funding available

Are other techniques available to study deep water habitats/species?

Cameras, traps?

More thought needs to be focused on developing the deeper water monitoring

Opportunity exists for a major calibration study to integrate different techniques. Could be an avenue to get more information from limited data.

Federal Sanctuary Monitoring Program

Last spring, 2004, Sanctuary program initiated discussions about the federal monitoring program. The Sanctuary identified key questions without prioritizing them. There will be another meeting in March or April 2005 to identify the priorities for the Sanctuary program. The federal monitoring program will build on the existing State monitoring program. The federal monitoring program will be modeled after MBNMS SiMON. This program identified gaps in monitoring and priorities for funding. However, SiMON has had substantial external funding and a full time coordinator. Consider the funding needed to develop a project like SiMON.

Funding for Deep Water Monitoring

The funding sources for ROV and SCUBA surveys are different. Some data are needed to build a deepwater monitoring program. Possible sources of funding include:

- DFG has \$140 k (from MARE-Marine Applied Research and Engineering)
- Sanctuary provided ship time and funding for submersible surveys
- Approach Exxon for funding for deep subtidal monitoring. Donna Schroeder is skeptical that Exxon would be interested because of their past responses.
- Jack Engle mentioned that a private individual in southern California is going to have an ROV for personal use.

Recommendation: Need more coordination to find out what is going on for deep subtidal monitoring.

Intertidal Monitoring

MARINE—a model for how to organize subtidal monitoring programs

Long-term monitoring program set up in 1980s (ongoing for 20 years)

Key species, fixed plot for dominant species

Including black abalone, owl limpets, mussels

If MPAs are established on mainland, then take of intertidal organisms (including limpets and mussels) will be an important consideration.

Long-term funding has been provided by NPS and MMS. In the future, the funding from MMS may be lost because they may not be able to do more oil exploration in California. The intertidal monitoring at the Channel Islands is part of larger network of 70 sites throughout California. All data from the partners are entered into a database developed by SCWRP. The results are organized data, easy to access, basic trends are available on public website at marine.gov.

Recommendation: More intertidal surveys inside and outside MPAs should be added in the future, if additional sites can be added.

Other topics to consider

Monitoring shallow soft bottom habitats

Soft bottom habitats at the islands have the full range of exposure

More exposed: have less obvious living communities

Less exposed: very important for living communities

We know where the seagrass beds are located and their approximate sizes.

We need to figure out if these areas are important for the monitoring program.

We don't know if eelgrass is essential for certain species.

Monitoring would be relatively easy in many soft bottom habitats.

However, scientists might not be able to gather enough data to have statistical significance due to small number of eelgrass beds.

Skunk Point

- Major eelgrass site
- Major crab trapping area
- No monitoring in Skunk Point

Scorpion

- Anchoring activities may impact smaller eelgrass beds
- Could be monitored inside and outside of the MPA

Smuggler's Cove

Prisoner's Cove

- Both have eelgrass beds

Sites with Pismo clams and geoduck clams are vulnerable to harvesting so these should not be highlighted as target species.

Recommend: Shallow subtidal monitoring of soft sediment communities should become part of the monitoring program and there may be someone (Jessie Allstadt) to do the research and a small source of funding. Note that seagrass beds may be very important components to this ecosystem where we already have data. Target: develop protocol for monitoring seagrass beds and maintain program as a limited focus for monitoring. Determine the importance of these habitats in system dynamics.

An evaluation should be done to figure out if there might be effects of MPAs on soft bottom habitats. Are the resources captured? Overlay the eelgrass beds with the reserves.

Hypothesis: East end of SRI was a major crab fishery, which has stopped now. No other information is available. Anecdotal data suggest that there were lots of crabs there.

There could be indirect effects of MPAs on soft bottom communities, e.g. predation of cabezon on gobies, which consume inverts in soft sediment. Possible trophic cascade.

Fish nursery areas would not be directly impacted by MPAs because small fishes are not targeted.

SCWRP does soft bottom infaunal cores.

Importance of monitoring where fishing occurs through the Sanctuary.

It is important to determine where fishing occurs in Sanctuary because this variable is needed as a covariate analyses of ecological data. We need to know what type of fishing occurs and where. The Sanctuary can determine where fishing activity occurs through the SAMSAP program.

Recommend letter from SAC to support use of plane for SAMSAP. Plane is important to figure out intensity of use in areas that we are monitoring. Need to know the fishing distribution to interpret the results from biological monitoring.

Monitoring the Acoustic Environment

Study of marine acoustics from EDC (Polefka)

Recommendations from SAC:

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- How can we monitor noise in the marine environment?
- Better understand hearing capabilities of animals
- Consider noise impacts on Sanctuary ecology

Sanctuary needs to determine if these are the best questions and how to address them.

Recommendation: It would be of value for RAP to become educated about marine acoustics through a presentation. Thus prepared, the RAP could review upcoming problems related to acoustics.

Monitoring Water Quality

Sanctuary is beginning to focus more attention on water quality issues.

- Freshwater input
- Seawater quality

Possible Questions

- Do the pulses of high nutrient input and pollutants contribute to long-term chronic health problems for species at the islands?
- Do PCBs increase in marine mammal fatty tissues from western to eastern islands?

Donna Meyers, West Coast Coordinator for Water Quality Programs

- Review of existing programs
- Recommendations for additional monitoring

Donna will be completing a summary report in Spring 2005

Water quality is a possible future focal area for RAP

All Channel Islands are Areas of Special Biological Significance, designated by State Water Quality Board. Point and non-point source discharge has been identified in various ASBS areas.

Action: Obtain information about point and non-point source discharges for the 5 northern islands.

Kira Schmidt (Channel Keeper) does water quality monitoring along mainland coast. Channel Keeper might consider a partnership with Sanctuary for water quality

monitoring. Types of monitoring that could occur at the islands include stream water quality monitoring and effects of small boat traffic.

MMS is going to be phasing out all types of coastal biological monitoring, including State mussel watch program.

Action: Wait for Donna Meyers to come up with list of recommendations and priorities and then work with her to implement them.

How do we communicate the research that is ongoing?

Permits require that scientists provide report and data to Sanctuary.

Scientists do not always return results of studies to CINMS.

CINMS does not have clearinghouse for data so that it can be shared with the public.

There is no good system or follow-up to acquire data.

If CINMS imposes too heavy of a burden, then the researchers may be discouraged from doing science.

Possible tools to facilitate communication

- Currents Symposium (MBNMS) could be a model for sharing of science with the public.
- Channel Islands Marine Research Committee (shares science)
- Bren School developed database for CINMS
- Environmental Media Department on campus may be interested in the communication workshop
- PISCO communication workshop (Summer 2005)

Action: CINMS needs to submit a request to NOAA for ship time on the large NOAA vessels. Sarah Fangman is looking for different research projects for the vessels (E.g. MacArthur II).

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Research Activities Panel

September 13, 2004

9 am – 4:30 pm

Bren School of Environmental Science and Management

Participants

Bob Warner, UCSB, SAC Research Seat

John Ugoretz, DFG

Sarah Fangman, CINMS

Dan Brumbaugh, SAC Research Alternate

Dean Wendt, Cal Poly SLO

Kevin Lafferty, USGS

Fred Piltz, MMS

John Dixon, Coastal Commission

Jenn Caselle, MSI PISCO Science Coordinator

Mike Murray, CINMS SAC coordinator

Chris Mobley, CINMS Manager

Christy Pattengill-Semmens, REEF

RAP Members Absent

Dave Siegel, ICESS

Hunter Lenihan, Bren

Dan Richards, NPS

Jack Engle, MSI

Jessie Alstadt, Channel Keeper

Churchill Grimes, SWFSC

Audience

Chris Miller, Commercial Fisherman

Michael Hanrahan, Business Working Group

Carl Gwinn, REEF, UCSB

9 am. Welcome and Introductions (Robert Warner)

Introduction of the RAP

The RAP includes representation chosen from a number of different institutions.
Overview of Agenda

Brief Sanctuary Overview (Chris Mobley)

Welcome and brief description of the role of the RAP in Sanctuary management.

The RAP

- Provides the opportunity to connect research and policy.
- Influences CINMS policy decisions.
- Provides a community service through the Sanctuary Advisory Council.
- Provides an opportunity for information sharing (e.g., MBNMS SiMON project)
- Is needed to ensure that Sanctuary research is rigorous and coordinated.
- Will help fill gaps in research.

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Sarah Fangman coordinates the Sanctuary Research Program. A new operations manager will be appointed to the Sanctuary this year to relieve Sarah of some of the many tasks she has assumed. By removing the burden of boat operations from Sarah, she may engage in other tasks, including conducting, coordinating, and seeking funds for research.

The Sanctuary owns two vessels, Shearwater and Xantu, that are available for research, education, and outreach, and an airplane that has been used for aerial monitoring. The Shearwater can be used to deploy remotely operated vehicles. In the future, the west coast sanctuaries may purchase an ROV for research. Next year, the Sanctuary will test an unmanned aerial vehicle. The Sanctuary program will partner with the National Ocean Service to create an Ocean Observing System.

Overview of Sanctuary Advisory Council and Working Groups (Mike Murray)

The Channel Islands National Marine Sanctuary was founded in 1980. The Sanctuary Advisory Council was founded in 1998. The group has 20 seats consisting of half community and half government representatives.

Role of the SAC

- To provide advice on resource management and use.
- To identify research and monitoring objectives
- To assist with education and outreach
- To build better partnerships

SAC Working Groups

- Sanctuary Education Team
- Recreational Fishing Working Group
- Commercial Fishing Working Group
- Conservation Working Group
- Research Activities Panel

Focus of the SAC

- Federal MPA process (top focus)
- MPA Education, Monitoring and Evaluation
- MPA Enforcement
- Management Plan (Fall 2004)
- Water Quality
- Marine Acoustics
- Multicultural Education

Introduction to Sanctuary Research and Monitoring Activities and the role of the Research Activities Panel (Sarah Fangman)

Goals of the Sanctuary research program

- Provide best information for management efforts
- Understand socioeconomic effects of management

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- Conduct research and monitoring.
- Partner with other organizations, e.g., ROV program with DFG,
- Provided funding to scientists in community to conduct monitoring
- Make research platforms available for scientists (Shearwater, Xantu, aircraft)
- Issue permits for research

Possible opportunities for the RAP

- Share results from research ongoing in the Sanctuary or related to the Sanctuary
- Prioritize research and monitoring activities
- Plan research activities in the Sanctuary
- Contribute advice on allocation of funds for collaborative research projects
- Contribute advice on allocation of effort for research vessels
- Provide advice on scientific aspects of management problems (e.g. NEPA, MPA monitoring)
- Provide input on scientific questions that affect policy decisions (e.g., review permit requests for scientific research to ensure the least possible impact to Sanctuary)
- Engage students in Sanctuary internships

RAP logistics

- Quarterly meetings (for important questions and more political topics)
- Possible joint meetings with the Channel Islands Research Activities Group
- Email communication through a listserv (for simple problems)

Role of the RAP Chair and RAP Membership (Bob Warner)

RAP members represent research institutions in the region.

Members should help define membership.

John Ugoretz (CA DFG)

John is interested in input about research to agencies from scientists who are working in the region. The DFG cannot fund all of the research that is needed in the region, so DFG is relying on partnerships with private scientists in order to conduct research needed to answer scientific questions that are relevant to policy. John serves on the RAP to facilitate information sharing between scientists and DFG. He would like to make scientists aware of the information needs of the DFG so that scientists may choose to direct their research in such a way that it will assist the DFG to acquire information that is useful for management. John may not be able to serve as the RAP representative, and possible alternates include Mary Bergen, Chuck Vallier, and Ian Tanaguchi. John is helping to develop the research and monitoring programs of the state MPAs in the CINMS.

The DFG utilizes a research vessel, the Garibaldi, which is a 45-foot Maine lobster boat with a large aft deck. The DFG has the funds to install a crane and bow thruster. The Garibaldi is a good platform for diving and is ideal for 2-3 days trips to the islands. The vessel sleeps 4 people in bunks and 2 people on seats. Currently, the vessel resides in Ventura. The Garibaldi is available to research scientists, provided the

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scientists are investigating questions that are relevant to the DFG management and policy.

John also is engaged in the ROV surveys, using the Sanctuary vessel, Shearwater. An ROV survey will occur this week. The ROV project is well funded and has been ongoing for 1.5 years. The DFG is reviewing the data collected and trying to figure out how best to quantify the data.

John is working with PISCO at UCSB and other research scientists and institutions to conduct SCUBA surveys of the shallow subtidal region in and around the state MPAs and other sites throughout southern California. Funding is guaranteed for this project only in 2004. John is hopeful the funding will be found to continue the intensive subtidal monitoring.

John serves as a mentor to students from the Bren School of Environmental Science and Management. This year, John is mentoring 5 students on a project related to monitoring lobster in the Channel Islands. The students are using logbook data and possibly lobster tagging to evaluate the status of lobster in and around MPAs. The project lacks funding to do a full tagging study. John is hopeful that the DFG can conduct trapping and long-lining surveys in conjunction with ROV studies.

James Lindholm (Pfleger Institute for Environmental Research)

The Pfleger institute is a research institute in Southern California that is supported by private funding. The staff is approximately 10 people and the institute has several research vessels. Dr. Michael Domeir is the chief scientist for PIER. The research focus of the institute includes Southern California, particularly the Channel Islands. Other locations where research is being conducted include Baja California and Indonesia. The primary focus of research has been white seabass and black seabass, but the topics of research have expanded to other species of recreational interest as well.

PIER has acoustic arrays around Anacapa and Santa Barbara islands that are used to track fish movement. PIER has tagged 49 kelp bass and sheephead for the study. PIER is interested in tagging additional sheephead, kelp bass, cabezon, lingcod and lobster. The objective of the research program is to produce detailed information on movement of a spectrum of priority species for monitoring. The acoustic array can track more animals than PIER can tag, so other scientists could use the array. However, as more people tag marine organisms, more signals are picked up by adjacent arrays. If anyone on the RAP knows people using Vemco Equipment—please contact Chris Lowe, Jenn Caselle, or James Lindholm.

Donna Schroeder (UCSB)

Donna works with Dr. Milton Love and Mary Nishimoto at UCSB. Topics of research in Love Lab include the effects of development of the offshore oil industry and the effects of oil platforms on marine organisms. The Love Lab is focused on rockfishes, which are of commercial and recreational importance. Dr. Love has monitored rockfish and other species in deepwater sites within MPAs. Mary Nishimoto, an oceanographer, has contributed to the growing understanding of the effects of oceanographic patterns on rockfish recruitment and survivorship. Donna Schroeder has participated in intensive study of nearshore kelp communities as part of the state effort to monitor MPAs. Donna serves on the board of directors of the Marine Sanctuary Foundation and she is involved

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with the Collaborative Marine Research Group. The Marine Sanctuary Foundation has encouraged scientists to collaborate with local people to get involved with monitor and research the Channel Islands. Donna is working to make the Marine Sanctuary Foundation a catalyst for small-scale research projects that respond to emerging management needs.

Dan Brumbaugh (American Museum of Natural History, Sanctuary Advisory Council)

Dan is not directly connected with the process to establish MPAs in the Channel Islands, but he observed the process for many years. Dan works in the Bahamas on a Large Biocomplexity Project to design and implement a network of MPAs.

Dean Wendt (Cal Poly, San Luis Obispo)

Dean has not conducted active research in the Channel Islands, but he is interested in ocean management. He is an ecologist with particular interest in physiology of larval stages of marine invertebrates. He joined the Marine Interests Group of San Luis Obispo to consider ocean management in the county. The Marine Interest Group is a group of stakeholders with broad representation of the community. The group produced mission statement: to sustain and enhance marine resources of the San Luis Obispo county. As part of the mission, the group is considering possible expansion of the Monterey Bay National Marine Sanctuary. When stakeholders brought information together, it was discovered that little is known about marine resources in San Luis Obispo county. The group developed a collaborative research program, which was initially funded by WWF, to work with commercial and recreational fishers to survey rockfish populations as part of state monitoring. The Resources Legacy Foundation supports tagging and more frequent data collection. Dean also started working with commercial fishers from Morro Bay to study cabezon. He has worked with Jenny Dugan (UCSB) to conduct bird surveys and water quality assessment using sand crabs. By joining the RAP, Dean is seeking a connection to research activities in the Channel Islands National Marine Sanctuary. He also has established similar connections with the Monterey Bay National Marine Sanctuary.

Kevin Lafferty (USGS)

Kevin provides research support for the Department of Interior and other federal and state government agencies. His primary focus is the study of species interactions, particularly parasites. Kevin has continued the decades-long research on kelp forests in the Channel Islands initiated by Gary Davis. He has asked basic ecological questions about species interactions in the presence and absence of fishing. His research has led to his general interest in the design and management of MPAs. Although some of the general responses to MPAs are well known (e.g., increased size and abundance of targeted species), Kevin is interested in other indirect effects of MPAs. He is interested in the roles of conservation and fisheries in ocean management. Kevin has attempted to formalize the contributions of different priorities for management by using mathematical models to design MPAs. Another aspect of his research has been how to restore nesting shorebirds with a minimum impact to beach users.

Fred Piltz (Minerals Management Service)

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Minerals Management Service has an interest in marine research, particularly marine mammal and seabird surveys and habitat mapping. Over the years, MMS has funded research in various disciplines, including physical oceanography, marine biology, and socioeconomic studies. There is a tradition of maintaining long-term monitoring programs, such as MaRINE and MMIRT. For the last 5 years, MMS has sponsored studies of fish and invertebrate populations around platforms and on shell mounds below platforms. MMS is continuing to fund research on rockfish with Milton Love and Chris Lowe (?). For over 10 years, MMS sponsored the Coastal Marine Institute at UCSB.

MMS has worked with USGS to create a multibeam map of eastern end of the Santa Barbara Channel. USGS collected tar samples from seeps and the beach. The samples can be identified as various crude oils that come from tar seeps.

After a long-term study, Scripps will remove arrays from the Santa Barbara Channel and Santa Maria Basin in December 2004.

Future studies may be related to decommissioning oil and gas platforms. It is not clear when the oil platforms will cease production and be removed or modified. MMS would like to predict environmental impacts of removing platforms.

Carter Olmann will evaluate nearshore current patterns in the context of offshore currents.

MMS may help to sponsor another California and the World's Ocean Conference in Spring 2006 and possibly contribute to the next California Islands Symposium.

John Dixon (California Coastal Commission)

The purpose of the California Coastal Commission is to protect marine resources and public access to the coast. The primary tool for achieving these objectives is through constrained development permits. For example, liquid natural gas and oil extraction requires permits that must be approved by the Coastal Commission. The Commission interacts and cooperates with agencies with similar missions. John is participating in the RAP because he is interested in ongoing research. Results from research may affect Coastal Commission decisions (e.g., work by Lafferty on snowy plovers affected decisions by the Commission). For many years, John was a research at the Marine Science Institute at UCSB. He studied kelp forests, particularly the fisheries aspects of sea urchin biology. John and his collaborators, Steve Schroeder and Tom Ebert, documented weekly recruitment of sea urchins for 14 years.

Jenn Caselle (Science Coordinator with PISCO—The Partnership for Interdisciplinary Studies of Coastal Oceans)

PISCO is an academic consortium of 4 universities, including UCSB, UC Santa Cruz, Hopkins Marine Station, and Oregon State University. PISCO was formed to support research on large-scale, long-term dynamics of nearshore ecosystems in California Current Large Marine Ecosystem. The research conducted at UCSB is concentrated around the Channel Islands and on the mainland coast north to Cambria.

One of the primary techniques employed by PISCO campuses is subtidal SCUBA surveys, which are used to evaluate subtidal community dynamics. The effort to monitor subtidal systems expanded in 2004 with support from the California Department of Fish and Game. The Department provided about \$300,000 to scientists, including Dave Kushner (at Channel Islands National Park), Jenn Caselle (at PISCO), and Donna

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Schroder (at UCSB), to conduct subtidal SCUBA surveys in and around the state MPAs in the Channel Islands. MaRINE conducts parallel surveys in intertidal systems.

PISCO has established a large array of oceanographic instrumentation in the nearshore region. Routine measurements include temperature, nutrients, and salinity. PISCO is studying the role of physical processes in recruitment. Long-term and fine-scale studies have been conducted on fish and invertebrates. These studies are paired with oceanography to reveal interesting patterns in nearshore ecosystems.

Another major research effort at UCSB (lead by Bob Warner) is to study connectivity through larval dispersal. Larval movement is tracked through otolith microchemistry and genetics. Other studies of fish movement are being conducted by Chris Lowe at CSU, Long Beach, and James Lindholm at PIER.

Christy Pattengill Semmens (REEF)

REEF is a non-profit, volunteer organization that works with divers and snorkelers to survey fish. The program is active in 9 National Marine Sanctuaries, including the Channel Islands. Divers and snorkelers use standardized SCUBA surveys to count fish. REEF receives approximately 2000 surveys per month from volunteers. In 1996, the program expanded to California. Volunteers have collected data in Channel Islands National Marine Sanctuary since 1996. Since the beginning of the program, several thousand surveys have been conducted in the Sanctuary. In 2003, REEF surveys began to focus annual monitoring particular sites (e.g., in and around MPAs) in order to address management questions. This year, REEF will conduct 3 different survey trips to 33 different sites throughout the Channel Islands. REEF data are managed electronically and may be requested for use. Data processing is relatively rapid.

Dave Siegel (ICESS—Institute for Computational Earth Systems Science)

Dave is the director of ICESS and a professor of geography at UCSB. He served on the Science Advisory Panel to the Marine Reserves Working Group. He conducts routine monitoring (Plumes and Blooms) in the Santa Barbara Channel. He is a principal investigator on a biocomplexity grant to study the connections between physical oceanography, populations of marine species, fishing, and economics on the west coast of the United States. The co-principal investigators are studying the processes that underlie the dynamics of fish populations and the distribution and quality of habitat, among other topics.

Jim Allen (SCCWRP—Southern California Coastal Water Research Project)

SCCWRP is a joint powers agency focusing on marine environmental research. The common mission of SCCWRP is to gather the necessary scientific information so that member agencies can effectively, and cost-efficiently, protect the Southern California marine environment. An important part of the mission is to ensure that information gathered by SCCWRP effectively reaches decision-makers, scientists and the public. Strategic goals for the program are

- To develop, participate in, and coordinate programs to understand ecological systems in the coastal waters and to document relationships between these systems and human activities;
- To answer the questions regarding the Southern California coastal waters:

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- Is it safe to swim?
- Is it safe to eat the fish?
- Is the ecosystem healthy?
- Are the natural resources being protected?
- To effectively communicate our research findings and recommendations, through a variety of media, to decision makers and other stakeholders;
- To continuously examine the composition and structure of SCCWRP to enhance the ability of the organization in achieving its mission;
- To serve as a catalyst in forming partnerships and alliances which further these goals; and
- To provide an information management system to archive, retrieve, analyze, and display SCCWRP data in order to achieve the above goals and enhance our understanding of the Southern California Bight.

Dr. Jim Allen is the principal investigator of the Fish Biology group at SCCWRP. He specializes in the ecology and environmental biology of marine fishes. His present research efforts focus on assessing natural and anthropogenic changes in marine fish populations and assemblages. Jim has been the head scientist in several large-scale synoptic studies of Southern and Baja California, Bight 98 and 03.

Jessie Alstadt (Santa Barbara Channel Keeper)

Jessie has been the Program Director and Biologist at Santa Barbara Channel Keeper since 1999. Santa Barbara Channel Keeper's mission is to protect and restore the Santa Barbara Channel and its watersheds through enforcement, citizen action, and education. Her experience includes long-term monitoring of sand beach and rocky intertidal species, kelp beds, eelgrass communities, mantis shrimp, urchin barrens, and warm water/cold water dynamics surveys.

Background on Channel Islands Marine Reserves Issue and Process (Satie Airame)

July 1999	MRWG, Science Advisory Panel, and Socio-economic Team formed. Over 40 alternatives evaluated.
May 2001	MRWG completed review and submitted 2 maps representing the areas of overlap and non-overlap.
August 2001	Sanctuary and DFG develop proposed project based on information from MRWG.
August 2001- October 2002	DFG developed CEQA DEIS/FEIS, proposing 6 alternatives.
October 2002	FGC decision to implement proposed project.
March 2003	Monitoring workshop at UCSB.
April 2003.	State MPAs established, constraining potential federal action.
June 2004	Preliminary draft NEPA DEIS released. Subcommittee of SSC met to discuss preliminary draft and develop comments.
September 2004	RAP meets to discuss preliminary draft and develop comments for SAC. SSC meets to discuss and approve final comments on

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	preliminary draft. SSC comments go to the Ad Hoc Marine Reserve Subcommittee.
October 2004	Ad Hoc Marine Reserves Subcommittee will consider all statements and draft a statement for PFMC to consider and finalize at November meeting.
November 2004	PFMC meets in Portland, OR, to develop final comments on preliminary draft and Council finalizes input.
Summer 2005	Sanctuary releases DEIS.

Overview of Preliminary Working Draft Environment Document

See RAPcomments.doc (drafted by Bob Warner and Satie Airame)

Public Comment

Michael Hanrahan (SAC Business Seat)

Michael currently is producing films about the natural history of the Channel Islands region. At this time, he is producing three films about (1) kelp rack and how it nourishes the beach, (2) what lives beneath Stearns Wharf, and (3) commercial fishing within the Santa Barbara Channel. Michael is interested in working with scientists to develop new ideas for films.

Chris Miller (Lobster Fisherman)

Chris brought several maps showing the value distribution estimated for the lobster fishery (from the impact analysis in the CEQA) and the distribution of the lobster fishery from the Ethnographic Data Survey. He noted that the value distribution estimated for the lobster fishery far exceeded the actual distribution of the lobster fishery. Therefore, the impacts to the lobster fishery from nearshore reserves were underestimated by the value distribution. Chris called for a new economic impact analysis to reflect the current fisheries.

Chris said that lobster fishing has little bycatch. The opposite conclusion is asserted on p. 76 and Chris asked that this reference, "catching and killing lobster for months," be removed. He said that the majority of lobsters leave traps when the bait is gone. Three months after being lost at sea, destruct clips on lobster traps will degenerate. During big storms, traps tend to get washed up on the beach and lobsters avoid the traps and stay alive.

Chris also brought maps showing proposed MPAs for the state of California at scales much larger than the CINMS process. The maps included 4-15% of the waters within the EEZ. Chris noted that larger reserves should be included in the CINMS process and suggested a large reserve off the south side of Santa Rosa Island at Gull Island. He argued that large reserves could contribute to stock rebuilding. Chris stated that he did not have support from fishermen nor managers, but that he thinks a larger reserve is in the best interest of all involved.

Chris proposed that all additional federal MPAs should be conservation areas that allow some types of sustainable fishing. He suggested that all alternatives should be a mix of no-take and limited-take MPAs.

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Chris suggested that the PFMC provided greater allocation to recreational fishers than commercial fishers. Because recreational fishers tend to be restricted by the distance from port and prevailing winds, they tend to concentrate in one region, within ½ day of port. With additional MPAs, Chris suggested that the recreational fishers would become more concentrated in this area because of displacement of effort from MPAs.

Chris suggested that the cost benefit analysis did not consider the real distribution of fishing effort. He suggested that a higher standard of regional monitoring is needed to make more precise socioeconomic predictions. Any potential displacement of fishers should be compensated with complimentary changes in fishery management (e.g., restrictions on traps, nets, etc.). Chris is concerned that large-scale fishing operations from far offshore have been squeezed by new regulations and these fishers will transfer their effort into the nearshore regions. Chris would like to see an effort to monitor the displacement of fishers and their combined impacts.

Chris suggested that recent harvest control actions, including closing of spot prawn trawling and reduction of TAC in nearshore and deeper nearshore fisheries, should be described as part of the ecological and socioeconomic baseline. Perhaps these should be included in a section on other types of fishery management. Information about harvest controls could be gathered from NOAA Fisheries. The harvest control actions do not need to be analyzed in the NEPA, but the impacts of additional harvest controls should be estimated. Since 1999, the fishery controls have increased and the area that is protected has expanded. A new socioeconomic baseline should be developed to account for these new fishery controls.

Chris emphasized the importance of monitoring MPAs to provide information to fishermen and managers. He was concerned that estimates of population size from fisheries dependent data would no longer accurately reflect stocks because of large populations concentrated within reserves. Chris was concerned that fishery management councils were unable to conduct the fishery independent surveys because money for these programs has been cut back. Chris suggested that estimates of population sizes for fishery purposes would have to come from fishery independent data.

Chris recommended that the RAP engage a scientist with expertise in community based management and social science.

Future RAP Meetings

DFG will provide first annual update on monitoring the Fish and Game Commission in December 2004. John Ugoretz would like some input from the RAP on design and results from MPA monitoring.