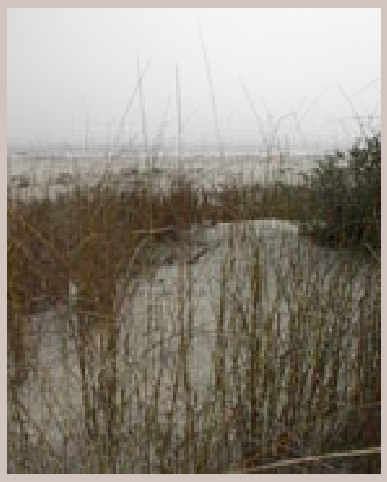
National Marine Sanctuary System

Strengthening Science for the Management of National Marine Sanctuaries





Research Coordinators Meeting Summary

February 2002

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February 2002
Prepared by Kimberly Benson
NOAA/National Ocean Service
National Marine Sanctuary Program

The 2002 NMSP Research Coordinators Meeting
Charleston, SC
January 26-28, 2002

Meeting Overview

The National Marine Sanctuary Program (NMSP) research coordinators and invited guests met in Charleston, SC, at the National Centers for Coastal Ocean Science (NCCOS) facility at Fort Johnson (the Center for Coastal Environmental Health and Biomolecular Research (CCEHBR)) for the second annual research coordinators meeting. The goals of the meeting were to

- Showcase NMSP science efforts and accomplishments
- Hold a workshop on system-wide monitoring in the NMSP
- Learn about the NCCOS-NMSP Partnership
- Get to know the Fort Johnson lab facilities and capabilities
- Plan for the future of NMSP science

Pat Fair (CCEHBR and Steve Gittings (NMSP)

The first day of the meeting was spent familiarizing all participants with research programs and activities at the sites, as well as hearing from NCCOS scientists on partnership projects with NMSP and the activities of the Charleston lab. The second day was dedicated to discussions on monitoring for the NMSP, focusing primarily on the development of a system-wide monitoring plan. Discussions on the third day covered a variety of program business items, comments from Director Dan Basta, and presentations from several CCEHBR lab staff on potential areas for future NCCOS/NMSP collaboration. Evening events included an awards ceremony and tours of the NCCOS laboratory facilities. A field trip to the Cape Romain National Wildlife Refuge capped a great week.

DAY 1—Program Introductions

Dr. Steve Gittings, NMSP Research Coordinator, and Pat Fair, CCEHBR Coastal Health Program Branch Chief provided welcoming remarks.

Science in the National Marine Sanctuaries
An introduction to the science program of the NMSP consisted of an explanation of the science evaluation process and results of recent efforts to identify priority information needs that was initiated during the 2001 Research Coordinators Meeting; a description of the NMSP plan for submerged cultural resources; and presentations from each of the participating sanctuary research coordinators. These presentations focused on science capacities, opportunities, monitoring efforts, and successful collaborations and partnerships at each sanctuary.

Presentations included

- NMSP Science Evaluation—Steve Gittings
- Submerged Cultural Resources Plan—John Broadwater
- Sanctuary Presentations
    - Olympic Coast NMS—Ed Bowlby
    - Cordell Bank NMS—Jan Roletto
    - Gulf of the Farallones NMS—Jan Roletto
    - Monterey Bay NMS—Andrew DeVogelaere
    - Channel Islands NMS—Ben Waltenberger
    - Stellwagen Bank NMS—James Lindholm
    - Gray's Reef NMS—Greg McFall
    - Hawaiian Islands Humpback Whale NMS—Claire Cappelle
    - Fagatele Bay NMS—Nancy Daschbach
    - Florida Keys NMS—Brian Keller
    - Flower Garden Banks NMS—Emma Hickerson
    - Monitor NMS—John Broadwater
- Participating NMSP Partners
    - REEF Environmental Education Foundation—Christy Pattengill-Semmens
    - Great Barrier Reef Marine Park Authority—Alison Green

Action Items

- Review the Draft Science Evaluation with particular attention to the section on your site and areas where the method of analysis could result in misinterpretation of the data. Send comments to Kimberly Benson (kim.benson@noaa.gov).
- Consider web-based dissemination of report similar to that currently used for research priorities at the Great Barrier Reef Marine Park Authority (http://www.gbrmpa.gov.au/corp_site/info_services/science/research_priorities/highest.html?ptr=39). Send comments to Kimberly Benson (kim.benson@noaa.gov).
- Contact Kimberly Benson (kim.benson@noaa.gov) or Lynn Takata (lynn.takata@noaa.gov) for copies of the above presentations.

The NCCOS/NMSP Science Partnership

The NCCOS/NMSP science partnership in 2002 again proved to be a productive means to mobilize NOS science capacity to address the management information needs of the NMSP. As the partnership enters its third year of activity, both NCCOS and the NMSP continue to look for and develop opportunities to further develop this relationship. The venue for the meeting was chosen specifically to provide participants an opportunity to become familiar with one of the NCCOS laboratories, CCEHBR.

To provide a context for partnership discussions, Dr. Geoff Scott, Acting Director of CCEHBR presented an overview of the NCCOS draft strategic plan. The strategic vision states that sustainable coastal management decisions should be made based on the best available science and research, and should also maximize societal benefits. NCCOS will strive to provide coastal managers with the scientific

understanding and products needed to balance environmental, social, and economic goals. NCCOS will provide these tools and services by maintaining high quality scientific expertise and capability, developing relevant research, monitoring, and forecasting capabilities, and building partnerships and partner capabilities.

As a five-year goal for the NCCOS/NMSP Partnership, Dr. Scott offered the idea of establishing a partnership-based, integrated assessment of National Marine Sanctuaries. An integrated assessment would include: baseline characterization; a monitoring program based on sanctuary specific goals; trend analysis and threat delineation; prediction of future outcomes; past prediction evaluation; and guidance to meet desired targets.

Mark Fonseca (CCFHR)

Following Geoff Scott's remarks, an overview was provided on the capacities of each branch at CCEHBR. For each of the current partnership NCCOS/NMSP projects, the principal investigator presented project updates, accomplishments, and future directions. During the third day of the meeting, a brainstorming session that included all NCCOS participants was held.

Presentations included

- NCCOS Strategic Plan for 2002-2006—Geoff Scott
- Capacities at CCEHBR
    - Coastal Health Program Branch—Pat Fair
    - Ecotoxicology Branch—Ed Wirth
    - Marine Forensics Branch—Ronald Lundstrom
    - Risk Analysis and Information Management Branch—Malcolm Meaburn
    - Coastal Research Branch—Greg Doucette
    - Ecology and Pathology Branch—Jeff Hyland
- NMSP/NCCOS Partnership Projects Updates
    - Support of Monitoring Activities and Site Characterization at Gray's Reef National Marine Sanctuary—Jon Hare, NCCOS/ CCFHR
    - Support of Monitoring Activities and Site Characterization at Gray's Reef National Marine Sanctuary—Jeff Hyland, NCCOS/CCEHBR
    - Ecological Characterization and Analysis of Seagrass Injury and Recovery on Shallow Seagrass-*Porites* Coral Banks in the Florida Keys National Marine Sanctuary—Dr. W. Jusdon Kenworthy, NCCOS/CCFHR,
    - Assessing Coral Health in the Florida Keys National Marine Sanctuary Using a Molecular Biomarker System—Cheryl Woodley, NCCOS/CCEHBR
    - Biogeography for Management Plan Revision and 5-year Plan for Developing Sanctuaries Biogeographic Research and Analysis Capabilities—Matt Kendall, NCCOS/Biogeography Team

- Comparative Analysis of the Functioning of Disturbed and Undisturbed Coral Reef and Seagrass Ecosystems in the Tortugas: Phase I-Establishing a baseline—Mark Fonseca, NCCOS/CCFHR

Action Items

- Comments from NMSP on the NCCOS draft strategic plan should be submitted to Steve Gittings (steve.gittings@noaa.gov) as soon as possible.

Awards Ceremony

A reception was held at the South Carolina DNR Education Center for participants and guests and the following awards were presented.

Symbiosis Award for Outstanding Partnerships: "In Recognition of Your Productive Collaboration with the National Marine Sanctuary Program 1999-2001"

Recipient: National Centers for Coastal Ocean Science were recognized for their productivity in conducting science to address the management information needs of the NMSP (award accepted by Geoff Scott).

Award for Science in Action: "In Recognition of Groundbreaking Work to Develop Scientific Programs or Initiatives"

Recipient: The Sanctuary Integrated Monitoring Network (SIMoN) was recognized for its innovative approach to sanctuary monitoring (award accepted by Andrew DeVogelaere and Mario Tamburri).

Award for Special Achievement: "In Recognition of Outstanding Achievements in Preserving the USS Monitor for the People of the United States"

Recipient: Monitor National Marine Sanctuary was recognized for special achievement in recovering artifacts from the wreck site (award accepted by John Broadwater).

Award for Outstanding Science Communication: "In Recognition of Distinguished Efforts to Promote National Marine Sanctuary Program Science"

Recipient: James Lindholm was recognized for his numerous publications over the last two years, including a just-released book titled *Dynamic Modeling for Marine Conservation.*

James Lindholm (SBNMS) and Steve Gittings (NMSP)

Thank You: "For exceptional service as a vital member of the Sanctuary family. Your dedication to quality, your planning, design and production skills, your willingness to follow as well as lead, but mostly your friendship, will be long remembered and appreciated."

Recipient: Paula Souik, who is leaving NMSP to work for the NOS Office of Response and Restoration, was honored for her outstanding contributions to the NMSP.

DAY 2—System-wide Monitoring

Acting Director Geoff Scott (CCEHBR)

As an introduction to the monitoring discussion, Dr. Geoff Scott, Acting Director of CCEHBR, presented a water quality short course that focused on the use of semi-permeable membrane devices (SPMDs). He commented on a pilot study (funded by a National Fish and Wildlife Foundation grant) in which SPMDs were deployed in sanctuaries with coral resources. Additionally, the devices were deployed on reef areas in Belize and Mexico during the 2001 Islands in the Stream mission and have been used in water quality monitoring at the Flower Garden Banks for several years.

Geoff Scott concluded by stating that the applicability of SPMDs in monitoring programs would be enhanced by further research, including:

1. Further development of an SPMD sampling rate database.
2. Validation of the use of permeability reference standards for diverse classes of contaminants.
3. SPMD/biota relative uptake rate comparison.
4. Further development of the use of SPMD for sediment pore water sampling.
5. Optimization of SPMD membranes and sequestration phases for metals.

System-wide Monitoring Workshop

The purpose of this workshop was to introduce system–wide monitoring as a concept for the NMSP; identify applicable questions and components of a system-wide monitoring program; and suggest elements to be incorporated into a plan. This section provides a summary of the points of agreement and major comments recorded during the workshop. The raw notes and comments recorded during the session can be found in Appendix I

Current monitoring efforts in the NMSP are site specific. They are designed to assess the management needs of the site and are largely dependent on the interest and efforts of partnerships. For these reasons, there is little consistency among monitoring activities at the sites with respect to focus, protocols, and level of effort.

All sites agreed that a system-wide monitoring program would be beneficial to the NMSP. It was recognized that such a program would provide a means to assess how our sites are influencing and being influenced by surrounding resources and threats within and beyond sanctuary boundaries. Further, a system-wide monitoring program also could serve to identify key areas for future protection.

A useful program should be question driven. In addition, individual site monitoring programs should be linked to the site-specific Action Plans and performance measures developed during the management plan review process.

Standardization of methods and protocols among the sites is not pre-determined. However, there is general consensus that existing site-based activities could be used to address questions at the ecosystem, regional, and national levels. These broader questions should be consistent with the mission of the NMSP and NOAA and draw on commonalities among site management activities. Biogeographic assessments could also be useful to identify potential regional, ecosystem, and system-wide links for broader assessment.

Charles Alexander (NMSP)

Broader ecological and biogeographic assessment should generally address conditions and effectiveness of each sanctuary with respect to a larger framework (i.e., common resources, ecosystems, regional, national frameworks). Such assessments should be based on status and trends of habitat, critical species/living marine resources, and relevant environmental/physical parameters. Ecosystem level questions might consider portions of multiple sanctuaries with similar resources. For example, sanctuaries with coral resources may collectively use information on status and trends of coral resources and threats to coral, to assess the effectiveness of resource management for corals across the NMSP. Other combinations could generalize information from sanctuaries where marine mammals are a primary resource or sanctuaries that are associated geographically. Similar assessments could be used to address the condition of submerged cultural resources and the effectiveness of management efforts to protect them.

The plan design needs to consider the products and target audiences relevant to each level of assessment. Consideration should be given to the report card approach to illustrate status and trends of the resources. However, oversimplification should be avoided, and report cards should be accompanied by text providing explanatory detail. Both the plan and the process, as well as significant reports, should be subjected to peer review to ensure credibility.

Further plan development will continue to move forward, in part with the assistance of a core group of sanctuary research coordinators (Andrew DeVogelaere, Brian Keller, Greg McFall, James Lindholm, and Ed Bowlby). This group will represent the interests and much of the diversity of the individual sanctuaries. Their participation will ensure applicability and utility to the sanctuary system. They will also serve to facilitate communication with the other research coordinators, site managers, and sanctuary advisory committees. Using guidance provided by workshop participants and outside advisors, this group, along with key headquarters personnel, will work over the next few months to draft a system-wide monitoring plan.

Action Items
- Convene core team to move forward with a plan based on the guidance provided during the workshop.

DAY 3—NMSP Program Business and Partnership Development

NMSP Program Business
Most of the last day of the meeting was dedicated to presentations and open discussion on topics that directly influence the science activities of the NMSP. Topics included coral resource monitoring, requirements impacting data management, expedition planning, and shiptime allocation process. Program business was concluded with an address by the program director, Dan Basta.

Coral Reef Monitoring Program
Two years ago, NMSP was awarded a grant from the National Fish and Wildlife Foundation to initiate a system-wide monitoring program for sanctuaries with coral resources. The monitoring program focused on addressing broad reporting categories (i.e., benthic condition, reef fish condition, water quality). The project incorporated a pilot study using SPMDs to detect the presence of persistent organic contaminants. The NMSP contracted Tom Shyka to complete the terms of the grant. During this session, he provided an update on the progress of the program.

A draft State of NMSP Coral Resources report is in review and draws on existing data from site monitoring efforts and the results of the SPMD study. Tom Shyka also presented a report card that he is developing to supplement the executive summary of the report. Such a report card could be adapted for use in the system-wide monitoring program.

Action Items
- Tom Shyka is working with each of the participant sites to collect comments on the draft report.
- If you would like to review the report and have not been contacted, please contact him at tshyka@maine.rr.com.

Section 508
Section 508 refers to a legal provision that requires the federal government to ensure equal access to electronic information technology for persons with disabilities. The guidelines affect software use and design criteria for databases used by the NMSP.

Action Items
Please review Section 508 information resources:
- OCRM ADP support requests: ocrmadpstaff@noaa.gov
- OCRM web workgroup: http://stingray.nos.noaa.gov/oww
- NOAA Section 508 web site: http://www.section508.noaa.gov

Metadata
Metadata or "data about data" describe the content, quality, condition, and other characteristics of data. The Federal Geographic Data Committee approved the Content Standard for Digital Geospatial Metadata (FGDC-STD-001-1998) in June 1998. Metadata is a federal requirement for data collected/created by the federal government after June 1998.

Action Items
- Please become familiar with the information on metadata found at these web sites and implement the necessary steps to meet FGDC requirements.
  - CSC Metadata Page: http://www.csc.noaa.gov/metadata
  - FGDC Metadata Pages: http://www.fgdc.gov/metadata/metadata.html

- Consider whether you feel the program should pursue metadata training.

Science Database
A science database was developed in preparation for the science workshop conducted last year. Based on suggestions from the research coordinators at the sites, Paula Souik and Chris Clement (SPO) completed a substantial redesign in the last year to maximize utility, access, and ease of data entry. During this session, Paula reviewed the features of the database and demonstrated editing, search, and export functions.

Action Items
Sanctuary Staff (please complete by April 30, 2002)
- Review the database entries for your site.
- Edit existing records to indicate/update the year of activity.
- Create records for new FY02 projects and ongoing projects extending into FY02.

Science Team
- Establish new point of contact for database maintenance, and revisions.
- Pursue recommended changes and better integration with SPITS.

Expeditions
The NMSP Marine Conservation Science Initiative (MCSI) is a concept to conduct integrated science at ecosystem and regional levels. We can look forward to continued support of large-scale projects, missions, and initiatives. Such operations provide benefits beyond the science they achieve. They allow us to bargain for and leverage shiptime, build program recognition, and leverage partnerships for support operations, sample processing, data analysis, and product development. John McDonough provided planning suggestions for maximizing the benefits of future missions.

Thoughts to Consider

- A strategic planning working group would facilitate project development and planning.
- Where do we want to be in 5-10 years?
- What types of products do we want to build and for what target audiences?
- What types of outcomes do we want to achieve?
- Are there connections to be made between the system-wide monitoring initiative and other expeditions to provide impetus for annual MCSI cruises?
- Can we explore partnership opportunities with NMFS on marine mammal and bird surveys to bargain for more advantageous time in the field during times of the year when, currently, shiptime is unavailable?

Fleet Allocation Process

Dana Wilkes presented an overview of the shiptime allocation process with recommendations and strategies for securing time to conduct program and site based science activities.

Action Items

- Annual requests are due at the end of January. Every site should consider requesting shiptime. Proposed activities need not be complex.
- Use request forms for NOAA ships (NOAA Form 77-65) and charter vessels (NOAA Form 75-91) for tracking purposes—only tracked time can be used to justify more time for NMSP activities or additional NOAA science support vessels.
- Start planning for FY 2004 now. Multi-year, multi-partner, and multi-sanctuary projects are favorably received in the allocation process.

Director's Remarks

Dan Basta, the Director of NMSP, joined the meeting on the last day to offer his thoughts on the future direction of the NMSP science program and to answer questions posed by participants. He addressed many of the topics discussed during the meeting and a variety of other areas of general importance to science activities or the system as a whole. These remarks included

- System-wide monitoring—we need to be quick and decisive in developing the plan and allow for it to evolve over time.
- Sanctuaries can provide a geographic focus for research. The priority for the NMSP research coordinators and science staff should be to promote research activities in the sanctuaries and coordinate these research efforts.
- NCCOS and other partners are ready and willing to engage.
- The NMSP needs to undertake a vessel requirements study modeled on the facilities requirements study that resulted in allocation of funds to program infrastructure.
- System-wide monitoring and Marine Conservation Science Initiatives will help build the case for additional vessel support.

- Consider utilizing sentinel sites in monitoring as long-term control and study areas so they may provide a baseline for later comparison, and may be marketed for additional appropriations. We currently do not have funding for sentinel sites.
- The success of expeditions is measured in what we achieve, as well as how we captivate and compel our constituents. NMSP staff should use them as an opportunity to tell the story of what we are doing during the cruise and as a program.

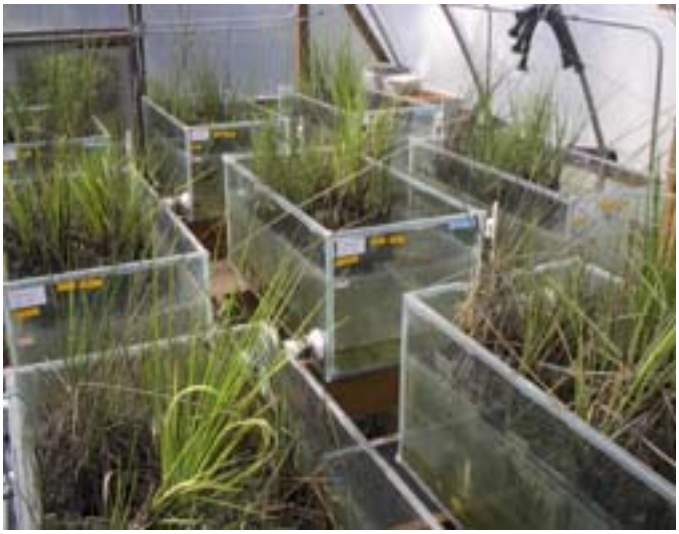
Director Dan Basta (NMSP), Jan Roletto (GFNMS), and Ed Bowlby (OCNMS)

- The Joint Management Plan Review Process has registered 7,000 comments and participation in scoping meetings, indicating increasing interest in sanctuaries and sanctuary programs.
- Biogeographic characterization of all sanctuaries will be a priority. It has utility beyond the management plan review process (e.g., establishing meaningful ecological boundaries, meaningful management strategies, setting the stage for future collaborative efforts, bringing and appropriately applying NCCOS expertise).
- Tech Diving: The NMSP will continue to support the evolution of the NOAA rebreather diving program. We need to develop the capacity that uses experienced rebreather divers in sanctuaries as opposed to having everyone trained in using rebreathers. Mitchell Tartt will be working on a workshop to establish protocols for technical diving in sanctuaries and methods for tapping into the community of technical divers to meet needs.
- SCUBA Diving: Sanctuary managers should encourage certification of sanctuary staff under NOAA and encourage efforts to obtain NOAA Science Diver status for worthy non-NOAA scientist candidates.
- The Science Evaluation report is a critical document for our program. It will be used to establish internal and external partnerships and secure funding for the NMSP science program.
- Fellowship Program: No funding was available this year. Sites are encouraged to participate in internship opportunities through universities. Such programs can be a resource for a variety of support, including GIS work that meets sanctuary needs.
- Exchange opportunities are encouraged. The experience encourages the shared project approach with folks outside their own sites. Interested individuals must determine with the site manager if a two-week, or other term, rotational assignment is feasible.
- We are open to ideas such as focused, short-term, product-oriented sabbaticals, but they must be balanced against upcoming work.

- The FTE picture is grim, requiring additional investment in contract employees if we are to grow. The budget outlook for FY03 is holding steady, so we need careful thought in terms of where we build capacity.
- The NOS partnership proposal program has $750K this year. This initiative requires partners within NOAA and NOS. Look for a request for proposals soon. One NMSP proposal is already in development on socioeconomic evaluation.
- Each year, national program priorities are selected by the director with input from site managers and program leads.
- Real-time video capability: There is opportunity for procuring and using this technology with the long-term goal of having telepresence at each sanctuary. Bob Ballard is looking to do this with *Jason* to provide access beyond their current two weeks of operation each year.

NMSP/NCCOS Partnership Brainstorming

The purpose of this session was to generate opportunities to develop a more integrated relationship at the program level. Thus far, the NCCOS/NMSP relationship has developed largely on a site-by-site basis. While NCCOS activity is not restricted to the regions where labs are located, early projects with NMSP were localized because initial ideas involved areas where the researchers were already working or with which they were familiar. The NCCOS labs are actively involved in projects across the nation and in other countries, and they are interested in working more with every sanctuary in the NMSP. Ideas discussed during the session are presented below.



Mesocosm Wet Lab (CCBEHR))

Cyrogenic banking–Paul Becker, NIST

National Institute of Standards & Technology (NIST) is not an NCCOS center, but has facilities at Fort Johnson in CCEHBR and the new Hollings Marine Laboratory. NIST primarily banks tissue, sediment and lipid samples for contaminant, pathogen, and genetic analysis. Tissue samples are most commonly banked. The cost of services is shared and access policies are project specific. Capacities in the new Hollings Marine Lab will allow for the handling of whole organisms and the possible development of a national taxonomic collection. The facilities will not duplicate the capacities of the Marine Mammal Lab on the West Coast.

Collaborative Ideas to Consider

- Preserving specimens of West Coast seabirds
- Preserving water samples during harmful algal blooms.

Bio-prospecting–Peter Moeller, CCEHBR
CCEHBR and the Hollings Marine Lab will provide opportunities (e.g., state-of-the-art equipment, people, space) for technological collaboration on bioprospecting. Samples provide an opportunity for testing new technologies and protocols. If active compounds are discovered, the focus shifts to development of synthesis techniques supported by some natural extraction. The group can also work on archived samples and the detection of anthropogenic compounds.

Collaborative Ideas to Consider
- Sanctuaries could contribute by selective harvesting. FKNMS contends that bioprospecting is a reality and would prefer to work proactively and collaboratively with NOAA/NCCOS.
- The NMSP is considering drafting a policy statement to address exploration, discovery, and development of bioactive compounds in sanctuaries.

Biotoxins group (HAB, ciguatera)–Steve Morton, CCEHBR
CCEHBR and the Hollings Marine Lab will offer lab space and expertise for collaborative biotoxin work. Sanctuaries represent new areas for investigation where benthic and water column HAB organisms may be present. Increased numbers of HAB organisms can be a good indicator of coral reef stress. No long-term ecological survey of ciguatera in coral reefs is available. The last survey in the sanctuaries was in 1985 in the FKNMS.

Collaborative Ideas to Consider
- Coral reef sites should consider collecting algal samples for the Biotoxins group.
- The NMSP is establishing a position for a National Volunteer Coordinator that could build and nurture efforts such as Phytoplankton Volunteer Monitoring Network to provide baseline data and early awareness of emerging threats.

Memorandum between NOAA/NCCOS and EPA on EMAP for the continental shelf—Jeff Hyland
A draft memorandum of understanding (MOU) is in development, and the NMSP will be kept aware of its progress. The MOU would set the stage for an offshore compenent of the EPA's Environmental Monitoring and Assessment Program.

Collaborative Ideas to Consider
- NMSP could support the offshore component and use data as one element of site and system-wide monitoring.

Data Management
There is a critical need for data information management, storage, and dissemination to support the NMSP science program, system-wide monitoring efforts, and activities with NCCOS. Information generated by over 200 scientists in 13 sanctuaries is extensive and would be a tremendous resource, if managed properly.

Collaborative Ideas to Consider
- Access might be provided through an interactive web site.
- A well-designed system would provide a means to incorporate data from opportunistic operations.
- System management would require specialized staff.
- There is interest in developing real-time data access.

Hollings Marine Laboratory at Fort Johnson

Attendees

National Marine Sanctuary Program

National Office

Charles Alexander
John Armor
Dan Basta, Director
Kimberly Benson
Stephen Gittings
Michael Murphy
Paula Souik
Lynn Takata
Mitchell Tartt
Christine Taylor
Dana Wilkes

Field

Ed Bowlby, Olympic Coast NMS
John Broadwater, Monitor NMS
Claire Cappelle, Hawaiian Islands Humpback Whale NMS
Nancy Daschbach, Fagatelle Bay NMS
Joanne Delaney, Florida Keys NMS
Andrew DeVogelaere, Monterey Bay NMS
Emma Hickerson, Flower Garden Banks NMS
Brian Keller, Florida Keys NMS
James Lindholm, Stellwagen Bank NMS
Greg McFall, Gray's Reef NMS
Jan Roletto, Gulf of the Farallones and Cordell Bank NMSs
Ben Waltenberger, Channel Islands NMS

National Centers for Coastal Ocean Science

Biogeography

Matt Kendall

Center for Coastal Fisheries and Habitat Research

Mark Fonseca
Jon Hare
Jud Kenworthy

Center for Coastal Environmental Health and Biomolecular Research

Paul Bauersfeld
Dan Bearden
John Bemiss
Marie DeLorenzo
Greg Doucette
Pat Fair
Thomas Greig
Margaret Holbrook
Jeff Hyland
Laura Kracker
Tod Leighfield
A.K. Leight
Rod Lundstrom
Malcolm Meaburn
Tina Mikulski
Peter Moeller
Steve Morton
Paul Pennington
John Ramsdell
Lori Schwacke
Geoff Scott, Acting Director
Gloria Seaborn
Ed Wirth
Cheryl Woodley

Other Attendees
Paul Becker, National Institute of Standards & Technology
Donald Cobb, Canada Fisheries and Oceans Program, Oceans Programs Division
Alison Green, Great Barrier Reef Marine Park Authority
John McDonough, NOS/Special Projects Office
Richard Murphy, Ocean Futures
Geno Olmi, NOS/Coastal Services Center
Paul Orlando, NOS/Special Projects Office
Dave Owens, Grice Marine Lab, College of Charleston
Christy Pattengill-Semmens, Reef Environmental Education Foundation
Tom Shyka, Coral Reef Monitoring Program
Mario Tamburri, Alliance for Coastal Technologies, University of Maryland Center for Environmental Science
Betty Wenner, ACE Basin National Estuarine Research Reserve, South Carolina Department of Natural Resources
Lisa Wooninck, NMFS/National MPA Center

Jan Roletto, Christine Taylor, Christy Pattengill-Semmens, Ed Bowlby, Pat Fair, Paula Souik, and Charly Alexander

Appendix I

System-wide Monitoring Workshop Meeting Notes
The information contained in this appendix represents the raw material recorded during the system-wide monitoring workshop at the 2002 NMSP research coordinators meeting. These notes are a compilation of materials captured on flipcharts and major points and comments raised during open discussions.

Status of existing monitoring efforts – site and issue specific and depend upon partnerships. Assessment indicates that monitoring is tailored to meet site needs. QUESTION: what does the FY 2001 science meeting summary indicate about site monitoring needs? Which sites are doing well? Which sites are struggling?

SBNMS has been working with Battelle about supporting data management needs relative to monitoring efforts. QUESTION: Could this be expanded and built upon?

Challenges – what are the most significant challenges? would be useful to obtain each site's perspective on this. For example, group believes that staffing and funding are significant constraints on current monitoring efforts.

Sentinel Sites – proposal to define these as representative sites for sustained observations. QUESTION: what does this mean in terms of pristine vs. damaged habitats, conducting monitoring at both for comparison (the control site model)?

Discussion on the Three Overarching Questions –

What is System Wide Monitoring?

- Method to address issues both at site and regional levels
- Understanding what is influencing our sites and the resources
- Understanding how the sites influence the resources
- Should include regional circulation models
- Should set the stage for easy, intuitive synthesis of data to respond to questions – aggregate up using detailed explicit information
- Should derive from a mission and then target more specifics
- May allow for the identification of commonalities across sites and can feed into national program objectives.
- May contribute to the site selection process – identifying key areas for future protection.
- Need to develop list of key questions and issues to be addressed at both levels as drivers to determine the specifics of monitoring – could be done by comparing site management plans and understanding common objectives and needs
- Need to determine the why?
    - -broad marine protection?
    - -site specific?
    - -both?
- Policy and management questions are site specific & may not be compatible with regional issues
- May indicate if a site has improved or not

- May answer regional questions, which incorporate monitoring observations from outside the sanctuary boundaries.
- Helps identify/understand "network" connections to other sites.
- May incorporate an ecosystem/community approach.
- It is not a program to answer broad national questions that are better answered by synthesizing data
- It is not a bunch a data loggers hoping that the data will mean something
- It is not always peer-reviewed data (not always possible)
- It is not necessarily standardized across sites
- Science driven leading to testing hypothesis – there is a role for examining or supporting synoptic scale efforts to determine patterns that generate hypothesis and require other types of monitoring
- Need to consider infrastructure investment, as well as connection to existing monitoring efforts that are designed to address the same types of questions
- Should be connected with a well thought out set of products that target particular audiences (and are simple and easily understood)
- Should support the development of scientifically defensible peer-reviewed research that can influence management decisions that may be contentious in nature

Data ---→ Patterns ---→ Targetted Monitoring ---→ Supporting Peer-Review Research

- Peer-review of targetted monitoring design is important [Duaber Decision]
- Peer review of interpretation is important
- Jeff Hyland – EMAP did engage statisticians and others to develop a scientifically defensible peer-reviewed monitoring plan for addressing a set of specific questions – ensures that investment in data collection is sound
- Establishing a system wide monitoring program could benefit from working with partners who are wrestling with the same issues

Relevant Questions –

- Issues related to the health of corals is one example of where we could be thinking about establishing a form of ecosystem-community monitoring
  - Status of corals
  - Threats to corals
  - Effectiveness of specific management strategies

Combination of monitoring approaches required

- Biogeographic assessment could help identify potential links that would require system wide monitoring – identification of driving questions
- Are MPAs that provide additional resource protection working?
- How do we identify areas within our sanctuaries that require additional protection?
- How do we identify key areas that require protection outside of sanctuaries?

System-wide questions

- habitat status
- health of sanctuary
- trends?
- effectiveness of the sanctuary
- Address Status & Trends Of:
  - 1. habitat
  - 2. critical species / LMR
  - 3. Environmental/Physical parameters
  - 4. Cultural resources
  - 5. Socioeconomic resources
- Trends & Sources of potential change
- Patterns/processes/performance indicators
- Temporal & hierarchical
- Questions derive from the status of resources within our boundaries.

Sentinel Sites – Opinions and thoughts

- The 13 sites are the sentinel sites
- Where are the "Flower Gardens" within the large sanctuaries?
- What are the questions that require sentinel sites?
- Sanctuary scale is inaapropriate to say they are representative of a region
- Sanctuary scale is appropriate for aggregating information to generate questions – to raise "red flags" – early warning of potential anthropogenic influences
- Sentinel sites could answer key questions at broader (regional) levels (i.e. habitat degredation, appearance of invasives,) asan early warning system (**this contradicts John's notes)
- Nature of sentinel site may differ between the East (small areas) vs West (large areas) coasts.
- What is the appropriate scale & definition of a sentinel site?
- Could be a network of index sites.
- Could be a component of a national backbone.

System Wide Monitoring Program Process –

Brainstorming Questions that Drive Monitoring

- What is the status of the habitat in the sanctuary?
- What is the health of the sanctuary compared to designation?
- Natural variability and long-term trends?
- Basic elements (would require more detail of elements in priority order):
  - habitat
  - critical species
  - physical environmental parameters
  - social, economic, cultural parameters
- Condition of a resource and perceived pressures?
- Causes of potential change – sources
- Monitor – status, pressures, management measures

Performance Measures

- GBR tying performance measures to overall health based on cumulative management measures
- Difficult to identify effectiveness of one particular management measure due to mosaic of measures that are implemented over a background of poorly understood natural variability
- Presents problems for continuing to support highly contentious or expensive management measures, unless you stop implementing the measure and monitoring indicates a reversal of trend

NOTE: Efforts to better understand the baseline status of the reources that the sites are mandated to protect is a step in the right direction. Some sites have the ability to do this, and are doing it better than others. If a negative trend is identified, suspected parameters that may be causing the condition can be measured whether they are local, regional, or global in nature (or monitoring a combination of parameters at all levels depending on the perceived problem). This discussion indicates that the sites could develop a robust "State of the Sanctuary" report following a similar structure and format that would utilize data from monitoring as well as other types of research activities. The "State of the Sanctuary" report could also include future directions (strategies), a funding plan, and a method for monitoring effectiveness of the strategies applied (could be as simple as continued "status" monitoring). Advantages to such a product are that it could be applied to other areas that have critical resources but little or no form of protection. A good exercise would be to design and mockup this report using the existing reports as a start.

Potential Future Exercise – sites identify categories of resources, threats, and management measures they either monitor or wish to monitor, as well as the status of that monitoring effort (well underway, needs improvement, not being done). A component of the exercise related to threats could reflect source – maybe as simple as: monitor in the sanctuary, monitor adjacent to the sanctuary, regional (could include marine and terrestrial elements of monitoring too). This information could be compared to existing monitoring efforts conducted by partners leading to questions of who could provide the data, access, etc. Note: some of this information already exists and could be developed into a strawman for the sites to respond to.

Sites identify relevant performance measures based on the above. These could apply to the status of a resource or a change in condition of a particular threat (reduction of pollutant X, decrease of vessel traffic by X%, etc.). Performance measures could also relate to management efforts (increase # of enforcement days to X).

Materials for developing background –

- Management Plans
- Results of last Research Coordinators Meeting
- Existing Site Monitoring Plans
- The monitoring activities matrix that Steve has developed from the sites
- AOP

THOUGHTS/QUESTIONS – Regional or ecosystem-based monitoring efforts might be better addressed if given attention at a regional or headquarters level. This would require a staff to interact with individual sites to obtain the information required for regional issues, and could in turn support sites in efforts to achieve a performance measure for a resource that is influenced by regional sources. It might be difficult for a site to access or generate information outside of their boundaries.

Could monitoring include monitoring the effectiveness of management measures in other non-sanctuary areas as a means to determine potential applicability to a site?

Next Steps: (Charly Alexander)
Review of gant chart acknowledging that the tasks will change and become more refined based on the outcomes of this meeting.

- Meeting results (value added) to sites for review by end of Feb
- Anticipate series of exercises to provide detailed information
- Potential contractor support to assist with this effort and prepare the framework for the system wide monitoring program
- Will solicit advice from a panel of experts
- Prepare for next planning session by end of summer – preparing for initial implementation
- Target initial implementation during 1st quarter FY 2003

James – Could the contractor prepare a meta-assessment of the sites through site visits. Tasks would include profiling each site then compiling and integrating results across the sites?

Core Team:

- Andrew
- Brian
- Greg
- James
- Ed

Plan Elements

1. Big Picture
2. Site
3. Data management
4. Other agency efforts
5. Funding Plan
6. Implementation schedule
7. Prioritized products. Consider audience
8. Needs – equipment, staff, vessels
9. Review, oversight, evaluation. Internal and independent panels