

Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS)

Fisheries Workshop

**Marriott Providence Hotel Downtown
1 Orms Street, Providence, RI 02904**

Monday, September 26, 2011

DRAFT Meeting Summary

Workshop Goal

Develop an Ocean Observatory/ Fisheries Community Interactive Partnership

Objectives

- Determine what MARACOOS-derived information products can be supplied regularly to fishermen;
- Complement what fishermen already know with new MARACOOS-derived information products;
- Engage the fishing community in the design and conduct of fisheries research projects;
- Establish a process for regularized engagement of fisheries stakeholders with MARACOOS.

Welcome

Dr. Carolyn Thoroughgood, MARACOOS Chair, and Dr. Steven Lohrenz, Dean of SMAST at UMass Dartmouth welcomed the group to the meeting. Dr. Thoroughgood stressed the importance of building ongoing collaboration between MARACOOS and the fisheries community, and committed to follow up with more regular communication and additional meetings as needed. She noted the evolution of MARACOOS commitment to development of products and application of data and observations to user needs. In addition, Dr. Thoroughgood informed the group that MARACOOS was in the process of developing a ten (10) year build out plan, and encouraged the participants to provide input to the plan. She also introduced the newly appointed Executive Director of MARACOOS, Dr. Gerhard Kuska.

Plan for the Day

Dr. Gene Kray, Dean of Continuing Education, West Chester University (ret.) served as the moderator of the day's discussion. He reviewed the objectives for the day (summarized above), and the process. (A copy of the meeting agenda, attendee list, as well as all available presentations will be made available on the MARACOOS website at www.maracoos.org).

Mid-Atlantic Observatory Status and Products

MARACOOS principal investigators, Professor Scott Glenn, Rutgers University, and Professor Wendell Brown, UMass, Dartmouth presented a power point providing an overview of

MARACOOS activities, organization, and the major themes and focus areas for their work, including ecosystems and fisheries, search and rescue, coastal hazards, and water quality. They also described MARACOOS extensive capabilities (e.g. HF radar, CODAR, gliders/ROV, satellites), and description of products developed from observation data.

Discussion: Several participants expressed their positive impression of the extensive reach of MARACOOS efforts, and its potential applications to support the fisheries community. One participant indicated that he would be interested in additional wave data and products, and enquired about its availability. In response, Dr. Glenn noted that that was exactly the kind of feedback the conference organizers were looking for in order to assist MARACOOS in identifying user needs. Although some wave data was available as well as embedded in models used by MARACOOS, if it is a priority for the fishers, MARACOOS could consider ways to improve that data.

Another participant noted that fisherman knew from experience that when there was an easterly wind it was made more difficult (in some cases fruitless) to catch scallops, but they were not sure why it happened. To what extent can observing data help to understand these phenomena? While there was some information available indicating that it may be related to increased sediment activity, it was suggested that collaboration with MARACOOS might help to identify the causes and inform management alternatives for the fishers. One potential role for MARACOOS is to help the gap between traditional fisher knowledge and experience such as this, improved understanding of causality, and more identification of more efficient management approaches.

There was a question about how MARACOOS work related to ecosystem-based management (EBM). There was a brief discussion of the work that MARACOOS, PI Dr. Josh Kohut, Rutgers, and Dr. John Manderson, NOAA Sandy Hook Lab et al. are working on to use ocean observations data to improve integration of ecosystem-based habitat considerations into fisheries management and reduction of by-catch. A more detailed presentation on that work was scheduled in the afternoon. (See discussion below.) In addition, it was observed that both ecosystem-based fisheries management and coastal and marine spatial planning (CMSP) were interested in much of the same data and information; however, they each accumulate and display it in different ways.

While there were some generally favorable views among the fisher community to ecosystem considerations, it was noted that there is no requirement in Magnuson for EBM. In addition, the research and science side and regulatory and management side of NOAA often send mixed messages about EBM and CMSP that leads to some lack of trust and fisher community concern that they will get the “short end of the stick” from the regulatory side. There was a consensus, however, that MARACOOS observing data and products developed in close collaboration with the fisher community had significant potential to develop ecosystem-based products, as well as inform better management decisions.

Search and Rescue Capabilities

Art Allen, Oceanographer, US Coast Guard and Tim Carton, USCG, District 1 provided an overview of USCG search and rescue operations, capabilities and its successful collaboration with MARACOOS in operationalizing observing data into and significantly enhancing the effectiveness of SAROPS.

SAROPS (Search and Rescue Optimal Planning System) is the software used by the U.S. Coast Guard for Maritime Search Planning. SAROPS is a system that uses thousands of simulated particles generated by user inputs in a graphical user interface. SAROPS has the ability to handle multiple scenarios and search object types; model pre-distress motion and hazards; and account for the effects of previous searches. SAROPS makes requests to and receives from Environmental Data Server (EDS) real-time gridded environmental products. SAROPS uses the latest drift algorithms to project the drift of the survivors and craft. Search Rescue Unit allocation is automated in SAROPS by maximizing Probability of Success. Each Search Rescue Unit gets a recommended search pattern that accounts for the relative motion between the Search Rescue Unit and the drifting particles.

It was noted that the Coast Guard objective in its search and rescue planning is to be mobilized within ½ hour and onsite within 1½ hours anywhere in their control area. A copy of their power point presentation can be found on the MARACOOS website at www.maracoos.org.

Given the fishers concern with their activities potentially impacting marine mammals and protected species, there was a question about whether and how SAROPs could be used to track entangled species or injured whales for example. While the USCG has from time to time been able to use SAROPs for this type application, usually in partnership with other groups (e.g. NOAA), it was noted that that is not their primary mission and, therefore, there are practical limitations to widespread use for that purpose. It was suggested that consideration be given to adapting SAROPS for use by other groups for tracking of marine mammals and protected species. There was also a suggestion made that there may be lessons learned from USCG/MARACOOS SAROPS collaboration for addressing connectivity issues that are important to habitats and ecosystem-based management.

Commercial/Recreational Fishers Needs

Greg DiDomenico, ED, GSSA, Adam Nowalsky, Chair, NJ RFA, and Jarret Drake, Commercial Fisherman, provided their views on fisher needs for observing data, and potential areas for collaboration between MARACOOS and the fisher community. A summary of comments and discussion is outlined below.

- Data and information related to safety, including wind speed and wave height. There are already some examples of this cooperation.
- Need information both in real time (how-to determine whether to leave or return to port), as well as predictive and hind-cast to relate to such things as ecosystem applications and as a reality check on fish surveys.
- Need to better identify and fill gaps in availability of data, such as information from National Data Buoy System (NDBS). There are some examples of fishers helping support repair and replacement of buoys, and there may be potential to grow that partnership.

- MARACOOS may also be able to play a broker role in working with NOAA to identify equipment that is not working and expediting repair/maintenance, or filling the information gaps with surrogate data from observing data.
- Need singular point of access to different information and data sources.
- Recognize that fishers currently seek out and tailor information from various sources to their particular needs. How can MARACOOS work more closely with fishers to enable to access and define the information needs?
- Expand opportunities that recognize that the recreational and commercial fisher communities are available to support research needs, and utilize vessels and time at sea to complement or directly support repair and maintenance, information gathering and research objectives.
- Keep in mind that a prime objective for product development and incorporation of observation data is to increase “efficiency”, which will vary depending on target fishery sector (recreational, for hire, commercial etc.) Efficiency can include, but is not limited to ability to catch fish, avoid by-catch, support better user experience in for hire sector, save on fuel and operational costs, enhance safety, provide less expensive product to consumer.
- Provide usable inputs into management process including Science and Statistical Committees and stock assessments. This will take close collaboration and focus on maintaining trust among fisher, observing, research and management sectors
- Further development MARACOOS high resolution localized information, and 3D nowcasting, hindcasting and forecasting of ecological conditions has significant potential.
- Further specific discussion, research and collaboration is needed to identify ways that observing data and information can specifically fill key gaps in knowledge of fish behaviors that are causing conflict in the management and regulatory arena and that can inform the move to EBM.
- It is important that MARACOOS and fisher work together to identify priority issues and be realistic about what can be achieved. Don’t “bite off more than you can chew”, or create unrealistic expectations.
- Focus on cohesive delivery mechanisms that are usable by the target fisher user group.
- There is a need to find a balance between providing a clearinghouse, menu of information that can be adapted by users into products, and specific localized information products.
- MARACOOS can also provide service in working with fisher community identify longer term research questions as well as short term user products, improve understanding of ocean physics that can provide greater certainty to stock assessments, and get beyond current limited application of and skepticism about EBM . (EBM= big fish eat little fish.)
- More temporal and spatial information to inform place-specific and species-specific management decisions.
- How can observing fill bad data gaps related to marine mammals and protected species?
- EBM-related information needs include mortality, feeding behaviors, and larval transport.
- What is the potential of acoustics to address some of these issues/questions?

Discussion: It was noted that MARACOOS and fishers have an opportunity to continue to work with and inform priorities of NOAA’s cooperative research program, which has supported some of the work discussed at this meeting. Several participants discussed both the importance and ongoing challenge of securing more information from fishers and the observing community to improve stock assessments that will help overcome the lack of trust. There is a need to be clear

on the benefits of information sharing to fishers, be realistic and recognize that there may be competitive issues among fisher communities, and balance concerns for confidentiality and transparency of information. How will the information be used to support MARACOOS investigations vs. fisheries management and regulation? There was consensus on need to focus where possible on localized information and provide a reliable delivery system, and that resources (e.g. vessels, expertise and information) are currently underutilized. There continues to be stovepipes and a divide within NOAA between research, data and information functions and the regulatory offices. It is important that MARACOOS and the fisheries community expand ways and opportunities to engage and utilize “fisherman experts.” There is a need to “find a third way” to step outside the stock assessment conflicts and transition to EBM.

Modeling Information / Resources, By-Catch Models and Tutorial on Use of and Interpretation of Data

The hands-on engagement activities were combined into one discussion session. Dr. Nickitas Georgas, Research Scientist at Stevens Institute of Technology gave a presentation on MARACOOS modeling activities. Dr. Georgas described the different models that were being used by the MARACOOS partners each with somewhat different physics and assumptions, and how the different types of data streams described earlier in the day were incorporated into the models. It was observed that the power and reliability of models had improved substantially over the last 10 years, and that increasingly modeling was using an ensemble approach, and coupled physical and ecological models to achieve much more reliable predications. Models can also be used for hindcasts. Dr. Georgas gave a more detailed description of the NYHOPS model that is operated by Stevens Institute in NY/NJ Harbor and NY Bight, and described how it has been used in real-world situations, including oil spills and the Miracle on the Hudson plane crash. There was a general discussion of the need to engage the fisher community in further dialogue to address some of the previously identified needs within the models. (e.g. waves, fisheries research.)

Professor Josh Kohut, RU, and Greg DiDomenico described the process that was used to “Build a Better Butterfish Model”, which included direct dialogue between fisherman and MARACOOS and NOAA researchers. The objective is to reduce butterfish by-catch in the squid fishery. It presented some unique challenges since the range of these fisheries overlap to such a significant degree that they could not rely on time or gear adjustments. It was therefore necessary to improve understanding and incorporate habitat and ecosystem considerations into designing any solutions. They started out by having groups of fisherman experts and scientists each build their own habitat model. It was pointed out that in this “Butterfish Smackdown,” the fisherman won every time. The groups then worked together to develop a consensus model. The direct benefits of building a better model are one outcome; but perhaps an even more significant outcome was improving trust between the science and fisher community that will be basis for further collaboration.

Greg DeCelles, UMass Dartmouth gave a presentation on a successful project that he worked on to resolve conflict between the restricted scallop fishery and yellowtail by-catch. The challenge was that the scallop fishery was being closed because they met their by-catch limit before they had caught their full allowable scallop allocation. In addition, there were inefficiencies in the

fisheries because of the resulting derby-style fishery, with boats rushing to secure their share of the catch before closure. The approach they developed, in general, required data sharing between the fisherman and the researchers, with the fisherman reporting their catch to a researcher utilizing grid system to track areas and corresponding levels of bycatch. Coupled with prompt reporting back to the fisherman to alert them to where the yellowtail was being caught, they could avoid the areas with the most significant by-catch. The result has been that the scallop fishery had been able to secure its full harvest the past two years; and the yellowtail by catch has been substantially reduced, while the pressure to engage in derby style fishing also has been reduced.

There was a consensus that both these cases provide possible models for successful collaboration between scientists, the observing communities, and the fisheries communities. However, the approach and solutions would probably need to be fisheries- and place-specific. There was discussion of different circumstances presented in case of turtle avoidance, and river herring versus sea herring. What are the conditions that will enable and provide incentives for fisherman to share necessary information? Are there other specific opportunities where MARACOOS and the fisheries community can look to build on these successes? One important factor is the speed of the information flow, and the feedback loop to fisherman to both inform activities and reinforce the value of continuing to share data. We need to always keep in mind what motivations and incentives there may exist for getting fisherman into the room and to the table.

Mike Crowley, RU, gave a presentation on MARACOOS website, data portal and information tools, and computers were set up for a hands-on demonstration following the presentation. There was considerable interest from the fishers in the room and discussion about the potential use of the MARACOOS site as a one stop shop and clearinghouse for information as previously discussed. Many of the issues previously identified as commercial and fisher needs such as information accessibility, usability, localization and customization of data were raised and discussed. How can you tailor the site to be user friendly to different potential user communities? Data and information on the site needs to be displayed using language that fishers use.... (e.g. fathoms, knots.) A question was raised about how to attract fishers to the site and train them, if needed, in how to use. Suggestions included a blog, chat rooms, and email lists, as well as going directly to the docks with information, participating in discussion forums and websites already used by fisherman, and developing a series of user stories and online tutorials for user-driven applications.

Wrap Up Discussion

The question came up again about MARACOOS' relationship with the Pioneer Array, especially because there was a lot of uneasiness among fishers about the Array and how it will impact industry. It was clarified that the Pioneer Array is part of the federal backbone and that it represents NSF's contribution to IOOS. MARACOOS is a regional association of academic and other entities that collect and provide data and information products, some of which will be used by NSF and its Pioneer Array.

It was agreed that much progress and been made to build upon for future meetings. The meeting would be shared among the participants, revised to incorporate their comments and posted in the

MARACOOS website. Comments and consideration would be addressed to the extent possible in MARACOOS's submission to the 10-year IOOS Build Out Plan being developed by NOAA in accordance with the ICOOS (ocean observing) Act.

It was agreed to establish a small working group, comprising 3-5 commercial fishermen and 3-5 scientists. From the commercial sector, the following individuals expressed an interest or willingness to participate in the working group:

Mr. Jim Kendall
Mr. Mike Theiler
Mr. Peter Moore
Mr. Greg DiDomenico

From the scientific community, the following individuals expressed an interest or willingness to participate in the working group:

Dr. John Manderson, NOAA Northeast Fishery Science Center, Sandy Hook, NJ
Dr. Josh Kohut, Rutgers University
Dr. Wendell Brown, University of Massachusetts - Dartmouth
Carolyn Woodhead, NOAA Cooperative Research, Gloucester, MA
Dr. Nickitas Georgas, Stevens Institute of Technology

The interested individuals agreed to meet—either in person or by phone/skype before the MARACOOS Annual Meeting on December 15-16, in order to develop specific recommendations for next steps that could be presented at the Annual Meeting.