

**2011 WEST COAST FORUM**

**COASTAL & MARINE SPATIAL PLANNING  
AND THE ROLE OF REGIONAL FISHERY MANAGEMENT  
COUNCILS IN MULTI-SECTOR SPATIAL PLANNING**

**Summary and Guide to Additional Resources**  
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*The **Fisheries Leadership & Sustainability Forum** (“Fisheries Forum”), a joint initiative among four of the Nation's leading academic and policy institutions, promotes professional development and continuing education by bringing together fishery managers and experts from a range of disciplines. The Fisheries Forum offers fishery managers opportunities to share experiences, build leadership skills, and enhance their understanding of fisheries law, policy, science, and economics. The semi-annual forums are the cornerstone of the Fisheries Forum and provide members of the regional fishery management councils with access to the latest research and an opportunity to discuss challenges and share success stories across regions. Each interactive forum is developed and led by faculty and staff from Duke and Stanford Universities in conjunction with leading experts from a range of disciplines. The forums focus on learning from experience and applying knowledge and problem solving skills to real world challenges.*

*For more information about Fisheries Forum programs and to view material from past forums and workshops, please visit the [Fisheries Forum website](#).*

**Introduction**

The ultimate goal of all Fisheries Forum programs is to empower fishery managers with the content knowledge, awareness, leadership skills, and professional network critical to informed and effective decision making. Towards this end, the 2011 West Coast Forum explored the topic of coastal and marine spatial planning (CMSP) and the role of the Regional Fishery Management Councils (Councils) in multi-sector spatial planning.

The Forum's curriculum was structured around three basic questions: Why? What? And How? Presenters began by addressing *why* has CMSP emerged as a topic of interest, what are the underlying drivers, and *why* is CMSP relevant to fishery managers? Focusing on the goals and principles of this new governance framework, panelists then examined the question of *what* is CMSP? Finally, speakers and participants explored the question of *how* the fisheries sector might contribute to and benefit from CMSP, highlighting important data and information inputs as well as strategies, processes and opportunities for Councils to engage in multi-sector spatial planning. How CMSP evolves will vary from region to region, however there are some general processes, tools and principles that are relevant to all of the regions.

In addition to panel presentations and discussions, the Forum agenda included a case study exercise. The Fisheries Forum uses the case study method to allow participants to explore common fishery management challenges within a context that encourages creativity and free exchange of ideas. This approach is collaborative and designed to inspire critical thinking and creative problem solving. The atmosphere is active, open, non-judgmental and discussion-oriented with the goal of affording participants a unique learning experience. The case study is fictional and is not intended to reflect or represent any one fishery or region.

The following provides a summary of the individual presentations as well as the themes that emerged from the panel and case study discussions. Links to **PDF** and video versions of the presentations are provided and are also available on the [Fisheries Forum website](#).

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## Forum Agenda and Learning Objectives

The Fisheries Forum developed the agenda and learning objectives for the 2011 West Coast Forum based on an extensive scoping process, intended to identify themes and issues with cross-regional relevance to a diverse audience of fishery managers. Forum participants included Council members, Council Executive Directors, and Council staff representing seven of the eight Council regions, state and federal agency officials, commercial and recreational fishing interests. Councils are well positioned to provide information and policy guidance to regional planning bodies, state and federal agencies, other industries and sectors and stakeholders regarding the spatial interests of fisheries relative to siting and planning for other ocean uses.

The curriculum elucidated how Councils can engage constructively in CMSP as envisioned by the national policy and multi-sector spatial planning more generally. The specific learning objectives of the Forum included:

- Clarifying challenges and opportunities in the current management framework to facilitate a greater understanding of the impetus behind CMSP;
- Enhancing awareness of the scientific and governance principles, characteristics and goals of CMSP;
- Exploring how the fisheries sector and in particular, the Regional Fisheries Management Councils can contribute to and benefit from CMSP; and
- Identifying current management tools and means by which fishery managers may engage constructively in multi-sector spatial planning with or without a formal framework for CMSP.

The West Coast Forum included experts from a broad range of disciplines and regions. Included in this document are brief descriptions of each panel session, presentations and associated discussion, along with direct links to the accompanying video and presentations. A full guide to multimedia resources, list of briefing materials, and the final 2011 West Coast Forum agenda are available on the Fisheries Forum website. This summary concludes with an overview of the major themes and topics of discussion.

## Presentations and Panel Sessions

### **ECOSYSTEM AND POLICY CONTEXT FOR CMSP**

*Objective: Explore the ecological, political and governance challenges driving the movement towards coastal and marine spatial planning.*

#### **Implementation of Ecosystem-Based Management via Marine Spatial Planning**

*Dr. Larry Crowder, Science Director  
Center for Ocean Solutions, Stanford University  
Presentation Video*

Dr. Larry Crowder set the stage by explaining the ecological context and drivers of CMSP. He described the deteriorating status of ocean health, highlighting the degradation of

marine ecosystems, and declines in the services they provide. These declines, which are due to a range of problems including overfishing, pollution, coastal development, shipping, climate change, ocean acidification and the cumulative effects of multiple impacts, are symptomatic of broader ocean governance problems. Current ocean management can be chaotic, fragmented and non-linear, often exacerbating, rather than minimizing, conflicts between human uses and the ecosystem.

To address some of these issues, Dr. Crowder explained that ocean management is trending towards ecosystem-based management. The goal of ecosystem-based management is to maintain a healthy, productive and resilient ecosystem so that it can provide the services that humans want and need. Specifically, ecosystem-based management:

- Protects ecosystem structure, functioning and key processes;
- Recognizes inter-connectedness within and among systems;
- Integrates ecological, social, economic and institutional perspectives; and
- Is place or area-based.

Effective ecosystem-based management considers the entire ecosystem including humans and employs an integrated approach that focuses on cumulative impacts of multiple sectors and deals with trade-offs among activities.

A healthy marine ecosystem is one that can sustainably deliver a range of societal benefits both now and in the future. To manage on an ecosystem basis and achieve ecosystem health, Dr. Crowder explained that the United States Ocean Policy Task Force identified coastal and marine spatial planning (CMSP) as an important tool to facilitate a more integrated system of ocean governance. Dr. Crowder observed that in many regions around the world, ocean users are the primary drivers of CMSP.

### **Coastal and Marine Spatial Planning**

*Dr. Linwood Pendleton, Director of Ocean and Coastal Policy*

*Nicholas Institute for Environmental Policy Solutions, Duke University*

*Presentation Video*

Building on Dr. Crowder's presentation, Dr. Linwood Pendleton provided an overview of the "what", the "how", and the "why" of CMSP as envisioned by the National Ocean Policy. Exploring some of the key elements and goals of CMSP, Dr. Pendleton described what CMSP is designed to achieve, how CMSP is intended to accomplish those goals, and why CMSP has been identified as a critical management tool for ocean governance in the U.S.

Dr. Pendleton described the development of the National Ocean Policy, highlighting the establishment of the National Ocean Council, the identification of nine national priority objectives, and the creation of a framework for CMSP. He also outlined ongoing efforts at the national level to support the implementation of CMSP, including: a 2011 national workshop and CMSP simulation exercise; the formation of Regional Planning Bodies

(RPBs), the development of a strategic action plan; and the launch of the National Information Management System (NIMS) and prototype data portal. The presentation emphasized the point that each of these activities, as well as forthcoming regional workshops, provide opportunities to educate and engage stakeholders and the public in CMSP.

In addition to public and stakeholder engagement, Dr. Pendleton described some of the other outcomes or measures of success associated with CMSP. These include the development of regional marine plans, the formation of RPBs, improved regulatory efficiency and coordination among government agencies, greater data accessibility for decision-making, and improved environmental conditions. Dr. Pendleton emphasized that CMSP does not equate to ocean zoning. Rather, it is intended to reduce conflicts among ocean users, increase predictability and certainty for planning and management, facilitate compatible uses and preserve critical ecosystem services.

## **Discussion**

The discussion that followed the panel presentation revolved around several dominant themes including the integration of the human element into ecosystem-based management and the role of stakeholders in CMSP. Participants also expressed concern about the impacts to and manipulation of freshwater systems and how that influences efforts to manage federal marine resources on an ecosystem-basis.

Most participants recognized the value in enhanced coordination between management agencies, however many had concerns that CMSP may add to the bureaucracy and divert resources from ministerial duties (i.e., establishing annual catch limits, etc.). Speakers also clarified that CMSP is not intended to redirect resources or funding away from the basic data collection needs for fisheries. Rather, it is intended to guide and prioritize discretionary data collection and information needs to improve efficiencies and reduce redundancies in the system.

## **SCIENTIFIC PRINCIPLES AND GOVERNANCE FRAMEWORK FOR CMSP**

*Objective: Examine the characteristics, goals and principles of coastal and marine spatial planning from a scientific and governance perspective.*

### **Scientific Principles and Governance Framework for Coastal and Marine Spatial Planning**

*Dr. Melissa Foley, Early Career Science Fellow  
Erin Prahler, Early Career Law & Policy Fellow  
Center for Ocean Solutions, Stanford University  
Presentation Video*

### **Dr. Melissa Foley - Ecosystem Objectives**

Echoing the observations of Dr. Crowder and Dr. Pendleton, Dr. Melissa Foley began by noting that the decline of ocean systems is partly a function of an increase in and lack of

coordination between different ocean uses. CMSP purports to remedy these deficiencies by enhancing agency coordination, reducing conflicts, enabling proactive planning, and promoting healthy ecosystems. Dr. Foley focused her presentation on the latter goal of healthy ecosystems by examining the ecological principles and objectives associated with CMSP.

Dr. Foley observed that the fisheries sector, unlike many other ocean uses, depends on a healthy and productive ocean environment. As such, the goal of ecosystem health is particularly relevant to the Councils and their obligation to manage for sustainable fisheries. Dr. Foley noted that the primary ecosystem objectives of CMSP include: proactive planning; sound science and spatial information; increased compatibility between users and the ecosystems; evaluation of tradeoffs and alternatives; and management for healthy ecosystems and sustainable delivery of ecosystem services. In theory, CMSP levels the playing field by requiring that analysis of alternatives and tradeoffs between ocean uses are more transparent and central to the planning process.

In 2009, the Center for Ocean Solutions convened a group of ecologists to define the key attributes of ecosystems, which may be monitored and used as indicators of ecosystem health to inform decision-making. They also developed four ecological principles, which were later identified as performance measures in the national framework for achieving conservation objectives. Dr. Foley outlined the primary *ecological principles* associated with CMSP which include maintaining:

- Native species diversity;
- Habitat diversity and heterogeneity;
- Populations of key species; and
- Connectivity between populations.

Dr. Foley also noted that focusing on these key principles and attributes without accounting for the human role and impact to the ecosystem may not yield meaningful improvement in ecosystem health. Indeed, fundamental change means that humans and their impacts must be included as part of the ecosystem. Towards that end, she identified several *ecosystem considerations*.

- **Vulnerability:** What is the likelihood that a species or habitat will sustain losses due to natural or human-induced disturbances?
- **Cumulative impacts:** What are the total impacts to ecosystems caused by multiple-human activities that co-occur in space and/or time?
- **Climate change:** What are the ecosystem impacts from sea level rise, temperature increases and ocean acidification?
- **Resilience:** Is the ecosystem able to persist and recover following a disturbance?

Dr. Foley further observed that bringing together all of these ecological components is no small task, but necessary for maintaining healthy ecosystems. The development of *comprehensive ecosystem assessments* (CEAs) brings these considerations together to facilitate planning and decision-making. CEAs can document the fundamental attributes of



a planning area and synthesize those attributes to address the issues of resilience, vulnerability, climate change, and cumulative impacts. The CEA process generally includes the following component steps:

- Assess the resources and ecosystem components, and potentially identify areas that are particularly sensitive or valuable (resource locations that are vital for coastal economies).
- Assess the impacts (type, frequency, duration, overlap, and scale) to the area.
- Develop management indicators to determine the success of management measures.
- Evaluate the risk and uncertainty associated with management indicators. Are the indicators affected by the human activities present? Are their activities that should not be combined due to strong impacts to the ecosystem? Is there enough data to develop models about future scenarios?

### **Erin Prahler - CMSP Governance Framework**

Complementing Dr. Foley's discussion of ecosystem objectives for CMSP, Ms. Erin Prahler focused on the governance framework for CMSP and the goals of greater agency coordination, conflict reduction, and proactive planning.

Ms. Prahler noted that CMSP aims to improve *agency coordination* by requiring that decision-making be comprehensive and integrated. She also observed that there are many different ways to achieve greater agency coordination, efficiency, and comprehensive project reviews. Around the world, CMSP efforts encourage agencies to sit in the same room, use the same data to analyze projects, and develop common decision frameworks/priorities to guide all agency decision-making.

Another major goal of CMSP is *conflict reduction*. This includes conflicts between different human uses, and between human uses and the ecosystem. While it is not yet clear what strategies the National Ocean Council will suggest for reducing conflict, there are several common strategies that have emerged from experiences with CMSP around the world. These include locating features of value; assessing compatibility of different uses and with other goals (i.e., ecosystem protection); determining constraints; and identifying opportunities.

In addition to enhanced agency coordination and conflict reduction, CMSP aims to enable more proactive planning. Ms. Prahler highlighted and illustrated several pre-conditions that make *proactive planning* possible including:

- Political support and leadership;
- Adequate funding;
- Firm deadlines;
- Willingness and capacity for civil society to engage; and
- Transparent design process and structure.

Ms. Prahler concluded by emphasizing the point that CMSP should facilitate agency coordination, reduce conflicts, enable proactive planning, and be ecosystem-based with plans that incorporate ecosystem considerations.

## Discussion

Participants were particularly interested in the nexus between CMSP and the *National Environmental Policy Act* (NEPA) process. There was some speculation regarding whether and how NEPA might change or improve through CMSP. Some suggested that CMSP and its reliance on spatial data might help inform the environmental review process required by NEPA. Others proposed that a marine spatial plan might function as a programmatic environmental review, helping to streamline the process and lead to greater efficiency. The general sense was that CMSP is unlikely to lead to wholesale changes in NEPA, but may provide a means of improving the existing environmental review process.

Some participants observed that the approach to CMSP to date feels very top down rather than bottom up. They expressed skepticism about the future of CMSP unless there are efforts to garner broad *stakeholder buy-in* at the outset. Dr. Foley reinforced the point that the goal of CMSP is to engage stakeholders up front and enlist their input particularly in data collection.

How CMSP will facilitate the transition to an *ecosystem-based management* (EBM) approach emerged as another theme in the panel discussions. While there appears to be a general trend towards EBM, some expressed concern that the most recent Magnuson-Stevens Fishery Conservation and Management Act (MSA) reauthorization, which required the establishment of annual catch limits on individual species, represents a movement away from EBM and back to single species management. How to reconcile these requirements with efforts to facilitate EBM via CMSP was a lingering question for some.

There was a general recognition among participants that ocean stakeholders with developed management systems like fisheries, oil and gas, and shipping are fearful of any disruption to the status quo. However, there are other stakeholders, with less-developed management systems (alternative energy, aquaculture, etc.), that want access to ocean space. To them, CMSP represents a means of getting their foot in the door.

Some participants expressed concern about the lack of *legislative authority* for CMSP and whether the executive order provides sufficient stability and predictability to enable meaningful progress and investments in CMSP. No one argued that CMSP would be better with a strong legislative mandate. However, some characterized the executive order as an experiment and a way to “test the waters” so that future legislative language can be developed with greater clarity and buy-in. It was also pointed out that there are examples in other countries where those who forged a path forward on CMSP absent clear statutory authority, now have a more evolved system of CMSP than those who waited for a legal mandate.

## INFORMATION AND DATA NEEDS FOR CMSP

*Objective: Investigate the types of information and data that fishery managers can provide to help inform spatial management and engage constructively in multi-sector decision-making processes.*

### **MSP & Fisheries**

*Daniel Dunn, Research Associate and Ph.D. Candidate*

*Marine Geospatial Ecology Lab, Nicholas School of the Environment, Duke University  
Presentation Video*

Mr. Daniel Dunn opened the panel by describing how the fisheries sector fits into the broader ocean community and how the role of fisheries is changing in light of emerging ocean uses and increased competition for space. Contrasting fisheries with other ocean users, Mr. Dunn explained that other sectors have undergone planning and prioritization exercise to determine areas that are optimal or most valuable for their activities. To ensure that fisheries interests are represented, he contends that the fisheries sector needs to adopt a similar approach to collect the data and information necessary to proactively identify areas of importance to the fishing industry. To accurately identify areas of importance or “primary fishing areas”, managers need to gather an array of information including individual, community, catch, and ecological data.

- *Individual Data:* Individual-level data includes information regarding fishers’ preferences and the value they place on specific areas and may be derived via different methods including fisher surveys and/or specialized tools such as OceanMap.<sup>1</sup>
- *Community Data:* Community-level data can help to identify broader community connections to locations at sea and may be based on observer and vessel trip report (VTR) data, dealer data, and fisher and industry surveys.
- *Catch Data:* Catch data may help to define areas of importance based on persistence of catch, composition of catch, high catch and discard/bycatch rates, catch quality, etc. These areas of importance may be identified using observer and VTR data with mapping and statistical applications.
- *Ecological Data:* Ecological data can help identify important life history areas, areas of increased target species use, and areas of likely conflict with other commercial and/or protected species, and may be used to model habitat use by target and non-target species. Information may be derived from tracking data, fisheries independent surveys as well as observer and VTR data.

Mr. Dunn further noted that no single type of data is sufficient to ensure that the fisheries sector may effectively participate in CMSP. To acquire the necessary data and information, he encouraged Councils to facilitate greater communication and coordination between fishery management entities and stakeholders. This includes more outreach to fishers to improve the quality and quantity of data and to reverse the perception that providing information to managers will lead to greater constraints on fishing. The fishing sector

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<sup>1</sup> “OceanMap”, a tool developed by Ecotrust, asks fishermen to prioritize areas of importance by allocating 100 pennies across a defined aread. It was used to inform California’s Marine Life Protection Act planning process.

needs to “stake-out” its territory by improving data collection and providing fisheries specific information to the CMSP process.

### **Mapping Human Communities onto Ecosystems**

*Dr. Kevin St. Martin, Associate Professor*

*Dept. of Geography, Rutgers, The State University of New Jersey*

*Presentation Video*

Dr. Kevin St. Martin reinforced and expanded upon the idea that community level data is an important component of identifying areas of importance for fisheries for the purposes of fisheries management and marine spatial planning. Towards that end, Dr. St. Martin presented a participatory method to map the presence of fishing communities at sea.

While geo-technologies such as geographic information systems (GIS) and other digital applications are creating new and important data streams for assessing and managing marine resources, Dr. St. Martin noted that the human dimension of the marine environment is not always sufficiently captured by these methods. Current data collection initiatives do not sufficiently account for the complexity of human communities and/or their relationship to locations and resources at sea.

Noting that fisheries are area and place-based, Dr. St. Martin observed that we cannot understand these ecosystems unless we include humans. Incorporating the human dimension and identifying “communities at sea” is crucial to effective CMSP as it can assist in identifying not just “what” is impacted but “who”. However, effective integration of community-level data into spatial planning processes is a function of multiple variables including methodology, community participation, incorporation of local knowledge, and accurate assessments of the local impacts of area management.

Dr. St. Martin proposed a methodology for mapping communities at sea that starts with defining “community”. Since vessels from particular places tend to fish in particular locations, Dr. St. Martin noted that an algorithm could be used to select peer groups of vessels. Using existing VTR data, one can filter by ports of origin, gear type, target species, trip clusters, etc. and define community using the appropriate parameters. This information can be used to develop “hotspot” maps that represent the frequency of time spent in a particular place by specific communities. Community-based analyses can also reveal different types of territories; changes in fishing activities and patterns over time; relationships to particular habitats or species ranges; and impacts of place-based regulations, marine protected areas, CMSP activities, etc.

There is often a mismatch between current mapping data and qualitative, interview-based information. To demonstrate how managers might gauge the accuracy of existing geo-coded data, Dr. St. Martin described a participatory action research project in Port Clyde, Maine designed to engage stakeholders and elicit local ecological knowledge. Interviews with fishers using GIS-generated community maps generated rich place-based social and ecological information from the community.

To enable the fisheries sector to play a constructive role in the CMSP process, Dr. St. Martin concluded that methodologies to address and incorporate the complex and varied human dimensions of fisheries are needed. Specifically, producing data about and with communities can not only produce more accurate and comprehensive information for management but can create a basis for community engagement in ecosystem based management and CMSP.

### **Use of Fisheries Data in Ocean Planning**

*John Weber, CMSP Managing Director*

*Northeast Regional Ocean Council*

*Presentation Video*

Reflecting on the experience of marine spatial planning efforts in Massachusetts and the Northeast, Mr. John Weber provided background information and examples from the Massachusetts (MA) Ocean Management Plan of 2010 as well as planned and ongoing work in the Northeast region.

The intent of the MA Oceans Act of 2008 was for science-based spatial planning and this focus was incorporated into the planning process from the outset. Mr. Weber commented that identifying scientific needs and data gaps, while a critical step in the process for comprehensive ocean planning, was somewhat constrained in MA by a statutorily mandated timeframe (18 months) and managers had to rely primarily on existing information.

Acknowledging that an open, public, participatory and transparent process is necessary for success, Mr. Weber noted that the MA process included a series of topic-specific working groups including fisheries. While the MA process was not specific to the fisheries sector, he noted that coordination with fishing interests is critical to accurately portray the spatial dimensions of fisheries.

Mr. Weber also explained the regional CMSP efforts being lead by the Northeast Regional Ocean Council (NROC). Along with leadership from the New England Fishery Management Council (NEFMC), state fishery agencies and stakeholder groups, NROC is exploring means by which the fishing sector and the NEFMC can play a role in CMSP. To engage the NEFMC more fully in this multi-sector process, NROC will start by examining existing sources of fishery data.

Mr. Weber also noted that planning needs to be grounded in sound science and information, but that there are issues with how data is displayed and portrayed since different analyses of the same data can yield different conclusions. That said, Mr. Weber noted that regional spatial plans should be based on a range of data types and sources including fishing-related spatial data (VTR, Vessel Monitoring Systems (VMS), observer data, etc.), habitat-related data/models, as well as industry derived qualitative data. They should also build on existing state efforts (Rhode Island (RI) and MA) and be reviewed with industry to discuss potential implications. Ultimately, development of a marine spatial plan should involve close coordination with federal and state fisheries agencies, industry advocates, and other individuals and entities.

Mr. Weber concluded that there are multiple benefits to working with fisheries managers and the fishing industry in the development of marine spatial plans. The fishing sector can play an important role in terms of the data and science inputs they can provide. Fishermen should be engaged from the outset as they offer a unique on-the-water perspective.

### **Fisheries Data and Coastal and Marine Spatial Planning**

*David Beutel, Aquaculture & Fisheries Coordinator*

*Rhode Island Coastal Resources Management Council*

*Presentation Video*

Mr. Dave Beutel described the experience of developing and implementing Rhode Island's Ocean and Coastal Special Area Management Plan (SAMP), a state-level CMSP process. Unlike the MA process, RI's efforts extended beyond state waters to thirty miles offshore. Driven primarily by the offshore wind energy development proposals, the process, which began in 2007 and was completed in 2010, engaged fishery stakeholders from the start. Developed with input from fisheries stakeholders, the RI Ocean SAMP includes a fishery-specific chapter that incorporates science-based fisheries standards and policies, and addresses key issues.

To ensure that fishermen had a seat at the table, managers convened fishery stakeholder meetings early and often in the process. The initial meetings were designed to introduce people to the SAMP concept and process. They also involved a participatory qualitative GIS mapping exercise designed to elicit information from fishermen about where they fish. Later meetings focused on issues and concerns, fishery research priorities and policy development.

Underpinning SAMP plan development were multi-layered mapping efforts. Noting that mapping was very dynamic with significant spatial and temporal variations, Mr. Beutel displayed several maps that incorporated both qualitative and quantitative data from the commercial, recreational and for-hire fishing sectors. Mr. Beutel also noted that the fishing sector raised a number of concerns relative to the potential impacts of and conflicts with wind energy development. Among other things, fishermen expressed a desire to: have input into wind energy site selection processes; maintain access to fishing and transit areas; ensure navigational safety; and preserve their economic livelihoods. They also indicated an interest in more site-specific research and data related to the impacts of wind energy activities to fish and their habitats.

The policies and standards developed for the RI SAMP were based on evaluations of resources, habitat, history, effort, economics, and impacts. Industry representatives were provided opportunities to review the draft plan and provide feedback to ensure that it reflects the issues and areas of greatest importance to the fishing sector. Mr. Beutel observed that the plan will continue to adapt and evolve, but ultimately identifying important areas and making sure that policies are enforceable are crucial to a successful spatial planning process.

Mr. Beutel concluded that the SAMP process yielded a number of lessons learned that could be applied in other regions undergoing the development of a marine spatial plan. First and foremost, he noted that managers must be clear with the industry and consistent with their data collection methods. It is also important that industry has a seat at the table throughout the process and that managers make every effort to keep them engaged. He also observed that different types of data are needed to paint an accurate picture of the industry's footprint and areas of importance (i.e., observer data is different than VTR data), but issues related to access, accuracy and confidentiality of data are a challenge. Likewise, there is value in the fishing sector being proactive rather than passive in proposing areas where wind energy development would be appropriate.

## **Discussion**

The discussion following the panel presentations revolved around comparing the processes of the different state-level and federal CMSP initiatives. In particular, participants focused their comments and questions on the issues of eliciting data and information from the recreational sector, the value and application of VTR and observer data, and the effects on decision-making of marine spatial plans.

Participants were interested in the issue of how to engage fishery stakeholders in multi-sector spatial planning. Specifically, those from areas with a larger recreational fishing sector than MA and RI wondered whether some of the same methods employed in New England to elicit recreational data could apply. Recreational surveys and extrapolating charter boat spatial preferences to apply to independent recreation anglers were proposed as possible approaches to acquire spatial information regarding the recreational sector.

Participants also discussed the value and use of VTR and observer data in light of confidentiality issues. Some noted that there are distinctions between data that can be used internally versus data that can be used officially for planning and decision-making purposes. RI is looking at ways to aggregate the VTR data to circumvent confidentiality issues and derive useful spatial information.

Ultimately, Forum participants were interested in understanding how, if at all, the spatial plans developed in MA and RI influenced decision-making. In MA, the plan has primarily been used to show what areas different ocean uses should avoid, but whether it provides the basis for regulations remains to be seen.

## **DATA PORTALS AND DECISION SUPPORT TOOLS**

*Objective: Explore the role of data portals and decision support tools and how they may be used to visualize proposed and existing ocean uses to inform and support spatial management decisions by Councils and other ocean users.*

### **Data Portals and Decision Support Tools**

*Dr. Melissa Foley, Early Career Science Fellow*

*Erin Praher, Early Career Law & Policy Fellow*

*Center for Ocean Solutions, Stanford University*

## *Presentation Video*

Dr. Melissa Foley and Erin Prahler provided a joint presentation focused on the function and application of data portals and decision support tools (DSTs) in multi-sector spatial planning. In addition to introducing the [“Decision Guide: Selecting Decision Support Tools for Marine Spatial Planning”](#) produced by Stanford University’s Center for Ocean Solutions (COS), they demonstrated the role and value of DSTs by walking participants through a simulation exercise.

### *Data Portals*

Dr. Foley began by describing the National Information Management System (NIMS). The NIMS was created as part of the National Ocean Policy, which called for initial actions to coordinate, integrate, and manage data to inform coastal and marine spatial planning. Scheduled for release in late 2011, the NIMS is an inter-agency effort that will provide links to regional data portals, including a directory of decision-support tools and incorporate over 150 authoritative data sets from Federal authorities. Included among the data sets will be information related to physical features, habitat and species distribution, ocean uses, infrastructure, and living and non-living resources. The NIMS is also intended to help create a community of practice for decision makers, researchers, and tool developers so that the system can adapt over time as data and tools evolve. The NIMS will also include a directory for decision support tools that is based on COS's Decision Guide. This directory is intended to help planners and managers determine what decision support tools could be useful throughout their process.

Dr. Foley also noted that smaller-scale data portals will be developed in each of the planning regions. She further highlighted the role of regional data portals as repositories for data from government, non-government and academic institutions. In addition to jurisdictional, ecological and oceanographic data, the regional portals will incorporate various dimensions of human use data. The goal is for data from the regional portals to be available to decision-makers and stakeholders to download and import into analytical and modeling program and/or to use with decision support tools. The portals will also include basic GIS map viewers. To date, the Northeast Regional Ocean Council (NROC) and the Mid-Atlantic Regional Council on the Ocean (MARCO) have the most developed regional data portals.

The Northeast regional data portal already includes a number of different types of data sets including biology and habitat, commercial, industrial, military uses, geology, oceanography, and other human uses. It also includes a map viewer to display data, a list of standards for the data, regulations that exist in the region, and further references for CMSP. The MARCO portal is mainly a map viewer platform that allows users to view and download data including jurisdictional, ecological, geological, and human use information. To date, it has primarily been used to help identify potential wind energy sites in the Mid-Atlantic region.

While the fishing sector can benefit from a more centralized and coordinated information management system, Dr. Foley noted that fisheries can also contribute data to the regional



data portals and help to ensure that fishing considerations are included when decisions are being made. It is often difficult for data managers to gain access to fisheries data, which makes it a challenge to make cross-sector management decisions that adequately account for potential impacts on the fishing sector. Councils can contribute to these regional portals by providing information regarding:

- Areas critical for habitat and spawning;
- Spatial connectivity between fished species and their prey;
- Areas that have seasonal or permanent fishing closures;
- Areas where there is greater fishing effort; and
- Typical vessel routes.

### *Decision Support Tools*

Ms. Prahler built on Dr. Foley's presentation by describing the role of DSTs to help synthesize and make sense of the data compiled within the data portals. DSTs are interactive software programs that are designed to facilitate, support, and inform decision-making. DSTs go beyond standard GIS analyses to help users: compile useful information and data; visualize information in a spatially explicit way; characterize and explain problems and solutions so that all the stakeholders have access to the same information; and help stakeholders and decision makers understand the potential alternatives and associated trade-offs for a project.

Noting that DSTs have been used in marine planning efforts around the world – including Australia, the Gulf of Mexico, Massachusetts, California, and the United Kingdom – Ms. Prahler observed that they are often tailored to the specific needs and planning objectives of a particular process. Among other things, DSTs can help users:

- Visualize complex information;
- Perform systematic and rigorous analyses of the data;
- Build relationships among the stakeholders and come to agreement on collaborative solutions; and
- Increase the transparency of the planning process.

### *COS Decision Guide*

Ms. Prahler explained the development of a Decision Guide by COS as means of bringing existing DSTs to the forefront of the marine spatial planning process and helping users to understand more about the tools that currently exist. COS convened a series of workshops with tool developers, resource planners and managers and selected nine DSTs (ARIES, Atlantis, Coastal Resilience, Cumulative Impacts, InVEST, MIMES, Marxan with Zones, Multipurpose Marine Cadastre, and MarineMap) to profile in the Decision Guide. The tools were chosen based on their state of readiness and current or near future application to spatial planning processes. While not all of these tools were created with a marine spatial planning process in mind, they are all relevant to the process. The DSTs offer a variety of functions from basic mapping applications to zoning, ecosystem service valuation, climate change adaptation, or evaluating cumulative impacts and trade-offs. There is also a range of expertise that is needed to use these tools. Some are accessible to untrained stakeholders

while others are limited to expert users and require significant support from the tool developer.

The COS Decision Guide includes a tool function matrix and a tool feature matrix, which are combined with a process outline to create a decision rubric to help users and decision makers select the tool or tools that are most appropriate for their needs. The rubric may be a good place for a practitioner to start in order to get a sense of the various functions of the different tools. Future iterations of this rubric will likely include finer scale distinctions that can indicate the relative strength of different DST functions.

### *Decision Support Tool Simulation*

Building on Ms. Prahler's discussion of DSTs, Dr. Foley provided an example of how decision support tools can be used during a planning process to help inform management decisions. Dr. Foley used the ecological principles presented earlier in the forum as objectives for a DST simulation exercise. The exercise was designed to illustrate how a DST can help users determine compatibilities among uses and the ecosystem and evaluate tradeoffs of different management alternatives. The DST simulation explored the tradeoffs associated with the different alternatives for a hypothetical proposed wave energy facility off the coast of Northern California. Specifically, the exercise focused on assessing the impacts to fisheries, the coastal viewshed, the benthic habitat and the cost-effectiveness of gathering energy. Analyzing multiple alternatives, the simulation demonstrated that there are significant overlaps between other human uses and fishery management areas and that even slight shifts in the proposed project footprint could reduce potential conflicts.

### **Discussion**

The primary theme that emerged was the need for the fisheries sector to take a more proactive role in the collection, communication and prioritization of fisheries-related data and information for multi-sector spatial planning.

Several participants observed that absent involvement by fishery managers, other sectors and ocean users will decide what fisheries information is most relevant and important to siting and spatial planning processes. As such, the Councils have a role to play in prioritization and provision of fisheries data inputs.

Responding to concerns related to the quality, quantity and type of fisheries data needed to inform spatial planning efforts, several participants emphasized that the level of risk and uncertainty associated with the data must be incorporated into decision making tools and models.

Observing that many industries and sectors have a goal of furthering their own interests, several participants commented that CMSP provides value in ensuring that these interests are explicit and transparent. Theoretically, CMSP provides the community of ocean users with an opportunity and venue to say what they really want.

There was also some speculation that CMSP and the development of these coordinated information systems will drive the Councils to accelerate their consideration of spatial management tools.

## **MANAGEMENT TOOLS TO SUPPORT MULTI-SECTOR SPATIAL PLANNING**

*Objective: Survey existing management tools and the opportunities that may offer regional fishery management councils an opportunity to provide input into spatial planning and permitting decisions for other ocean uses.*

### **Management Tools to Support Fisheries Engagement in Integrated Ocean Governance**

*Meghan Jeans, Program Director*

*Fisheries Leadership & Sustainability Forum, Center for Ocean Solutions,  
Stanford University*

*Presentation Video*

Ms. Meghan Jeans began by articulating the numerous ways Councils can contribute to multi-sector spatial planning and the benefits that fisheries management may derive from a more coordinated marine management system. Understanding the types of fisheries information and data that are useful to spatial planning efforts is an important starting point. However, an awareness of the nature and extent of Council authority under existing laws, and the opportunities that exist to contribute this information and influence other ocean uses can help federal fishery managers be constructive participants in coordinated planning and decision-making processes. Towards that end, Ms. Jeans highlighted several key opportunities for Councils to leverage and expand their influence and contribute to a more transparent and coordinated system of ocean governance.

Councils are advisory in nature with no direct regulatory authority, however they serve an obligatory function under the MSA. The MSA confers direct authority to the Councils to develop (albeit not approve, implement or enforce) conservation and management measures for fishery resources. The Councils also have indirect and discretionary authority to influence federal agency actions pursuant to the MSA and other statutory and regulatory provisions.

The Executive Order requires that CMSP be consistent with applicable law and will not vest the National Ocean Council or RPBs with new or independent legal authority superseding existing state, federal, or tribal authorities. As such, CMSP must be consistent with the requirements of the MSA, including its mandate to prevent and end overfishing and rebuild overfished stocks. This includes addressing non-fishing impacts that deplete fish populations. The MSA confers limited authority to the Councils to restrict non-fishing activities or engage in inter-agency consultations during the development of an FMP. Ms. Jeans noted that both the spirit and letter of the law acknowledge a critical nexus between fishing and non-fishing ocean uses by requiring consideration of other ocean uses when establishing catch levels, recognizing and mitigating the impacts of non-fishing activities on fish habitat, and/or developing fishery ecosystem plans.

She went on to highlight how several provisions of the MSA allow Council direct authority to influence in marine spatial planning processes including:

- Essential Fish Habitat (EFH) conservation and consultation;
- Optimum yield (OY) and annual catch limit (ACL) requirements;
- Fishery ecosystem plans (FEPs); and
- Aquaculture FMPs

Ms. Jeans elaborated on how Councils may provide comments to the federal action agency and indirectly influence non-fishing ocean uses through legal authorities with environmental review procedures. These legal tools include, but are not limited to, the National Environmental Policy Act (NEPA); the Clean Water Act (CWA); and the Coastal Zone Management Act (CZMA).

While it is crucial for fishery managers to understand the origins of their authority in order to provide timely and constructive input into planning and siting decisions, equally important is an awareness of the various processes through which these decisions are made. Ms. Jeans cautioned that without an understanding of the processes and timelines, Councils might miss important opportunities to provide input and information relevant to fisheries conservation and management.

Emphasizing the importance and inherent challenges associated with inter-agency coordination, Ms. Jeans provided the 2011 NOAA/BOEMRE memorandum of understanding (MOU) as an example of a non-regulatory tool intended to improve coordination and communication between two agencies. Consistent with the recommendations of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, the MOU included a commitment by the agencies to consult on any upcoming environmental issues relating to energy development of the OCS.

In addition to understanding the authorities, processes and agreements, Ms. Jeans encouraged Councils to determine whether or not their existing council structure and processes are sufficient to allow them to be constructive participants and beneficiaries of an integrated system of ocean governance. In addition to posing some reflective and visioning questions, Ms. Jeans provided several suggestions of steps Councils may take to enable them to engage constructively in multi-sector spatial planning efforts.

### **Opportunities and Impediments for Using EFH Authority in CMSP**

*Karen Abrams, Senior Policy Analyst*

*Office of Habitat Conservation, NOAA Fisheries*

*Presentation Video*

Ms. Karen Abrams started her presentation by explaining the scope and extent of Council authority and jurisdiction, noting that historically Councils have primarily been focused on determining where and when fishing activity occurs, but have had little influence over non-fishing impacts. At the same time, she observed that Councils should be concerned about

non-fishing uses of the ocean since activities like coastal construction, dredging, flood control, and offshore energy development have the potential to adversely affect the habitats necessary to support healthy fish stocks and sustainable fisheries.

Reinforcing the message of Ms. Jeans' presentation, Ms. Abrams explained that the MSA offers Councils tools to influence non-fishing ocean uses. Specifically, she noted the Councils' authority to provide conservation recommendations to federal and state agencies for actions that may affect habitat of a fishery resource, including areas designated as essential fish habitat (EFH). Though Councils are not required to provide habitat conservation recommendations except in the case of anadromous species, Council engagement can confer a number of benefits. Council input into the EFH consultation process can serve to: reinforce NOAA Fisheries' conservation recommendations; communicate scientific and management priorities and imply a need for greater scrutiny; and increase attention to habitat and Council interests in fisheries habitat conservation.

Ms. Abrams outlined the EFH consultation process and provide several examples where Council input influenced the outcome of the siting and approval of other ocean uses. She also described some issues and impediments to Council engagement including:

- Broad scope of EFH designations makes it difficult to prioritize areas and actions;
- High number of EFH consultations relative to Council capacity and resources;
- Lack of consistent process for coordinating with NMFS on non-fishing impacts;
- Lack of clear process within the Councils to identify why, when and how a Council provides conservation recommendations to action agency; and
- Weak EFH mandate without a strong regulatory or enforcement hammer.

After outlining the barriers to Council involvement in EFH consultation and conservation, Ms. Abrams went on to enumerate several solutions to help Councils leverage their authority and influence non-fishing impacts to fish habitat. Among other things, Ms. Abrams recommended that Councils identify priorities and habitat objectives/targets for managed fish to narrow scope of actions that merit Council action. Doing so could improve the position of the Council in the CMSP process, increase likelihood that other agencies would accept Council recommendations, and facilitate greater coordination with NMFS regional offices. She also suggested that Councils establish a clearer internal process to review and approve Council consultations. Looking ahead, Ms. Abrams asked participants to reflect on how their Council approaches developing habitat objectives or priorities and what impediments, if any, challenge that process.

## **Discussion**

The discussion that followed the panel presentations revolved around several themes including internal council processes to facilitate more effective engagement and coordination with other uses and the value of EFH and NEPA in providing opportunities for Council influence.

Participants were curious about why and when the different Councils opt to weigh in on non-fishing activities. While the degree and frequency of engagement with non-fishing activities and agencies varied between regions, participants agreed that it is often a function of council awareness, timing, political dynamics, and the nature of the activity being proposed. Generally, participants agreed that most Councils do not have a formal process or trigger for determining when an activity warrants Council input or involvement. In some regions, the location and/or type of activity proposed dictate Council engagement. In other regions, the nature and extent of the potential impact (catch reductions, habitat destruction, etc.) drives Council involvement.

Participants observed that establishing priorities could help Councils determine which activities warrant their input. Priorities may be framed as areas of particular value to fishermen and/or important habitat areas. Since EFH designations alone are often too broad and encompassing to effectively identify and communicate priority habitat areas, habitat areas of particular concern (HAPCs) may serve as a useful tool to establish habitat priorities.

Some members of the group pointed out that fishery ecosystem plans (FEPs) may help Councils articulate criteria for determining when Council consultation is needed. Others noted the challenge inherent in moving from comprehensive information contained in some FEPs to identifying goals and objectives for habitats.

### **Leadership Development**

Mr. Don Wells, an independent expert in leadership development, and the leadership consultant for the Duke Environmental Leadership-Master of Environmental Management program, led participants in an exploration of what it means to be a leader. Underscoring that leadership cannot be taught but can be learned, Mr. Wells facilitated a thoughtful discussion that examined the distinctions between management and leadership and prompted participants to reflect on the characteristics of a leader versus a manager. He also observed that both leaders and managers play pivotal and often complementary roles, and that there are both upsides and downsides to accepting the mantle of leadership.

Relating the concept of leadership to the role of Council members, some participants cautioned that it was important not to confuse decision-making with leadership. Individual Council members may occupy a leadership role within their Council and/or with their respective constituents, however leadership goes beyond simply being a conduit for information flow between stakeholders and the Council. Effective Council leaders can both inspire and engage people in the process.

Following the full group discussion, Mr. Wells asked participants to break into small groups and share a time when they assumed (or were appointed to) a leadership role. Whether the experience was a success or failure, participants were asked to ask probing questions of their peers and reflect on their own lessons learned and how they might have done things differently with the benefit of hindsight.

## Case Study Exercise

The case study, written for the September 2011 West Coast Forum, was intended to help participants merge their existing knowledge and experience with new ideas and skills derived from the Forum's presenters and discussions in an interactive and collaborative environment. The scenario was designed to stimulate thought and reflection on the avenues and tools available to councils to provide input on emerging ocean uses, and to consider how councils can engage with broader, multi-sector marine spatial planning initiatives. Specifically, Forum participants had the opportunity to:

- Consider the legal and process tools available to Councils to make spatially referenced management decisions and to influence the siting and management of other ocean uses;
- Discuss potential barriers and solutions to engaging in multi-sector spatial management and planning;
- Evaluate the attributes of other ocean uses that influence their potential compatibility or incompatibility with fisheries interests;
- Share region-specific experiences with spatial management, spatial planning and engaging with other ocean resource uses; and
- Examine how spatial information can be used in fisheries management to support and communicate the council's objectives, and how fisheries information can contribute to multi-sector planning processes.

The case study guided participants through a series of tasks structured to reflect the "how, what, why" framework of the curriculum. Through the two-day exercise, Forum participants examined potential strategies and processes for setting and communicating objectives, identified opportunities for engaging in the management and siting of other ocean uses and evaluated how data can help substantiate fisheries interests in multi-sector spatial planning and decision making.

The case study is designed for use as a learning tool for U.S. federal fishery managers, but may be adapted for use by other audiences including students. For more information about the case study and/or to inquire about opportunities to utilize the case study as an educational exercise, please contact Fisheries Forum staff at: (800) 490-9762.

## Wrap-Up Discussion

As Forum participants considered how the Councils could engage in CMSP, the issue of identifying and communicating fisheries data and spatial information emerged as a dominant theme. Participants also recognized that such considerations are not unique to multi-sector ocean management, but can help facilitate spatial management of fisheries. Others observed that the information and data that the fisheries sector needs to engage proactively in CMSP is the same as that needed to provide more reactive input into siting decisions by other ocean users via traditional comment and consultation processes.

Discussions also underscored the importance of inter-agency relationship building as a foundation for effective multi-sector spatial planning. Participants reflected on their regional experiences with inter-agency coordination and communication and noted some of the common challenges and

potential solutions to facilitating more effective engagement. Reconciling overlapping management jurisdictions and aligning asynchronous timelines for providing input emerged as the primary barriers to inter-agency coordination. Participants noted that formal mechanisms such as MOUs can help establish official protocols and expectations for coordination. Meanwhile, the Councils themselves can implement internal processes to improve information sharing and communication between the Council, NOAA and other agencies.

While most of the discussion revolved around how the Councils can influence and provide input into the CMSP process and siting of other ocean uses, some expressed concern that CMSP could invite other constituencies into fisheries management and/or subsume the Council process. Others speculated that this could lead to venue shopping wherein people disappointed with the Council process could circumvent the Council using CMSP.

Participants also debated the value and merits of Council inclusion on the RPBs. Some acknowledged that they might have more success engaging through a consultative mechanism. Others felt that a co-management relationship between entities ensures a more coordinated and bottom up approach. Meanwhile, a few contended that absent an official seat at the table, many Councils are unlikely to engage given their competing obligations.

The discussion also highlighted impressions that CMSP is largely top down and has not yet generated a lot of bottom up support or momentum. Some commented that while there may be a national-level vision for CMSP, the lack of details about how to implement, fund and engage stakeholders in the process indicates a lack of effective leadership.

Ultimately, participants agreed that the question is not whether or not Councils should engage in CMSP, but rather how and to what degree. Many of the issues raised regarding the implementation of CMSP are relevant to fisheries management and coordination between fisheries and other ocean users regardless of CMSP.