

Meeting Summary

Ocean Protection Council Science Advisory Team (OPC-SAT) Meeting

“Advancing Science in California Fisheries”

Hosted by the California Ocean Science Trust

September 4, 2013

Held at the Silicon Valley Community Foundation

Room 114, San Mateo, CA

10:00 AM to 5:00 PM



Meeting Attendance

OPC-SAT Members: R. Ambrose, A. Boehm, M. Carr, D. Cayan, F. Chavez, K. Coale, C. Costello, J. Field, S. Gaines, G. Griggs, F. Gulland, M. Hall-Arber, S. Johnson, K. McLeod, S. Murray, K. Nielsen, J. Paduan, W. Sydeman, and S. Weisberg

Participating Managers: T. Barnes (CA Department of Fish and Wildlife), C. Kuhlman (CA Ocean Protection Council), S. Mastrup (CA Fish and Game Commission), and C. Shuman (CA Department of Fish and Wildlife)

Funders: David and Lucile Packard Foundation (K. Lee and H. Ludeman), Resources Legacy Fund Foundation (M. Weber and M. Armsby), and Sea Grant (J. Eckman)

Ocean Science Trust Staff: H. Carter, E. Knight, S. McAfee, M. O'Donnell, A. Pribyl, and L. Whiteman
Additional Ocean Protection Council Staff: L. Engeman, V. Termini, M. Villareal, and C. Waldmann
Additional Attendees: A. Erickson (Center for Ocean Solutions), and A. Reynolds (State Coastal Conservancy)

Meeting Theme: “Advancing Science in California Fisheries”

Hosted by the California Ocean Science Trust, the purpose of this meeting was to bring the Ocean Protection Council Science Advisory Team (OPC-SAT) together with fisheries decision makers to discuss ways the academic and research community can better support and inform California fisheries management. Staff leadership from the Ocean Protection Council (OPC), the Fish and Game Commission (FGC) and the Department of Fish and Wildlife (DFW) shared their vision of the current fisheries policy and management landscape in California, including management cycles and processes, and associated challenges. Key funders (the David and Lucile Packard Foundation, Resources Legacy Fund Foundation and Sea Grant) of California marine science illuminated opportunities for the scientific community to address managers’ science needs and advance novel ideas.

Topics discussed included:

- strengthening ‘science integration’ tools, such as scientific review and rapid assessments of fisheries, that can open avenues between the scientific and management communities;
- the potential for sustainability credits for marine protected areas (MPAs), and other new approaches to integrate MPAs and fisheries management; and
- key science needs associated with implementing more flexible fisheries management plans (FMPs) known as ‘FMP lite.’

Key Meeting Outcomes

1. Broad agreement that the Marine Life Management Act (MLMA) is a strong foundation for fisheries management, providing the authority to implement its mandates in novel ways.
2. A commitment among the OPC-SAT and decision makers to expand partnerships in the continued exploration of thoughtful and creative ways to integrate MPAs with fisheries management.
3. Acknowledging capacity limitations, DFW is interested in broadening access to scientific resources with an initial focus on prioritization of fisheries.
4. The FGC shared its desire to pursue new pathways (e.g. processes, stock assessment models etc.) to take up science within the FMP framework guided by the MLMA.
5. Funders expressed interest for injecting resources into fisheries management, and encouraged participants to expand the conversation started today with the broader scientific community.
6. OPC shared interest in shaping policy to support and advance fisheries management frameworks, and help to craft and pursue diverse funding portfolios.

Welcome and Introduction

The meeting started with a welcome and introduction from OPC-SAT co-chair and science advisor, S. McAfee, California Ocean Science Trust.

There is a growing conversation about how to increase the uptake of independent scientific information into fisheries management in California. Fisheries managers from DFW and the FGC are expressing the desire to share ideas and strengthen partnerships with the academic and research community in California. The OPC is prepared to support these goals, and California’s community of marine science funders are eager to learn about fishery managers’ particular science needs. The purpose of this meeting

is to both kick off a conversation between decision makers and the OPC-SAT -- the state-sanctioned body to offer scientific and technical advice -- as well as to act as a conduit to the broader scientific community.

OPC-SAT Business

- ***New OPC-SAT members:*** Dr. Gretchen Hofmann, UC Santa Barbara, an environmental physiologist with expertise in ocean acidification, and Dr. Holly Doremus, UC Berkeley, a trained scientist and lawyer with expertise in the science policy boundary, will join the OPC-SAT.
- ***OPC-SAT executive committee transitions:***
 - ◇ New OPC-SAT co-chair: M. Carr, UC Santa Cruz, will take over from A. Boehm, Stanford University, as co-chair of the OPC-SAT.
 - ◇ New OPC-SAT co-chair elect: The newest member of the OPC-SAT executive committee is K. Nielsen, Sonoma State University.
 - ◇ Thank you G. Griggs! G. Griggs, UC Santa Cruz, transitioned off the executive committee after over three years of service.
- ***Working group updates:***
 - ◇ The West Coast Ocean Acidification and Hypoxia Science Panel (OAH Panel): A. Boehm, chair of the OAH Panel, announced its expansion to now include Oregon, Washington State, and British Columbia. With the final membership at twenty, the OAH Panel is now poised to fully engage in its work on behalf of state, regional and federal decision-makers. The first OAH Panel meeting is scheduled November 25th and 26th, 2013.
 - ◇ OPC-SAT Task Force on Scientific Collecting Permits (on behalf of DFW): Tasked with helping DFW understand the potential impacts of scientific collecting permits on ecological communities in marine protected areas (MPAs), M. Carr described a series of models the task force is developing. See M. Carr's slides [here](#).
 - ◇ Upcoming Report – *“Potential Impacts of Climate Change on California’s Fish and Fisheries:”* W. Sydeman, Farallon Institute, announced the upcoming report summarizing the latest research on the potential impacts of climate change on California’s fish and fisheries.

Working Session: “Advancing Science in California Fisheries”

Executive committee member M. Carr, supported by Ocean Science Trust staff, led the working session, which included a series of moderated discussions between the OPC-SAT and decision makers from DFW, FGC and the OPC.

Overview

The core goal of this meeting was to initiate a discussion between decision makers and scientists to:

- enhance understanding of the context of fisheries management in California, including the cultural, social and political realities of incorporating independent science;
- identify and discuss the tools and processes available to help support DFW and the FGC in their missions; and

- explore next steps and opportunities for new science integration.

The meeting was not about what or whose science to provide to managers, but rather the process of how independent science is taken up, and ways those avenues may be enhanced through greater mutual understanding and collaboration between decision makers and California's scientific community. Thus, the essential question of the day was: What are the available science integration tools and processes that we can strengthen so that science needs for priority fisheries issues may be addressed in ways that are credible, relevant and timely?

Here to learn about the priority science needs of state fisheries managers, key funders of California marine science also offered some remarks to share their interests and demonstrate their commitment to the conversation being started in this meeting:

H. Ludeman, Program Officer, David and Lucile Packard Foundation

Enhancing the uptake of independent science is a key pillar of the Packard Foundation's approach. H. Ludeman's work, specifically with the Ocean Conservation and Science Program, focuses on fisheries management and conservation along the west coast, and at the federal level. In California, the Packard Foundation has supported the development of the network of MPAs, and is now looking to build on that work. More broadly, the Packard Foundation is currently strategizing ways to expand its work on fisheries to inform a five-year grant-making plan. The plan will not designate a pathway, but rather topics they wish to pursue, which currently includes:

- MPAs and fisheries management
- Techniques available for data-poor fisheries
- Alternative management approaches, including co-management and collaborative data collection

M. Weber, Program Officer, Resources Legacy Fund Foundation (RLFF)

Over the last decade, RLFF has focused on the implementation of the Marine Life Protection Act (MLPA) to create the new network of MPAs. The new challenge is to now map out a strategy for integrating MPAs with other coastal challenges, including water quality and fisheries management. DFW and the FGC have already made critical strides, but fisheries management is inherently a work in progress. The MLMA is a groundbreaking law, however there are challenges associated with implementing it. RLFF's ultimate intention is to support effective management and sustainable fishing practices. But before taking any action, RLFF first intends to understand the full landscape of science and other needs. At RLFF we characterize this as "aggressive incrementalism:" supporting small steps toward larger change. The key is to identify the right small steps at the right time. Therefore, RLFF will conduct outreach on multiple fronts: managers, stakeholders and the scientific community, in order to scope the political, economic, social and scientific aspects of fisheries in California. This meeting will help the organization to understand the scientific aspects. Until this broad scale scoping is complete, RLFF will remain agnostic on the best ways to move forward. It will likely be next year before any kind of strategy is released.

J. Eckman, Director, California Sea Grant

California Sea Grant is invested in basic research based on broad themes, one of which is sustainable fisheries. Going forward, California Sea Grant will continue to maintain their approach of open calls for proposals. This meeting will help illuminate areas and topics within California fisheries that may be in need of more attention.

Setting the Scene for Science: the Management Context

Cat Kuhlman, Deputy Secretary for Ocean and Coastal Matters, California Natural Resources Agency, Executive Director, California Ocean Protection Council

The OPC's role in fisheries is one of a supporter and funder, helping to advance DFW and FGC in addressing key management challenges. The OPC is well situated for this because of its unique membership, including the Secretaries of both the California Natural Resources Agency and the California Environmental Protection Agency. This allows the OPC to take a broader look across the landscape of agencies and other actors, and facilitate effective strategies and partnerships. Some science priorities for the OPC:

- *Enhancing the role of scientific and technical review:* the OPC is currently funding the implementation of an independent scientific review of DFW's density estimation methods for northern red abalone.
- *Development of FMPs:* the OPC is funding the development of the FMP for spiny lobster.
- *Regional MPA Monitoring:* the OPC continues to fund baseline monitoring in each of the MPA regions, and is interested in ways MPA monitoring may inform fisheries management.
- *Enhancing sustainable fisheries in California:* directed by Assembly Bill 1210, the OPC is implementing the [California Sustainable Seafood Initiative \(CSSI\)](#), a voluntary seafood program. This program led to the concept of the Rapid Fisheries Assessments (conducted by Ocean Science Trust), which will help to inform CSSI, but may also serve as a launching point for identifying information gaps and fishery improvement projects.

Looking forward, the OPC recognizes the need to advance conversations with the State Legislature around core fisheries needs.

Sonke Mastrup, Executive Director, California Fish and Game Commission

Fisheries management in California has been through a number of changes in recent decades. With the passage of the MLMA, management was passed from the State Legislature to the FGC, with the provision that FMPs would be developed and adopted for all California fisheries. However, getting every fishery under an FMP is extremely challenging. First, fisheries management is underfunded, currently costing approximately four times the revenue that fisheries actually generate. Second, there are inherent risks and uncertainties associated with the science that informs FMP development. To help decision makers more effectively navigate tradeoffs, we need to develop even better ways to communicate the uncertainty.

In the eyes of the FGC, sustainability means that fisheries need to be both ecologically and economically sustainable. There needs to be new models for fisheries management that confront the social, political and legal realities surrounding these resources. As they stand now, FMPs are too large and complex. We should explore the concept of 'FMP lite' to increase the number of state fisheries under management plans. These more flexible plans could be updated over time eventually achieving full FMP status. In terms of the science, the key is appropriately prioritizing information needs: separating the need to know from the nice to know. In addition, tribes and traditional ecological knowledge must also be a core part of understanding the science needs for FMPs.

Craig Shuman, Marine Region Manager, California Department of Fish and Wildlife

DFW is now at a turning point. While there are still many challenges -- not the least of which are limited

staff, ongoing travel restrictions, and the increasing complexity of creating new regulations -- DFW is committed to planning how best to focus our limited effort, and expand our resources and capacity through partnerships. The OPC-SAT could be particularly adept at helping DFW to prioritize the science we need, and acting as a conduit on our behalf to the wider scientific community. The language of the MLMA offers an opportunity to better streamline the fisheries management structure.

Tom Barnes, Program Manager, State Managed Marine Species, California Department of Fish and Wildlife

There are many challenges to developing FMPs. After the MLMA was passed, DFW started by looking at how federal FMPs are developed and applied this to our first state FMP (Nearshore Fishery Management Plan). However, it took an extremely large amount of resources. FMP lite is a good solution, but there are still several issues to work out, such as:

- Prioritizing what should go into an FMP lite;
- handling issues constituents would like to see incorporated into an FMP;
- determining the minimum they can put in an FMP lite to ensure sustainability; and
- incorporating ecosystem considerations.

Question and Answer Period

M. Carr then opened the floor for questions from the OPC-SAT to the decision makers, which are summarized and grouped by theme.

Addressing the lack of science capacity at DFW

DFW aims to enhance internal capacity as well as increase external partnerships. One priority is to better access scientific capacity in academic and research institutions. DFW developed the [Science Institute](#) as a way to reach out and collaborate with academics. In particular, the Science Institute could serve as a recruiting tool for scientists with expertise in stock assessments.

Prioritizing research needs for the funding community

While DFW does prioritize research needs, they are not totally in control of their daily activities. For example, a new legislative mandate, or need to comment on a piece of legislation or circumstance, can trump internally designated priorities. DFW needs to develop a shared priority list between managers and funders so they can keep everyone on the same page in developing long-term fisheries management.

Costs of managing commercial fisheries

Commercial fisheries bring in, on average about \$5 million in license fees and landing taxes to DFW. An analysis in 2007 estimated that DFW is spending over \$22 million to manage commercial fisheries. The challenge is to figure out how to develop an economically sustainable commercial fishery for both DFW and the fishermen.

Relationship between state and federal fisheries managers

This highlights a couple of important needs. While DFW works closely with NOAA Fisheries for species that span state and federal jurisdiction, the state doesn't have the management structure in place like the Pacific Fisheries Management Council to review the available stock assessments and turn them into

regulations. Further, there are a number of harvested fisheries without management because DFW does not have the capacity to conduct stock assessments. One challenge is maintaining this expertise in house. DFW needs the FMP, the science, and the added regulatory support.

Economics of fisheries management

There are a number of unfunded mandates. California subsidizes fisheries from general funds, but this is a very unstable platform. In addition, recreational fishers are paying a relatively larger share. The FGC needs to better understand the economics of fisheries to decide how the fee structures affect the dynamics of the fishery.

Socioeconomic factors and sustainability

The FGC views its (and DFW's) job as ensuring that fisheries are sustainable from a biological perspective; not determining society's needs in terms of fisheries and fishing communities. However, the MLMA requires that socioeconomics be considered in FMPs. DFW has limited capacity to address this, and the FGC itself would also benefit from additional training.

Defining 'FMP lite'

DFW could potentially prioritize fisheries for FMP lites based on economic value. If DFW can understand the status of a stock, then they can implement management measures accordingly -- but do those approaches actually change the status metric? Potentially lumping fisheries into risk bins could be a viable option.

Additional Discussion

There is a need for new ways of thinking, such as developing key questions and priorities through more collaborative processes, then cultivating interest among funders. One consideration is the role of MPAs in informing fisheries management, especially because the success of each depends on the other.

The Dirty Work: Employing the Tools of Science Integration

Following the presentations by decision makers, this session aimed to describe two case studies as "pathways" that demonstrate science integration in practice.

Speakers:

- Tom Barnes, Program Manager, State Managed Marine Species, California Department of Fish and Wildlife
- Emily Knight, Program Manager, Ocean Science Trust
- Alena Pribyl, Project Scientist, Ocean Science Trust

Case Study #1: Scientific Review of Red Abalone

Earlier this year, DFW approached Ocean Science Trust to coordinate a scientific and technical review of the survey design and methods currently used to estimate red abalone (*Haliotis rufescens*) density. Abalone density is used as part of an adaptive management approach to inform catch guidelines for the recreational red abalone fishery in northern California, and population goals in southern California, as outlined by the [Abalone Recovery and Management Plan](#).

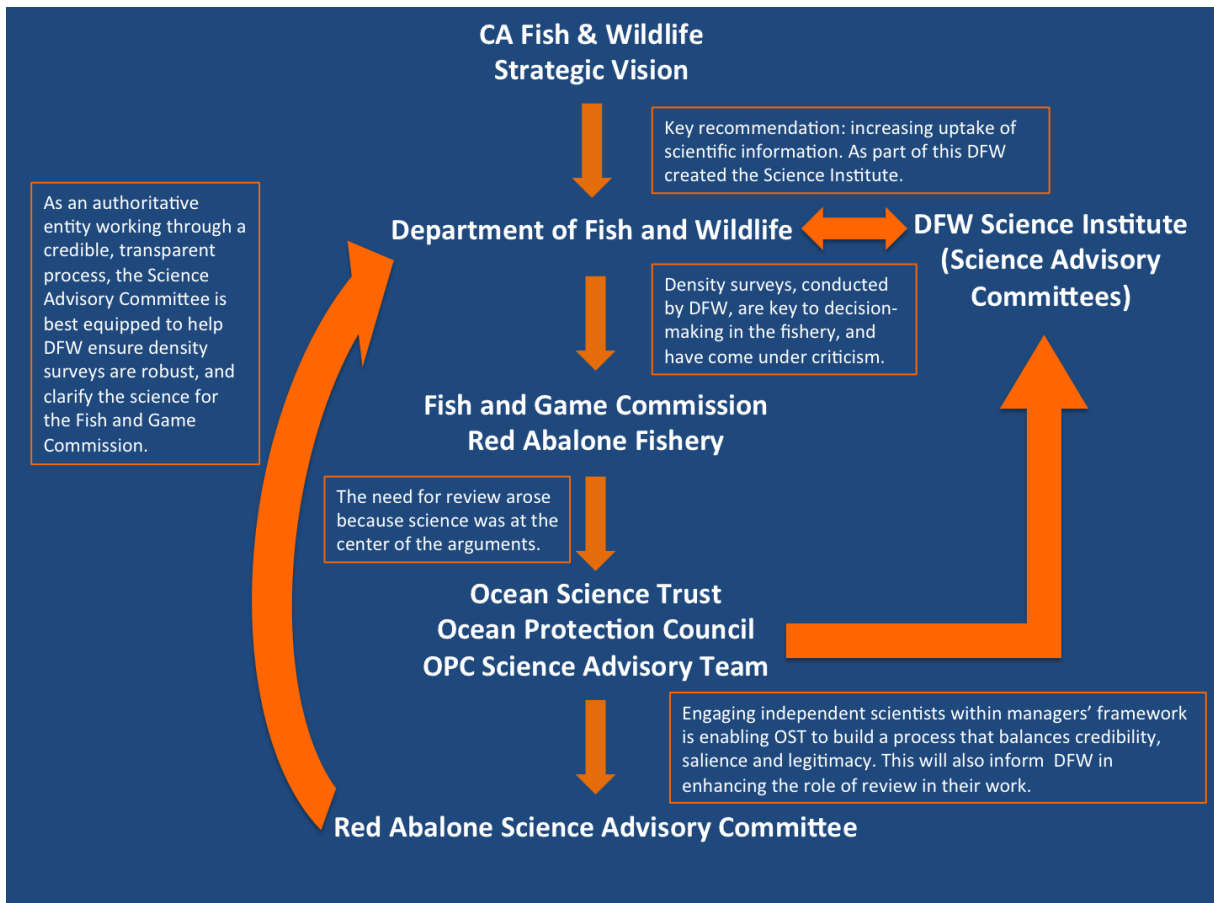


Figure 1: Red Abalone Scientific Review Science to Management Pathways & Opportunities

Key Integration Themes

Testing the efficacy of review guidelines

As part of the development of the Science Institute, DFW drafted guidelines for commissioning scientific review. Therefore, the request for an evaluation of the methods used to estimate red abalone density was an opportunity to both fill a specific science need for DFW and the FGC, and more broadly test the efficacy of these new guidelines.

Having a structure in place to address emerging needs

The OPC was critical for DFW because it provided funding support. Ocean Science Trust (and its partnership with the OPC) was key as an independent entity through which to engage the OPC-SAT and scientific community. In designing the review process, Ocean Science Trust worked with the OPC-SAT to establish the Red Abalone Science Advisory Committee (SAC), which resulted in a broader and more robust suite of expertise being represented.

Scoping the review, and clarifying roles and responsibilities

Prior to designing the review process, Ocean Science Trust worked with DFW to thoroughly scope the review, and clarify the roles of Ocean Science Trust, the Science Advisory Committee, and DFW during the review and after its completion. Through this initial step, Ocean Science Trust was able to better understand the situation that led to the need for the review, and design a process and timeline aimed at balancing credibility, legitimacy and salience in the eyes of the Science Advisory Committee, managers

and fishing constituents.

Maintaining independence of the review process

The methods to estimate red abalone density had come under criticism from fishing constituents. In order to implement a credible and authoritative review, it was not only critical to establish a team of external scientists (the SAC) to conduct the review, but the process needed to be designed and maintained by an independent, neutral entity (in this case Ocean Science Trust).

Case Study #2: Rapid Assessments of Selected California Fisheries

In 2010, California Governor Jerry Brown signed AB 1210 (Monning, 2009), which required the OPC to implement a voluntary California sustainable seafood certification program, now known as CSSI. To inform this program, the OPC approached Ocean Science Trust to conduct rapid assessments of 11 selected California fisheries. A rapid assessment is a synthesis of existing knowledge about a fishery that reveals the state of its biological information, management and governance, gaps in understanding, and potential improvement plans.

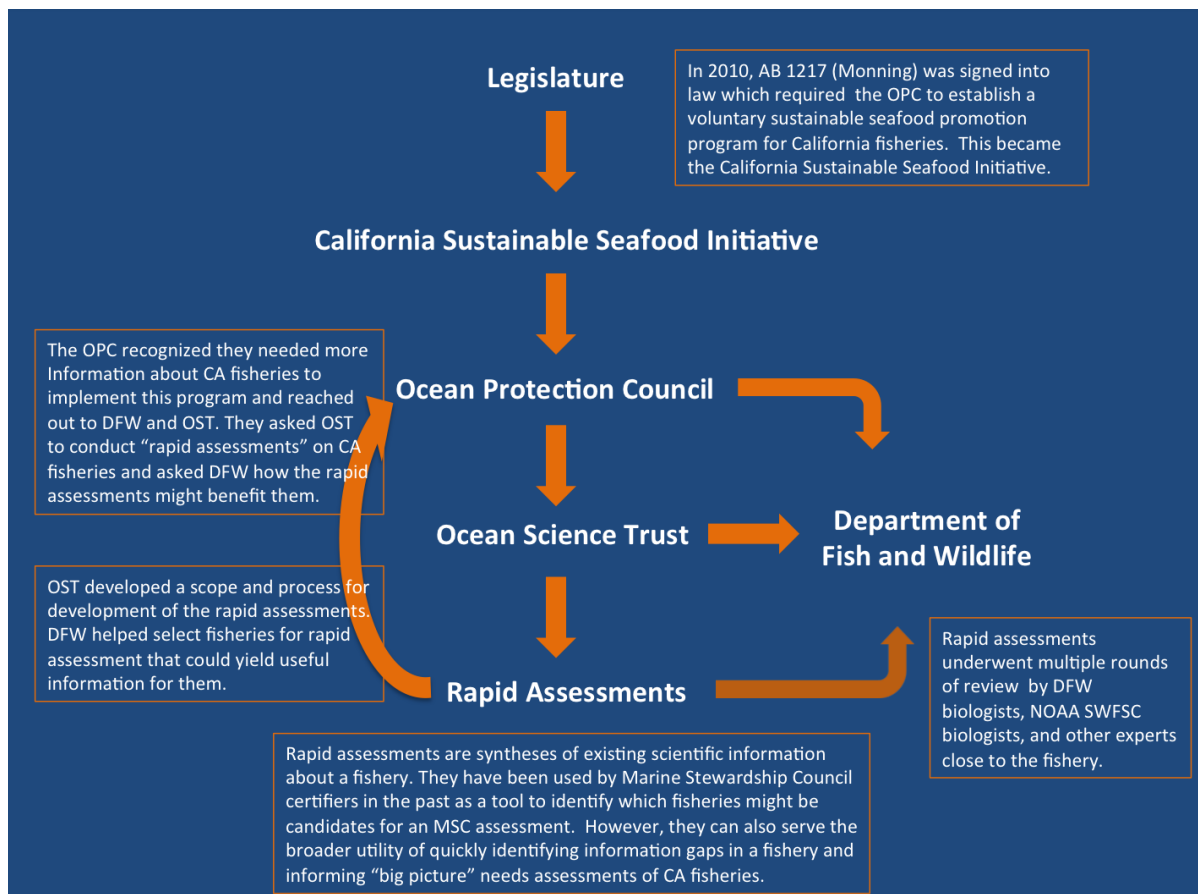


Figure 2: Rapid Assessments Science to Management Pathways & Opportunities

Key Themes

Expanding the utility of the rapid assessments (turning a need into an opportunity)

The OPC and Ocean Science Trust recognized early on the potential for the rapid assessments to also inform fisheries management and strengthen collaboration with DFW. This exemplifies that in many

cases, the opportunity to enhance the integration of independent science into decision making on multiple fronts often begins with projects that were generated to address a singular request.

Engaging with DFW throughout the process

In order to ensure the rapid assessments' utility to fisheries managers, it was critical to collaborate with DFW throughout the process. DFW informed the scope of rapid assessments and provided technical review of the final drafts. This allowed DFW to plan for how best to build off the rapid assessments (work that is currently ongoing). To Ocean Science Trust, this also enhanced the quality of the assessments.

Summary

In general, these case studies offer some lessons on ways to harness existing opportunities:

- Working with an existing management priority can help attract the appropriate entities (including funders) to the table.
- Utilizing existing organizational structures (e.g. the OPC and OPC-SAT) is a platform from which collaboration between managers and the scientific community can be facilitated, and helps to broaden the suite of expertise involved in innovative ways.
- Process, driven by a clear scope, is key. Boundary organizations can play a critical role in clarifying the scope and designing and implementing effective processes that balance credibility in the eyes of multiple audiences, including stakeholders.
- Seeking new ways to expand or cultivate additional audiences for the initial scope is an effective way to make existing funds go farther, and serve multiple management audiences.

Finally, S. Gaines closed this session by pointing out that there is also an important role for the scientific community in promoting new discoveries, and working with managers to build new avenues to evaluate and potentially integrate cutting-edge scientific information and ideas.

Science Integration Workshops

M. Carr invited M. O'Donnell and L. Whiteman up to run two science integration workshops. M. Carr encouraged the group to consider what they heard in the last session as they brainstorm ideas around these opportunities.

Workshop #1: Incorporating MPAs into the Fisheries Management Conversation

The challenge to the OPC-SAT on this issue is to identify ways to efficiently engage and mobilize the scientific community on this issue. Certainly, this challenge will not be resolved in this session, but the time to initiate and advance the dialogue is now.

During the planning process, MPAs were sold as a means to benefit fisheries, and now fishers are asking for those benefits. Core questions facing scientists and managers are:

- What are ways to incorporate information that might help decision makers evaluate "conservation credits" for the fisheries that are enhanced by MPAs?
- How should the term "credit" be defined? For example, does it mean other management controls are potentially relaxed, and what science from monitoring could be used to evaluate that?

- What is the best way to utilize MPA monitoring to inform management of fisheries and the MPAs themselves? Through what existing mechanisms can information from the baseline monitoring program be used?

There are some existing examples for how this can look in practice. First, in 2011 DFW conducted a [Marine Protected Areas and Fisheries Integration Workshop](#) to get the conversation started. Also, the FGC once used the MPAs to in part justify a management decision. A stock assessment for California halibut had showed the southern stock was depleted. However, the FGC chose not to take immediate action because, among other reasons, the MPAs were potentially buffering stock resilience. Yet another example was in the development of the spiny lobster FMP, where MPAs were used in the evaluation of stock sustainability. The effect of MPAs on calculations of spawning potential ratio (SPR) in lobster is dramatic. When the effects of MPAs are used in the calculations, the risk to the stock is significantly reduced. In the case of Dungeness crab, however, MPAs had a different effect by placing spatial limitations on the fishing area.

The workshop then became a discussion between the OPC-SAT and fisheries managers:

- *Highly mobile species:* California halibut pass in and out of reserves. The OPC-SAT expressed skepticism that such species benefit from the protection of MPAs.
- *“Credit” as a term:* J. Field stated that rather than credit, this is about tradeoffs. Managers must decide how to manage fisheries outside of MPAs: Do you overharvest fish outside the MPAs or think about economic tradeoffs such as having a smaller harvest, but larger fish? On the other hand, C. Costello described the origin of the word credit as going back to CSSI, and how the MPAs ought to be considered in rating sustainability.
- *Spatial management:* S. Gaines noted that the current management system is not spatially structured, but we are now attempting to address spatial challenges. Management must provide a clear vision, including management objectives paired with priority science questions.
- *Fisheries modeling:* The MLPA Initiative funded models to determine which fisheries might benefit from MPAs. These models could also be used to inform decisions about fishing pressure outside MPAs. Models exist for the South, North Central and North Coast regions of California.
- *Incorporating models into the FMP process:* An important consideration is which models should be used in the development of FMPs, and what process should DFW use to make such a determination? In the spiny lobster FMP, for example, building off existing work was a critical factor. A stock assessment model already existed. However, all acknowledged that selecting models simply because they are available is not necessarily the best way forward. S. Mastrup noted that the OPC-SAT could be the body to work through these kinds of decisions.

In conclusion, the presence of MPAs can provide valuable information for management, but they also present the opportunity to change the way fisheries themselves are managed. C. Costello offered the idea of doing localized experiments that test new management strategies on a small scale. Fisheries managers noted that this could reduce enforcement burdens by building local buy in, but that the challenge is whether or not the current legal structure would allow such experiments. The OPC-SAT should consider forming subcommittees around such issues to fully discuss and vet such ideas.

Workshop #2: Fisheries Management Plans: Integrating Science into a Management Framework

Developing FMPs

Under “Setting the Scene for Science: the Management Context,” S. Mastrup discussed the notion of FMP lite as a more feasible way for DFW and the FGC to get fisheries under FMPs. S. Mastrup (and the other fisheries managers present) suggested that the scientific community could be most useful by in general helping develop and implement processes to prioritize, including:

- winnowing down FMPs to the most core elements;
- narrowing down the list of existing and emerging fisheries that need to be considered;
- grouping fisheries with common features to maximize use of information; and
- developing procedures to evaluate and uptake independent scientific information (K. Lee offered the idea of an open-source “wiki” style FMP that allows the scientific community to contribute).

Implementing FMPs

Another challenge that the scientific community could inform is consequences of FMP implementation. Essentially, managers want to know: Is this management action having unintended ecological consequences? Is it harming the fishery? Are there other factors, such as ocean acidification, on the horizon that managers need to be aware of? The scientific community could help answer these questions.

Finally, the workshop concluded with the suggestion that FMPs should be designed and implemented in ways that allows fisheries to be considered within the context of the whole ecosystem. This could also make doing multiple FMPs more efficient because the same scientific foundation would exist for all.

Thoughts on Next Steps

Participants then concluded this working session by reflecting on what they’d heard:

- There is a clear need to feed economic and business models into management processes.
- We need to define what we mean by ‘sustainability.’
- We’ve talked about prioritization, such as vulnerability scoring, and about FMP lite.
- Finally, we need to define what we mean by MPA credit, and discuss how we can mobilize around it.

Then funders provided some of their impressions from the day:

- *K. Lee & H. Ludeman:* There appeared to be a general alignment around trying new things. We will take this into consideration. Particularly interested in ideas around developing and implementing FMP lites. Want to support state government in priority activities they do not have the time or capacity to do on their own.
- *M. Weber:* To build on that, it seems clear what an FMP lite could look like. The main issue is how to get there, especially in terms of managing expectations, uncertainty and risks in a fair and informed way. Another key aspect is the relationship between MLMA and MSC criteria, and ways to advance new fisheries models being developed in the scientific community.
- *J. Eckman:* The ‘data poor’ arena the managers are working in is very important. Are there ways that key species which have emerged as imminently threatened could be used as test cases to develop less encumbered (yet still defensible) ways to collect data?

Part 3: Meeting Conclusion

Wrap Up

Closing Remarks (via phone): Secretary John Laird, CA Natural Resources Agency

The OPC is working very hard to re-organize to be more effective and focus on priority issues, of which fisheries management is one. With new leadership now at DFW and the establishment of the MPAs, we're looking to support efforts to take an ecosystem approach: to advance our understanding of sustainable fisheries in concert with ocean acidification, land-based impacts and marine debris, to name a few. This will require agencies working together. Something that hasn't always happened the way it should. This is not simple for a number of reasons, but the OPC is uniquely positioned to promote that kind of collaboration, and bring independent science to bear in a flexible, adaptive way.

I want to applaud DFW: they are committed to this goal and are working on it. And the OPC-SAT is the venue for such conversations to happen. I want to highlight that a similar model is being proposed in Lake Tahoe. The work you all are doing together is being watched elsewhere. We're on a good path, and I want to thank everyone in the room today. Thank you to S. McAfee and her staff for pulling this meeting together. I look forward to continuing this important work to advance sustainable fisheries in California.

Meeting Adjourn

