

# California Ocean Science Trust: *Progress Report*

OCTOBER 2009 THROUGH SEPTEMBER 2012

CONNECTING SCIENCE TO OCEAN POLICY AND MANAGEMENT



## Greetings from the Executive Director



Dear Friends,

I am pleased to present the California Ocean Science Trust (OST) progress report, covering October 2009 through September 2012. It has been a challenge to distill OST's progress of the last few years into this report – there is so much more I wish to share!

I have had the privilege of leading OST since early 2010, and in that time I have come to deeply appreciate the boldness of California's commitment to science-supported decisions. OST, while independent of the state, exists by statute, and our role in supporting California's ocean resource decisions with robust science and transparent processes demonstrates not only the framer's intention of securing our ocean's future for all, but sound governance.

In thinking about our growth over the past three years, I recall a particular project that brings into focus our role as an honest broker, or "boundary organization." In response to the state's request for guidance on sea level rise projections, we convened the Ocean Protection Council's Science Advisory Team, a committee of professionals who lend their time and expertise on behalf of the state. They took on this challenge, like so many others, and the guidance we provided to our policy leaders resulted in informed planning decisions that I contend will ultimately save Californians' precious tax dollars. At a time when others try to marginalize the role of science in policy, California seeks the guidance of those most knowledgeable, and those experts in turn extend themselves to answer the call. It is exhilarating and humbling to be in a position to support this effort.

Informed decisions are better decisions, and understanding the basis for these decisions is good governance. That's our role, and with the help and support of scientists and other partners, and the state's continued commitment to seeking expert guidance, we have succeeded in this daring experiment to be fair, thorough, cost-effective and grounded in the weight of scientific opinion.

I am proud of California for envisioning an organization such as OST, and proud of our state partners, particularly the Ocean Protection Council. I am also touched by the commitment of the broader ocean community – fishermen, conservationists, industry, scientists – all lending their voices to shape a common vision: a vibrant future for our diverse and productive ocean resources, and a vibrant ocean economy that depends on them. I am deeply privileged to support and encourage our collective vision, fortunate to work with the extraordinary OST team and to be guided by a Board of Trustees dedicated to OST's integrity and value. Together we are innovating and learning, listening and serving.

I encourage you to reach out to any of us at OST with questions and ideas.

With my best wishes for our vibrant future,

A handwritten signature in black ink, which appears to read "Skyli McAfee". The signature is written in a cursive, flowing style.

Skyli McAfee

Executive Director, California Ocean Science Trust



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# Who We Are

## California Ocean Science Trust

The last decade has seen a surge in calls for better integration of the best available scientific information into coastal and marine management. Yet despite this growing chorus of support for science informed decision-making, incorporating science into the policy process is no simple matter. Scientists and policymakers often run into trouble collaborating harmoniously because they are enmeshed in disparate worlds that operate with fundamentally different time scales, processes, and even languages.

California Ocean Science Trust (OST) is expert at living in and understanding both of these worlds. We work to ensure that the best available science is applied to California policies and ocean management. Carefully, yet boldly, we are building a bridge constructed of our independence, integrity, experience, and knowledge that links science and policy in ways that result in better ocean management.

This is what we call Science Integration.

### Mission

California Ocean Science Trust advances a constructive role for science in decision-making by promoting collaboration and mutual understanding among scientists, citizens, managers, and policymakers working toward sustained, healthy, and productive coastal and ocean ecosystems.



## Our Origins

OST is a nonprofit 501(c)(3) public benefit corporation established pursuant to the California Ocean Resources Stewardship Act (CORSA) of 2000. OST's founding statute is one of our most powerful assets. It emphasizes the importance of greater scientific understanding in ocean and coastal policy and management, while at the same time demonstrating the state's commitment to improved, science-informed decisions.

## Our Team

OST is a team of science integration professionals, including experts in technology and data management, science communications, science administration, marine policy, as well as both natural and social sciences.

**Skyli McAfee**, Executive Director  
**Liz Whiteman**, Program Director  
**Tess Freidenburg**, Senior Scientist  
**Emily Knight**, Science Integration Program Manager  
**Madhavi Colton**, Associate Scientist  
**Errin Kramer-Wilt**, Project Manager  
**Erin Meyer**, Associate Scientist  
**Tony Hale**, Information Systems Officer  
**Ryan Meyer**, Science Integration Fellow  
**Holly Rindge**, Communications Manager  
**Aaron McGregor**, Program Associate

OST also mentors and greatly benefits from a California Sea Grant fellow each year:

**2010:** Liz Rogers  
**2011:** Aaron McGregor  
**2012:** Hayley Zemel





## Our Work

OST does not advocate for or against specific policy and management outcomes. Rather, we are committed to remaining neutral and facilitating the integration of unbiased, rigorous science into decision-making. We pursue our work by operating as a “boundary organization,” helping scientists and decision-makers work together more effectively. We are home to the MPA Monitoring Enterprise, and foster the programs, Science Initiatives and Science Advising.

### **Science Advising:**

#### **Independent and Honest Brokers of Scientific Information**

Through the Science Advising program, we coordinate expert advice, and act as a liaison and bridging institution between the scientific community, decision-makers, and various thought leaders in science and policy. We focus on developing robust processes, such as peer review and expert judgment, to promote and protect the credibility of OST and state products and programs.

### **MPA Monitoring Enterprise:**

#### **Taking the Pulse of Ocean Ecosystems**

Under the Marine Life Protection Act (MLPA), California is establishing a network of marine protected areas (MPAs) to protect marine life, habitats, and ecosystems. It is essential that everyone with a stake in the future of these vital resources knows if the MPAs are working as intended. With the MPA Monitoring Enterprise program, we are expanding the boundaries of science, online technologies and communications tools to take the pulse of ocean ecosystems, evaluate management actions, and enhance the relationship between people and science. Through our collaborative approach, we are advancing monitoring in other management arenas including climate change and fisheries management.

### **Science Initiatives:**

#### **Understanding and Responding to Managers’ Needs**

Under the Science Initiatives program, we broker solutions to managers’ information needs, including coordinating science studies, organizing workshops, and building partnerships, among other activities. In any initiative we take on, we strive to achieve the highest scientific rigor while ensuring that outcomes strategically inform policy and management decisions, and are presented in compelling formats fit for broad audiences. Through Science Initiatives, we are continually expanding our understanding of how government entities use independent science in decision-making, so that we may strengthen and build on those connections.

## The Ocean Protection Council Science Advisory Team and Science Advisor to the State

One of OST's key partners is the California Ocean Protection Council (OPC), a cabinet-level body that coordinates ocean-related agencies and leads the state with effective over-arching ocean policy. As part of its core mission, the OPC promotes scientific understanding of ocean issues that face California. The OPC has demonstrated its commitment to this mandate by, among other things, designating OST's executive director as its science advisor, and asking OST to coordinate the OPC Science Advisory Team (OPC-SAT), a multi-disciplinary body of 24 scientists from a variety of research institutions in California and beyond.

The science advisor acts as the representative of science at the "policy and management table," and conversely serves on a variety of science boards and committees. Through these regular interactions with the decision-making and scientific communities, the science advisor works to bridge both worlds. In building the OPC-SAT in 2008, OST put into place the structure to effectively harness the best thinking of the scientific community on behalf of the state. As a result, we have seen improvements in the scientific quality of state projects and products, our own programs, and a rising consciousness among the scientific community of opportunities to inform state policy.

## Our Partners

OST cannot achieve its mission without strong partnerships with a wide variety of organizations. Our founding legislation and core principles each reference our role in promoting the integration of science across the policy and management landscape, not just our own activities. Collaborating with a diversity of colleagues ensures OST and others leverage each others' relative strengths to provide the state with the best outcomes. Hence, building partnerships is core to our work, rather than something pursued in a haphazard, opportunistic way.



# Our Achievements

promote understanding  
break down barriers  
advance science  
inform managers  
empower scientists  
engage citizens  
share knowledge  
foster collaboration  
hone best practices  
guide learning  
streamline coordination  
improve communication  
strengthen relationships

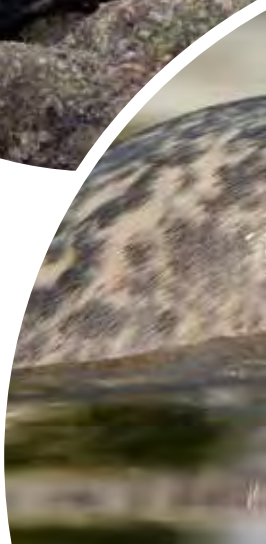
## Setting the Standard for Science Integration

What do we mean by “setting the standard for science integration”? It means enthusiastically rising to the challenges set forth by our founding legislation (CORSA, 2000) to:

- better coordinate California’s ocean resource management agencies;
- promote multi-agency and multi-institutional approaches among state, regional and federal agencies and marine science institutions; and
- identify information gaps and mobilize California’s science resources to fill those gaps.

As part of this, OST is now actively engaged as the state’s identified science support on a variety of ocean matters, is the home to the innovative engine that guides learning and research using our seminal MPA network (the MPA Monitoring Enterprise), and is sought after as a partner and leader in the field increasingly referred to as “boundary organizations.”

Ultimately, however, there is no single answer to this question. It lies in getting to know OST’s culture, how we conduct our work, and our vision going forward.





## A Culture Of...

### Pragmatism

We cannot always predict when a policy window will open or shut, or when a breakthrough result might suggest a need for policy action. At OST we maintain a pragmatic sensibility, allowing us to respond to needs as they arise, and to conduct projects and manage contracts efficiently and effectively.

### Innovation and Creativity

We believe management relevant information is of even greater value if it informs and engages a broad range of constituencies in ocean and coastal issues. Employing innovative technologies, OST is breaking down barriers between science and broader audiences, and re-imagining what is possible.

### Curiosity

As scientists, we are curious. At OST, we are actively encouraged to explore, think and ask questions of each other, and our partners.

### Reflection

At the heart of OST is self-reflection. We are constantly seeking to improve OST by learning from our own experiences and from others: recognizing where things could work better, both for ourselves and the community of practitioners in science integration.

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OST applies a range of strategies in conducting our work that helps us to continually develop and hone best practices for linking science with decision-making. We'd now like to share some of our highlight achievements from the last three years, according to those strategies. Through this lens, we aim to display how interrelated all of our programs and activities are; continually contributing to and drawing from each other while at the same time generating their individual momentum.



## Understanding Marine Ecosystem Conditions and Trends

The planning of California’s open coast statewide MPA network is now complete. Yet establishing the network was just the first chapter in the story of MPAs in California: the same law that required a new system of protected zones off the coast also calls for scientific monitoring to track their effectiveness, enhance our understanding of ocean ecosystems, and inform future management decisions. OST launched the MPA Monitoring Enterprise in 2007 to lead the development and implementation of a scientifically rigorous and cost-effective MPA monitoring program. The program we are building is the most comprehensive study of the state’s ocean ever undertaken, and will inform fisheries management, water quality monitoring, climate change adaptation and other ocean policy.



## MPA Monitoring

Through the MPA Monitoring Enterprise program, we are working to ensure that monitoring adopts the most feasible, cost-effective approaches to answer key MPA design and management questions, and measure progress towards the goals of the MLPA. This is a unique opportunity to understand how managers use scientific information and to reflect these needs in MPA monitoring programs.

### Creating a New Monitoring Framework to Assess Ocean Conditions and MPA Performance

A central question lies at the heart of MPA monitoring: What is the health of California's ocean, inside and outside the protected areas?

Breaking down institutional and cultural barriers, we are working alongside stakeholders, scientists, state managers, tribes and tribal communities and others to lead the development of a new framework for monitoring - one that assesses the changing condition of ocean ecosystems and the performance of MPA networks by measuring the "pulse points" of ecosystems and answering key strategically selected management questions.

### Establishing a Benchmark

The first step is to establish baseline conditions, or a "benchmark" that future changes can be measured against, and this work is underway now. Baseline programs are designed by the Monitoring Enterprise team in collaboration with the Department of Fish and Wildlife (DFW) and California Sea Grant, and measure ecological and socioeconomic conditions in the first few years following MPA implementation.

### Launching an Ecosystem Health Report Card

From kelp forest size to fish and bird populations, and from numbers of MPA visitors to fishing revenues, the data from the baseline program will add up to the most detailed picture ever created of current ocean conditions. For California, it is a reference point from which all future conditions can be measured, including a catastrophic oil spill, impacts from climate change, as well as fishery management effectiveness and the performance of MPAs. The value of this investment will grow to serve California far into the future. We are currently working with managers, scientists, technology and communications experts to develop and pilot a new 'ecosystem health report card' to provide the starting point for using this data.



## **Evolving MPA Monitoring to Build Relevance**

As baseline program data collection continues, we are already planning the next stage: ongoing monitoring. Once a benchmark is established, ongoing monitoring can begin to track changes over time. This will enable scientists, ocean users and state officials to keep a finger on the pulse of marine systems and make the best possible decisions to maintain the health of our ocean. We recognize it is not practical to track the status of every human use, plant or fish. Key to our approach will be monitoring just enough to detect changes, monitoring at scales that will be useful to managers, and investing modest resources for future indications of performance of the network as a whole.

## **Engaging Citizens**

Beyond the traditional institutions of science lies a tremendous capacity on the part of citizen scientists actively engaged in the world around them. We have launched a new citizen science initiative to foster a community engaged in MPA monitoring and stewardship, and build understanding of the approaches and organizational arrangements that can promote enduring partnerships for ongoing monitoring.

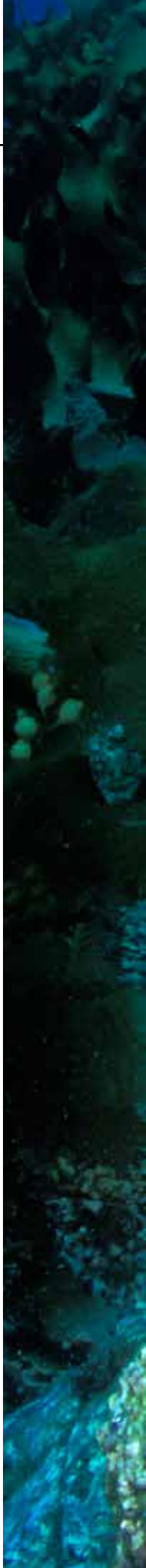
## **Building Partnerships with Tribal Governments**

Knowledge that can advance our understanding and stewardship of ocean health is a shared goal between the state and tribal governments in California. We are building new partnerships to create ocean health assessments that incorporate traditional knowledge and can be used by the state to inform adaptive MPA management, as well as by tribal governments to advance their own ocean stewardship goals.

## **Fostering a Community Engaged with Science**

We envision a future in which a common body of shared scientific knowledge forms the basis of participation in ocean resource management. Toward that end we have built OceanSpaces, a new online community platform for staying informed, sharing information and communicating among the diverse audiences interested in California's ocean.

- North Central and South Coast regional monitoring plans were formally adopted as part of state policy in 2011. Citizens, university scientists and others are in the field collecting baseline data.
- In the North Coast, a regional MPA network was adopted in early 2012, and planning for monitoring has been launched.
- In the Central Coast region baseline data collection is complete and analysis is underway. Results will be shared with the public and policymakers in early 2013.



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## Understanding the Science Policy System in California

From state and tribal offices, private foundations and federal funders, to community groups, to university departments, and non-governmental organizations (NGOs), many different kinds of organizations are seeking to advance science in support of healthy and productive ocean ecosystems. In order to work with these groups effectively, OST seeks to understand their role, including their constraints, how they relate to one another, and the ways in which science can support them.



## Agency Science Needs Assessment (ASNA)

Though much of marine and coastal science may be considered relevant to policy or management, this does not mean that it is always useful to decision-makers. We designed the Agency Science Needs Assessment (ASNA) to bridge this information disconnect by deepening our understanding of the “supply and demand” of marine and coastal science.

Through ASNA, we are engaging in interviews with staff across agencies and organizations with ocean and coastal missions. These enlightening conversations are helping us to hone our existing activities, and guiding us in implementing strategies that empower scientists and decision-makers by strengthening the bonds between them.

### How Does ASNA Work?

The first round of ASNA was initiated in 2011 and continued well into 2012. However, OST intends for ASNA to be an ongoing process, improving our knowledge of science needs over time, thereby enhancing the relevance and impact of all of our activities and programs.

### Goals of ASNA

- Understand how agencies interact with and use science in decision-making
- Strengthen the relationships between scientists and managers
- Build a living database of state information needs
- Broker solutions to some of the priority information needs we identify

### Climate Change and Fisheries

The first initiative of ASNA is a white paper that will examine impacts of climate variability and changes on the fish and fisheries of the California Current. We have teamed up with the OPC-SAT and the Sonoma County Water Agency to address this cross cutting topic of interest to fisheries and water managers alike.



### **Developing an Inventory of Science Priorities**

Working with the OPC-SAT in early 2011, we began by conducting a background analysis of the OPC's cross cutting focal areas that involved interviewing dozens of scientists from across disciplines. From this analysis, we generated an initial list of candidate science studies that would advance knowledge in areas of strategic importance.

### **Engaging Agencies to Inform and Prioritize the Science**

We then initiated a series of interviews with staff working throughout California state government. Through these conversations, we explored how science is used in their work, and ways in which they believed those connections could be improved and expanded. We also identified priority science needs through a discussion of the study candidates list mentioned above.

### **Putting Science to Work for the State**

Taking what we learn, we will work to address the science needs that emerge as opportunity allows, and within managers' timeframes. This may involve project management, organizing workshops, or facilitating partnerships. The scale of these efforts will be appropriate to the needs.

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Looking forward, we will continue to apply ASNA at a broad scale (as with the first round described above), while facilitating modular approaches, focusing in on user needs around a single topic or program. ASNA will also provide multiple opportunities for our ever-growing array of partners to hone their own work. We will share our results widely, and are already beginning to plan briefings, workshops and trainings around ASNA.



## Creating Sustainable Technology Solutions that Catalyze our Understanding of Ocean Resources

Technology can offer us the ability to advance managers' understanding of ocean ecosystems, while also connecting people with sound scientific information in new and interactive ways. True to our mission, OST strategically employs technological solutions when they will best serve managers' information needs and facilitate more informed decision-making of our coastal and marine resources.

Our first foray into using technology to advance understanding was the PLATFORM model, an interactive tool that reflects the technical information synthesized in the "Oil and Gas Platform Decommissioning Study." Since then, OST has expanded into the realms of information management, helping the state to maximize its investments in data collection, and building communications platforms that gather diverse audiences around scientific information.



# OceanSpaces

**When people and data connect, we can make better decisions for the health and management of our oceans.**

We strive to strengthen the understanding and use of science as the basis for sound decisions. Thus it is incumbent upon us to effectively steward and share MPA monitoring data and results, and facilitate better communication among the diverse audiences interested in the health of our ocean.

In 2008 we began to explore the role that an online information management system could play in furthering our mission. We conducted an extensive user needs assessment, which included interviews with policymakers, scientists and stakeholders, to understand how they may need and want to interact with monitoring information in an online venue. This work laid the foundation for OceanSpaces.

OceanSpaces is the hub of MPA monitoring data gathered through the state supported monitoring program and key partners. Integrating technology and communications, the website includes everything from raw data, interactive maps and expert analysis, to updates about monitoring projects and ecosystem health report cards. More than a data portal, OceanSpaces empowers a broader community with science, helping to advance the dialogue around ocean policy and management.

**OceanSpaces is an online community that fosters new knowledge of ocean health. The platform brings together everyone with a stake in the health of our oceans - scientists, fishermen, policymakers and citizens, offering new opportunities for individuals to communicate, create and share knowledge.**



## **We built OceanSpaces upon four core values:**

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- Scientific rigor encompasses the monitoring framework, data collection and analysis that are critical to credibility
- A community that is inclusive of diverse stakeholders, perspectives and interests
- The accessibility of information, data and results to a broadly engaged community
- A platform that demonstrates the transparency of information and the scientific process

## **On OceanSpaces you can:**

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- Explore interactive MPA maps
- Dig into details about current MPA monitoring projects
- Find out who is conducting MPA monitoring
- Easily access MPA monitoring results
- Sign up to follow news from projects, groups and organizations
- Form new community groups around topics of interest
- Find ecosystem health report cards
- Download monitoring data
- Share photos, videos and newsfeeds
- Make new connections within a vibrant and diverse community

OceanSpaces launched in fall 2012, and continues to grow with new content and community engagement. As we look ahead, OceanSpaces will be the source for policymakers to find relevant and impartial monitoring results to help evaluate a region's network of MPAs and understand current ocean conditions.

**We invite you to join us at [www.oceanspaces.org](http://www.oceanspaces.org)!**



## The Geoportal

### Improving access to credible geospatial data across state agencies

California has made significant investments in the collection of scientific information from the marine and coastal environment, processing much of it into geospatial formats to support comprehensive and transparent planning and decision-making. Yet, these data are often found in varying resolution and are housed in databases that operate under different standards of quality control. Recognizing these barriers, the California Legislature passed Assembly Bill (AB) 2125, directing the OPC to facilitate state agencies' use and sharing of scientific and geospatial information.

Over the past two years, OST has been a close partner to the OPC and the interagency Coastal and Marine Geospatial Working Group (CCMG-WG) in their efforts to implement AB 2125. Our support of various projects, including an essential information management needs assessment, has allowed OST and our partners to explore the types of geographic data and emerging technologies that will advance decision-making in the coastal and marine environment. These findings are helping to guide the state as it develops a publically accessible website – termed a “Geoportal” – where agencies will be able to disseminate their geospatial data among each other, businesses and the broader public in a secure and easy to use platform.

As the Geoportal comes online in the fall of 2012, OST staff will continue to work with the OPC and CCMG-WG partners to support beta testing, agency outreach, staff trainings and the development of customizable features and tools to support coastal and ocean agency management assessments. OST will mobilize the academic community and other non-governmental partners to increase the breadth of resources available via the GeoPortal, and expand the user base.





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## Strengthening Collaboration between the State and Scientific Communities

OST holds itself dually accountable to the needs of the state and the advancement of the latest and most innovative thinking of the scientific community. One core function of our commitment to “dual accountability” is putting in place the structures necessary to both efficiently mobilize the scientific community to respond to state needs, and facilitate more constructive dialogue between decision-makers and the scientific community. This is exemplified by the OST executive director’s role as science advisor to the state, and OST’s work coordinating all activities of the OPC-SAT.



## Ocean Protection Council Science Advisory Team

As a well-respected, diverse, and independent team of scientists, the OPC-SAT works to ensure the credibility of the scientific information the OPC uses to inform and guide its decisions. As science advisor to the state, the OST executive director also serves as member and co-chair of the OPC-SAT. The science advisor's unique position helps to broker the dialogue among resource managers and scientists, beginning with identifying managers' highest priority information needs – at which point OST will engage the OPC-SAT for guidance, input, and as a portal to the wider scientific community.

Since its inception, the OPC-SAT has become increasingly recognized by state agencies with ocean and coastal jurisdiction, and OST is committed to serving this broadening constituency of state actors. We highlight below some of the OPC-SAT's achievements to exemplify their unique value and role, as well as the constructive ways they can inform decision-making and collaborate with the state.

### Summarizing Challenging Scientific Issues to Guide State Policy

#### Sea Level Rise:

##### Supporting the Coast and Ocean Climate Action Team (CO-CAT)

The Coast and Ocean Climate Action Team (CO-CAT) is a working group comprised of senior level agency staff whose aim is to ensure the state's ability to adapt to climate change impacts on ocean and coastal resources. In late 2010, OST convened a task force of climate experts from the OPC-SAT to provide CO-CAT with guidance on sea level rise projections. The OPC-SAT's recommendations informed the OPC Sea Level Rise Resolution and the "Sea Level Rise Interim Guidance Document," which is now used across the state in planning decisions.

#### State Ocean Priorities:

##### Informing the OPC Strategic Planning Process

The OPC 2012-2017 strategic plan is the seminal publication for the goals, objectives, and proposed actions the Council will pursue during these five years. To support this effort, OST mobilized the OPC-SAT to inform each step of the planning process, including (1) helping to determine the topical focal areas of the plan, (2) identifying many of the research and data priorities highlighted throughout the plan, (3) translating for staff the scientific underpinnings of proposed issues and actions, and (4) helping to craft the chapter on science-based decision-making.

## Engaging Decision-Makers in Dialogue

### Joint OPC-SAT/OPC Management Team Meetings

OST hosts semi-annual meetings with the OPC-SAT, the OPC, other state managers, and guest speakers. These meetings are an opportunity for scientists to learn about the state's priorities and challenges, as well as report out on structured activities and efforts on behalf of the OPC since the last meeting. They are often rife with animated discussion as state leaders and scientists work together to improve the role of science in decision-making.

## Producing Scientific Statements

From disagreements over methods to the constant need for more data to any range of other circumstances, there will always be some amount of uncertainty in the science on any given topic. When organized through transparent processes and communicated clearly, scientific consensus or position statements can be powerful tools in helping managers and the public wade through the complexity and understand the state of the science. The OPC-SAT has thus far come together on two occasions to assert statements on pressing issues before the state:

### Consensus Statement on Ocean Observing

In January 2010 the OPC-SAT developed a consensus statement elucidating the many ways California's ocean observing system can inform ocean management decisions. In response, the OPC unanimously adopted a policy resolution based on the statement.

### Position Statement on Climate Change:

In March 2011 the OPC-SAT issued a position statement on climate change adaptation, discussing the expected impacts to California's coastal communities, and challenging the state, the scientific community, including themselves, and other stakeholders to continue proactively collaborating to address these changes.

Finally, the OPC has provided a standing agenda item at each public meeting to hear directly from a scientist. Known as the "Spotlight on Science," this speaker series is functionally 'speaking science to power,' and is coordinated between OST and the OPC-SAT. Many high level scientists have participated, providing relevant information on salient issues before the Council and the public.





## Current OPC-SAT Membership

**Richard F. Ambrose**, Professor/Director, University of California, Los Angeles/Environmental Science and Engineering

**Alexandria B. Boehm**, Associate Professor, Stanford University

**Mark Carr**, Professor, University of California, Santa Cruz

**Daniel R. Cayan**, Meteorologist, Scripps Institution of Oceanography

**Francisco Chavez**, Senior Scientist, Monterey Bay Aquarium Research Institute

**Kenneth Coale**, Director, Moss Landing Marine Laboratories, San Jose State University

**Christopher Costello**, Associate Professor, University of California, Santa Barbara.

**John Field**, Fisheries Scientist, NOAA Southwest Fisheries Science Center

**Steve Gaines**, Professor/Dean, Donald Bren School of Environmental Science, University of California, Santa Barbara

**Gary Griggs**, (co-chair emeritus) Professor/Director, University of California, Santa Cruz/Institute of Marine Sciences

**Frances Gulland**, Director of Veterinary Science, The Marine Mammal Center

**Madeleine Hall-Arber**, Professor, Massachusetts Institute of Technology

**Sam Johnson**, Research, Geologist U.S. Geological Survey

**Karen McLeod**, Director of Science, Communication Partnership for Science and the Sea, Oregon State University

**Steven N. Murray**, Professor/Dean, California State University Fullerton/College of Natural Sciences and Mathematics

**Karina J. Nielsen**, Assistant Professor, Sonoma State University

**Jeffrey D. Paduan**, Associate Professor, Naval Postgraduate School

**Harry N. Scheiber**, Professor, University of California, Berkeley, Boalt Hall School of Law

**Jerry Schubel**, President and CEO, Aquarium of the Pacific

**John J. Stachowicz**, Associate Professor, University of California, Davis

**William Sydeman**, President, Farallon Institute for Advanced Ecosystem Research

**Stephen Weisberg**, Executive Director, Southern California Coastal Water Research Project.

## OST wishes thank the contributions of former OPC-SAT members:

**Tony Haymet**, Director/Vice Chancellor, Scripps Institution of Oceanography/University of California, San Diego

**Mark Moline**, Director/Professor, School of Marine Science and Policy, College of Earth, Ocean, and Environment, University of Delaware



## Translating the Best Available Science

Among OST's ongoing activities is coordinating scientific advice to the state's ocean resource decision-makers. We design and facilitate robust processes that evaluate the technical merits of state-supported projects and products, and ensure that decisions are supported by the highest quality science. Our frameworks are designed to promote more constructive and sustained interactions between state decision-makers and the scientific community, and are adaptable, so they may be used again as additional information arises or needs change.





## Expert Judgment

OST is developing processes in which experts are asked to consider and interpret scientific data and results in ways that clarify the status of scientific knowledge, help decision-makers weigh difficult trade-offs, and ultimately advance the dialogue around ocean resource management. At the core of these processes is the goal of transparently eliciting expert judgment in a timely manner, even when the issue at hand is characterized by complexity, uncertainty, and rapidly evolving scientific understanding.

### Learning from an emerging body of practice

Government agencies and other organizations worldwide already use expert judgment in various forms to inform management decisions and to develop education and outreach materials. While there are a variety of common themes and approaches in how expert judgment is used, currently there are no clear standards or guidelines for using it reliably, leaving this critical tool open to attack and dismissal as merely “opinion.”

### Developing a new framework

To address a growing need, we have initiated a project to develop standards, guidelines and recommended best practices for using expert judgment. We conducted interviews, and hosted a workshop with individuals who have implemented expert judgment processes in a range of policy, management, and environmental circumstances to begin identifying common themes across these experiences. From this information gathering effort we developed a preliminary framework to be applied across a wide range of environmental problems.

### Testing and refining the framework

We are currently testing and refining the expert judgment framework in two case studies. The first is focused on using expert judgment to assess the health of kelp forest ecosystems inside and outside MPAs in California’s Central Coast region. In the second, as part of the “Aquatic Invasive Species Vector Risk Assessments” project, we are facilitating a process to judge the relative risk of different vectors for introducing aquatic invasive species to California.

Despite significant differences across the two applications in factors such as management context, data availability, scientific uncertainty, and breadth of expert input, the framework has served as a useful guide in both case studies. As we continue our assessment of these cases, we are looking for additional opportunities to apply the framework and elicit feedback from other practitioners who might benefit from this approach.

## Peer Review

Coordination of peer review is a core function of OST's multi-faceted approach to integrating science with policy and management. Through our peer review process, we provide the state with technical and scientific evaluations of reports, proposals for funding, and other products, thereby helping to ensure the efficient allocation and use of public funds.

One of OST's key clients for peer review is the OPC. Committed to continually raising the scientific quality of their products, the OPC submits for peer review all reports and proposals with a scientific and/or technical component. Additionally, over the last year we have begun receiving peer review requests from other agencies, for documents aimed at a wide variety of management, policy and regulatory decision points.

### Our Process

OST employs an objective, timely and cost-effective peer review process modeled after that used by many scientific journals. To ensure that we identify the most qualified experts, OST calls upon the OPC-SAT to link us to an extensive and diverse network of accomplished scientists. Our full process is publically available on our website.

We are now undertaking a comprehensive evaluation of our process. As OST's reputation and relevance grows among state decision-makers, it is our goal to ensure that our process continues to:

- meet the diverse needs of the state and other partners;
- is perceived widely as transparent and credible; and
- is scientifically rigorous.

Ultimately, we will augment our current process, developing a suite of peer review options for the diverse range of products we encounter.





STRATEGY ① ② ③ ④ ⑤ ⑥

## Coordinating Science Studies

OST excels in coordinating science studies that span the complex interface between policy, management, and science. We strive to achieve the highest scientific rigor while ensuring that the outcomes of studies are presented in ways that are compelling to a non-scientific audience, and can inform better policy and management decisions. Further, we view our studies as launching points; to expand on the original scope, build lasting partnerships that extend the utility of project results, and catalyze avenues of further inquiry.

# Aquatic Invasive Species Vector Risk Assessments

## The Need

Aquatic invasive species (AIS) can upset ecological stability, out-compete native species, and impact water quality, which in turn can affect commercial and recreational uses of California's coastal waters. However, it is extremely difficult to predict precisely which species among the many AIS that enter our state will actually do harm. Therefore, managers and researchers have recognized that in many cases the most cost-effective means to reduce the risk of damage from AIS is to prevent new introductions by managing the pathways, or vectors through which AIS enter California.

## The Project

The OPC reached out to OST to coordinate risk assessments for introductions of AIS into California's coastal and estuarine waters. The goals of this project are to learn more about lesser-understood vectors, to develop a method for understanding the relative risk associated with each, and to recommend efficient strategies to prevent new invasions.

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### The six AIS vectors under consideration are:

- commercial fishing
- recreational boating
- live bait trade
- live imported seafood
- aquariums and aquascaping
- aquaculture

Through a competitive process, OST recruited three highly qualified teams of AIS scientists. To research the six vectors, the teams used a combination of literature and database review, augmented with direct sampling and interviews. In part, the teams found that in many instances, information about the vectors was limited or difficult to access, requiring that additional steps be taken to credibly assess the relative risk of each vector. Therefore, OST expanded upon the original project scope, bringing in a host of experts to inform the design of an expert judgment framework to apply to the information.

## Impact and Next Steps

OST will host the final expert judgment workshop later this fall. In it we will facilitate the application of a framework involving a range of interdisciplinary experts to translate the data gathered by the research teams, clarify the uncertainties, and produce an easily accessible description of the relative risk of each vector for decision-makers. In addition, OST intends for this framework to serve as an adaptable model that can be repeated as more information is gathered or new vectors of concern emerge.

We are also conducting outreach among the complicated web of state agencies with jurisdiction over AIS, and targeting the decision points where this information will be most useful. To bolster this effort, we have partnered with the Center for Ocean Solutions, which, among other areas, excels in legal expertise, to prepare a policy and management analysis to elucidate the potential management options and associated trade-offs facing AIS managers.



## Oil and Gas Platform Decommissioning Study

Completed in June 2010, this two-year study was OST's first major step into complex project management. OST leveraged multiple funders, including the OPC, Chevron Corporation, Ocean Conservancy, The Sportfishing Conservancy, and the United Anglers.

### The Need: California's Oil and Gas Platforms

There are 27 oil and gas platforms off the California coast that will reach the end of their productive lives over the next two decades. The existing leases require that the platforms be dismantled and removed by the oil companies that own them. However, platform decommissioning is a scientifically, legally complex and politically sensitive issue that sparks heated and sometimes polarizing debate. What state officials needed to help them wade through the arena of public opinion was an objective reference to lay out the various challenges surrounding platform decommissioning options.

### The Study

Drawing on such venerable models as the National Academy of Sciences, OST designed and managed the process to produce "Evaluating Alternatives for Decommissioning California's Offshore Oil and Gas Platforms: A Technical Analysis to Inform State Policy." Stepping beyond the typical technical report, the study also includes PLATFORM, an interactive tool that allows managers and the public to weigh for themselves the myriad of tradeoffs associated with decommissioning alternatives.

### Informing the State Debate

The study directly informed California's rigs-to-reef bill, AB 2503, which was altered to reflect some of the study's major findings, particularly around potential impacts to the marine environment and economic cost savings. Then Governor Arnold Schwarzenegger signed the bill into law in September 2010. More recently, OST was also asked to summarize in a memo to the state legislature the study's findings with respect to greenhouse gas emissions, including implications, limitations, and avenues of further inquiry.

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### Report: Plastic Debris in the Marine Environment

- To begin confronting this important topic, the OPC called for a report summarizing the latest scientific information on plastic marine debris in California.
- In response, OST partnered with USC Sea Grant to produce "Plastic Debris in the California Marine Ecosystem: A Summary of Current Research, Solution Efforts and Data Gaps".

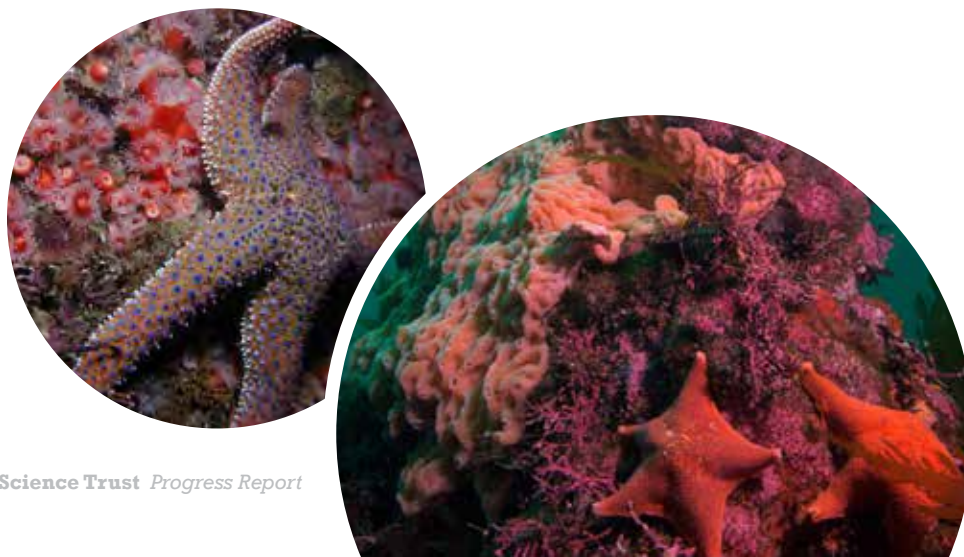


# Our Vision Moving Forward

OST is demonstrating the value of an organization dedicated to science integration for both policy and management of marine resources. As set out in our founding statute, we have cultivated durable relationships with scientists, and partnered with governments, industry, and citizen organizations. We have delivered a range of products and services that leverage those relationships with the cross-disciplinary skills and expertise so that state government and other partners can realize greater value from public investments in science. OST enthusiastically believes that sound science at the decision table can lead to better decisions, and better decisions can lead to more sustainable outcomes. Ultimately, this saves California money, and supports California's economy.

## Our long-term aim

Continue to be highly recognized and sought after across California as an integral partner in pursuing effective science-informed management of marine and coastal resources. To continually expand and improve our skills, tools, relationships, programs and processes so that we may be increasingly support scientists, decision-makers, and the wider community with our knowledge of information needs and agency cultures, and our institutional understanding of obstacles and opportunities. To maintain our stature as an independent honest broker of scientific information at both the state and federal level, and collaborate with and support the development of boundary organizations in other sectors. Acknowledged across the stakeholder spectrum for its value and approach, organizational integrity and commonly held goal, OST will be supported by an ecosystem of funding, including industry, a variety of state sources, federal grants, and private entities.

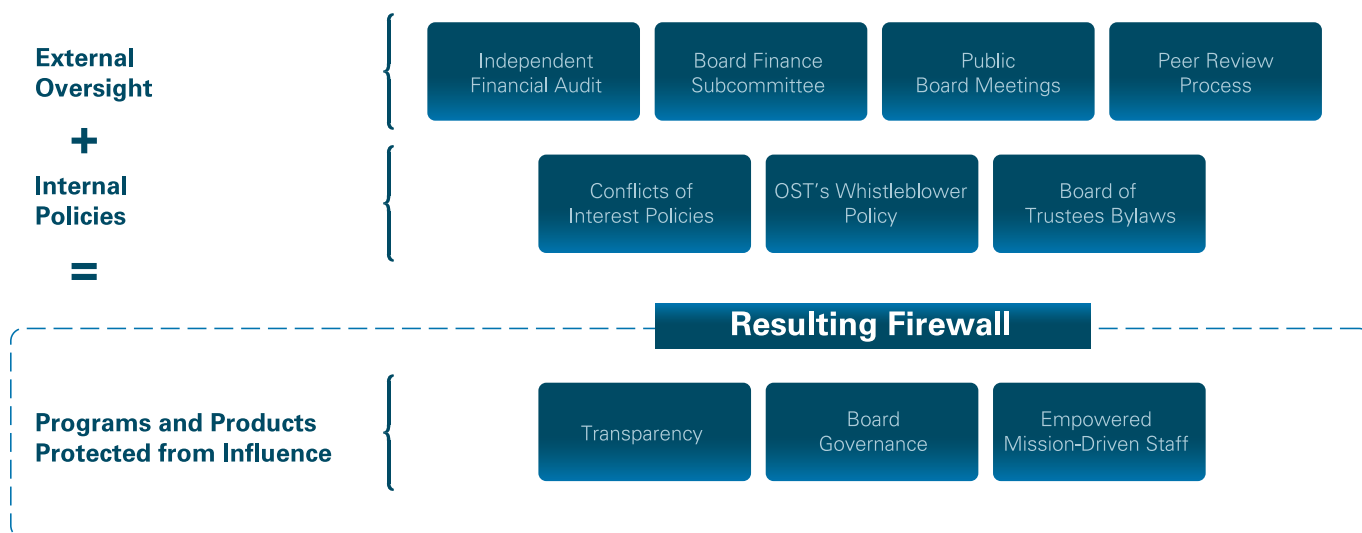


# Appendix I: Our Funding

## Maintaining Neutrality and Transparency

Our independence lies in dual accountability to decision-makers, who serve the public, and the scientific community, which is subject to its own strict norms of openness and objectivity. OST is dedicated to serving these two groups effectively, and enabling them to participate with one another without sacrificing their own core values. We could not accomplish this without maintaining our own credibility, legitimacy, and transparency in their eyes, and in the eyes of the public at large.

We have in place a series of formal internal policies and external oversight mechanisms that constitute a “firewall” of protection around all our programs, products, and processes.



## OST Funding Partners

### 2009-2010 Partners

Orange County Community Foundation  
 Resources Legacy Fund Foundation  
 The Ocean Protection Council  
 Natural Capitol Project  
 California Natural Resources Agency

### 2010-2011 Partners

Resources Legacy Fund Foundation  
 The Ocean Protection Council  
 California Natural Resources Agency  
 The Keith Campbell Foundation for the Environment  
 The David and Lucile Packard Foundation

### 2011-2012 Partners

Resources Legacy Fund Foundation  
 The Ocean Protection Council  
 Gordon and Betty Moore Foundation  
 The Keith Campbell Foundation for the Environment  
 The David and Lucile Packard Foundation

## Financials

FY2009-2010 Oct 1, 2009 - Sept 30, 2010 (Audited)	FY2010-2011 Oct 1, 2010 - Sept 30, 2011 (Audited)	FY2011-2012 Oct 1, 2011 - June 30, 2012 (Unaudited**)
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### Statement of Activities and Changes in Net Assets

<b>Revenues</b>			
Contributions	338,066	624,104	680,121
Contracts	1,558,138	1,555,474	1,551,357
Other	127,652	24,383	4,357
<b>Total Revenues</b>	<b>2,003,856</b>	<b>2,203,961</b>	<b>2,235,835</b>
<b>Expenses</b>			
<b>Program Services</b>	<b>1,273,945</b>	<b>1,157,785</b>	<b>1,200,626</b>
Supporting Services			
Management and General	362,466	584,216	591,353
Fundraising	3,904	9,812	-
<b>Total Supporting Services</b>	<b>366,370</b>	<b>594,028</b>	<b>591,353</b>
<b>Total Expenses</b>	<b>1,640,315</b>	<b>1,751,813</b>	<b>1,791,979</b>
<b>Net Income</b>	<b>365,541</b>	<b>452,148</b>	<b>443,856</b>
Change in Donor Intent	(137,500)	-	-
Change in Net Assets	226,041	452,148	443,856
Net Assets at the Beginning of Year	999,462	1,225,503	1,677,651
<b>Net Assets at the End of the Year</b>	<b>1,225,503</b>	<b>1,677,651</b>	<b>TBD</b>

### Statement of Financial Position

<b>Assets</b>			
Cash	1,433,750	1,858,317	1,588,075
Account Receivable	-	5,928	5,025
Grants Receivable	50,000	-	-
Contracts Receivable	771,035	812,620	1,492,373
Prepaid Expense	14,937	22,838	27,929
Equipment	18,210	11,908	32,085
<b>Total Assets</b>	<b>2,287,932</b>	<b>2,711,611</b>	<b>3,145,487</b>
<b>Liabilities</b>			
Accounts Payable	104,139	221,080	207,677
Payroll Payable	26,637	17,818	56,020
Refundable Grant	450,000	-	-
Deferred Support	481,653	795,062	760,281
<b>Total Liabilities</b>	<b>1,062,429</b>	<b>1,033,960</b>	<b>1,023,978</b>
<b>Net Assets</b>			
Unrestricted	1,175,503	1,642,432	TBD*
Temporarily Restricted	50,000	35,219	TBD*
<b>Total Net Assets</b>	<b>1,225,503</b>	<b>1,677,651</b>	<b>TBD*</b>
<b>Total Liabilities and Net Assets</b>	<b>2,287,932</b>	<b>2,711,611</b>	<b>TBD*</b>

\*FY 2011-12 Values will be determined at Year End Close

\*\*FY2011-12 Full year Financials will be audited at the regularly schedule audit



# Appendix II: Our Board

As designated in OST's founding legislation (CORSA, 2000), ten voting members form OST's Board of Trustees. Our Board provides strategic direction on all of our major projects and programs. Board composition is representative of the wide-ranging coastal and marine interests in California, resulting in broad perspectives that transcend the institutional gaps in knowledge and communication that can impede the integration of science in coastal and marine policy and management.



## Our Board of Trustees

- Ken Wiseman**, Board of Trustees Chair, General Public Representative
- Barry Gold**, Vice Chair, Ocean and Coastal Interest Group Representative
- Honorable Fred Keeley**, Chair, Audit and Finance Subcommittee, General Public Representative
- Jonathan Bishop**, CAL EPA Representative
- Catherine Kuhlman**, Natural Resources Agency Representative
- David D. Caron**, CSU/UC Representative
- Kenneth Coale**, CSU/UC Representative
- Karen Finn**, Department of Finance Representative
- Leslie Mintz Tamminen**, Ocean and Coastal Interest Group Representative
- Stephen Weisberg**, General Public Representative

## The Finance and Audit Subcommittee

- Fred Keeley**, Chair, General Public Representative
- Karen Finn**, Department of Finance Representative
- Barry Gold**, Ocean and Coastal Interest Group Representative
- Ken Wiseman**, General Public Representative

## Former Board Members (2010/2011)

- Brian Baird**, Natural Resources Agency Representative
- Amber Mace**, ex officio, Executive Director, Ocean Protection Council

# Appendix III: Additional Information

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## Current Memberships of the Science Advisor

- Co-Chair, OPC Science Advisory Team
- Blue Ribbon Citizen Commission, CA Fish and Wildlife Strategic Vision
- Southern California Coastal Water Research Project (SCCWRP), Commission's Technical Advisory Group (CTAG)
- Steering Committee, CA Current Acidification Network (C-CAN)
- Steering Committee, CA Harmful Algal Bloom Monitoring and Alert Program (HAB-MAP)
- 2013 Conference Science Co-Chair, Coastal and Estuarine Research Federation
- MLPA Milestones Committee
- Joint Strategic Advisory Committee for the Central and Northern California's Ocean Observing System (CeNCOOS)
- Member, Governing Council, CeNCOOS
- Advisory Council, Coastal and Marine Science Institute, UC Davis
- Advisory Board, UC Davis Policy Institute for Energy, Environment and the Economy

## Former Staff

OST wishes to recognize the contributions of staff from this reporting period that have since moved on to other exciting endeavors:

**Amber Mace**, Executive Director

**Diana Pietri**, Program Manager

**Cheri Recchia**, Director, MPA Monitoring Enterprise

**Kellie Geldreich**, Office Manager

**Rebecca Gentry**, Program Associate

**Liz Rogers**, Program Associate

**Geri Feldman**, Chief Administrative and Compliance Officer

#### PHOTO CREDITS:

**Charlotte Stevenson:** front and back cover background (algae), page 3 header (pelicans), page 4 lower right (jellyfish), page 8 header (anemone), page 10 & 11 full (anemone), pages 18 & 19 footer (surfers in Malibu), page 30 header (anemone), page 30 lower left (sea star on a reef). **Chad King (NOAA MBNSF):** page 30 lower right (bat stars on a reef). **Claire Fackler (NOAA CINMS):** front cover second from right (rockfish). **Emily Knight:** page 5 lower right (divers), page 16 & 17 full (swimming in Santa Barbara). **John J. Meyer:** page 14 lower right (fishing boats), page 15 lower (walking the beach at sunset), page 24 & 25 full (Santa Cruz coast). **Monterey Bay Aquarium Research Institute:** page 22 lower right (conducting research). **Robert Schwemmer (NOAA CINMS):** page 20 & 21 full (submersible). **Scott Toews:** page 4 & 5 lower (sardines).





# OST's Core Principles

## **Lift All Boats.**

Science integration is not a competition. Others are in the field using different models and approaches. When the institutions around us are functioning well, and working together constructively, we all benefit. Encouraging and promoting these other efforts is part of our mission. OST should enrich the work of our partners across the science-policy landscape, and vice versa. Partnership, collaboration, free and open exchange of ideas, and mutual promotion will help us all attain our collective goal.

## **Credibility.**

We cannot build crucial partnerships between science and the state unless we are demonstrably objective, neutral, and rigorous in all we undertake. We go to great lengths to maintain our credibility and integrity in the eyes of all our stakeholders, both organizationally and individually.

## **Honest Broker.**

To us this term encompasses several key aspects of our process. OST seeks to expand the range of options available to decision-makers and scientists, and to understand the context of knowledge use so that our products can be relevant and directly applicable. We are open about our processes, and are dedicated to making our findings and learning accessible to anyone with an interest.

## **Accountability.**

All who work with us should know what to expect from us. And we strive to evaluate our work, so that we know we are delivering on expectations, using the appropriate tools, and checking ourselves along the way. OST's standard approach to each of our undertakings is to leverage ongoing efforts and find the most cost-effective, inclusive, and transparent path forward.

## **Professional Investment.**

As part of setting the standard for science integration, and building an organizational culture that reflects those standards, OST seeks to promote its team by supporting and encouraging professional development. This dedication serves us in multiple ways: foremost, OST is creating leaders and ambassadors for science-informed governance, and we've reaped those benefits from team members who move on in their careers. OST helps members and colleagues re-enter graduate school, speak comfortably in public, and contribute innovative ideas that inform the process. Staff members hold the integrity of OST products paramount, and each is charged with challenging OST methods, processes and approaches to safeguard that integrity.

