

U.S. West Coast Strategic Plan

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The marine environment along the California, Oregon and Washington coasts supports a range of marine life. This ecosystem, stressed by human activity, remains vibrant due to widespread conservation efforts. The humpback whale, once on the brink of extinction, can now be spotted feeding in these highly productive waters.

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Why Conserve the West Coast?

Ecologically important. This highly productive, vibrant ecosystem supports a diverse array of marine wildlife and fisheries. The environment is degraded but still relatively healthy and intact.

Existing capacity. Progressive politics, engaged activists, and relatively strong scientific understanding produced by a robust scientific community.

Serve as a model. There is an opportunity for the West Coast to serve as a model nationally and a model nationally and globally for advancing ocean conservation and management.

Emerging threats posed by climate change. Impacts like sea level rise and ocean acidification will have profound effects, some of which are already visible.

Socioeconomic and cultural importance. Tourism and fisheries are important economic drivers. In 2010, 39 percent of the U.S. population lived in counties directly on a shoreline.



The marine environment off the U.S. West Coast is a highly productive ecosystem, supporting large populations of whales, seabirds, and important fisheries. While this ecosystem remains vibrant and functional due in large part to the nutrient-rich waters of the California Current, it has also been degraded over time by fishing pressure, pollution, coastal development, and other human activities.

Over the last few decades, progress has been made on several fronts: overfishing has effectively ended in federal waters and the amount of toxic chemicals directly discharged into our oceans has been reduced dramatically. However, the chronic pressures of development and industrialization continue. These changes weaken the long-term ability of the ecosystem to respond to current and future environmental challenges, notably climate change.

This strategy describes the David and Lucile Packard Foundation's long-term goal to enhance the ability of the U.S. West Coast marine ecosystems to sustain biodiversity and productivity as pressures and demands on these systems grow, and it includes steps the Foundation will take toward achieving that vision.

Over the next 10 years we will support activities to achieve the following outcomes:

- Marine protected area (MPA) systems in California and Oregon are durable and effectively implemented through strong partnerships; steps are taken to strengthen resource management on Washington's Pacific Coast.
- West Coast federal fisheries adopt an ecosystem-based approach to management that includes reducing bycatch and habitat damage.
- Californian fisheries are on a solid path to rebuilding, with MPAs closely tied to fishery management advancements supporting both fisheries and fishing communities.
- Fisheries and protected area managers are equipped to implement ecosystem-based management and adapt to the impacts of climate change and ocean acidification.

We have an unprecedented and timely opportunity to advance ocean management on the West Coast. Political leadership, engaged activists, and a robust scientific community are helping to pave the way for new practices and policies that can serve as models for place-based marine conservation globally.

New protected areas went into effect along the coast of Santa Barbara County in 2012 to provide protection to marine life and habitat, improve scientific research opportunities, and inform the public about local marine life and need for protection. There are now 124 marine protected areas in California state waters.

The Packard Foundation's Ocean Vision

Oceans and coastal marine ecosystems cover over 70 percent of Earth's surface and are home to over 230,000 marine species. They play a critical role in the climate system and in weather; they provide people with food, employment, and livelihoods; and they contribute many other social, economic, and cultural benefits to humanity.

But oceans face severe threats. The single greatest pressure on oceans is unsustainable fishing. Today, approximately 40 percent of fish stocks are believed to be overexploited or collapsed, and many fisheries use harvest methods that harm marine habitats or result in significant bycatch of other species. Oceans are also subjected to a wide range of other pressures: coastal development that destroys critical habitats such as mangroves and wetlands; pollution and sedimentation, including agricultural runoff, sewage, toxic pollutants, and plastics; and shipping, port development and dredging, offshore oil and gas drilling, desalination, and deep sea mining. The oceans are also already experiencing pressures from climate change and ocean acidification—pressures that will grow to have major impacts in the coming decades.

For more than two decades the Packard Foundation has been working to restore the health and productivity of the oceans. We support work that will lead to a future in which:

- Marine biological resources are managed sustainably, by which we mean that human harvests (of fish or other species) do not diminish the productivity of the resource or harm other species and that the loss and degradation of priority coastal and marine habitats is minimized.
- Both local and national benefits to society associated with the use of ocean resources continue to grow but in ways that do not diminish the potential benefits for future generations. These benefits include economic growth, employment, coastal community development, livelihoods, recreation, health, and nutrition.
- Effective governance and management systems exist that can access the necessary information for sound management and adapt to changing conditions, particularly in the face of the growing impacts of climate change and ocean acidification.
- Oceans research and discovery provides the scientific knowledge and information needed for the sound management of the oceans and contributes to expanded human horizons and understanding.

Achieving this future requires broad changes in how our oceans, coasts, and fisheries are managed and governed in countries around the world as well as in the open oceans. With the resources that our Foundation has available, we cannot hope to engage in this full scope of issues globally. Instead we concentrate on four areas of work that we believe are particularly important in their own right and that can help to catalyze the full array of changes that are needed.

First, we directly address the greatest current pressure on marine resources: unsustainable fishing. The Foundation supports work globally to change the incentives for fishers by building a “sustainable seafood” movement that is creating demand-side pressures for change. This approach is reaching fisheries around the world and is an important complement to the country-by-country and fishery-by-fishery work that is needed to reform governance and management. The Foundation is also directly engaged in national approaches in specific regions, including the United States, Mexico, and Indonesia.

Second, we attempt to create regional models that meet our vision of healthy and productive oceans through grantmaking that supports a range of policy and regulatory changes, better governance, and improved understanding to inform management. In these regions we work on all elements of the fisheries challenge—creating supportive policies, improving fisheries management, establishing marine protected areas, and helping to create “demand side” incentives for change.

Third, we support basic scientific research and engineering to improve our knowledge and understanding of the oceans. The Foundation is one of the largest private donors for basic marine scientific research through our investment in the Monterey Bay Aquarium Research Institute (MBARI). We provide unrestricted funding that enables outstanding scientists and engineers to pursue novel topics and ideas.

Finally, the Foundation promotes a vision of healthy and productive oceans and the steps needed to attain that vision. Real progress has been made in the past two decades in improving fisheries and coastal management. We believe that the Foundation can promote a positive vision for a sustainable future for oceans by helping to mobilize and empower individuals and organizations to pursue actions that lead to healthy oceans.

U.S. West Coast Grantmaking Background

The Foundation has advocated for healthy oceans on the West Coast for two decades through a variety of grantmaking strategies. From 2003 to 2013, the Resources Legacy Fund (RLF) managed our California Coastal and Marine Initiative, which was a 10-year commitment made by the Foundation to support ecosystem-based conservation of coastal and marine resources in California, including the designation and implementation of MPAs. In tandem through the Foundation’s Marine Fisheries Subprogram, we supported coastal conservation in the Pacific Northwest and reforms to federal fisheries management on both the West Coast and at the national level. In addition, the Foundation’s Science Subprogram and several of our partner institutions—including MBARI, the Center for Ocean Solutions (COS), and the Monterey Bay Aquarium—have contributed to conservation achievements along the West Coast.

Table 1: Major accomplishments supported by Foundation grantmaking, 2003–2013

IMPROVE FISHERIES MANAGEMENT	CONSERVE CRITICAL COASTAL ECOSYSTEMS	ENHANCE SCIENTIFIC UNDERSTANDING
<p>U.S. FEDERAL FISHERIES</p> <ul style="list-style-type: none"> • Overfishing of federal fisheries at an all-time low. Science-based catch limits that prevent overfishing now in place. • Thirty-two fish stocks rebuilt to healthy levels. <p>WEST COAST</p> <ul style="list-style-type: none"> • Large scale no-trawl areas established (150,000 sq. mi.) to protect seafloor habitat. • Forage fish, important prey (e.g., sardine, anchovy), protected by Californian policy. Development of new or expansion of existing forage fisheries requires proof of sustainability. 	<p>CALIFORNIA</p> <ul style="list-style-type: none"> • MPAs cover 16 percent of California state waters. The statewide network of MPAs is the first in the nation. • Ocean Protection Council and science/monitoring capacities established; broad ocean constituency engaged; new and continued funding secured. <p>OREGON</p> <ul style="list-style-type: none"> • MPAs cover 8 percent of Oregon state waters. Plans for siting of commercial-scale renewable ocean energy development set strong conservation standards. • Campaign efforts to establish MPAs significantly increased advocacy capacity on ocean conservation issues; new funding secured. <p>WASHINGTON</p> <ul style="list-style-type: none"> • State initiates spatial planning with focus on stakeholder engagement and data collection. Washington leads the country in ocean acidification planning, developing recommendations for how to address it. 	<p>KNOWLEDGE</p> <ul style="list-style-type: none"> • The California Current is one of the best-studied marine ecosystems, particularly data rich in Monterey Bay and at study sites of the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). <p>MARINE PROTECTED AREAS</p> <ul style="list-style-type: none"> • Designation and monitoring carried out with deep grounding in science. • Unique public-private collaborations to govern and monitor. • New observing methods and tools advance the state of the art (MBARI, PISCO, COS).

U.S. West Coast Goal

If the Foundation's positive vision for healthy oceans is within reach anywhere, it is along the West Coast of the United States. For a variety of oceanographic, geographic, and historical reasons, the marine ecosystems along the U.S. West Coast are in relatively good condition today. In recent years state, federal, and tribal policy and management frameworks have been developed, guided in many cases by organizations and individuals supported by the Foundation. These efforts move this region ever closer to our vision for ocean and coastal management. In addition, the West Coast can contribute critical leadership on important issues that span the Pacific, including conservation of migratory species such as tuna, turtles, and sharks. Yet there is much more that needs to be done.

This West Coast Subprogram strategy will contribute to the following outcomes over the next 10 years:

- **Marine protected area systems in California and Oregon are durable and effectively implemented through strong partnerships. Resource management on Washington's Pacific Coast is strengthened.** We will build on the existing state MPA network in California, several MPAs in Oregon, and areas protected within Federal waters as "essential fish habitat." We will help to elevate attention to the importance of these areas and to coastal ecosystems generally, as well as to the benefits of sound ocean management.
- **West Coast federal fisheries adopt an ecosystem-based approach to management that includes reducing bycatch and habitat damage.** Significant progress has been made in recent decades to improve the management of federal fisheries. But while more federal fisheries are now being harvested at levels that stocks can sustain, those harvest levels may still be too great when considering the needs of other species. Harvest levels ideally take into account the ecological relationship of the target species with other species (e.g., prey for species such as birds and marine mammals) and the potential impacts of habitat destruction and bycatch.
- **Californian fisheries make advancements that include incorporating newly designated MPAs into fishery management. Advancements in state fisheries support both fisheries and fishing communities.** The combination of the growing network of MPAs, the potential for different management approaches, and the development of techniques for assessing stock status of fisheries through "data-poor" techniques and collecting fishing data electronically creates a significant opportunity for advancing the management of state fisheries over the next decade.
- **Fisheries and protected area managers are equipped to implement ecosystem-based management and adapt to the impacts of climate change and ocean acidification.** The fisheries and marine science infrastructure along the U.S. West Coast is on par with the best in the world. Today, however, despite the research that has been carried out and the monitoring that is in place, effective ecosystem management continues to be constrained by a lack of knowledge and information in a form that

Our goal is to enhance the ability of U.S. West Coast marine ecosystems to sustain biodiversity and productivity as pressures and demands on these systems grow.

can be used by decision makers through a process that has political legitimacy and scientific credibility. The Monterey Bay Aquarium Research Institute, with support from the Foundation, will provide support to advance science and knowledge. In parallel, we will support efforts to fully integrate an ecosystem approach to management that is increasingly critical as managers confront the need to forecast and adapt to the impacts of climate change and ocean acidification.

Theory of Change

The U.S. West Coast's coastal waters and watersheds are under increasing pressure from population and economic growth, globalization, technological development, and increasing consumption. All of these pressures intensify the uses of our oceans, resulting in depressed fisheries, damaged ocean habitats and watersheds, and excessive nutrients and other forms of pollution. In the coming decades some of these pressures, such as ship traffic and potential energy and offshore aquaculture development, are likely to grow. In addition, the impacts of increased atmospheric carbon dioxide concentrations and associated climate change will result in significant pressures on and changes to this ecosystem over the course of this century. Impacts will include ocean acidification, sea level rise and associated wetland loss, changes in ocean temperatures and ocean currents, and associated changes in the distribution and abundance of species along the coast.

The ability of West Coast marine ecosystems to maintain their diversity and productivity can be enhanced if the existing pressures on these ecosystems can be reduced. Moreover, by reducing existing pressures, the resilience of the ecosystems will be increased so that they are better able to withstand the growing impacts of climate change. We can also increase the resilience of these systems if we can improve our ability to manage the systems in the face of climate change. To the extent that we are able to improve our ability to forecast changes in marine species distribution and populations, fisheries and habitat managers can take action to minimize the impact on these systems.

Through this grantmaking strategy, we seek to reduce the most significant existing pressures on the West Coast ecosystem and to enhance our capabilities for managing these systems in the face of change. Fisheries management offers considerable opportunities to reduce existing pressures and build on the progress that has been made over the past decade. Efforts to end overfishing and rebuild stocks in federal waters are paying off, and the West Coast is now in a unique position to serve as model of fisheries management by further incorporating broader ecosystem needs and climate change impacts into management systems. In addition, there are opportunities to link fisheries management to habitat conservation by integrating recently designated MPAs into Californian state fisheries management. These MPAs serve both as a refuge for fish populations and as protection from disturbance for important habitats used by fish. Habitat protection also has broader benefits for biodiversity conservation and provides economic benefits associated with tourism.

In our work on both fisheries and habitat protection, we aim to improve the ability to manage these resources in the face of change. Management of fisheries has historically

assumed that weather and currents are relatively random factors influencing the dynamics of fisheries populations. Management of MPAs also has been premised on relatively stable long-term conditions, albeit with significant year-to-year variations. But in a world with a changing climate, managers will need to understand how to set harvest levels for fisheries populations under conditions where the historical baseline is known to be changing. And MPA managers will need to manage resources under oceanographic conditions that have not previously been experienced at those sites. For both effective fisheries management and habitat protection, our theory of change thus assumes that we must work to improve the ability of managers to forecast and manage in the face of change.

California Current Ecosystem Assessment

Our Theory of Change and strategic priority setting were informed by a 2012 assessment of the marine ecosystem along the U.S. West Coast conducted by California Environmental Associates. The assessment found that the offshore environment (federal waters) along the West Coast is subject to relatively few stressors beyond fishing, although impacts associated with shipping, climate change, and ocean acidification will grow. Nearshore, state-managed waters face an additional multitude of stressors, including fishing, coastal development, pollution, invasive species, and ship traffic (see list at right). The cumulative impacts from these stressors will continue to threaten the diversity and abundance of plants and animals along the coast in the absence of effective protection management measures. The assessment concluded that while there were multiple threats facing the West Coast, climate change is the overarching issue in the next 50 years. This strategy hopes to address both short-term and long-term issues facing the U.S. West Coast.

Non-fishing Impacts

- + Invasive Species
- + Pollution
- + Nutrients
- + Toxics
- + Hypoxia/Anoxia
- + Disease
- + Noise pollution
- + Changing freshwater flows
- + Marine debris
- + Climate change
- + Ocean acidification
- + Aquaculture
- + Shipping
- + Desalination
- + Subsea cables
- + Renewable energy
- + Coastal and port development
- + Coastal power plants

Grantmaking Strategy

There is no silver bullet to address the multiple problems affecting our oceans and coasts. Ensuring that U.S. West Coast marine ecosystems sustain biodiversity and productivity in the face of growing pressures will require a wide array of actions, but not all are logical priorities for philanthropic investments, nor do we have the capacity to engage on this full range of opportunities. We have identified a selection of interventions where we believe that we can have the greatest impact with our resources and expertise.

Our grantmaking strategy involves two initiatives: *Advancing Fisheries Management and Conserving Marine Habitats*. For both initiatives, we identify five-year outcomes and provide greater detail on the types of activities that the Foundation will consider supporting. Outcomes articulate changes we expect to see by 2018 as a result of our intervention.

Initiative 1: Advancing Fisheries Management

While federally managed stocks appear to be relatively well managed by global standards, even the best managed fisheries traditionally focus on individual species without fully considering the broader impact of fishing on the surrounding ecosystem or the future effects of climate change. To more effectively assess the health of any given fishery and to determine the best way to manage it, key components of an ecosystem must be taken into account. Because ecosystems are complex and dynamic, management must remain open to adjustment in light of experience and gains in scientific understanding. While there has been much discussion of ecosystem-based fisheries management approaches, these have not yet become mainstream. This strategy will aim to overcome the barriers that currently prevent the more widespread adoption of ecosystem-based management of both federal and state fisheries.

An ecosystem-based approach can also take into account the economic and social considerations of the communities whose livelihoods derive from the sea by involving those communities in the management of the fishery. Currently West Coast federal fisheries management, which span from California to Washington, suffer from boundaries that are not well aligned to oceanic regimes. This hinders conservation strategies that could be more responsive to community and ecosystem needs.

Closer to shore, fisheries caught between 0 and 3 miles from shore are typically governed by individual states rather than the federal government. Generally, the condition of state-managed fisheries is worse due in part to funding and staffing constraints, smaller stocks, weaker mandates, and limited data and information on stock health. (See Table 3.) While some actions have been taken to conservatively manage state fisheries along the West Coast, more work is needed to bring state-managed fisheries into closer alignment with federal management.

The outcomes we are pursuing through our fisheries management initiative have two objectives: to advance ecosystem-based fisheries management in federally managed

Table 2: Summary logic model

INITIATIVES	OUTCOMES (2018)	OBJECTIVES	GOAL
ADVANCING FISHERIES MANAGEMENT	Requirements for setting annual catch limits to end overfishing and rebuild fish stocks remain intact	Advance ecosystem-based fisheries management in federally managed fisheries	Enhance the ability of the U.S. West Coast marine ecosystems to sustain biodiversity and productivity as pressures and demands on these systems grow
	Increased number of ocean champions in U.S. Congress demonstrate support for an end to overfishing and rebuilding of stocks		
	Federal fishery managers have adequate skills and capacity to implement legal requirements and advance ecosystem-based fisheries management		
	Ecosystem considerations are integrated into national policies and West Coast federal fishery management plans		
	Priorities for advancing fisheries management identified and adopted by regulators	Improve small-scale fisheries managed by the state of California	
	Enabling conditions including technical, social, and physical infrastructure secured to advance co-management strategies in high-priority fisheries, with two pilots initiated		
	Modern technologies allow monitoring of fisheries performance and management in real time		
	Fishery improvement plans established for top 15 fisheries in need of better management in California, with 5 plans completed		
CONSERVING MARINE HABITATS	Increased capacity in government and civil society to meet long-term MPA implementation needs, including new and stable sources of funding and durable partnerships	Promote effective management and adaptable systems that support MPA implementation in California and Oregon	
	Demonstrated compliance by ocean users with rules and regulations governing MPAs		
	Improved understanding of MPA performance informs adaptive management that include a clear vision, set of goals, and objectives		
	Increased public understanding and support of MPAs by government and community leaders		
	Increased coastal governance capacity and advocacy presence established for ocean conservation	Conserve marine ecosystems along Washington state's coast	
	Increased protections secured for ecologically important and sensitive areas for Washington's Pacific Coast marine ecosystems that are collaboratively developed and managed for habitat and species conservation		
	Shoreline Master Programs for the two coastal counties covering the southern half of the coast updated to provide protection for undeveloped shorelines and estuaries		

Table 3: Comparison of federal and Californian fisheries governance systems

JURISDICTION	FISHERIES MANAGED BY STATE OF CALIFORNIA 0–3 MILES OFFSHORE	U.S. FEDERALLY MANAGED FISHERIES 3–200 MILES OFFSHORE
AUTHORITY	Management responsibility is divided between multiple entities, depending on the fishery. These include the California Department of Fish & Wildlife, the California Fish & Game Commission, and the California legislature.	The National Oceanic and Atmospheric Administration (NOAA) is responsible for federally managed fisheries. The Pacific Fisheries Management Council provides management recommendations for NOAA to implement.
LEVEL OF MANDATE	Mandates have not kept pace with reforms at the federal level.	Federal law requires an end to overfishing for all federally managed species by 2011. Harvests have been curtailed, but many stocks remain well below healthy levels and will take years to rebuild.
SIZE OF FISHERIES	Primarily small to medium; fisheries generally smaller in scale. Recreational fishing sector a major constituent, particularly in southern California.	Primarily medium to large; fisheries generally larger and more industrial-scale.
STOCK STATUS	Generally data-poor fisheries. Many more species affected by fishing than are the subject of stock assessments and fishery management plans, resulting in many unassessed and undermanaged stocks.	Stock status known for less than half of all federally managed species (unknown: 258 stocks, known: 220 stocks), but that is better than most fisheries management systems globally.
FUNDING LEVELS	Poor; funding not available to implement existing requirements.	Good (within global context); funding inadequate for conducting stock assessments on all managed species.
AGENCY CAPACITY	Limited.	Relatively strong.

fisheries and to improve small-scale fisheries managed by the state of California. For each initiative we will provide support by deploying a multitude of tools, including science, policy analysis, advocacy, capacity building, and research.

Objective 1.1 Advance ecosystem-based fisheries management in federally managed fisheries

Over the next 10 years we envision an end to overfishing in the United States, sufficient funding for stock assessments, and an adoption of ecosystem-based approaches on the West Coast supported by robust tools for making resource decisions in the face of growing climate change impacts.

After 35 years of evolution under the Magnuson-Stevens Fishery Conservation and Management Act, marine fisheries management in the United States incorporates an

impressive set of principles, practices, and tools. Over the past decade these policies have paid off. The United States has turned the corner on overfishing and is making significant progress in rebuilding stocks. We are now entering a period of increased activity in efforts to reauthorize the Magnuson-Stevens Act. Advocates will need to defend the act to ensure full implementation of the significant gains made in fisheries sustainability over the last five years and to prevent backsliding.

2018 Outcomes

- Magnuson-Stevens Act requirements for setting annual catch limits to end overfishing and rebuild all assessed stocks to healthy levels remain intact
- Increased number of ocean champions in U.S. Congress demonstrate support for an end to overfishing and rebuilding of stocks
- Federal fishery managers have adequate skills and capacity to implement legal requirements and advance ecosystem-based fisheries management
- Ecosystem considerations are integrated into national policies and West Coast federal fishery management plans

Grantmaking Activities

National fisheries policy and management: Implementing the Magnuson-Stevens Act will continue to face challenges of limited funding and political will, and it will encounter opposition from some sectors of the fishing community. Reinforcing the benefits of sustainable fishing can help strengthen political support by amplifying the importance of ending overfishing and rebuilding stocks. The reauthorization process provides an opportunity to convey the importance of strong fisheries management and advocate for the implementation of current requirements so that progress is not undermined.

Looking forward, developing a set of priorities that addresses the law's shortcomings and establishes a set of requirements for achieving ecosystem-based fisheries management is needed. We will continue to coordinate with funding partners and provide support to a core group of advocacy organizations so that if and when a reauthorization moves forward the conservation community is in a strong position. The Foundation does not support lobbying activities.¹

Fisheries policy in the United States and globally tends to focus on setting harvest levels based on the abundance of the target species, typically ignoring the wider ecological impact of harvest. Policy makers need to shift to setting policy and developing management strategies that consider the relationships between managed species and their environment.

1. As a private family foundation, we do not advocate for candidates, legislation, or ballot initiatives. The Packard Foundation is permitted to use its funds to influence public policy as long as the activities are outside the definitions of lobbying or are within exceptions created by the Internal Revenue Code and Regulations. There are many activities the Packard Foundation can fund, including research, analysis, data collection, discussions of important broad social and economic issues, project work, and direct service, to name a few. Grantees often have more latitude in what they can do. Grantees that are 501 (c)(3) public charities can engage in lobbying activities up to the limits established by the law. The law provides clear guidance on how private foundations can support public charities that lobby. Like many other foundations, we follow these rules when supporting grantees who choose to advocate specific public policies.

This will take time and require support. Building the technical capacity of federal fishery managers to effectively implement the core conservation provisions of the Magnuson-Stevens Act and incorporate ecosystem considerations into fisheries management requires both tools and training.

Tools that allow analysts and decision makers to account for the ecosystem within existing management regimes remain elusive, although critical to using ecosystem-based approaches. The deeper our understanding and the more developed our analytical tools, the better prepared we are to recognize ecosystem changes that have the potential to affect fish stock distribution, population size, productivity, and fishery yield. Tools for decision makers that forecast future conditions, evaluate alternative management scenarios, and assess economic and ecological trade-offs have been developed, but steps are needed to ensure that they are actually useful for and by fishery managers.

We see a significant opportunity for the Foundation to support work to advance coupled oceanographic and ecosystem modeling, with close engagement of fisheries managers, to improve the decision-making capacity of managers. The Foundation's expertise and networks in West Coast science and policy and our institutional partnership are assets we plan to build on in piloting an ocean modeling forum.

West Coast federal fisheries: The West Coast offers considerable opportunities for further achievement by capitalizing on progress made through the West Coast groundfish catch share program and adoption of the Pacific Coast Fishery Ecosystem Plan.

Forage species, such as sardines and anchovy, serve a crucial role as prey for sea birds, marine mammals, and commercially and recreationally important fisheries. Protecting stocks of forage species from overharvesting to ensure their abundance, which supports broader ecosystem needs, requires better models to inform the setting of harvest control rules and a strong advocacy presence. We plan to continue advancing the science on key management questions and supporting advocacy to achieve these protections. For example, we are considering funding a series of workshops to clarify the scientific basis for managing sardines in the California Current, taking into account the dynamics of the ecosystem.

Highly migratory species such as tuna and sharks are under significant pressures from fishing globally, although fishing pressure from the U.S. West Coast is not considered to be a primary threat to these species. However, there may be additional opportunities for the United States to assert a leadership role and place greater pressure on high seas management of these species. In addition, our work through the Foundation's Western Pacific, Gulf of California, and Marine Fisheries programs has the potential to contribute to the conservation of these species through both policy and market-based interventions.

Objective 1.2 Improve small-scale fisheries managed by the state of California

In the late 1990s the Foundation provided support for California state fisheries reform, culminating in the establishment of the Marine Life Management Act in 1999. Due in part to those efforts, California now has strong fishery management laws on paper. However, implementation has been more troubled. The California Department of Fish and Wildlife

faces several challenges, including data-poor fisheries, Weak management safeguards, and scarce budgets. We don't have a clear understanding of the status of these fisheries and only a handful of fishery management plans have been developed. In addition, data collection systems need updating to meet current technology, and there is a lack of structure in California's commercial fishing communities.

With MPA implementation now under way, there are emerging opportunities to engage with the Department of Fish and Wildlife, the Fish and Game Commission, the Ocean Protection Council, academia, fishers, and the nongovernmental organization (NGO) sector on state fisheries management. The MPA network also provides an area-based framework around which management and coastal habitat strategies could be designed, as well as associated monitoring systems. We see opportunities to incorporate California's new MPA network into a complementary state fisheries strategy.

There is a growing sense of opportunities to take advantage of new, potentially more cost-effective technologies and to pilot innovative management approaches in order to lower management costs, ensure stock sustainability, and increase profits for fishers. This will entail further integrating the existing MPA network in California with fisheries management reforms to achieve increased productivity and biodiversity, setting California as a model for marine resource management.

2018 Outcomes

- Priorities for advancing fisheries management identified and adopted by regulators
- Enabling conditions including technical, social, and physical infrastructure secured to advance co-management strategies in high-priority fisheries, with two pilots initiated
- Modern technologies allow monitoring of fisheries performance and management in real time
- Fishery improvement plans established of top 15 fisheries in need of better management, with 5 plans completed

Grantmaking Activities

Over the next decade we envision a science-based system of fisheries management where needs and priorities are established by the state with engagement by stakeholders. We anticipate both top-down and bottom-up approaches will be needed to advance Californian fisheries. There is growing interest in piloting co-management approaches in areas along the coast where fishers are interested in more actively participating in management, recognizing this also requires them to bear greater management costs and accountability.

Community-oriented approaches have the potential to help align the natural spatial scales of some fish stock dynamics with management systems. Spatial management tools such as territorial use rights and community-based management may provide avenues for incorporating existing MPAs into management as well. Building the institutional capacity of fishing communities is expected to be challenging, as it will require establishment of fishing associations and cooperatives, if not already in place, to facilitate a shift at the

community level from passive to active management. We anticipate supporting these types of community-based efforts, in parallel with broader state-level governance reform, to put California on a path to sustainable fisheries management.

California's fisheries management agencies, the legislature, and governance entities such as the Ocean Protection Council all have a role to play in setting fisheries improvement priorities, establishing state-wide guidance for management, supporting research, and providing funding. Through this strategy we propose exploration and co-development of a California state fisheries improvement plan with the Resources Legacy Fund and will engage our institutional partners to identify potential opportunities for alignment as the sub-strategy for this work develops more fully.

Initiative 2: Conserving Marine Habitats

Conserving habitats of sufficient quantity and quality to maintain the resilience of fish and other essential components of marine ecosystems remains a critical element of the Foundation's strategy. Climate change is likely to shift the geographic range of species over time. Through our investments we hope to ensure that coastal habitats and MPAs are managed in a way that takes into consideration the spatial and biological conditions for ecological communities to thrive in a changing climate.

The habitat conservation initiative has two objectives: to promote effective management and adaptable systems that support MPA implementation in California and Oregon and to conserve marine ecosystems along Washington state's coast to ensure a resilient and healthy environment for future generations. For each initiative we will provide support to deploy a multitude of tools, including science, advocacy, communications, and capacity building.

Objective 2.1 Promote effective management and adaptable systems that support MPA implementation in Oregon and California

Just like land-based parks or reserves, MPAs serve to protect the habitat and biodiversity in the areas where they are established. MPAs can play a key role in fisheries management, protecting stocks in areas where formal fisheries management systems are relatively weak or data are not available that would allow managers to set quotas. They may also provide a reference point of relatively undisturbed marine habitats that can help scientists to better understand the impacts of humans on marine ecosystems. By benefitting habitat, biodiversity, and fisheries, MPAs are a critical tool for bolstering the resilience of marine ecosystems.

In 2012, marine protected areas were designated in both California and Oregon. California's MPA network covers 16 percent of state waters and is the first statewide network in the nation. Over the past few years, the California Ocean Protection Council has approved \$16 million in bond-funded efforts to collect baseline information that will inform systematic MPA monitoring. In Oregon, MPAs and marine reserves cover 8 percent of state waters, and the state has allocated \$800,000 annually to implement the MPA program. Now that both states have gone through the challenging process of designating a large-scale system

of MPAs, supported in part by the Foundation, our attention turns to ensuring effective implementation of these protected sites in both states.

2018 Outcomes

- Increased capacity in government and civil society to meet long-term MPA implementation needs, including new and stable sources of funding and durable partnerships
- Demonstrated compliance by ocean users with rules and regulations governing MPAs
- Improved understanding of MPA performance informs adaptive management plans that include a clear vision, set of goals, and objectives
- Increased public understanding and support of MPAs by government and community leaders

Grantmaking Activities

Securing the benefits of recently designated MPAs in California and Oregon will require effective implementation, ranging from developing adaptive management systems informed by monitoring to ensuring compliance with fishing prohibitions through enforcement and education. Relying only on government agencies to carry out all implementation activities is not feasible given budget shortfalls, limited capacities, and competing priorities. Reforms to governance and public funding are required to ensure that operational capacity, social capital, and long-term financial stability to support ocean conservation and management are in place.

Implementing new MPAs provides an opportunity to foster partnerships and collaboration among NGOs, the scientific community, and government agencies. The process of MPA monitoring and evaluation can provide an opportunity to track relevant climate data and communicate that information to interested stakeholders, while research into the impacts of climate change on MPAs will help inform management over time. Establishing durable governance systems provides the enabling conditions for future adaptation and expansion where needed. California has five years of experience in implementing MPAs along the central coast region, which will help inform implementation efforts under way in other parts of the state and in Oregon.

Over the next 10 years we envision durable systems of MPAs in California and Oregon that are effectively implemented through strong interagency and public-private partnerships. We will seek to achieve this goal by supporting assessments of MPA implementation priorities and opportunities for partnership and by providing additional capacity for authorities to adaptively manage sites based on scientific information that incorporates climate change impacts. Adaptive management and measurement will inform future development of these systems and test our assumption that these MPAs will increase fish productivity and associated biodiversity protection.

We will continue to collaborate with several donors on a coordinated California MPA strategy managed by the Resources Legacy Fund. In Oregon, we will work with existing grantees and other funders while developing new partnerships with NGOs, academia,

managers, and leaders. Improving the overlap between management needs and PISCO's research capabilities will provide opportunities for future partnership. A small amount of funding will be dedicated to improving the understanding of the impacts of non-fishing activities on MPAs and how MPAs are integrated into the regulation of non-fishing activities by state agencies, since such activities could compromise MPA performance.

Objective 2.2 Conserve marine ecosystems along Washington state's Pacific Coast to ensure a resilient and healthy marine ecosystem for future generations

The Pacific Coast of Washington state has relatively intact ecosystems and high levels of biodiversity. Occupying the northern half of the coast, the Olympic National Park and Olympic National Marine Sanctuary are prominent features establishing a strong federal management presence. Adding to the uniqueness of Washington's coast is the presence of four treaty tribes that are sovereign nations with co-management responsibilities for the fisheries and other natural resources in their usual and accustomed areas, which cover about 70 percent of Washington's coastal waters. The coast is rural, sparsely populated, and culturally distinct from the rest of the state, with the south coast supporting an economically valuable shellfish industry.

In 2010, Washington took steps to place greater attention on the Pacific Coast through the passage of marine spatial planning (MSP) legislation that established a framework for planning ocean uses. Subsequently, the state authorized \$2.1 million to implement this planning. An advisory committee to the Governor representing Pacific Coast stakeholders developed a draft goal for the MSP process: "To ensure a resilient and healthy marine ecosystem on Washington's coast that supports sustainable economic, recreational, and cultural opportunities for coastal communities, visitors and future generations." We view the MSP process as an opportunity given our aligned interest in achieving a resilient and healthy marine ecosystem along the West Coast.

2018 Outcomes

- Increased coastal governance capacity and advocacy presence established for ocean conservation.
- Increased protections secured for ecologically important and sensitive areas for Washington's Pacific Coast marine ecosystems that are collaboratively developed and managed for habitat and species conservation.
- Shoreline Master Plans for the two coastal counties covering the southern half of the coast updated to provide protection for undeveloped shorelines and estuaries.

Grantmaking Activities

In Washington much of the public attention, science and advocacy capacity, and funding are directed toward Puget Sound. The competition for research and public attention on ocean issues in the state is one of the challenges facing conservation efforts on the Pacific Coast.

Increased awareness of ocean acidification among the public provides an opportunity to incorporate environmental change data into planning tools currently under development and funded by the state. Advocating for inclusion of climate impact science and adaptation best practices into ongoing marine planning processes and shoreline policy updates can inform future management decisions.

While MSP is providing a mechanism for interested parties to come together to develop guiding objectives and a goal for marine planning, there are no clear mechanisms or mandates requiring specific conservation actions be taken. However, further conservation actions are needed if Washington is to reach its draft planning goal. In the meantime, the updating of Shoreline Master Plans by counties along the coast provides a well-defined process by which NGOs can build networks and capacity while working toward protections, including buffer zones for new coastal development. Initial investments are meant to leverage ongoing processes to achieve conservation goals.

Washington state is the most recent addition to our West Coast grantmaking portfolio, although we have directed a small amount of funding to the Washington Coast over the past five years to establish a conservation presence. We are now in a position to leverage the state's planning process to increase stewardship along the coast, working with NGO partners, treaty tribes, academia, and managers. We will periodically reassess the opportunity to achieve conservation impact through the MSP process and will coordinate our activities with other interested donors.

Cross-Cutting Activities: Climate Change and Science

We aim to strengthen long-term capabilities for managing marine systems in the face of climate change through increased knowledge and understanding, development of predictive models to inform decision making, and advocacy to ensure knowledge and tools are put to good use. While typically ignored in developing day-to-day ocean management, climate impacts on ocean and coastal ecosystems are already evident on the West Coast. Changing temperatures, salinity, and acidity are expected to create challenges for species' environmental tolerances and for ocean productivity generally. Sea level rise will result in further direct loss of intertidal areas and estuaries. Ocean acidification, hypoxia, and shifting species distribution are all associated with climate change. Climate adaptation efforts may themselves have significant adverse impacts if not focused on supporting ecosystem health and resilience. Though impacts of climate change are highly uncertain, we know that increased variability within the ocean system will require a flexible and adaptive approach.

This strategy aims to move both human and natural systems of the West Coast in directions that will make them more resilient in the face of a changing climate. That apparently simple statement hides a mix of policy and scientific concerns that will likely guide the Foundation's funding through and beyond the coming decade. Because the changes in climate and ocean chemistry, including water temperature, storm intensity, ocean acidification, and ocean circulation patterns, have no recent precedent, there is a great

need for science and policy choices to be linked. Scientists have a limited understanding of how the climate is changing, and in particular what those changes will do to the oceans and ecosystems along the California Current. Gaining a better understanding of a changing climate is a large task to which our institutional partners the Monterey Bay Aquarium Research Institute, the Partnership for Interdisciplinary Studies of Coastal Oceans, and the Center for Ocean Solutions have made substantial contributions over the past decade. We anticipate that those lines of research will continue, in part with support from the Foundation.

Even with our current limited understanding, it is clear that coastal ecosystems and food webs can be protected more effectively than they are at present. Doing so will require changes in policies and in the way that existing policies, such as fisheries management, are implemented. This is partly a matter of persuading governments and other actors that a changing climate requires different actions—including managing habitats and fisheries in a more coordinated fashion and using adaptive strategies so that changing climate conditions can be recognized and addressed in management decisions. We expect to support grantees that continue to build recognition of the long-term significance of climate change and to convince public and private decision makers that their responsibilities and interests lie in decisions that are grounded in the emerging and incomplete science describing the changing climate.

Challenges

While we propose a variety of interventions to achieve our grantmaking objectives, each will need to address the following challenges to achieve meaningful and durable protections. Extraction-oriented management frameworks, where exploitation is the default when adequate information or political will is not in place, compound these challenges. The conservation community will continue to require strategic and creative approaches moving forward. Our initiatives will take these factors into account and use the multiple tools at our disposal (e.g., advocacy, communications, analysis) to address these challenges to achieve our desired outcomes.

- **KNOWLEDGE: Information gaps weaken fisheries management and habitat conservation.** While the United States is data-rich compared with most parts of the world, there are major gaps in our understanding of fisheries stock health and the impacts of fishing pressure on the broader ecosystem. More than half of all federally managed stocks remain unassessed, and even less is known about the status of state-managed stocks, leaving them more vulnerable to depletion. In addition, antiquated systems to collect fishery data are inadequate. These systems and gaps in fisheries data are compounded by how little we know about the contribution of habitats to fisheries productivity and how little we understand the coming impacts of climate change on fisheries and the best way to respond.

- **POLITICAL WILL: Establishing fisheries policy and allocating resources to implement those policies requires political will.** Oceans are not a priority for most elected officials. We lack ocean champions in many of the areas where we work. At the national level, many political leaders who played important roles in fisheries policy have retired. The consequences of this frailty of political will cannot be ignored. On the West Coast there are relatively few political, corporate, or civil society leaders who give priority to state-managed fishery issues, although we have seen growing political support for MPAs in California and Oregon over the past five years. At the state level, marine issues are often not priorities for decision makers, and there is a lack of structured processes for creating change, exposing a need for better governance.
- **FUNDING: Government budgets are level or decreasing.** A lack of funding weakens implementation of strong policies, resulting in inadequately informed decision making and weak implementation and enforcement. Any budget gains are likely to be modest in the coming years, and securing new state and federal funding for these efforts will be difficult, requiring consistent and creative efforts. The still slow-to-recover U.S. economy and federal budget situation will continue to put pressure on funding for our nation's primary marine fisheries policy, the Magnuson-Stevens Act, which could be further eroded by a lack of fluency and history with the Act among new members of Congress. State funding for marine conservation is even more vulnerable to swings in tax revenues, which can drive tight or diminished budgets from year to year.
- **FISHING COMMUNITY SUPPORT: Changes to fishing access affect coastal communities.** For fishers, loss of access caused by regulatory restrictions, declines in populations, economic trends, and other factors can result in unemployment, poverty, and lost traditions. As a result, both commercial and recreational fishers have voiced strong opposition to conservation efforts in the past.
- **ADVOCACY CAPACITY: The capacity to engage in challenging resource management issues requires a diverse set of skills.** Running sophisticated campaigns requires a breadth of advocacy skills. While NGOs working at the national level have demonstrated high capacity in some areas, other skills continue to be weak. This includes more effectively reaching a public audience on ocean issues, nontraditional constituency building, strategic communications, and agency-level advocacy.

Landscape Assessment

The goal, objectives, and outcomes described in this strategy cannot be achieved through Foundation funding alone. The Foundation will continue to partner with other donors and with our institutional partners to achieve conservation impact.

DONORS. Total U.S. philanthropic funding toward marine conservation amounts to more than \$100 million per year. In 2012, the Consultative Group on Biological Diversity surveyed

U.S.-based foundations to examine global priorities for philanthropic support of marine conservation. It found that the West Coast ranked second behind the Caribbean/Central America region in grant support. To make significant progress, we will continue to build strong partnerships with other donors in the region. Most of the initiatives presented in this strategy will be co-funded with other foundations.

INSTITUTIONAL PARTNERS. In the 1980s, David and Lucile Packard were instrumental in establishing several institutions that are internationally recognized for excellence, including the Monterey Bay Aquarium and the Monterey Bay Aquarium Research Institute. Since then, the Foundation has established long-standing relationships with several other organizations working on ocean science and conservation along the West Coast. Through this grantmaking strategy, we intend to better align the goals of the Foundation's work with our partners' missions as outlined here.

- The **Center for Ocean Solutions** seeks to link academic research to solving real world problems in the ocean. COS will continue to be a valuable partner in addressing research needs relevant to the goals of this strategy.
- The **Monterey Bay Aquarium** aims to empower individuals, influence policy, and contribute to the protection of the oceans for future generations. The Aquarium brings strong scientific credibility, diverse constituencies, and a unique educational platform for raising awareness and encouraging action on several policy priorities.
- The **Monterey Bay Aquarium Research Institute** is contributing basic research and technology to lower the costs of monitoring and to expand the knowledge base to inform better management.
- The **Partnership for Interdisciplinary Studies of Coastal Oceans** has improved fundamental understanding of oceanography and marine biology. Its long-term monitoring datasets provide documentation of the California Current of a scale and duration that is unique in the world's coastal oceans.
- The **Resources Legacy Fund** remains a key partner and advisor of the Foundation in implementing both marine and terrestrial conservation strategies in California. RLF will continue to serve as an intermediary to the Foundation on California MPA implementation and will serve as an advisor and key grantee of the Foundation in shaping a state fisheries strategy for California.

Monitoring, Learning, and Evaluation

The West Coast subprogram will monitor, evaluate, and learn from its grantmaking from the individual grant level to the broader strategy level. We aim to understand progress being made toward a defined set of outcomes, to monitor environmental and program trends in order to refine grantmaking activities, and to share lessons with key stakeholders in order to promote understanding and spur broader improvement. Refining our strategic outcomes to

be as concrete as possible and identifying measurable indicators will be a primary aim of our monitoring, evaluation, and learning (MEL) plan to be fully developed by the end of 2013.

Our goal for **monitoring** is to understand progress toward our outcomes and to monitor trends to refine our management of the subprogram. We will use a number of sources for regular data gathering, including grant reporting, published data, and the direct interaction of staff with grantees, funders, and experts through informal interviews and site visits. In specific cases we will work closely with grantees to design and support monitoring toward outcomes of common interest. We will align the monitoring data collection efforts to ensure this information feeds into our evaluation needs.

Evaluation refers to the use of an objective third party to assess the effectiveness of program implementation or grants for both a management and an oversight function. Through our evaluation work we propose to explore questions such as the following:

- To what extent do the assumptions in our logic model hold up?
- To what extent are we achieving our habitat conservation and marine fisheries outcomes?
- What have we learned about effective interventions for achieving our initiative outcomes?
- How can we improve our grantmaking to more effectively achieve our goal?

We will conduct evaluations and assessments as needed to inform our work moving forward, including a subsequent 5-year grantmaking strategy.

In addition to the specific evaluation questions, there are a number of broader **learning** agenda questions that we plan to explore over the life of the strategy. A few examples of the types of questions we would like to explore further include:

- How do we support adaptive management of MPAs while ensuring the integrity of the system is maintained?
- What are best practices for managing data-deficient fisheries that capitalize on active participation of fishers through collaborative research opportunities and co-management approaches?
- In order to maximize the impact of our grantmaking, what is the right balance between investments of time and funding into additional monitoring and evaluation?

We aim to create timely feedback mechanisms to share the findings of our monitoring, evaluation, and learning with the subprogram team, the Foundation's other ocean subprograms, grantees and funders, and the broader field as appropriate. This feedback will be shared in order to inform grantmaking decisions, shape strategy, and ensure program learning. Special attention will be paid to disseminating results in a manner that builds from our communication goals of transparency, leadership, and collaboration through shared learning.

Why Packard Foundation?

Long-term leadership. Viewed as a leader in marine science and conservation with demonstrated results. Strong reputation attributed in part to expertise and strength of relationships.

Leverage West Coast partnerships. Brings unique assets to bear through scientifically rigorous and credible partner institutions (MBARI, PISCO, COS).

Adaptive in achieving impact. Capable of deploying a diversity of tools (science, policy, advocacy, technology) to reach goals.

Experience on fisheries at West Coast-wide and national levels. Works at multiple scales (state, regional, national) to pilot concepts and transfer lessons learned across political boundaries.

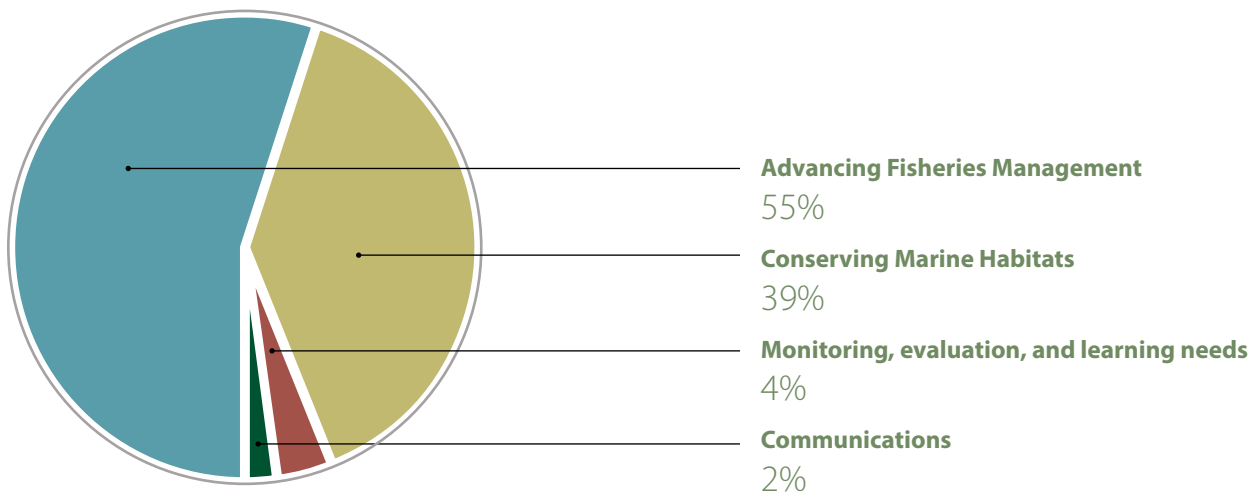
Our Ocean vision. Identifies West Coast as geographic priority where fisheries management and coastal conservation strategies are enhanced by scientific understanding.

Funding Plan

In 2014 we expect to make grants totaling \$6 million. We anticipate approximately 55 percent of funding will be directed to the Advancing Fisheries Management initiative, 39 percent of funding will be directed to the Conserving Marine Habitats initiative, with 6 percent of funding dedicated to communications and to monitoring, evaluation, and learning needs. (See Figure 1). Over a five-year time frame (2013–2018) we expect to increase our investments in Californian fisheries improvements, decrease our investments in MPAs, and maintain level funding for our national policy and federal fisheries efforts. We will routinely revisit the strategy through our monitoring, evaluation, and leaning efforts, which will inform our levels of investment within each initiative. We plan to use other funding sources available to us, including Program Related Investments and Organizational Effectiveness grants, as needed.

Given the long-term presence of the Foundation on the West Coast, we anticipate continuing to support targeted conservation enhanced by scientific understanding over the next decade. Based on our broad commitments to marine conservation at the regional and national levels, we do not foresee entirely exiting this work for some time.

Figure 1: Budget allocation



Lingcod, *Ophiodom elongates*



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