# the David & Elucile Packard

## Chile Marine Strategy 2019-2021

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#### **INTRODUCTION**

The David and Lucile Packard Foundation ("the Foundation") has supported marine conservation in Chile since 2008, first through its Marine Birds Strategy and then through exploratory marine conservation grant-making (Box 1). Altogether, the Foundation has invested more than \$4.6 million between 2008 and 2018 in marine conservation in the country, resulting in significant achievements by grantees and the Chilean government (Box 2).<sup>1</sup>

The Foundation's investments have increased the leadership of civil society organizations (CSOs) working on marine biodiversity and fisheries conservation in Chile with limited philanthropic partnership and helped catalyze new funding streams for them. More recently, the funder landscape has changed significantly. Major foundations are making impact investments through new grant programs, expected to bring in tens of millions of dollars over the next decade for marine conservation.

The total annual philanthropic investment for marine conservation in Chile approached \$8 million in 2018, including a longestablished program of Marisla Foundation and new investments from the Walton Family Foundation and Pew Charitable Trusts, among others. The Chile Marine Strategy is designed to complement much of these existing investments.

In this document, we provide a summary of Chile's most salient coastal conservation issues and outline a national-level plan for the Foundation's in-country work. We outline a three-year strategy with a long-term outlook

#### Box 1.

Chiloé Island is a priority area for shorebird investments within the Marine Birds Strategy, and the Foundation has supported seabird conservation efforts on the Juan Fernández, Desventuradas, Choros, and Chañaral Islands, as well as some limited seabird bycatch mitigation work. In 2011, the Foundation commissioned a coastal-marine assessment for Chile and subsequently began supporting broader marine conservation efforts on an exploratory basis (1).

to 2030, building on the Foundation's previous efforts and investments in the country, the support of other funding partners, and leveraging priorities and grant-making plans within the Foundation's broader Ocean Strategic Framework. The political climate in Chile is dynamic, particularly regarding its extractive economy and trade policy. Furthermore, the country's process of governance decentralization continues, yet often with insufficient support for local institutions (2). Therefore, we expect the Foundation's Chile strategy will evolve as the country's politics change and our own understanding of opportunities matures.



<sup>&</sup>lt;sup>1</sup> This figure does not include general support to the conservation organization Island Conservation, which maintains a small staff in Chile and has conducted invasive mammal eradication programs on islands.

### THE FOUNDATION'S OCEAN STRATEGIC FRAMEWORK AND CHILE MARINE STRATEGY

The Chile Marine Strategy is part of the Foundation's Ocean Strategic Framework. The Framework describes a set of priorities for creating and establishing sound marine resource management in countries with globally significant marine biodiversity that together account for most of global seafood production: Chile, China, Indonesia, Japan, Mexico, and the United States—all encircling the Pacific Ocean. In addition to working in these six focal countries, the Foundation supports four global strategies that transcend national boundaries: 1) promoting global markets for sustainable seafood—through the design, implementation, and financing of new standards of practice for private sector seafood supply chains, 2) protecting marine birds through habitat protection and bycatch reduction, 3) eliminating illegal, unreported, and unregulated (IUU) fishing, and 4) working to more broadly understand and proactively address the impacts of climate change on ocean systems. Chile's global role in marine resource extraction and conservation is significant. It is within the top 15 countries in marine capture fisheries landings, aquaculture production, coastline length, and size of its Exclusive Economic Zone (3, 4). With recent marine protected area designations, Chile ranks 6<sup>th</sup> globally in total marine protected area (MPA) coverage by country.

We envision a future where marine life in coastal and ocean ecosystems is rebounding, diverse, and resilient, and where ecosystems provide increasing benefits to human well-being and healthy communities. Our goal is to protect and restore ocean life, on which all life depends, by improving marine resource management in countries with the



greatest impact on marine biodiversity and to accelerate progress using the levers of science, seafood markets, and addressing illegal, unreported, and unregulated (IUU) fishing globally.

#### Box 2.

Building on existing efforts and initiatives, the Foundation's initial assessment (2011) and engagement (Jan 2012-Jan 2018) helped change the landscape for marine conservation in Chile. Major achievements since 2012 include the following:

- Creation of nine marine protected areas (MPAs). The Pitipalena-Añihué multiple-use MPA (m-MPA) was created in 2014. An m-MPA around Juan Fernández Islands was created in 2015, along with two Marine Parks (i.e., no-take zones). The Nazca-Desventuradas Marine Park was created in 2016. In February 2017, the government announced an unprecedented expansion of Chile's total marine area protected through the creation of the Caleta Tortel, Seno Almirantazgo, and Rapa Nui m-MPAs, the extension of the Juan Fernández m-MPA, and the creation of Cabo de Hornos and Archipiélago de Juan Fernández Marine Parks. With the exceptions of Rapa Nui and Cabo de Hornos, the Foundation was an active supporter of all these MPAs, which represent a total area of 606,165 km<sup>2</sup>, of which 562,035 km<sup>2</sup> (93 percent) are no-take zones. Specifically, we supported technical studies, communication campaigns, community outreach, and the development of the management plans and the documents submitted for formal MPA request.
- Creation of municipal marine reserves. We supported the development and validation of a new bottomup marine conservation model that resulted in the creation of the first Municipal Marine Reserve in Navidad, located in central Chile.
- **Creation of a TURF Reserve Program.** The Foundation supported the initial scoping, design, and piloting of a TURF Reserve Program, which provides incentives for fishing communities to set aside a portion of their fishing grounds and enforce those areas as no-take zones in exchange for an annual payment to assist with management costs. The Program has been running for two years and has created two no-take zones in central Chile. The Walton Family Foundation is now supporting the program.
- **Improved fisheries policies.** The Foundation supported a successful policy initiative banning trawling on seamounts throughout the country. We supported grantees to develop technical studies and communicate the issue to the wider public in order to raise awareness.
- Fisheries traceability. The Foundation supported the development of small-scale fisheries traceability systems and an integrated seafood delivery platform, both of which are in use for some Chilean fisheries.
- Salmon aquaculture. To help address the expansion of salmon aquaculture in Patagonia, the Foundation facilitated development and use of new platforms for improved civil society access to information related to the salmon industry's activities. Grantees also improved public transparency and accountability processes for salmon aquaculture.
- Shorebirds in Chiloé Island. The Foundation supported the development of a multi-stakeholder Conservation Plan for Shorebirds in Chiloé Island, which is now being implemented. The Plan includes shorebird monitoring, land purchases to protect shorebird habitat, and some of the first conservation easements in Chile for shorebird roosting sites.
- Environmental education. The Foundation supported a coalition of influential Chileans who are implementing a national educational campaign (Chile es Mar) to raise awareness of ocean issues.
- Chile-California exchanges. The Foundation supported knowledge and peer learning exchanges between conservation CSOs and business leaders from Chile and California, which included dialogue on the conservation of coastal lands and the development of land trusts.



In Chile, the Foundation's grant-making will focus on securing protection and building opportunities for management of the country's most important coastal ecosystems.<sup>2</sup> Specifically, it will be designed to benefit ecosystems that are 1) representative of Chile's natural heritage and critical to the survival of the country's threatened coastal species, and 2) fundamental to the maintenance of Chile's rocky reef fisheries, which play a critical role in the well-being of many of the country's coastal communities.

#### 2030 Outlook

Our ambition for ocean conservation in Chile is twofold.<sup>3</sup> First, we seek to help establish a network of sustainably managed areas that safeguard coastal biodiversity and is representative of Chile's natural heritage. Second, we aim to support organizations working with the country's small-scale fisheries so that most are on a path toward sustainability.<sup>4</sup> This strategy focuses on increasing and improving the quality of coastal ecosystems within four human and natural systems that interact with each other: MPAs, coastal wetlands, TURFs,<sup>5</sup> and open-access areas. Our long-term goals are the following:

<sup>&</sup>lt;sup>2</sup> In this document, we use "coastal" to refer to both marine and terrestrial areas along the coast of Chile, including islands.

<sup>&</sup>lt;sup>3</sup> Here we define "long-term" as corresponding to the 2030 outlook the Foundation adopted in its Ocean Strategic Framework.

<sup>&</sup>lt;sup>4</sup> The Foundation is focused on in-shore coastal systems and small-scale fisheries because a) they are the most important for the majority of coastal communities, b) a relatively solid management structure is already in place for small-scale fisheries that limited philanthropic support can build on (i.e., TURF system), c) other funders are already investing considerably in the improvement of industrial fisheries, whereas more limited investments are targeting small-scale fisheries, d) there is much expertise within Foundation staff and grantees to work on nearshore coastal systems and small-scale fisheries, e) vast tracks of land and watersheds already protected (as national parks or other categories, mainly in Patagonia) offer a unique opportunity to link our coastal protection work to these other efforts and therefore take a comprehensive land-to-sea approach, and f) we see realistic opportunities to make considerable progress in a relatively short time frame.

<sup>&</sup>lt;sup>5</sup> For the purposes of this Strategy, we refer to TURFs (Territorial Use Rights in Fisheries) as those bodies of water comprised of both Chile's marine areas for the exploitation of benthic resources (AMERBs, *Áreas Marinas de Explotación de Recursos Bentónicos*) – access rights that date back to Chile's original Fisheries Law of 1991 – as well as Coastal Marine Spaces of Native People (ECMPOs, *Espacios Costeros Marinos Pueblos Originarios*), territorial use rights granted to fishing and indigenous communities by the Chilean Government. The term "open access areas" represent de facto open access, as Chile has a fisheries registry and therefore de jure entry restrictions do exist.

- The country's MPA network is strengthened and expanded to provide effective and representative protection across Chile's main ecological regions.
- Mechanisms and plans are established and implemented to secure the long-term protection of Chile's priority coastal wetlands.
- Most legally compliant TURFs are well managed and have income-generation strategies in place that promote biodiversity conservation.
- Most coastal open access areas have effective fisheries management plans.

Through this strategy, the Foundation is pursuing two transitions. First, its investments in marine conservation are moving from an exploratory and active learning phase to strategy-driven engagement. Second, our investments in Chile under the Marine Birds Strategy are maturing, with significant site-based outcomes on the horizon. Thus, grant-making under the Chile Strategy will capitalize on opportunities to further integrate the Marine Birds Strategy investments. Most of this strategy's work to protect coastal areas, for instance (including islands and wetlands), will be supported via our Marine Birds grant-making. We will also coordinate with other Foundation programs and donors to increase our overall impact. Various lines of work we plan to address through this strategy cannot be carried out successfully without a strong collaboration and partnership with other donors. For a more detailed description of our funding and collaborations, see Table 1 (p.20) and "Funding Plan" section (p.21).

#### **CHILE'S COAST AND FISHERIES: AN OVERVIEW**

The coast of Chile is vast, diverse, and one of the world's most productive. Chile's coastline stretches 4,200 kilometers along the Pacific Ocean, with 161,338 km<sup>2</sup> of territorial waters and an Exclusive Economic Zone (EEZ) five times larger than its terrestrial national territory (3.6 million km<sup>2</sup>). The EEZ includes five ecological regions, including the Humboldtian which is well known for intense upwelling, large-scale climatic phenomena (i.e., El Niño Southern Oscillation), and endemism (5, 6). The northern coast is influenced little by freshwater inputs and has a narrow coastal shelf (<10 km). Moving south, the coastal shelf widens, and freshwater inputs are more common. The coastal topography of northern and central Chile is dominated by rocky coasts with some protected bays and few sandy beaches. The far south is dominated by freshwater inputs and a topographically diverse network of



islands, fjords, estuaries, and channels. This network contributes to Chile's vast coastline of 80,000 km, representing over half of the entire total coastal length of South America (3).Following a return to democracy in the 1990s, Chile became one of the strongest economies in Latin America. Coastal

economic activities are expanding, dynamic, and interact with local communities and environments in complex ways. Starting in the 1980s, coastal activities related to tourism, marine resource extraction, energy generation, and urban and rural development have increased significantly. Almost a third of Chile's municipalities are in the coastal zone, including Chile's main urban centers outside of its capital Santiago, such as Antofagasta, Valparaiso-Viña del Mar, Concepción-Talcahuano, Coquimbo-La Serena, and

Puerto Mont-Puerto Varas. While legal protection of marine areas has improved, coastal environmental policies and management remain weak and suffer from a lack of institutional integration and coordination (7, 8).

#### **Fisheries and Mariculture**

Chile is the sixth largest exporter of seafood in the world (4). In 2016, its seafood exports were valued at \$3.45 billion, approximately 1 percent of the Global Domestic Product (GDP). Total seafood production the same year was \$2.7 million metric tons, with 1.7 and 1 million metric tons from wild capture and mariculture, respectively. Farmed Atlantic salmon comprised half of the mariculture production (9). Wild and farmed fish, invertebrates, and algae are processed mainly for export by over 700 processing plants along the Chilean coast.



The majority of mariculture production occurs in the Los Lagos Region in southern Chile.<sup>6</sup> Chile is the second largest producer of farmed salmon, by far the country's most valuable seafood product, after Norway. In recent years, Chile's seafood production has fluctuated significantly, largely due to sanitary problems related to salmon mariculture (e.g., ISA virus outbreak in 2007 and SRS bacterial infections<sup>7</sup>). In general, mariculture regulation has improved, including more stringent sanitary and environmental standards. However, many challenges remain, including effective spatial planning and limiting production to sustainable levels. Salmon production's expansion into southern Patagonia and its associated impacts are a primary environmental concern: dozens of concessions are in various stages of development and approval (10).

Driven by external market demand, mussel mariculture has also rapidly expanded over the past 20 years. Three species are farmed in southern Chile; however, the Chilean mussel (*Mytilus chilensis*) now constitutes over 90

<sup>&</sup>lt;sup>6</sup> Known as "Region X," this region includes the cities of Puerto Mont and Puerto Varas, as well as Chiloé Island. According to the 2017 census, 820,000 people live in the region.

<sup>&</sup>lt;sup>7</sup> ISA stands for "Infectious Salmon Anemia," a viral disease of Atlantic salmon which has caused devastating effects in farms in Norway, Scotland, Canada, and Chile. Salmon Rickettsial Septicaemia (SRS), or Piscirickettsiosis, is a highly infectious disease that costs the Chilean salmon industry \$300 million USD/year.

percent of production and is the country's second most important mariculture export (9, 11). Predominately harvested in the south, a seaweed known as pelillo (*Graciliaria chilensis*) is the third most valuable mariculture export (12). The Chilean government is considering a law to regulate small-scale aquaculture and has approved the first pilot projects to develop mariculture within TURFs. These pilot projects include restocking efforts as a strategy to restore nearshore rocky reef ecosystems.

While marine capture fisheries comprise a small portion of the GDP, the sector provides ~250,000 jobs, including over 30 percent of the jobs in southern Chile. Marine landings are roughly split between industrial (138 vessels in 2016) and small-scale sectors (11,524 vessels). The latter is heterogeneous in terms of activities and landings.<sup>8</sup> Important species of industrial landings are anchovy, mackerel, sardine, Humboldt squid, and hake. For the small-scale sector, top landings include anchovy, sardine, and Humboldt squid. Over the past several years, the wild harvest of kelp, which occurs in the central and northern regions, has increased substantially (12).<sup>9</sup> Diving-based fisheries are diverse, including over 40 species of benthic invertebrates and reef fish. Many Chilean fisheries are in a vulnerable state: Out of the 25 fisheries that have been assessed, 15 are overexploited or collapsed (9). Many unregulated species, such as reef fish, are also overfished (13). Illegal fishing is a growing issue in Chile, gaining increasing attention by the government, civil society organizations (CSOs), and the media. While limited data is available, recent surveys suggest IUU landings are 20 to 50 percent of official landings in small-scale fisheries, and even higher for some species (14, 15).

The 1991 Fisheries and Aquaculture Law forms the foundation of seafood regulation in Chile. Industrial fisheries management in Chile has evolved from open access to a framework based on total allowable catch and market-based instruments to allocate and trade quota. The law establishes a five-mile exclusive artisanal fishing zone<sup>10</sup> and policy for TURFs in designated areas to manage benthic resources. TURF designation is based largely on economically important benthic species, such as the gastropod mollusk known as loco (Concholepas concholepas), keyhole limpets, and sea urchins. Important fisheries policy reforms occurred in 2013, including defining sustainable use as the main goal of the Fisheries and Aquaculture Law. Ecosystem-based management approaches and science-based decision-making are explicitly mandated in the new reforms. The Fisheries and Aquaculture Law also establishes a key role for scientific committees that are mandated to assign quotas and approve management and recovery plans. Fisheries Management Plans (FMPs) are new multi-stakeholder participatory management instruments for open access areas. The government is strongly supporting the establishment of FMPs: 20 plans have been approved, including for species such as southern hake, kelp, and razor clams. An additional 12 are in development. FMPs are designed to be updated every five years, with the first renewals scheduled for 2019. While the policy is inherently flexible (e.g., ability to include multiple species), FMPs currently focus on single species.

#### **Marine Protected Areas (MPAs)**

The administration of biodiversity conservation instruments in Chile is complicated with multiple agencies capable of establishing, vetoing, and administering different aspects of ocean and coastal resources. In 2009, the Chilean government initiated environmental policy reforms to strengthen the legal framework for biodiversity conservation and create the Ministry of Environment. These reforms established a roadmap for the creation of the Biodiversity and Protected Areas Service and a new,

<sup>&</sup>lt;sup>8</sup> The sector includes 1,121 large vessels (12-18 meters), 4,663 medium vessels (8-12 m), and 5,740 small vessels (<8 m).

<sup>&</sup>lt;sup>9</sup> Algae harvesting has increased over the past two decades, with annual landings tripling from 2000 to 2015.

 $<sup>^{10}</sup>$  9.3 km wide from the coast between 18°21'S and 41°28'S.

consolidated protected areas system.<sup>11</sup> However, the main bill covering the creation of the Service has been under debate for seven years. The uncertainty around details and timing for adoption of this bill continues to be a major challenge to designation and management of MPAs in Chile. Different agencies continue to manage different MPAs.



**Figure 1.** Marine Protected Areas in Chile. Marine Parks are no-take zones, while Marine Reserves are motivated and managed for fisheries conservation. Protected areas in dotted lines had been announced but had yet to be officially decreed as of June 1, 2018 when the map was last updated. Map is to scale.

Currently, there are 29 MPAs decreed or announced (Fig. 1).<sup>12</sup> With the recent (February 2018) signing of various MPAs by President Bachelet (see Box 1), Chile's MPA protection increased from 4 to 40 percent of its Exclusive Economic Zone under some form of protection (16). Through these actions, Chile has greatly exceeded its commitment for the Aichi Target 11 under the Convention on Biological Diversity to protect at least 10 percent of marine-coastal areas.<sup>13</sup> Despite these accomplishments, MPAs

<sup>&</sup>lt;sup>11</sup> Servicio de Biodiversidad y Áreas Protegidas, SBAP; Sistema Nacional de Áreas Protegidas, SINAP.

 $<sup>^{12}</sup>$  This includes 14 Marine and Coastal Multiple-use Protected Areas, 10 Marine Parks (i.e., no-take areas), and five Marine Reserves. It does not include one National Monument (< 1 km<sup>2</sup>) and nine Natural Sanctuaries (totaling 8 km<sup>2</sup>) located along the Chilean coast.

<sup>&</sup>lt;sup>13</sup> The Aichi Target 11 specifically states that: "By 2020, at least 17 percent of terrestrial and inland water areas and 10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through

are underrepresented along the ecologically important continental coast. Furthermore, the coastal MPAs that do exist are concentrated in the Patagonia region. Central and northern Chile enjoy little marine protection, despite having higher levels of overall marine biodiversity and the country's most productive waters (17, 18).<sup>14</sup> North of 40° south, only 143 km<sup>2</sup> of coastal waters are under formal marine protected area designation

Finally, protected area management in Chile is weak: Multiple evaluations by the Ministry of Environment report inadequate implementation, enforcement, management, and funding for protected areas (19, 20). Marine and coastal areas perform the worst (19-21). While an important and commendable first step has been taken in the establishment of Chile's MPAs, practically all the country's MPAs operate with minimal or no budget.

#### Wetlands and Coastal Planning

Chile's wetlands are diverse in nature and geography (22). In general, these wetlands have low biodiversity, but high endemism. Coastal wetlands are primarily located in central and southern Chile, and are dominated by tidal flats, marshes, lagoons, and estuarine waters. While information is limited, coastal wetlands are in a state of general decline: All locations monitored by the Ministry of Environment showed signs of eutrophication or hyper-eutrophication in 2012 (23).

Many of Chile's wetlands are important sites for migratory shorebirds, including two sites that are considered of hemispheric importance.<sup>15</sup> A recent field-based national assessment identified priority shorebird sites along the Chilean coast, including a network of beaches, wetlands, and other coastal environments (24). To date, legal protection of coastal wetlands has been accomplished through designation of Ramsar sites and Nature Sanctuaries, both of which are required to be included in official land-use planning instruments and can trigger Environmental Impact Statements.<sup>16</sup>

In October 2017, for example, the Ministerial Council for Sustainability approved the creation of a Nature Sanctuary to protect the coastal wetlands of Putú, located north of Concepcion. However, both instruments are considered weak because they lack funding and enforcement (25).



Figure 2. Priority sites in Chile for shorebirds, identified by the *Atlas de la aves playeras de Chile* published in 2017.

Consequently, over the past several years, CSOs have been developing strategies to protect wetlands

effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscape and seascape."

<sup>&</sup>lt;sup>14</sup> While marine biodiversity is less studied in southern Chile, species richness is higher in northern and central Chile, which is also where marine protection gaps have been identified.

<sup>&</sup>lt;sup>15</sup> Chiloé Island and Bahía Lomas are designated sites of Regional Importance by the Western Hemisphere Shorebird Reserve Network (WHSRN), defined as sites with 1) at least 500,000 shorebirds annually or 2) at least 30 percent of the biogeographic population for a species.

<sup>&</sup>lt;sup>16</sup> Four of Chile's 15 Ramsar sites are coastal.

using local land-use planning instruments, acquisitions of coastal lands, and a new law supporting private conservation easements.<sup>17</sup>



Despite Chile's territorial and economic dependence on the coastal zone, progress on management of coastal resources has been slow and insufficient (7, 26). Passed in 1994, the National Policy for the Use of the Coastal Fringe was a milestone for coastalmarine policy (7). While the policy includes a National Committee for the Use of Coastal Areas, implementation has been challenging due to insufficient economic and human resources. Even so, the policy did create conditions for improved public and intergovernmental participation

in coastal management and administration. Regional Commissions for the Use of Coastal Areas were created in 2008 for all of Chile's regions to facilitate zoning and spatial planning.

While legal frameworks, government institutions, and CSOs are relatively weak for coastal planning and management, recently there has been some progress on wetland protection. A 2017 field-based national assessment identified priority shorebird sites along the Chilean coast that include a network of beaches, wetlands, and other coastal environments (Fig. 2; 24). A national wetland inventory was initiated in 2011, and information on spatial distributions and other wetland characteristics is now available (26). The goal of the inventory is to implement a monitoring system and support coastal planning efforts. But, progress on both components (monitoring and coastal planning) has been slow, likely exacerbated by few CSOs explicitly focused on wetland protection.

#### **Coastal Infrastructure and Development**

With rapid changes underway on much of Chile's coast driven by multiple development drivers and ongoing risks from natural hazards, coastal planning and safeguarding important environmental sites will be a major challenge over the next decade (27-29).<sup>18</sup> Over the past two decades, the number of thermoelectric power plants has tripled, maritime freight transportation has nearly doubled, and 3,000 permits have been granted for various commercial and industrial infrastructure projects along the coast. Responsible for around 13 percent of Chile's GDP over the past decade, the mining sector is strongly tied

<sup>&</sup>lt;sup>17</sup> Multiple instruments exist, such as Regional Territorial Use Plans (Planes Regionales de Ordenamiento Territorial), County Development Plans (Plan de Desarrollo Comunal), County Regulatory Plans (Planes Reguladores Comunales), and Conservation Easements (Derecho Real de Conservación).

<sup>&</sup>lt;sup>18</sup> Many coastal geographies in central and northern Chile are undergoing rapid changes via development drive-by seaside tourism, leisure development (e.g., second homes), and urban expansion. Some planners fear that Chile is on a similar trajectory as the Mediterranean region of France and Spain during the so-called Trente Glorieuses, which often resulted in a denaturalization of the coastal landscape through the development of buildings and other infrastructure.

to infrastructure development, including ports, energy plants, and desalination plants. As mining operations begin to operate in more populated areas (e.g., central Chile), a coalition of mining companies has started to advocate for the disposal of tailings in the deep sea.<sup>19</sup> Lastly, the Chilean government has taken an interest in marine renewable energy. However, potential environmental impacts and mitigation strategies have not been assessed. While the government has committed to sustainability and environmental standards (including an environmental impact framework), the increased pace of coastal infrastructure development has heightened concern about associated risks and potential impacts along the coast. For example, conflicts have emerged around the construction of thermoelectric plants and wind farms, with local communities worried about coastal environmental impacts (31).

The Chilean coast is also important for tourism. Considered an important contributor to long-term economic growth in Chile (32), it is expected to double by 2026 (30)<sup>20</sup> and over half (55 percent) of the most visited designations by foreign tourists in Chile are coastal (32). Domestic tourism is also largely driven by coastal activities, particularly in the central region where the coast serves as weekend and holiday destinations for millions of Santiago residents. Much of the development in coastal cities like Valparaiso-Viña del Mar is driven by second homes. Mega-development projects are underway on the central coast, such as Curauma with a planning horizon of 25 years and an expected population of 200,000 (33). In northern Chile, where tourism is driven by sandy beach access and the "3Ss" (sun, sand, and sea), development favors an intensely recreational model at the cost of natural landscapes. In cities like Coquimbo-La Serena, for instance, urban growth is linked to major tourism projects (34). These

development trends are likely to lead to further degradation of coastal sites in the region, including areas like the Tongoy estuary—an important shorebird migratory site (35). Mainstreaming new sustainable tourism development models over the next decade will be a major challenge, as the current model devalues the natural function and environmental values of coastal landscapes and focuses more on the shortterm economic gain of recreational tourism.



<sup>&</sup>lt;sup>19</sup> More than 1.6 million tons of mining tailings are produced every day in Chile.

 $<sup>^{20}</sup>$  In 2016, the total contribution of Chile's tourism industry to GDP was \$24.9 billion, 10 percent of GDP. Total employment was 793,000 jobs (10 percent of total employment). Over 150,000 jobs are expected to be created in the sector over the next decade.

#### STRATEGY

#### Theory of Change

Our strategy rests on the overarching assertion that the maintenance of functioning coastal ecosystems is fundamental to avoid biodiversity loss and important for the long-term well-being of coastal communities and the marine resources they rely on. It is also based on the assumption that management of coastal ecosystems and resources requires effective governance, responsive governments, and organized citizens. By working with civil society, government, the private sector, and philanthropic partners, we aim to protect priority coastal ecosystems, while also supporting human and institutional capacity to ensure long-term effective management of those ecosystems.

In the next three years, the Foundation will use four strategic approaches to guide its grant-making in Chile to ensure strong and effective MPAs, TURFs, coastal wetland protections, and open access fisheries management (Figure 3). These approaches are:

- 1. Enhance institutional capacity across civil society and government to proactively and professionally implement science-based marine and coastal policies, laws, and commitments;
- 2. Enhance and support robust transparency, accountability, and public participation mechanisms for government decision-making and achievement of marine resource protections;
- 3. Support the establishment of science-based policies, regulations, and management institutions for coastal and marine resource conservation; and
- 4. Support work to secure sustainable long-term financial resources necessary to implement and enforce Chile's policies, laws, and regulations for coastal and marine resource conservation.

Our support builds upon previous work supported by the Foundation and others. Some investments will focus on completing ongoing efforts to reach desired outcomes while other investments will focus on seeding new areas of work that have received little attention or investment historically. Most of our investments will be made in collaboration with other funders (see Table 1).



Figure 3. Theory of change for the Packard Foundation's Chile Marine Strategy

#### **Outcomes and Strategies**

To achieve many of this strategy's intended outcomes we plan to build on work previously supported by the Foundation (as part of its Marine Birds strategy and the Chile exploratory grant-making) and/or by other funding partners. In Table 1, we summarize the outcomes for each of the four strategy targets (MPAs, Coastal Wetlands, TURFs, and Open Access Areas), how they will be monitored, if our support builds on work previously carried out by the Foundation and/or others, and the expected level of engagement with other funding partners and of Foundation staff to succeed. Following, we provide more detailed information on each of the outcomes and the type of activities the Foundation will support to reach these outcomes.

#### **Marine Protected Areas Outcomes**

- 2030 Outlook: The MPA network is strengthened and expanded to provide representative protection across Chile's main ecological regions.
- 2022 Outcomes:
  - Three new MPAs in Patagonia are established.
  - A strategy and work plan are in place for the creation of coastal MPAs outside of Patagonia.
  - A system is in place for effective management of three MPAs.

We will continue to support efforts to establish three MPAs in Patagonia, each of which the Foundation began supporting during its exploratory grant-making phase. Our grantees are well along in ensuring community support for these MPAs, and their proven connections to decision-makers should enable this process to move forward. Given that central and northern Chile are underrepresented in the MPA network, we will support expanding the network to these areas to increase the representativeness of the country's coastal biodiversity under protection. This is particularly important given the high levels of biodiversity with restricted distributions in northern and central Chile, current development trends, and the limited public and private philanthropic investment in these regions (5, 18). In Northern Chile, we anticipate much more opposition to the establishment of MPAs given the vested interests of mining and other economic actors. Over the next three years we will help develop a strategic plan to establish coastal MPAs in central and northern Chile and a campaign strategy to try to avoid or overcome opposition. The plan will include a portfolio of marine protection approaches, including government-led protected areas and opportunities for integrating TURF Reserves, municipal protected areas, and marine concessions. The plan would also give priority to underrepresented coastal fishing and indigenous communities. The plan would not obligate, but would position the Foundation to help implement that strategy post 2021.





Now that a significant MPA network has been established in Chile that meets the country's commitments under the Convention on Biological Diversity, we will also focus on supporting long-term financing and implementing effective management for Chile's MPAs. While the MPAs have been established, the government does not yet have the funding or management capacity to effectively steward these areas. Chile is among the top 10 most underfunded countries for biodiversity conservation (36). The MPA network was originally designed to fund administration and management costs using tourism revenues (37). However, current evidence suggests visitor fees are likely to fund less than 15 percent of costs associated with MPAs (21). Given the scale of this revenue shortfall,

philanthropic investments alone will not be able to bridge the gap. Consequently, our strategy is to work with the government and grantees to support the development of management plans so that the staffing and financial needs are clear, and then launch an effort to secure a sustainable funding stream. During the next three years, Foundation investments will help establish at least three MPA-specific management plans and a business plan for their implementation. We will also support the work of the Chilean government and grantees currently engaged in the design of a national conservation fund by leveraging our experience in the establishment of other similar funds (mainly in Mexico) and providing targeted funds to assist in the development of this fund.

#### **Coastal Wetlands Outcomes**

- 2030 Outlook: Mechanisms and plans are established and are being implemented to secure the long-term protection and functioning of Chile's priority coastal wetlands.
- 2022 Outcomes:
  - At least 10 priority wetlands on Chiloé Island are under some form of long-term protection.
  - A detailed national strategy for protecting Chile's coastal wetlands is published.
  - A network of Chilean practitioners working on coastal planning and the conservation of coastal habitats is growing.

Our immediate goals focus on building on the Foundation's previous site-based investments in wetland protection, developing a national strategy for protecting coastal wetlands, and enhancing capacity to execute that strategy. Under the Foundation's Marine Birds Strategy, we will continue to support activities focused on securing the long-term protection of Chiloé wetlands that are of global importance to shorebirds. This includes support for spatial and land-use planning, private land protection, and applied research on the interactions of aquaculture and wetland ecosystem health.

Today, there is a growing network of CSOs working on marine biodiversity and fisheries conservation issues in Chile. In general, the capacity to execute programs is high. In contrast, few organizations and individuals are working on wetland protection, and even fewer are working explicitly on coastal planning, especially outside of Patagonia. This gap presents both opportunities and challenges. The Foundation will support a process to identify a core group of practitioners across academic, CSO, and private sectors that have interest and expertise in coastal land protection and planning, and then support them to design a strategy for building and attracting talent, resources, and attention to coastal land protection and other sustainable development priorities. Ultimately, the aim is to protect key coastal areas while at the same time elevating the voices of coastal communities—many of which are often not taken into consideration in policy development—to be champions for the protection of their coastal assets.

#### **TURF** Outcomes

- 2030 Outlook: Most legally compliant TURFs have well-enforced management and incomegeneration strategies to sustain habitat conservation.
- 2022 Outcomes:
  - Strategic plans are published and promoted that synthesize the potential opportunities for generating additional revenue for fishing communities, while also delivering increased habitat protection within TURFs (AMERBs and ECMPOs).
  - The necessary support and infrastructure is in place to scale TURF Reserves and related approaches that hold potential to increase and restore near-shore habitats.

AMERBs are a fisheries policy tool which has been implemented throughout Chile over the past several decades. Today, there are approximately 450 legally-compliant AMERBs (38).<sup>21</sup> A single Chilean fishing association can apply for up to three AMERBs. While AMERB management and associated habitat outcomes are variable, AMERBs account for >1,100 km<sup>2</sup> of the nearshore seascape, with an average size of approximately 100 hectares (39). Likewise, indigenous communities can solicit territorial use rights in coastal-marine áreas (ECMPOs), which can offer opportunities for sustainable management of coastal resources, biodiversity conservation, and the improvement of livelihoods in coastal communities.

Our near-term goals for TURFs focus on preventing habitat loss, increasing habitat protection, and improving best management practices. Many fishing associations with TURFs are already diversifying their incomes and livelihoods. Thus, supporting diversification strategies that align with maintaining or improving habitat conservation is likely to contribute to the long-term protection of marine ecosystems along the Chilean coast. To prevent habitat loss within TURFs and fishers reverting to open access areas, it is important to support complementary income-generating opportunities that are tied to well-functioning TURFs. Those opportunities include business models that are compatible with habitat and biodiversity protection. We will scope and support several activities, including business model development and support services for tourism, small-scale aquaculture, and/or certified seafood products. These activities will complement investments being made by our funding partners that are focused on developing market demand for sustainable seafood from the Chilean small-scale fishing sector.

<sup>&</sup>lt;sup>21</sup> In total, there have been 776 TURFs established across the Chilean coast, many of which are not active or legally compliant.



A pilot TURF Reserve program in AMERBs was initiated with Foundation support and has continued with support from other funding partners. The program provides supplementary revenue to fishing communities in exchange for setting aside a portion of their TURF as a no-take area. The modest annual payment goes toward the cost of managing the reserve, including anti-poaching surveillance. By incentivizing the

creation of enforced no-take zones within TURFs, there is an opportunity to increase coastal marine habitat protection at a national scale. Further, TURF Reserve programs hold the potential to enable new business models that could benefit fishing communities. For example, under the right conditions, benefits from TURF Reserves could be integrated into seafood products harvested by the fishing community and sold within emerging sustainable seafood markets.

Biodiversity benefits from TURF Reserves could also be commoditized and sold as credits in offset or mitigation markets (40). We anticipate opportunities for marine biodiversity offset programs in the near term, as the Chilean government has recently modified important aspects of environmental impact assessment policy to allow offsetting (41). However, many structural challenges need to be addressed before a TURF Reserve program can access any emerging markets. These include identifying how TURF Reserves can be integrated into Chile's environmental impact statement process, gaining official recognition and approval by government, assessing the costs, benefits, and risks of different business models, and assessing which geographies are priorities for a TURF Reserve program. We will support various activities to design, implement, and ramp up programs that improve habitat protection and biodiversity within Chile's TURF system.

#### **Open Access Marine Areas Outcomes**

- 2030 Outlook: Most coastal open access areas have effective fisheries management plans.
- 2022 Outcomes:
  - The process of establishing a fisheries management plan for reef fish is underway.
  - Opportunities and mechanisms for improving (and expanding) algae fisheries management plans are identified and incorporated into upcoming revision stages.

Fisheries management plans are currently the single policy tool available to improve open access areas for long-term sustainability of fisheries and biodiversity conservation. Reef fish have been depleted from



Chile's near-shore ecosystems for more than a decade, largely due to unregulated spearfishing (42). Assessing and establishing a management plan for reef fish is an important first step to recover reef fish populations and subsequently help restore Chile's kelp ecosystems. The Foundation will support various activities (e.g., assessment, strategy, and participatory processes) to establish the first reef fish fisheries management plan in Chile.

Six management plans for kelp have been approved, all in the northern regions of Chile. However, management experience in kelp fisheries is limited in Chile, as is the implementation of fisheries management plans in general since the policy was created in 2013. We will support three activities focused on improved kelp management in Chile: 1) assessing the current kelp management plans to identify implementation challenges and support processes to overcome them, 2) assessing Regions V and VI, which have active kelp fisheries, to work toward establishing fisheries management plans for these

regions, and 3) assessing opportunities for demand-side market interventions (i.e., European Union, China, and Japan) that could lead to improved management in Chile. To accomplish the latter, we will work closely with the Foundation's Global Seafood Markets Strategy and China and Japan focal country strategies.

#### **Capacity Building**

Given available resources, we will take a flexible approach to build the institutional strength and financial ability to help establish a foundation for durable coastal and marine resource protection and achievement of our long-term goals. These investments will be made based on previous experience and current opportunities and may not be tied to any specific outcomes.

#### Institutional Strength

With funding partners, we will explore the design and funding of a capacity-building program that supports strengthening organizations working on marine and coastal conservation in Chile. We will build on our previous work and lessons learned from establishing a similar program in northwest Mexico (see Box 3). We envision a program for

#### Box 3.

Since 2014, the Programa Pescadero has been working to strengthen institutional capacities and leadership of CSOs in Northwest Mexico. Managed by the Mexican Fund for the Conservation of Nature, the program was funded by five foundations, including the Foundation\*, with an annual budget of \$400 k. The Program builds capacity through a combination of expert-led workshops and one-on-one trainings with targeted CSOs. It also uses organizational best practices to assess the needs of CSOs, tailor personalized strength-building support, and measure results across the marine conservation sector in the region.

\* The David & Lucile Packard Foundation, The Walton Family Foundation, The Leona M. and Harry B. Helmsley Charitable Trust, Marisla Foundation, and Sandler Foundation. Chile that supports two groups: 1) CSOs working on marine and fisheries conservation, and 2) the environmental consulting sectors that service small-scale fishing communities. The latter group plays an important role across all of Chile. With our funding partners, a first step will be to scope such a program, develop options for an appropriate organizational framework within the Chilean context, and identify potential implementing partners for the program.

#### Sustainable Finance

Chile lacks a philanthropic sector devoted to environmental causes, and emerging markets of goods and services devoted to sustainability are rare to non-existent. The infrastructure to support in-country environmental philanthropy is in its infancy. Tax benefits for environmental giving do not exist and organizations dedicated to private land conservation (e.g., land trusts) are rare. The setting, however, has begun to change. Multiple developments, within and outside of the government, are sparking a new level of interest in developing frameworks for financing environmental conservation in Chile (43).



Supported by the Foundation and others, a small group of CSOs is making progress in promoting policies that incentivize in-country philanthropic investment for conservation. For example, a law was passed in 2016 that allows landowners to voluntarily place conditions on private property for the benefit of environmental conservation, which is analogous to conservation easements in the United States and elsewhere. While the law is a major step toward creating a framework for private conservation in Chile, it is currently untested and could be equally applied to a priority coastal wetland and a golf course.

The Foundation is supporting efforts to establish successful applications of the new easement law on Chiloé Island, focusing on wetlands and shorebirds. Doing so will be important to set a precedent for applying the new law toward environmental protection. Nevertheless, more support is needed to develop the legal, organizational, and financial infrastructure to apply and scale conservation easements and other private conservation initiatives in Chile. This includes property law and enforcement, tax law and incentives, and capable CSOs focused on land protection and stewardship. Such infrastructure is currently weak in Chile. In the near-term, we will support activities to continue to promote financial incentives (e.g., tax credits) for environmental giving in Chile. The country's potential for philanthropic giving is strong and growing: The number of millionaires in Chile is expected to grow by more than 50 percent over the next five years (44, 45). Developing an in-country philanthropic environmental sector is timely and would be of high impact, especially since international aid and philanthropic funding continues to decrease in general as Chile is increasingly viewed as a fully-developed country.

**Table 1.** Summary of outcomes of the Chile Strategy, with notes on monitoring approaches,existing collaboration with other funder partners, level of Foundation staff involvement, and estimatedrisk to achieve successful completion.

| 2022<br>OUTCOMES  | HOW<br>MONITORED                                 | FOUNDATION<br>TO LEAD | COLLAB.<br>WITH<br>FUNDERS | BUILDING ON<br>ONGOING<br>PROCESSES | STAFF<br>INVOLVEMENT | ESTIMATED<br>LEVEL OF RISK |
|---|--|-----------------------|----------------------------|-------------------------------------|----------------------|----------------------------|
| MPAs  |  |                       |                            |                                     |                      |                            |
| Three new MPAs established in Patagonia   | Grantee reports                                  |                       | Х                          | Х                                   | Low                  | High                       |
| Strategy in place for<br>creation of MPAs outside<br>of Patagonia                           | Grantee reports;<br>Coastal working<br>group     | х                     | х                          |                                     | High                 | Low                        |
| System in place for<br>effective management of<br>three MPAs                                | Grantee reports;<br>Coastal working<br>group     |                       | х                          | х                                   | Low                  | Medium                     |
| Coastal Wetlands  |  |                       |                            |                                     |                      |                            |
| 10 priority wetlands in<br>Chiloé are protected   | Grantee reports;<br>coastal working<br>group     | х                     |                            | х                                   | Low                  | Medium                     |
| A national strategy for<br>wetland protection is<br>published                               | Official gazette;<br>coastal working<br>group    | х                     | х                          | х                                   | Medium               | Medium                     |
| A network of<br>practitioners working on<br>coastal planning and<br>conservation is growing | Coastal working<br>group; targeted<br>interviews | х                     | х                          |                                     | High                 | Low                        |
| TURFs   |  |                       |                            |                                     |                      |                            |
| Plans for TURF<br>protection and revenue<br>generation published<br>and promoted            | Grantee reports;<br>fisheries working<br>group   | х                     | х                          | х                                   | Medium               | Low                        |
| Infrastructure in place to scale TURF Reserves  | Grant reports;<br>Fisheries WG                   |                       | х                          |                                     | Low                  | High                       |
| Open Access Areas   |  |                       |                            |                                     |                      |                            |
| Process to establish<br>management plans for<br>reef fish is underway                       | Grantee reports;<br>Fisheries WG                 | х                     | х                          |                                     | Medium               | Medium                     |
| Mechanisms for<br>improving algae<br>management plans<br>incorporated into<br>revisions     | Grantee reports;<br>Fisheries WG                 | х                     | Х                          |                                     | Low                  | Medium                     |
| Capacity Building   |  |                       |                            |                                     |                      |                            |
| Capacity-building<br>program designed and<br>beginning to be<br>implemented                 | Grantee reports                                  | x                     | x                          |                                     | High                 | Low                        |
| Incentives for<br>philanthropic giving in<br>Chile have increased                           | Discussions with<br>Chile Funders<br>Group       |                       | х                          | х                                   | Low                  | Medium                     |

#### **Risk Assessment**

Much of the expected outcomes laid out in this strategy build on previous efforts begun either through Foundation support or with the support of other funders and are being and will be co-financed with collaborating donors (see Table 1). We estimate that there won't be much risk involved in getting to most of these outcomes, largely due to the momentum already gained through our grantees' previous efforts and our previous and/or future collaborations with other funding partners and the Chilean government. However, it is important to point out that we do anticipate a high level of risk to reach a couple of outcomes (Table 1). These are:

#### **MPA Designations**

Under the administration of President Bachelet, Chile increased its MPA coverage from 4% to over 40% of the country's Exclusive Economic Zone (EEZ), positioning the country as a world leader in MPA establishment and far exceeding Chile's commitments under the Aichi targets for marine conservation. We expect that it will be difficult for the new administration of President Piñera to have the incentive to establish new MPAs given the achievements of the previous administration. MPA establishment also requires going through a council of all the country's ministers. As the new administration, operating under more neoliberal politics and economic thinking, pushes for economic development, the establishment of new MPAs could be seen as a barrier to achieve stronger economic growth, especially by the ministers of economy and energy.



#### **Scaling up TURF Reserves**

Chile has been a leader in the establishment of TURFs as a fisheries management tool. However, there are only a handful of TURF-Reserve models, mostly located in the AMERBs of the central part of the country. It took over five years for fishing communities to establish just a few of these reserves, and thus far, the establishment of the existing TURF Reserves has been done on a case-by-case basis and we are just now beginning to see the results of these management interventions. It

will be difficult to build the political capital at the local, regional, and national level necessary to make the case for the increase of TURF Reserves at a scale that would be meaningful for conservation and fisheries management for key fisheries and coastal ecosystems throughout Chile.

#### **Funding Plan**

Due to our experience working in Chile over the past seven years, as well as the relationships we have formed, the Foundation is in a unique position to collaborate and create synergies with existing partners and new funders, thus leveraging foundation assets and fostering aligned philanthropy. Total grant funding from other donors investing in marine



and coastal conservation in Chile is approximately \$7.75 million annually. Over the next three years, our expectation is that the Foundation's Chile Strategy will invest \$1 million annually, along with an approximately \$700,000-\$1 million annually from other Foundation programs working in coordination with this strategy (i.e., Marine Birds, Global Seafood Markets, Science, and Organizational Effectiveness). An average of \$1,825,000 annually will allow us to implement the activities laid out in this strategy.

#### Monitoring, Evaluation, and Learning (MEL)

Our MEL activities for the Chile Marine Strategy will be conducted in close coordination with the Foundation's broader Ocean Strategic Framework MEL efforts. We define monitoring as the ongoing collection of information about program implementation and the shifting strategic context. We define evaluation as the systematic collection, analysis, and interpretation of data to determine the value of and the decision-making about a program. We define learning as the use of data and insights, from monitoring, evaluation, and other information-gathering approaches, to inform strategy and decision-making. In general, our approach is to monitor extensively and continuously, evaluate selectively, and learn intentionally to share widely.

#### Monitoring

Monitoring helps us understand what is and is not working, as well as what is emerging within the context of our strategy. There are multiple components to our monitoring plan, all of which we will undertake in partnership with grantees and others. We will establish regular processes for gathering and recording data relevant to progress toward each of our desired outcomes. These data will allow us to test assumptions and evaluate progress. We will work with a third-party partner to synthesize various monitoring inputs and prepare a biannual report summarizing information on indicators of the social-ecological condition of the strategy's targets (see Appendix I).

Improvement of long-term social-ecological conditions is the goal of our grant-making strategy. While these are unlikely to show definitive trends during a three-year strategy, they will help establish a baseline for future assessments toward our 2030 outlook. We will set aside approximately \$50K/year to help establish mechanisms for long-term monitoring of these social-ecological conditions in cases where these don't exist (see Appendix I). We will collect information relevant to our four near-term targets mostly through review of grant reports (see Table 1). This will allow us to qualitatively monitor progress toward desired outcomes. For our MPA and coastal wetland targets, all our short-term desired outcomes, with one exception, can be fully monitored with grant reporting, other outputs, and related government announcements. We will monitor our desired outcome of a growing network of practitioners working on coastal planning by integrating additional efforts within our learning activities.

Within our TURF and open access area targets, some desired outcomes can be fully or partially monitored with grant reporting, other outputs, and related public announcements. Other desired outcomes will prove more challenging to monitor directly, including attempts to connect specific outcomes to improved habitat quality. Thus, to complement our ongoing monitoring efforts, our evaluation activities will focus on using methodologies to gauge realized and potential progress toward habitat improvement. Lastly, much of our initial grant-making will include assessments, focused on developing implementation strategies for long-term desired outcomes (e.g., coastal wetland protection). While these strategies themselves are a desired near-term outcome, we will ensure that the initial assessments and strategies include monitoring plans, as well as efforts to establish baselines.

#### **Evaluation**

Our evaluation activities will focus on assessing the impact of our strategy on habitat quality in coastal Chile. Our bi-annual monitoring reports that synthesize social-ecological conditions will serve as a foundation to guide an expert elicitation process in order to cost-effectively evaluate ongoing progress toward this strategy's three-year outcomes and long-term outlook that focus on habitat.<sup>22</sup> Convening a group of experts, we will assess and forecast benefits from the interventions we are supporting within our coastal conservation (wetlands and MPA) and fisheries (TURF and open access) targets. This will include short-term (e.g., three-year) and long-term expectations (e.g., 2030). We will conduct the expert elicitation process during years one and three of the Chile program. The expert elicitation process will also evaluate important questions that will improve our monitoring and learning:

- What are the main barriers to a successful implementation of the strategy?
- Are existing capacities sufficient for the implementation of the strategy across the four target areas?
- What are indicators of strategy implementation? Which should be tracked and evaluated?
- What are the changes that will occur (or have occurred) to which one can attribute a *cause and effect* related to the Foundation's investments?
- Is the Foundation's investment on-track toward achieving its long-term outlook?
- How could the strategy and its implementation be strengthened to better achieve its near-term outcomes and long-term outlook?

 $<sup>^{22}</sup>$  Expert knowledge to inform decision-making can be found in almost all areas of conservation science and practice. Over the past decade, new methods and approaches have been developed to overcome the challenges with expert data (e.g., biases). In general, the process has five main steps: 1) deciding how information will be used, 2) determining what to elicit, 3) designing the elicitation process, 4) performing the elicitation, and 5) encoding the elicited information to inform a decision directly or for use in a model.

- Are the assumptions in the strategy still salient?
- What are the emerging issues which must be addressed to avoid habitat degradation as an unintended consequence?

#### Learning

We seek strategic opportunities to share what we are learning, to co-create insights with our partners, and to use these insights to inform and galvanize change. Fostering learning will also increase our ability to adapt to changing conditions, and thereby is an important mechanism to build resilience into the strategy and its outcomes. The strategy team will facilitate social learning processes by establishing deliberative and face-to-face interactions with grantees and other interested entities (i.e., partner funders, academia, and government).

At the midpoint of this strategy we will take steps to broaden advisory input into our learning strategy to assess progress and identify whether course corrections would be beneficial. More specifically, we plan to organize a series of meetings with two working groups (coastal conservation and small-scale fisheries) comprised of a subset of experts who were part of the expert elicitation process. Participants in these meetings will review progress to date toward the strategic outcomes, what is working, what is not, and which components may need some course correction or adaptation given emerging challenges and opportunities. Results from the learning process will be further socialized with relevant stakeholders.

#### **Exit Strategy**

This strategy has been developed with a 2030 outlook in accordance with the Foundation's Oceans Strategic Framework. Thus, we do not expect to exit our work in Chile over the next three years. However, in 2021 we will be assessing our entire marine portfolio and refreshing the Foundation's Ocean Strategic Framework and associated strategies. We expect a refreshed framework to be published in 2022.

#### **Program Management**

The program will be managed by a Program Officer (Richard Cudney) and assisted by one Program Associate (Maeve Stewart).



#### **APPENDIX I.**

Monitoring of long-term trends within the four strategic areas. Holistic monitoring mechanisms need to be created using available and new data sources.

|  | Marine<br>Protected Areas   | Coastal<br>Wetlands  | TURFs   | Open<br>Access Areas   |
|--|---|--|---|--|
| Natural system<br>indicators                     | Biodiversity, top<br>predators.   | Rainfall, river flow,<br>radiation, nutrients,<br>macrophytes, bird<br>monitoring.               | Reef fish, algae, benthic invertebrates.  | Reef fish, algae,<br>benthic invertebrates.  |
| Available data<br>sources                        | Basic baseline data<br>available from reports<br>during MPA creation.                         | Physical and satellite<br>are datasets available.<br>Some bird monitoring<br>data available.     | Government reports,<br>consultant reports.<br>Accessibility may be a<br>challenge. Satellite data<br>could be useful for algae. | Fisheries Management<br>Plans, local and<br>regional landings data.                        |
| Human system<br>indicators                       | Management plan,<br>funding, local<br>infrastructure.   | Inclusion into local<br>planning instruments,<br>protected status,<br>funding for<br>management. | Legal compliance, financial<br>stability, governance,<br>fisheries monitoring and<br>plans, diversified revenue<br>streams.     | Active Fisheries<br>Management Plan<br>committee.  |
| Available data<br>sources                        | SERNAPESCA data<br>sources, minimal data<br>available from the<br>Ministry of<br>Environment. | Local government<br>archives.  | Minimum government<br>data available from<br>Instituto de Fomento<br>Pesquero.  | Some data available<br>associated to Fisheries<br>Management Plans<br>and meeting minutes. |
| Mechanism in<br>place or<br>Packard to<br>create | No formal assessment<br>mechanism exists (e.g.,<br>MPA scorecard).                            | Does not exist.  | Yearly assessments<br>available for select species.<br>Holistic monitoring<br>mechanism does not exist.                         | Does not exist.  |

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